



**PROFIL ARBED**



## Programme de vente

Poutrelles    Profilés U    Cornières

## Sales programme

Structural Shapes

## Verkaufsprogramm

Träger    U-Profile    Winkelstahl

**ARBED**  
GROUP

**PROFIL** **ARBED**



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# Worldwide number one producer of steel beams







## Le numéro un mondial de la poutrelle en acier

ProfilARBED est **le premier** producteur de poutrelles en acier dans le monde et **le plus européen** des sidérurgistes. Nous offrons aux constructeurs métalliques des **solutions innovantes, compétitives, écologiques et esthétiques** pouvant **intégrer d'autres matériaux**. Nos aciéries électriques respectent **les critères environnementaux** les plus sévères, et nos produits **répondent aux exigences technologiques** du secteur de la construction. ProfilARBED a intégré la **mondialisation** dans sa stratégie: l'entreprise est représentée dans **plus de 65 pays**.

## Worldwide number one producer of steel beams

ProfilARBED is the world's **leading** manufacturer of steel beams and the foremost steel producer in Europe. We offer fabricators **innovative, aesthetic, competitive** and **ecological solutions** fully compatible with the use of other materials. Our electric steelworks comply with the strictest **environmental criteria** and our products meet the construction sector's **technological requirements**. A key part of ProfilARBED's strategy lies in working towards globalisation, operating as we do in **more than 65 countries worldwide**.

## Weltweit Marktführer bei Stahlwalzträgern

ProfilARBED, der **europäischste** aller Stahlproduzenten, ist weltweit **Marktführer** bei Stahlwalzträgern. Hier finden Stahlanwender **innovative, wirtschaftliche, ökologische und ästhetische Lösungen**, die sich auch hervorragend mit **anderen Baustoffen kombinieren lassen**. Die Elektro Stahlwerke von ProfilARBED arbeiten nach den strengsten **Umweltmaßstäben**, und die dort hergestellten Produkte **erfüllen die technischen Anforderungen** der Baubranche. Einen festen Bestandteil der Unternehmensstrategie bildet auch die **Globalisierung**: ProfilARBED ist in **über 65 Ländern** vertreten.

## Nuances d'acier

### Système de désignation des aciers

La norme européenne EN 10027 définit, en combinaison avec la communication ECISS IC10, la manière de désigner les sortes d'acier. Le tableau 1 reprend les symboles usuels pour les aciers de construction.

### Aciers de construction

Les nuances des aciers de construction disponibles et conformes aux normes européennes et américaines sont reprises aux tableaux 2, 3 (EN) et 4 (ASTM).

D'autres nuances suivant les normes japonaises (JIS) et canadiennes (CSA) sont disponibles sur demande.

Le tableau 5 donne une liste de correspondance des désignations suivant Euronormes et HISTAR avec les désignations américaines, canadiennes, japonaises et nationales européennes antérieures.

Les aciers contiennent typiquement une teneur en silicium comprise entre 0.15 % et 0.25 %, et sont donc aptes à la galvanisation au trempé (diagramme 1). Leur teneur en phosphore étant habituellement inférieure à 0.040 %, celle-ci n'a pas d'influence sur l'épaisseur finale du revêtement dans la plage de Si considérée.

## Steel Grades

### Designation system for steels

The European standard EN 10027 defines, in combination with the ECISS communication IC10, the designation system for steel grades. The usual symbols for structural steels are shown in table 1.

### Structural Steels

The available structural steel grades according to European and American standards are shown in tables 2, 3 (EN), and 4 (ASTM).

Other grades according to Japanese (JIS) and Canadian (CSA) standards are available upon request.

Table 5 shows a list of corresponding designations between the European standards as well as the HISTAR grades with those from the American, Canadian, Japanese and the former national European standards.

The steels are typically delivered with a Si content ranging between 0.15 % and 0.25 %, and are as such suitable for galvanization (diagram 1). As the phosphorus content of these steels is usually lower than 0.040 %, it does not have any influence on the final thickness of the coating in the considered Si range.

## Stahlsorten

### Bezeichnungssystem für Stähle

Die europäische Norm EN 10027 umfasst, in Verbindung mit der ECISS Mitteilung IC10, die Kurznamen der Stahlgüten. In der Tabelle 1 sind die üblichen Symbole für Baustähle gezeigt.

### Baustähle

Die verfügbaren Baustahlsorten gemäß europäischen und amerikanischen Normen sind in den Tabellen 2, 3 (EN) und 4 (ASTM) gezeigt.

Die Güten nach japanischen (JIS) und kanadischen (CSA) Normen können auf Anfrage geliefert werden.

Tabelle 5 enthält eine Liste der Bezeichnungen vergleichbarer Stähle zwischen den europäischen Normen sowie den HISTAR Güten mit den Bezeichnungen nach amerikanischen, kanadischen, japanischen und früheren nationalen europäischen Normen.

Die Baustähle werden im Normalfall mit einem Siliziumgehalt von 0.15 % - 0.25 % geliefert. Sie sind daher zum Feuerverzinken geeignet (Diagramm 1). Der Gehalt an Phosphor liegt gewöhnlich unter 0.040 % und hat bei den betrachteten Si-Werten keinen Einfluss auf die Endstärke des Überzugs.

Épaisseur du revêtement de zinc en fonction de différents paramètres.  
Thickness of the zinc coating in function of different parameters.  
Abhängigkeit der Stärke des Zinküberzugs von verschiedenen Parametern.

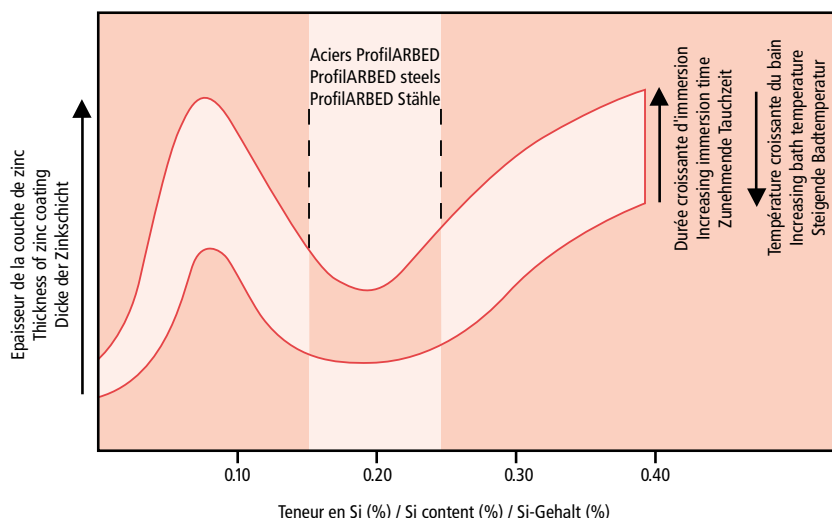


Diagramme 1 / Diagram 1 / Diagramm 1

## Aciers de marque HISTAR et FRITENAR

### Généralités

Les aciers de marque HISTAR et FRITENAR sont conformes en tous points aux exigences des normes applicables aux aciers de construction. Leurs caractéristiques sont même supérieures, et ils offrent des garanties supplémentaires.

### Aciers à haute limite d'élasticité avec soudabilité améliorée

Les aciers HISTAR et FRITENAR combinent de façon idéale haute limite élastique, bonne ductilité et excellente soudabilité. Les différentes limites élastiques sont 355, 420 et 460 N/mm<sup>2</sup> pour les aciers HISTAR et 355 N/mm<sup>2</sup> pour l'acier FRITENAR.

Grâce à l'application du procédé révolutionnaire de traitement technique "en ligne" QST (Quenching and Self-Tempering = trempe et autorevenu), les nuances HISTAR, contrairement aux aciers conventionnels de construction, présentent une limite d'élasticité constante pour toutes les épaisseurs du produit (voir diagramme 2). L'état de livraison thermomécanique des nuances HISTAR est conforme aux spécifications EN 10113-3: 1993.

## HISTAR and FRITENAR trademark steels

### General

The HISTAR and FRITENAR trademark steels meet in all points the requirements of the applicable structural steel standards. They even exceed the requirements and offer supplementary guarantees.

### High strength steels with improved weldability

HISTAR and FRITENAR are structural steel grades with a low alloy content, combining high strength, good toughness and superior weldability. The HISTAR steels are available in yield strengths of 355, 420 and 460 N/mm<sup>2</sup> whereas the one of FRITENAR steel is 355 N/mm<sup>2</sup>.

The application of the revolutionary and innovative in-line heat treatment QST (Quenching and Self-Tempering) allows, unlike most standard grades, to present for all HISTAR grades constant guaranteed values for yield strength over the whole range of products. A comparison between the yield strengths of HISTAR grades and conventional grades is shown in diagram 2. HISTAR steels are delivered in thermomechanically rolled condition as defined in EN 10113-3: 1993.

## HISTAR und FRITENAR Markenstähle

### Allgemeines

Die HISTAR und FRITENAR Markenstähle erfüllen alle Bedingungen der üblichen Baustahlnormen. Sie zeichnen sich sogar durch bessere Werte aus und bieten zusätzliche Sicherheiten.

### Hochfeste Baustähle mit verbesserter Schweißbarkeit

HISTAR und FRITENAR Güten sind hochfeste Feinkornbaustähle, die eine Kombination von geringen Legierungsgehalten, hohen Streckgrenzen, exzellenten Zähigkeiten sowie eine ausgezeichnete Schweißbarkeit zulassen. Lieferbar sind Streckgrenzen von 355, 420 und 460 N/mm<sup>2</sup> für HISTAR und von 355 N/mm<sup>2</sup> für FRITENAR.

Dank der bahnbrechend neuen in-line-Wärmebehandlung QST (Quenching and Self-Tempering = Abschrecken und Selbstanlassen) sind die Streckgrenzen der HISTAR Güten im Gegensatz zu denjenigen der üblichen Baustähle unabhängig von der Erzeugnisdicke unreduziert (siehe Diagramm 2). Die HISTAR Stähle werden im thermomechanisch gewalzten Zustand geliefert und stehen im vollen Einklang mit den Forderungen der DIN EN 10113-3: 1993.

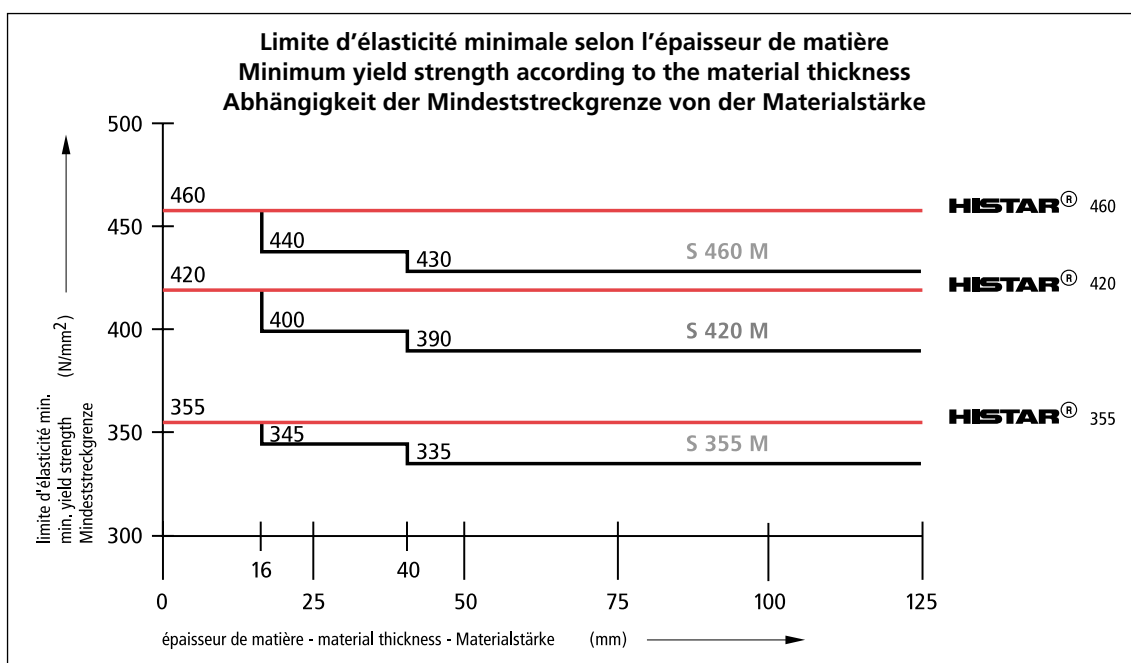


Diagramme 2 / Diagram 2 / Diagramm 2

Les nuances des aciers de marque HISTAR et FRITENAR sont reprises au tableau 6. Des fiches techniques détaillées de ces nuances sont également disponibles.

Les aciers contiennent habituellement une teneur en silicium comprise entre 0.15 % et 0.25 %, et sont donc aptes à la galvanisation au trempé (diagramme 1). Leur teneur en phosphore étant habituellement inférieure à 0.040%, celle-ci n'a pas d'influence sur l'épaisseur finale du revêtement dans la plage de Si considérée.

La nuance FRITENAR est disponible pour toutes les sections tandis que les nuances HISTAR sont disponibles uniquement pour les profilés marqués HI (pages 24 -> 87).

Les aciers HISTAR et FRITENAR peuvent être oxycoupés et parachevés suivant une procédure identique à celle appliquée aux aciers du même niveau de résistance. En cas normal, il n'est pas nécessaire de procéder à un préchauffage afin d'éviter la fissuration lorsque la température du produit est  $>0^{\circ}\text{C}$ .

Dans l'hypothèse du respect des règles générales de soudage, les aciers HISTAR et FRITENAR offrent une excellente aptitude au soudage manuel et automatique. Grâce aux faibles valeurs pour le carbone équivalent, il n'est pas nécessaire de procéder au préchauffage, pourvu que l'apport en énergie se situe à l'intérieur de la fourchette normale (10-60 kJ/cm), que la température du produit soit  $>0^{\circ}\text{C}$  et que des électrodes à faible teneur en hydrogène soient utilisées.

En cas de recuit de détente des aciers HISTAR et FRITENAR, la température se situe entre  $530^{\circ}\text{C}$  et  $600^{\circ}\text{C}$ . La durée d'application recommandée est de 2 minutes par mm d'épaisseur sans qu'elle soit inférieure à 30 minutes ou supérieure à 150 minutes.

Lors d'opérations locales de dressage à la flamme sur toute l'épaisseur du produit, il convient de ne pas dépasser une température de  $700^{\circ}\text{C}$ . Une température jusqu'à  $900^{\circ}\text{C}$  est admissible en cas de dressage à la flamme en surface du produit uniquement.

Table 6 shows the characteristics of the available HISTAR and FRITENAR trademark steel grades. Detailed data sheets of these steels are also available.

The steels are typically delivered with a Si content ranging between 0.15% and 0.25%, and are as such suitable for galvanization (diagram 1). As the phosphorus content of these steels is usually lower than 0.040%, it does not have any influence on the final thickness of the coating in the considered Si range.

All sections are available in the FRITENAR grade whereas only the sizes marked HI (pages 24 -> 87) are available in HISTAR grades.

HISTAR and FRITENAR steels can be cut with a torch and machined using the process normally applied to the steel of the same level of strength. Due to the low carbon equivalent, preheating in order to prevent cracking is generally not necessary for product temperatures  $>0^{\circ}\text{C}$ .

HISTAR and FRITENAR steels offer a good weldability for manual and automatic processes, provided the general rules for welding are respected. Due to the low carbon equivalent values of these steels, preheating is not necessary for the normal range of heat inputs (10-60 kJ/cm) and for temperatures of the structure over  $0^{\circ}\text{C}$ , provided that low hydrogen consumables are used.

If stress relieving is required for HISTAR and FRITENAR steels, it is performed at temperatures between  $530^{\circ}\text{C}$  and  $600^{\circ}\text{C}$ . The recommended holding time is 2 minutes per mm product thickness, but not less than 30 minutes and not more than 150 minutes.

For local reheating of the entire thickness of HISTAR and FRITENAR beams, the flame straightening temperature may go up to  $700^{\circ}\text{C}$ . For local reheating of the surface only, the flame straightening temperature may go up to  $900^{\circ}\text{C}$ .

In Tabelle 6 ist die Liste aller verfügbaren HISTAR und FRITENAR Markenstähle aufgeführt. Weitere Einzelheiten sind in separaten Werkstoffblättern ersichtlich.

Die Markenstähle werden im Normalfall mit einem Si-Gehalt von 0.15% - 0.25% geliefert. Sie sind daher zum Feuerverzinken geeignet (Diagramm 1). Der Gehalt an Phosphor liegt gewöhnlich unter 0.040% und hat bei den betrachteten Si-Werten keinen Einfluss auf die Endstärke des Überzugs.

Nur die in den Tabellen der Seiten 24 -> 87 mit HI gekennzeichneten Profile sind in HISTAR Güten lieferbar, während die FRITENAR Güte für alle Profile erhältlich ist.

Das thermische Trennen und die mechanische Bearbeitung von HISTAR und FRITENAR Güten können unter normalen Bedingungen genauso ohne jegliche Einschränkung durchgeführt werden wie vergleichbare Stähle in dem jeweiligen Festigkeitsbereich. Ein Vorwärmen zur Vermeidung von Abkühlrissen ist, bedingt durch den geringen Gehalt an Legierungselementen, ab einer Verarbeitungstemperatur  $>0^{\circ}\text{C}$  nicht erforderlich.

Unter Einhaltung der allgemeinen Regeln der Schweißtechnik bieten die HISTAR und FRITENAR Güten für alle manuellen und automatischen Schweißprozesse eine exzellente Schweißbarkeit. Bedingt durch das niedrige Kohlenstoffäquivalent ist ein Vorwärmen bei üblichen Streckenenergien (10-60 kJ/cm) und bei Verarbeitungstemperaturen  $>0^{\circ}\text{C}$  nicht erforderlich, vorausgesetzt es werden Schweißzusatzwerkstoffe mit niedrigem Wasserstoffgehalt verwendet.

Für den Fall, dass Spannungsarmglühen erforderlich ist, erfolgt dieses bei den HISTAR und FRITENAR Güten bei Temperaturen zwischen  $530^{\circ}\text{C}$  und  $600^{\circ}\text{C}$ . Es wird empfohlen, die Haltezeit bei 2 Minuten pro mm Materialstärke anzusetzen. Die Gesamtdauer sollte jedoch mindestens 30 Minuten betragen und insgesamt 150 Minuten nicht überschreiten.

Bei einer Erwärmung des Materials beim Flammrichten über die gesamte Erzeugnisstärke sollte das Temperaturniveau unter  $700^{\circ}\text{C}$  liegen. Bei einer lokalen Oberflächenerwärmung kann die Flammrichttemperatur bis  $900^{\circ}\text{C}$  betragen.



## Aciers pour applications offshore

Les nuances HISTAR Offshore et FRITENAR Offshore ont été développées spécialement pour les applications offshore. Comparées aux aciers de marque HISTAR et FRITENAR, les nuances offshore présentent des propriétés supplémentaires, dont notamment :

- Des caractéristiques de déformation améliorées dans le sens de l'épaisseur pour ce qui concerne la résistance à l'arrachement lamellaire (qualités Z).
- Des propriétés de résilience garanties dans le sens transversal.
- Un rapport maximal entre les valeurs de la limite élastique et de la résistance à la traction.

Les caractéristiques mécaniques et les compositions chimiques des nuances d'aciers offshore sont reprises aux tableaux 7 et 8. Les aciers offshore sont conformes aux spécifications de l'EN 10225.

Des fiches techniques détaillées des nuances HISTAR Offshore et FRITENAR Offshore sont également disponibles.

## Qualités spéciales

1. Aciers patinables – conditions de livraison sur demande.
2. Les aciers suivant spécifications particulières (composition chimique et propriétés mécaniques) sont disponibles sur demande et sont sujets à des tonnages minima à convenir.

## Steel grades for offshore applications

HISTAR Offshore and FRITENAR Offshore are structural steel grades especially developed for offshore applications. In comparison to the HISTAR and FRITENAR trademark steels, the grades for offshore applications offer the following additional features :

- Improved deformation properties in through thickness direction with respect to the resistance to lamellar tearing (Z qualities).
- Notch impact properties in transverse direction.
- Maximum ratio between yield strength and tensile strength.

The available grades, their mechanical characteristics and chemical composition are shown in tables 7 and 8. They are in compliance with EN 10225.

Detailed data sheets on the HISTAR Offshore and FRITENAR Offshore steels are also available.

## Special Steel Qualities

1. Weathering steels – delivery conditions upon request.
2. Steel grades according to particular specifications (chemical composition and mechanical properties) are subject to prior approval and minimum tonnages to be agreed upon.

## Stahlgüten für Offshore-Anwendungen

Die HISTAR Offshore- und FRITENAR Offshore-Güten sind speziell für den Offshore-Bereich entwickelt worden. Im Vergleich zu den Markenstählen HISTAR und FRITENAR bieten die Offshore-Güten folgende zusätzlichen Eigenschaften :

- Güten mit verbesserten Verformungseigenschaften zur Verminderung der Terrassenbruchneigung bei Beanspruchung senkrecht zur Erzeugnisoberfläche (Z-Güten).
- Kerbschlageigenschaften in Querrichtung.
- Maximales Verhältnis zwischen Streckgrenze und Zugfestigkeit.

Die Tabellen 7 und 8 führen die verfügbaren Offshore-Güten sowie deren mechanische Eigenschaften und chemische Zusammensetzung auf. Die Offshore-Güten stehen im vollen Einklang mit den Forderungen der EN 10225.

Weitere Einzelheiten sind in separaten Werkstoffblättern ersichtlich.

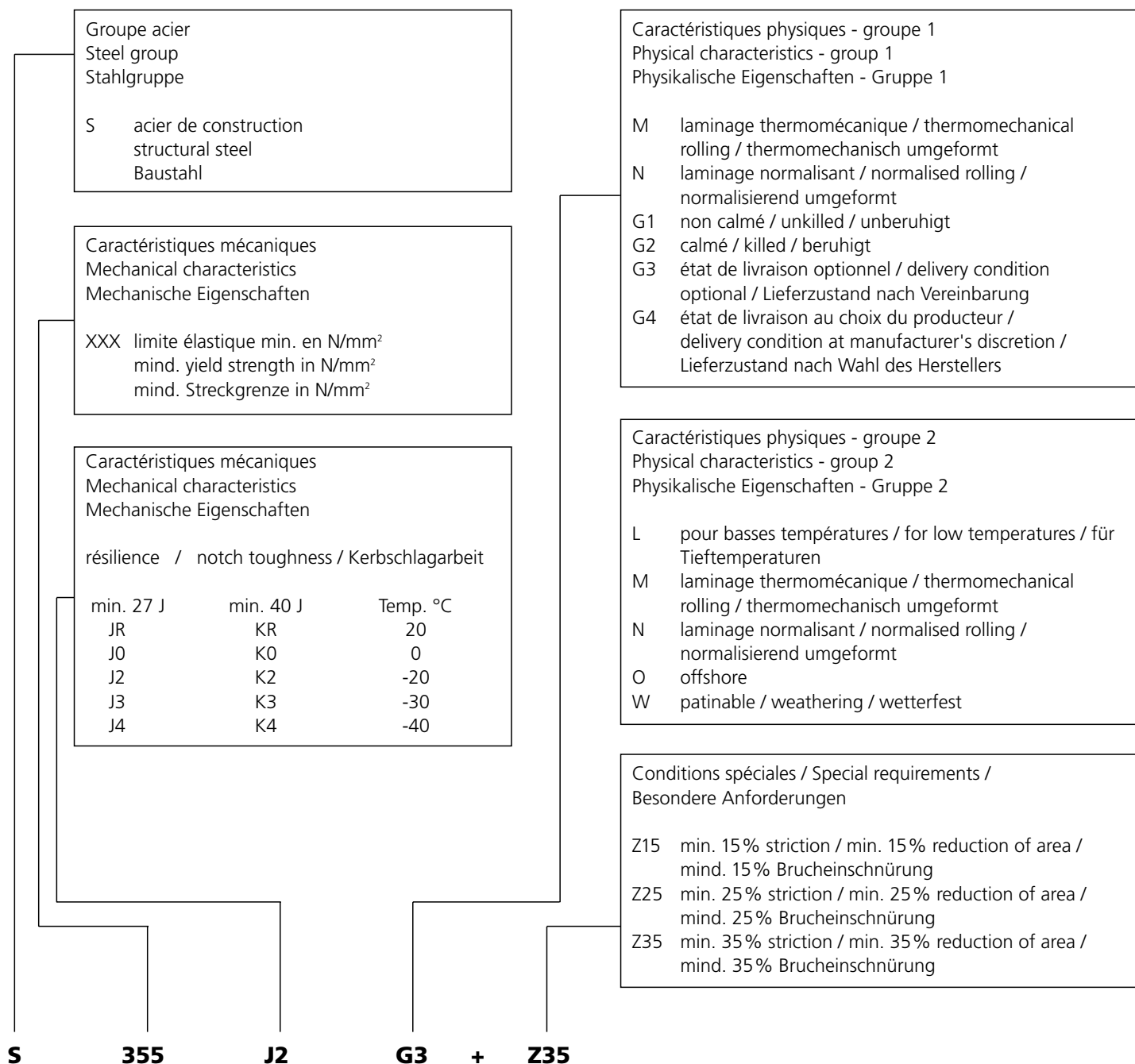
## Sondergüten

1. Wetterfeste Stähle. Lieferbedingungen auf Anfrage.
2. Stahlgüten gemäß Sonderspezifikation (chemische Zusammensetzung und mechanische Eigenschaften) sind lieferbar nach Vereinbarung und unterliegen Mindestbestellmengen.

**Tableau 1:**  
**Désignations usuelles des nuances d'acier de construction**  
**suivant EN 10027: 1992, EN 10025: 1993 et EN 10113: 1993.**

**Table 1:**  
**Usual structural steel grade designations in accordance**  
**with EN 10027: 1992, EN 10025: 1993 and EN 10113: 1993.**

**Tabelle 1:**  
**Übliche Bezeichnungen der Baustahlgüten**  
**nach EN 10027: 1992, EN 10025: 1993 und EN 10113: 1993.**



**Tableau 2 : Caractéristiques mécaniques des aciers de construction.**

**Table 2: Mechanical properties of structural steel grades.**

**Tabelle 2: Mechanische Werte der Baustahlgüten.**

| Norme<br>Standard<br>Norm | Nuances<br>Grades<br>Güten     | Limite d'élasticité minimale R <sub>eH</sub><br>Minimum yield strength R <sub>eH</sub><br>Mindestwert der oberen Streckgrenze R <sub>eH</sub><br>N/mm² |              |              |              |               |                | Résistance à la traction R <sub>m</sub><br>Tensile strength R <sub>m</sub><br>Zugfestigkeit R <sub>m</sub><br>N/mm² |                | Allongement minimal<br>Minimum elongation<br>Mindestwert der Bruchdehnung<br>% |             |              |               | Essai de flexion par choc<br>Notch impact test<br>Kerbschlagbiegeversuch |   |
|---------------------------|--------------------------------|--|--------------|--------------|--------------|---------------|----------------|---|----------------|--|-------------|--------------|---------------|--|---|
|                           |                                | Epaisseur nominale (mm)<br>Nominal thickness (mm)<br>Nenndicke (mm)  |              |              |              |               |                | Epaisseur nominale (mm)<br>Nominal thickness (mm)<br>Nenndicke (mm)   |                | Epaisseur nominale (mm)<br>Nominal thickness (mm)<br>Nenndicke (mm)            |             |              |               | Température<br>Temperature<br>Temperatur                                 | Energie absorbée min.<br>Min. absorbed energy<br>Mind. Kerbschlagarbeit |
|                           |                                | ≤16  | > 16<br>≤ 40 | > 40<br>≤ 63 | > 63<br>≤ 80 | > 80<br>≤ 100 | > 100<br>≤ 150 | ≥ 3<br>≤ 100  | > 100<br>≤ 150 | ≥ 3<br>≤ 40  | >40<br>≤ 63 | >63<br>≤ 100 | >100<br>≤ 150 | °C   | J   |
| EN 10025 :<br>1993        | S 235 JRG2<br>S 235 J0         | 235  | 225          | 215          |              |               | 195            | 340-470   |                | 26   | 25          | 24           | 22            | +20<br>0   | 27<br>27  |
|                           | S 275 JR<br>S 275 J0           | 275  | 265          | 255          | 245          | 235           | 225            | 410-560   | 400-540        | 22   | 21          | 20           | 18            | +20<br>0   | 27<br>27  |
|                           | S 355 JR<br>S 355 J0           | 355  | 345          | 335          | 325          | 315           | 295            | 490-630   | 470-630        | 22   | 21          | 20           | 18            | +20<br>0   | 27<br>27  |
|                           | S 355 J2G3/G4<br>S 355 K2G3/G4 |  |              |              |              |               |                |   |                |  |             |              |               | -20<br>-20   | 27<br>40  |
| EN 10113-3:<br>1993       | S 355 M<br>S 355 ML            | 355  | 345          | 335          |              |               | 450-610        |   | 22             |  |             |              | -20<br>-50    | 40<br>27   |   |
|                           | S 420 M<br>S 420 ML            | 420  | 400          | 390          |              |               | 500-660        |   | 19             |  |             |              | -20<br>-50    | 40<br>27   |   |
|                           | S 460 M<br>S 460 ML            | 460  | 440          | 430          |              |               | 530-720        |   | 17             |  |             |              | -20<br>-50    | 40<br>27   |   |

Tableau 3: Composition chimique de l'analyse sur coulée

Table 3: Chemical composition of the ladle analysis

Tabelle 3: Chemische Zusammensetzung der Schmelzanalyse

| Norme<br>Standard<br>Norm          | Nuances<br>Grades<br>Güten | C<br>max.<br>%  |                    |      | Mn<br>max.<br>% | Si<br>max.<br>% | P<br>max.<br>% | S<br>max.<br>% | N<br>max.<br>%        | Al <sup>1)</sup><br>min.<br>% | Nb<br>max.<br>% | V<br>max.<br>% | CEV <sup>7)</sup><br>max.<br>%                                      |            |            |             |
|------------------------------------|----------------------------|---|--------------------|------|-----------------|-----------------|----------------|----------------|-----------------------|-------------------------------|-----------------|----------------|---|------------|------------|-------------|
|                                    |                            | Epaisseur nominale (mm)<br>Nominal thickness (mm)<br>Nenndicke (mm) |                    |      |                 |                 |                |                |                       |                               |                 |                | Epaisseur nominale (mm)<br>Nominal thickness (mm)<br>Nenndicke (mm) |            |            |             |
|                                    |                            | ≤16   | >16<br>≤40         | >40  |                 |                 |                |                |                       |                               |                 |                | ≤16   | >16<br>≤40 | >40<br>≤63 | >63<br>≤150 |
| EN 10025 :<br>1993 <sup>6)</sup>   | S 235 JRG2                 | 0.17  | 0.17               | 0.20 | 1.4             | -               | 0.045          | 0.045          | 0.009 <sup>4)5)</sup> |                               |                 |                | 0.35  | 0.35       | 0.38       | 0.38        |
|                                    | S 235 J0                   | 0.17  | 0.17               | 0.17 | 1.4             | -               | 0.040          | 0.040          | 0.009 <sup>4)5)</sup> |                               |                 |                | 0.35  | 0.35       | 0.38       | 0.38        |
|                                    | S 275 JR                   | 0.21  | 0.21               | 0.22 | 1.5             | -               | 0.045          | 0.045          | 0.009 <sup>4)5)</sup> |                               |                 |                | 0.40  | 0.40       | 0.42       | 0.42        |
|                                    | S 275 J0                   | 0.18  | 0.18               | 0.18 | 1.5             | -               | 0.040          | 0.040          | 0.009 <sup>4)5)</sup> |                               |                 |                |   |            |            |             |
|                                    | S 355 JR                   | 0.24  | 0.24               | 0.24 | 1.6             | 0.55            | 0.045          | 0.045          | 0.009 <sup>4)5)</sup> |                               |                 |                | 0.45  | 0.45       | 0.47       | 0.47        |
|                                    | S 355 J0                   | 0.20  | 0.20 <sup>3)</sup> | 0.22 | 1.6             | 0.55            | 0.040          | 0.040          | 0.009 <sup>4)5)</sup> |                               |                 |                | 0.45  | 0.45       | 0.47       | 0.47        |
| EN 10113-3 :<br>1993 <sup>2)</sup> | S 355 J2G3/G4              | 0.20  | 0.20 <sup>3)</sup> | 0.22 | 1.6             | 0.55            | 0.035          | 0.035          | -                     |                               |                 |                | 0.45  | 0.45       | 0.47       | 0.47        |
|                                    | S 355 K2G3/G4              | 0.20  | 0.20 <sup>3)</sup> | 0.22 | 1.6             | 0.55            | 0.035          | 0.035          | -                     |                               |                 |                | 0.45  | 0.45       | 0.47       | 0.47        |
|                                    | S 355 M                    | 0.16  | 0.16               | 0.16 | 1.6             | 0.50            | 0.035          | 0.030          | 0.015                 | 0.02                          | 0.05            | 0.10           | 0.39  | 0.39       | 0.40       | 0.45        |
|                                    | S 355 ML                   | 0.16  | 0.16               | 0.16 | 1.6             | 0.50            | 0.030          | 0.025          | 0.015                 | 0.02                          | 0.05            | 0.10           | 0.39  | 0.39       | 0.40       | 0.45        |
|                                    | S 420 M                    | 0.18  | 0.18               | 0.18 | 1.7             | 0.50            | 0.035          | 0.030          | 0.020                 | 0.02                          | 0.05            | 0.12           | 0.43  | 0.45       | -          | -           |
|                                    | S 420 ML                   | 0.18  | 0.18               | 0.18 | 1.7             | 0.50            | 0.030          | 0.025          | 0.020                 | 0.02                          | 0.05            | 0.12           | 0.43  | 0.45       | -          | -           |
|                                    | S 460 M                    | 0.18  | 0.18               | 0.18 | 1.7             | 0.60            | 0.035          | 0.030          | 0.025                 | 0.02                          | 0.05            | 0.12           | 0.45  | 0.46       | -          | -           |
|                                    | S 460 ML                   | 0.18  | 0.18               | 0.18 | 1.7             | 0.60            | 0.030          | 0.025          | 0.025                 | 0.02                          | 0.05            | 0.12           | 0.45  | 0.46       | -          | -           |



<sup>1)</sup> S'il existe suffisamment d'éléments fixant l'azote, la teneur minimale en Al n'est pas applicable.

<sup>2)</sup> La somme totale des teneurs en Cr, Cu et Mo ne doit pas dépasser 0.60%.

<sup>3)</sup> Pour les épaisseurs nominales >30mm: C=0.22% max.

<sup>4)</sup> Un dépassement des valeurs spécifiées est admis à condition que pour chaque augmentation de N de 0.001% la teneur maximale en P soit réduite de 0.005%; la teneur en N sur coulée ne doit cependant pas dépasser 0.012%.

<sup>5)</sup> La valeur maximale exigée pour l'azote ne s'applique pas lorsque la composition chimique présente une teneur minimale en Al total de 0.020% ou lorsque d'autres éléments fixant l'azote sont présents en quantité suffisante. Les éléments fixant l'azote doivent être mentionnés dans le document de contrôle.

<sup>6)</sup> Pour une épaisseur nominale >100mm: teneur en C selon accord.

<sup>7)</sup>  $CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 =$  condition supplémentaire.

<sup>1)</sup> If sufficient nitrogen binding elements are present the minimum aluminium requirement does not apply.

<sup>2)</sup> The total sum of Cr, Cu and Mo shall not be higher than 0.60%.

<sup>3)</sup> For nominal thickness >30mm: C=0.22% max

<sup>4)</sup> It is permissible to exceed the specified values provided that for each increase of 0.001% N the Pmax content will be reduced by 0.005%; the N content of the ladle analysis, however, shall not be more than 0.012%.

<sup>5)</sup> The max. value for nitrogen does not apply if the chemical composition shows a minimum total Al content of 0.020% or if sufficient other N binding elements are present. The N binding elements shall be mentioned in the inspection document.

<sup>6)</sup> For nominal thickness >100mm: C content upon agreement.

<sup>7)</sup>  $CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 =$  supplementary requirement.

<sup>1)</sup> Der Mind.-Wert für den Aluminiumanteil gilt nicht, wenn ausreichend Anteile an stickstoffabbindenden Elementen vorhanden sind.

<sup>2)</sup> Der Gesamtgehalt an Cr, Cu und Mo darf nicht größer als 0.60% sein.

<sup>3)</sup> Max. 0.22% C bei Nenndicken >30mm.

<sup>4)</sup> Die angegebenen Werte dürfen überschritten werden, wenn je 0.001% N der Höchstwert für den Phosphorgehalt um 0.005% unterschritten wird; der Stickstoffgehalt darf jedoch einen Wert von 0.012% in der Schmelzanalyse nicht übersteigen.

<sup>5)</sup> Der Höchstwert für den Stickstoffgehalt gilt nicht, wenn der Stahl einen Gesamtgehalt an Aluminium von mindestens 0.020% oder genügend andere stickstoffabbindende Elemente enthält. Die stickstoffabbindenden Elemente sind in der Prüfbescheinigung anzugeben.

<sup>6)</sup> Bei einer Nenndicke >100mm ist der Kohlenstoffgehalt zu vereinbaren.

<sup>7)</sup>  $CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 =$  zusätzliche Forderung.



**Tableau 4: Nuances d'acier suivant ASTM**

**Table 4: Steel grades according to ASTM**

**Tabelle 4: Stahlgüten nach ASTM**

| Nuances<br>Grades<br>Güten   | Analyse de coulée<br>Ladle analysis<br>Schmelzanalyse |  |                |                              |                   |                 |                 |                 |                 |                               |                    |  | Poids<br>unitaire<br>Unit<br>weight<br>Meter-<br>gewicht | Essai de traction<br>Tensile test<br>Zugversuch |                                     |  |                                 |                                | Essai de flexion<br>par choc<br>Notch impact test<br>Kerbschlagbiegeversuch<br>en long<br>longitudinal<br>längs |  |
|------------------------------|---|--|----------------|------------------------------|-------------------|-----------------|-----------------|-----------------|-----------------|-------------------------------|--------------------|--|--|---|-------------------------------------|--|---------------------------------|--------------------------------|---|--|
|                              | C<br>max.<br>%  | Mn<br>max.<br>%                          | P<br>max.<br>% | S<br>max.<br>%               | Si<br>max.<br>%   | Cu<br>max.<br>% | Ni<br>max.<br>% | Cr<br>max.<br>% | Mo<br>max.<br>% | Nb <sup>5)</sup><br>max.<br>% | V<br>max.<br>%     | CE<br>max.<br>%                          | G<br>kg/m  | R <sub>e</sub><br>N/mm <sup>2</sup>             | R <sub>m</sub><br>N/mm <sup>2</sup> | R <sub>e</sub> /R <sub>m</sub><br>max. | A<br>min.<br>8 in. (200mm)<br>% | A<br>min.<br>2 in. (50mm)<br>% | Température<br>Temperature<br>Temperatur<br>°C  | Energie absorbée<br>Absorbed energy<br>Kerbschlagarbeit<br>J |
| A 36 - 97                    | 0.26<br>0.26  | <sup>7)</sup><br>0.85-1.35               | 0.040<br>0.040 | 0.050<br>0.050               | 0.40<br>0.15-0.40 |                 |                 |                 |                 |                               |                    |  | ≤634<br>>634   | ≥250<br>≥250                                    | 400-550<br>≥400                     |  | 20<br>20                        | 21<br>19                       |   |  |
| A 572 - 97<br>Gr 50          | 0.23<br>0.23  | 1.35 <sup>4)</sup><br>1.35 <sup>4)</sup> | 0.040<br>0.040 | 0.050<br>0.050               | 0.40<br>0.15-0.40 |                 |                 |                 |                 |                               |                    |  | ≤634<br>>634   | ≥345<br>≥345                                    | ≥450<br>≥450                        |  | 18<br>18                        | 21<br>19                       |   |  |
| A 992 - 98<br>Gr 50          | 0.23  | 1.50 <sup>4)</sup>                       | 0.035          | 0.045                        | 0.40              | 0.60            | 0.45            | 0.35            | 0.15            | 0.05 <sup>4)</sup>            | 0.11 <sup>4)</sup> | 0.45 <sup>3)</sup>                       |  | 345-450   | ≥450                                | 0.85                                   | 18 <sup>2)</sup>                | 21 <sup>2)</sup>               |   |  |
| A 913 - 97<br>Gr 50<br>Gr 65 | 0.12<br>0.16  | 1.60<br>1.60                             | 0.040<br>0.030 | 0.030<br>0.030 <sup>9)</sup> | 0.40<br>0.40      | 0.45<br>0.35    | 0.25<br>0.25    | 0.25<br>0.25    | 0.07<br>0.07    | 0.05<br>0.05                  | 0.06<br>0.06       | 0.38 <sup>1)</sup><br>0.43 <sup>1)</sup> |  | ≥345 <sup>10)</sup><br>≥450                     | ≥450<br>≥550                        | 0.85 <sup>9)</sup>                     | 18<br>15                        | 21<br>17                       | 21<br>21  | ≥54 <sup>6)</sup><br>≥54 <sup>6)</sup>                       |

<sup>1)</sup> CE = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 = condition supplémentaire

<sup>2)</sup> Voir ajustements sur l'élongation sous clause "Tension Tests" de la spécification A 6/A 6M-98

<sup>3)</sup> Max. CE = 0.47% sur coulée pour les sections des groupes 4 et 5

<sup>4)</sup> Voir limites spécifiques dans la norme

<sup>5)</sup> Nb = Niobium = Columbium (USA)

<sup>6)</sup> Valeur moyenne

<sup>7)</sup> Teneur en manganèse de 0.80-1.20% pour les sections avec t>20mm et G≤634 kg/m

<sup>8)</sup> Gr 65 peut être livré avec une teneur en soufre max. de 0.010% après accord de l'usine

<sup>9)</sup> Condition supplémentaire

<sup>10)</sup> Max R<sub>e</sub>=450 N/mm<sup>2</sup> = condition supplémentaire

<sup>1)</sup> CE = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 = supplementary requirement

<sup>2)</sup> See elongation requirement adjustments under the "Tension Tests" section of Specification A 6/A 6M-98

<sup>3)</sup> Max. CE = 0.47% on heat analysis for the shapes in groups 4 and 5

<sup>4)</sup> See specific limitations in the standard

<sup>5)</sup> Nb = Niobium = Columbium (USA)

<sup>6)</sup> Average value

<sup>7)</sup> Manganese content of 0.80-1.20% for shapes with t>20mm and G≤634 kg/m

<sup>8)</sup> Gr 65 can be furnished with a maximum sulphur content of 0.010% upon agreement of the mill

<sup>9)</sup> Supplementary requirement

<sup>10)</sup> Max R<sub>e</sub>=450 N/mm<sup>2</sup> = supplementary requirement

<sup>1)</sup> CE = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 = zusätzliche Forderung

<sup>2)</sup> Siehe Abänderungen der Anforderungen an die Bruchdehnung unter der Klausel "Tension Tests" der Norm A6/A 6M-98

<sup>3)</sup> Max. CE = 0.47% auf Schmelzanalyse für die Profile der Gruppen 4 und 5

<sup>4)</sup> Siehe spezifische Begrenzungen in der Norm

<sup>5)</sup> Nb = Niobium = Columbium (USA)

<sup>6)</sup> Mittelwert

<sup>7)</sup> Mangan-Gehalt zwischen 0.80-1.20% für Profile mit t>20mm und G≤634 kg/m

<sup>8)</sup> Nach Absprache mit dem Werk kann Gr 65 mit einem Schwefelgehalt von maximal 0.010% geliefert werden

<sup>9)</sup> Zusätzliche Forderung

<sup>10)</sup> Max R<sub>e</sub>=450 N/mm<sup>2</sup> = zusätzliche Forderung

## Tableau 5: Tableaux de comparaison des nuances d'acier

### Table 5: Comparison tables of steel grades

### Tabelle 5: Vergleichstabellen der Stahlgüten

| Aciers de construction / Structural steels / Baustähle           |  |                        |                      |  |                                  |                      |                        |                       |                            |                |                          |
|--|--|------------------------|----------------------|--|----------------------------------|----------------------|------------------------|-----------------------|----------------------------|----------------|--------------------------|
| EN 10025: 1993   | Normes antérieures / Previous standards / Frühere Normen |                        |                      |  |                                  |                      |                        |                       |                            |                |                          |
|  | NF A 35-501  | DIN 17100              | BS 4360              | NBN A21-101<br>UNE 36 080                                  | UNI 7070                         | SS 14                | NS 12 101              | ÖNORM<br>M1316        | ASTM                       | CSA<br>G 40-21 | JIS G 3101<br>JIS G 3106 |
| S 235 JRG2<br>S 235 JO   | E 24-3   | RSt 37-2<br>St 37-3 U  | 40 B<br>40 C         | AE 235B-FN<br>AE 235-C                                     | Fe 360 B-FN<br>Fe 360 C          | 13 12-00             | NS 12 123<br>NS 12 124 | RSt 360 B<br>St 360 C | A 36                       | 260 W          | SS 400<br>SM 400 A/B/C   |
| S 275 JR<br>S 275 JO   | E 28-2<br>E 28-3   | St 44-2<br>St 44-3 U   | 43 B<br>43 C         | AE 255-B<br>AE 255-C                                       | Fe 430 B<br>Fe 430 C             | 14 12-00             | NS 12 142<br>NS 12 143 | St 430 B<br>St 430 C  |                            |                | SS 400                   |
| S 355 JR   | E 36-2   |                        | 50 B                 | AE 355-B   | Fe 510 B                         |                      |                        |                       | A 572 Gr 50<br>A 992 Gr 50 | 300 W<br>350 W | SS 490                   |
| S 355 JO<br>S 355 J2G3<br>S 355 J2G4<br>S 355 K2G3<br>S 355 K2G4 | E 36-3<br>E 36-4   | St 52-3 U<br>St 52-3 N | 50 C<br>50 D<br>50 D | AE 355-C<br>AE 355-D<br>AE 355-D<br>AE 355-DD<br>AE 355-DD | Fe 510 C<br>Fe 510 D<br>Fe 510 D | 21 32-01<br>21 34-01 | NS 12 153<br>NS 12 153 | St 510 C<br>St 510 D  |                            |                |                          |

| Aciers à haute limite d'élasticité et à caractéristiques de ténacité élevée / High strength steels with high notch toughness /<br>Hochfeste Stähle mit erhöhter Kerbschlagfestigkeit |  |                       |               |  |                            |                      |  |  |             |                |                        |
|--|--|-----------------------|---------------|--|----------------------------|----------------------|--|--|-------------|----------------|------------------------|
| EN 10113: 1993   | Normes antérieures / Previous standards / Frühere Normen |                       |               |  |                            |                      |  |  |             |                |                        |
|  | NF A 35-504<br>NF A 36-201                               | DIN 17102             | BS 4360       |  | UNI 7382                   | SS 14                |  |  | ASTM        | CSA<br>G 40-21 | JIS G 3101             |
| S 355 M<br>S 355 ML  | E 355  | St E 355<br>TSt E 355 | 50 D<br>50 EE |  | Fe E 355 KG<br>Fe E 355 KT | 21 34-01<br>21 35-01 |  |  | A 913 Gr 50 | 400 W          | SM 490 YA<br>SM 490 YB |
| S 420 M<br>S 420 ML  | E 375<br>E 420 R<br>E 420 FP                             | St E 420<br>TSt E 420 |               |  |                            |                      |  |  | A 913 Gr 60 |                |                        |
| S 460 M<br>S 460 ML  | E 460 R<br>E 460 FP                                      | St E 460<br>TSt E 460 | 55 C<br>55 EE |  | Fe E 460 KG<br>Fe E 460 KT |                      |  |  | A 913 Gr 65 |                | SM 570                 |

| Tableau de comparaison pour nuances HISTAR / Comparison table for HISTAR grades / Vergleichstabelle für HISTAR Güten |                         |          |  |             |                                  |           |              |                          |            |                      |
|--|-------------------------|----------|--|-------------|----------------------------------|-----------|--------------|--------------------------|------------|----------------------|
| HISTAR   |                         |          | Normes antérieures / Previous standards / Frühere Normen |             |                                  |           |              | ASTM A 572<br>ASTM A 913 | ASTM A 992 | JIS G 3106           |
|  | EN 10113                | EN 10025 | NF A 35-504<br>NF A 36-201                               | NF A 35-501 | DIN 17102                        | DIN 17100 | BS 4360      |                          |            |                      |
| 355<br>420<br>460  | S 355<br>S 420<br>S 460 | S 355    | E 355<br>E 420<br>E 460                                  | E 36        | St E 355<br>St E 420<br>St E 460 | St 52-3   | 50 D<br>55 C | Gr 50<br>Gr 60<br>Gr 65  | Gr 50      | SM490B/C/YB<br>SM570 |

**Tableau 6 : Aciers de marque HISTAR et FRITENAR**

**Table 6: HISTAR and FRITENAR Trademark Steels**

**Tabelle 6: HISTAR und FRITENAR Markenstähle**

| Nuances<br>Grades<br>Güten | Analyse de coulée<br>Ladle analysis<br>Schmelzanalyse |                 |                 |                |                |                               |                 |                |                                | Epaisseur aile<br>Flange<br>thickness<br>Flanschstärke | Essai de traction<br>Tensile test<br>Zugversuch |   |   | Essai de flexion par choc <sup>3)</sup><br>Notch impact test <sup>3)</sup><br>Kerbschlagbiegeversuch <sup>3)</sup><br><br>en long<br>longitudinal<br>längs |  |
|----------------------------|---|-----------------|-----------------|----------------|----------------|-------------------------------|-----------------|----------------|--------------------------------|--|---|---|---|--|--|
|                            | C<br>max.<br>%  | Mn<br>max.<br>% | Si<br>max.<br>% | P<br>max.<br>% | S<br>max.<br>% | Al <sup>2)</sup><br>min.<br>% | Nb<br>max.<br>% | V<br>max.<br>% | CEV <sup>1)</sup><br>max.<br>% | t<br><br>mm  | R <sub>e</sub><br>min.<br><br>N/mm <sup>2</sup> | R <sub>m</sub><br><br>N/mm <sup>2</sup> | A<br>min.<br>L <sub>0</sub> =5.65√S <sub>0</sub><br>% | Température<br>Temperature<br>Temperatur<br>°C   | Energie absorbée<br>Absorbed energy<br>Kerbschlagarbeit<br>J |
| HISTAR 355                 | 0.12  | 1.6             | 0.30            | 0.035          | 0.030          | 0.02                          | 0.05            | 0.10           | 0.39                           | ≤125   | 355   | 490-610                                 | 22  | 0<br>-20   | 47<br>40   |
| HISTAR 355 L               | 0.12  | 1.6             | 0.30            | 0.030          | 0.025          | 0.02                          | 0.05            | 0.10           | 0.39                           | ≤125   | 355   | 450-610                                 | 22  | -20<br>-50   | 47<br>27   |
| HISTAR 420                 | 0.12  | 1.7             | 0.30            | 0.035          | 0.030          | 0.02                          | 0.05            | 0.12           | 0.39                           | ≤125   | 420   | 500-660                                 | 19  | 0<br>-20   | 47<br>40   |
| HISTAR 420 L               | 0.12  | 1.7             | 0.30            | 0.030          | 0.025          | 0.02                          | 0.05            | 0.12           | 0.39                           | ≤125   | 420   | 500-660                                 | 19  | -20<br>-50   | 47<br>27   |
| HISTAR 460                 | 0.12  | 1.7             | 0.30            | 0.035          | 0.030          | 0.02                          | 0.05            | 0.12           | 0.39                           | ≤125   | 460   | 550-720                                 | 17  | 0<br>-20   | 47<br>40   |
| HISTAR 460 L               | 0.12  | 1.7             | 0.30            | 0.030          | 0.025          | 0.02                          | 0.05            | 0.12           | 0.39                           | ≤125   | 460   | 550-720                                 | 17  | -20<br>-50   | 47<br>27   |
| FRITENAR 355               | 0.14  | 1.6             | 0.55            | 0.030          | 0.030          | 0.02                          | 0.05            | 0.06           | 0.40                           | ≤16<br>16<t≤40   | 355<br>345                                      | 490-630                                 | 22  | -20  | 41   |

<sup>1)</sup> CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15

<sup>2)</sup> S'il existe suffisamment d'éléments fixant l'azote, la teneur minimale en Al n'est pas applicable.

<sup>3)</sup> Valeur moyenne de 3 essais sur échantillons non réduits et sans aucune valeur en dessous de 70% de la moyenne garantie. Les prescriptions suivant EN 10113:1993 sont applicables.

<sup>1)</sup> CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15

<sup>2)</sup> If sufficient nitrogen binding elements are present the minimum aluminium requirement does not apply.

<sup>3)</sup> Mean value of 3 tests for full size specimens with no single value less than 70% of the guaranteed average value. The provisions according to EN 10113:1993 are applicable.

<sup>1)</sup> CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15

<sup>2)</sup> Der Mindestwert für den Aluminiumanteil gilt nicht, wenn ausreichend Anteile an stickstoffabbindenden Elementen vorhanden sind.

<sup>3)</sup> Mittelwert aus 3 Versuchen, ohne Einzelwert unterhalb von 70% des Mindestwertes. Die Festlegungen gemäß EN 10113:1993 gelten.

## Tableau 7 : Caractéristiques mécaniques des aciers HISTAR® et FRITENAR® pour applications offshore

### Table 7 : Mechanical properties of the HISTAR® and FRITENAR® steel grades for offshore applications

### Tabelle 7 : Mechanische Werte der HISTAR® und FRITENAR® Stahlgüten für Offshore-Anwendungen

| Nuances<br>Grades<br>Güten           | Epaisseur aile<br>Flange<br>thickness<br>Flanschstärke | Essai de traction<br>Tensile test<br>Zugversuch       |   |  |   |   | Essai de flexion par choc <sup>4)</sup><br>Notch impact test <sup>4)</sup><br>Kerbschlagbiegeversuch <sup>4)</sup> |  |   |  |
|--------------------------------------|--|---|---|--|---|---|--|--|---|--|
|                                      |  |   |   |  |   |   | en long / longitudinal / längs   |  | transversal <sup>5)</sup> / transverse <sup>5)</sup> / quer <sup>5)</sup> |  |
|                                      |  | R <sub>e</sub><br>min.<br><br>mm<br>N/mm <sup>2</sup> | R <sub>m</sub><br><br>N/mm <sup>2</sup> | R <sub>e</sub> /R <sub>m</sub><br>max. | A<br>min.<br>L <sub>0</sub> =5.65√S <sub>0</sub><br>% | Z <sub>z</sub> <sup>1)</sup><br>min.<br>% | Température<br>Temperature<br>Temperatur<br>°C   | Energie absorbée min.<br>Min. absorbed energy<br>Mind. Kerbschlagarbeit<br>J | Température<br>Temperature<br>Temperatur<br>°C                            | Energie absorbée min.<br>Min. absorbed energy<br>Mind. Kerbschlagarbeit<br>J |
| HISTAR 355 TZ OS <sup>3)</sup>       | ≤40  | 355   | 460-620                                 | 0.87                                   | 22  | 25  | -20  | 50   | -20   | 27   |
| HISTAR 355 TZK OS <sup>2) 3)</sup>   | ≤40  | 355   | 460-620                                 | 0.87                                   | 22  | 35  | -40  | 50   | -40   | 50   |
| HISTAR 420 TZ OS <sup>3)</sup>       | ≤40  | 420   | 500-690                                 | 0.90                                   | 19  | 25  | -20  | 60   | -20   | 27   |
| HISTAR 420 TZK OS <sup>2) 3)</sup>   | ≤40  | 420   | 500-690                                 | 0.90                                   | 19  | 35  | -40  | 60   | -40   | 50   |
| HISTAR 460 TZ OS <sup>3)</sup>       | ≤40  | 460   | 530-720                                 | 0.90                                   | 17  | 25  | -20  | 60   | -20   | 27   |
| HISTAR 460 TZK OS <sup>2) 3)</sup>   | ≤40  | 460   | 530-720                                 | 0.90                                   | 17  | 35  | -40  | 60   | -40   | 50   |
| FRITENAR 355 OS                      | ≤16<br>16<t≤40   | 355<br>345  | 460-610                                 | 0.87<br>0.87                           | 22  | –   | -20  | 50   | –   | –  |
| FRITENAR 355 TZK OS <sup>2) 3)</sup> | ≤16<br>16<t≤40   | 355<br>345  | 460-620                                 | 0.87<br>0.87                           | 22  | 35  | -40  | 50   | -40   | 50   |

<sup>1)</sup> Essai en travers-court svt. accord. Valeur moyenne de 3 essais. Seulement pour t>15mm.

<sup>2)</sup> Pour épaisseur ≤25mm, essai Charpy V à -20°C.

<sup>3)</sup> Nuance disponible pour les profilés marqués HI; autres profilés sur demande.

<sup>4)</sup> Valeur moyenne de 3 essais sur échantillons non réduits et sans aucune valeur en dessous de 70% de la moyenne garantie. Les prescriptions suivant EN 10225 sont applicables.

<sup>5)</sup> Essai svt. accord. Uniquement pour profilés à largeur d'aile ≥165mm.

<sup>1)</sup> Through thickness testing upon agreement. Mean value of 3 tests. Only for t>15mm.

<sup>2)</sup> For thickness ≤25mm, Charpy V test at -20°C.

<sup>3)</sup> Grade available for shapes marked HI; other sections upon request.

<sup>4)</sup> Mean value of 3 tests for full size specimens with no single value less than 70% of the guaranteed average value. The provisions according to EN 10225 are applicable.

<sup>5)</sup> Tested upon agreement. Only for sections with flange width ≥165mm.

<sup>1)</sup> Proben in Dickenrichtung nach Absprache. Mittelwert aus 3 Versuchen. Nur für Materialstärken t>15mm.

<sup>2)</sup> Für Dicke ≤25mm, Charpy V Prüfung bei -20°C.

<sup>3)</sup> Güte verfügbar für mit HI gekennzeichnete Profil< andere Profile auf Anfrage.

<sup>4)</sup> Mittelwert aus 3 Versuchen, ohne Einzelwert unterhalb von 70% des Mindestmittelwertes. Es gelten die Festlegungen gemäß EN 10225.

<sup>5)</sup> Prüfung nach Absprache. Nur für Profile mit Flanschbreite ≥165mm.



## Tableau 8 : Composition chimique des aciers HISTAR® et FRITENAR® pour application offshore

### Table 8 : Chemical composition of the HISTAR® and FRITENAR® steel grades for offshore applications

### Tabelle 8 : Chemische Zusammensetzung der HISTAR® und FRITENAR® Stahlgüten für Offshore-Anwendungen

| Nuances<br>Grades<br>Güten        | Analyse de coulée<br>Ladle analysis<br>Schmelzanalyse |            |            |           |           |                          |            |           |                           |
|-----------------------------------|---|------------|------------|-----------|-----------|--------------------------|------------|-----------|---------------------------|
|                                   | C<br>max.   | Mn<br>max. | Si<br>max. | P<br>max. | S<br>max. | Al <sup>1)</sup><br>min. | Nb<br>max. | V<br>max. | CEV <sup>2)</sup><br>max. |
|                                   | %   | %          | %          | %         | %         | %                        | %          | %         | %                         |
| HISTAR 355 TZ OS <sup>3)</sup>    | 0.12  | 1.6        | 0.30       | 0.025     | 0.010     | 0.02                     | 0.04       | 0.06      | 0.38                      |
| HISTAR 355 TZK OS <sup>3)</sup>   | 0.12  | 1.6        | 0.30       | 0.020     | 0.007     | 0.02                     | 0.04       | 0.06      | 0.38                      |
| HISTAR 420 TZ OS <sup>3)</sup>    | 0.12  | 1.6        | 0.30       | 0.025     | 0.010     | 0.02                     | 0.05       | 0.06      | 0.38                      |
| HISTAR 420 TZK OS <sup>3)</sup>   | 0.12  | 1.6        | 0.30       | 0.020     | 0.007     | 0.02                     | 0.05       | 0.06      | 0.38                      |
| HISTAR 460 TZ OS <sup>3)</sup>    | 0.12  | 1.7        | 0.30       | 0.025     | 0.010     | 0.02                     | 0.05       | 0.06      | 0.38                      |
| HISTAR 460 TZK OS <sup>3)</sup>   | 0.12  | 1.7        | 0.30       | 0.020     | 0.007     | 0.02                     | 0.05       | 0.06      | 0.38                      |
| FRITENAR 355 OS                   | 0.12  | 1.6        | 0.30       | 0.030     | 0.025     | 0.02                     | 0.05       | 0.06      | 0.39                      |
| FRITENAR 355 TZK OS <sup>3)</sup> | 0.12  | 1.6        | 0.30       | 0.020     | 0.007     | 0.02                     | 0.04       | 0.06      | 0.38                      |

<sup>1)</sup> La valeur min. en Al ne s'applique pas en cas d'utilisation d'autres éléments liant l'azote.

<sup>2)</sup>  $CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15$

<sup>3)</sup> Nuance disponible pour les profilés marqués HI; autres profilés sur demande.

<sup>1)</sup> When other N-binding elements are used, the min. Al value does not apply.

<sup>2)</sup>  $CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15$

<sup>3)</sup> Grade available for shapes marked HI; other sections upon request.

<sup>1)</sup> Der Mindestwert für den Anteil an Al gilt nicht, wenn andere stickstoffabbindende Elemente vorhanden sind.

<sup>2)</sup>  $CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15$

<sup>3)</sup> Güte verfügbar für mit HI gekennzeichnete Profile; andere Profile auf Anfrage.

## Gammes de profilés européens

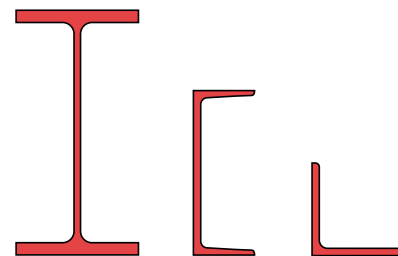
Dimensions nominales: hauteur (x largeur) en mm

## European section ranges

Nominal sizes: depth (x width) in mm

## Europäische Profilreihen

Nennmaße: Höhe (x Breite) in mm



| IPE  | IPN  | HE   | HL  | HD   | HP  | UAP  | UPN  | L   | L   |
|--|--|--|---|--|---|--|--|---|---|
| pages/Seiten 22-25   | pages/Seiten 26-27   | pages/Seiten 28-35   | pages/Seiten 34-35  | pages/Seiten 38-39   | pages/Seiten 40-41  | pages/Seiten 42-43   | pages/Seiten 44-45   | pages/Seiten 46-51  | pages/Seiten 52-54  |
| Poutrelles à ailes parallèles<br>Parallel flange I sections<br>Parallel-flanschtige I-Träger | Poutrelles à ailes inclinées<br>Taper flange I sections<br>Träger mit geneigten inneren Flanschflächen | Poutrelles à larges ailes<br>Wide flange beams<br>Breitflanschträger | Poutrelles à très larges ailes<br>Extra wide flange beams<br>Träger mit besonders breiten Flanschen | Poutrelles-colonnes<br>Wide flange columns<br>Breitflanschstützenprofile | Poutrelles-pieux<br>Wide flange bearing piles<br>Breitflanschpfähle | Fers U à ailes parallèles<br>Parallel flange channels<br>Parallel-flanschtige U-Profil | Fers U à ailes inclinées<br>Taper flange channels<br>U-Profil mit geneigten inneren Flanschflächen | Cornières à ailes égales<br>Equal leg angles<br>Gleichschenklige Winkel | Cornières à ailes inégales<br>Unequal leg angles<br>Ungleichschenklige Winkel |
| 100  |  | 100  |   |  |   | 80<br>100  | 100  | 100 x 100<br>110 x 110  |   |
| 120  | 120  | 120  |   |  |   |  | 120  | 120 x 120   | 120 x 80  |
| 140  | 140  | 140  |   |  |   | 130  | 140  | 130 x 130<br>140 x 140  | 130 x 65  |
|  |  |  |   |  |   |  |  |   | 150 x 90  |
| 160  | 160  | 160  |   |  |   | 150  |  | 150 x 150   | 150 x 100   |
| 180  | 180  | 180  |   |  |   | 175  | 160  | 160 x 160   | 160 x 80  |
| 200  | 200  | 200  |   |  | 200   | 200  | 200  | 180 x 180   |   |
| 220  | 220  | 220  |   |  | 220   | 220  | 220  | 200 x 200   | 200 x 100   |
| 240  | 240  | 240  |   |  |   |  | 240  |   |   |
|  |  |  |   |  |   | 250  |  | 250 x 250   |   |
| 270  | 260  | 260  |   | 260  | 260   |  | 260  |   |   |
|  | 280  | 280  |   |  |   |  | 280  |   |   |
| 300  | 300  | 300  |   |  | 305   | 300  | 300  |   |   |
| 330  | 320  | 320  |   | 320  | 320   |  | 320  |   |   |
|  | 340  | 340  |   |  |   |  | 350  |   |   |
| 360  | 360  | 360  |   | 360  | 360   |  |  |   |   |
|  | 380  |  |   |  |   |  | 380  |   |   |
| 400  | 400  | 400  |   | 400  | 400   |  | 400  |   |   |
| 450  | 450  | 450  |   |  |   |  |  |   |   |
| 500  | 500  | 500  |   |  |   |  |  |   |   |
| 550  | 550  | 550  |   |  |   |  |  |   |   |
| 600  |  | 600  |   |  |   |  |  |   |   |
|  |  | 650  |   |  |   |  |  |   |   |
| 750  |  | 700  |   |  |   |  |  |   |   |
|  |  | 800  |   |  |   |  |  |   |   |
|  |  | 900  | 920   |  |   |  |  |   |   |
|  |  | 1000   | 1000  |  |   |  |  |   |   |
|  |  | 1000   | 1100  |  |   |  |  |   |   |

## Poutrelles alvéolaires

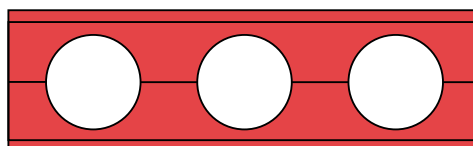
Pages / Seiten 60-61

## Castellated beams

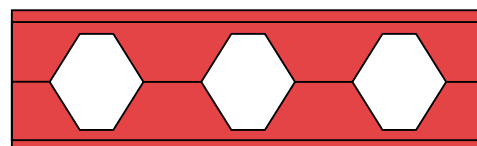
Pages / Seiten 60-61

## Lochstegträger

Pages / Seiten 60-61



**ARBED Cellular Beams**



**Poutrelle alvéolaire à ouvertures hexagonales**

**Castellated beam with hexagonal holes**

**Wabenträger**



## Sélection de poutrelles IFB et SFB

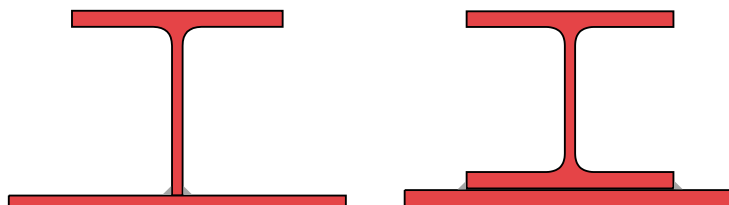
Integrated Floor Beam IFB ; Slim Floor Beam SFB

## Selection of IFB and SFB beams

Integrated Floor Beam IFB ; Slim Floor Beam SFB

## Auswahl von IFB- und SFB-Trägern

Integrated Floor Beam IFB ; Slim Floor Beam SFB



| IFB   |  |   |                                  | SFB  |
|---|--|---|----------------------------------|--|
| pages/Seiten 56-57  |  |   |                                  | pages/Seiten 58-59   |
| Poutrelles type A<br>Type A beams<br>Typ-A-Träger   |  | Poutrelles type B<br>Type B beams<br>Typ-B-Träger |                                  | Poutrelles<br>Beams<br>Träger  |
| 1/2 IPE 400 + □<br>1/2 IPE 450 + □<br>1/2 IPE 500 + □<br>1/2 IPE 550 + □<br>1/2 IPE 600 + □ | 1/2 HE 220 + □<br>1/2 HE 240 + □<br>1/2 HE 260 + □<br>1/2 HE 280 + □<br>1/2 HE 300 + □<br>1/2 HE 320 + □<br>1/2 HE 340 + □<br>1/2 HE 360 + □<br>1/2 HE 400 + □<br>1/2 HE 450 + □<br>1/2 HE 500 + □<br>1/2 HE 550 + □<br>1/2 HE 600 + □<br>1/2 HE 650 + □ | 1/2 HE 280 + □<br>1/2 HE 300 + □                  | 1/2 HP 360 + □<br>1/2 HP 400 + □ | HE 140 + □<br>HE 160 + □<br>HE 180 + □<br>HE 200 + □<br>HE 220 + □<br>HE 240 + □<br>HE 260 + □<br>HE 280 + □<br>HE 300 + □<br>HE 320 + □ |

Poutrelles constituées de profilés laminés à chaud et de plaques.

Beams built-up from hot-rolled sections and plates.

Aus Walzprofilen und Blechen zusammengesetzte Träger.

## Gammes de profilés britanniques conformes à BS 4-1: 1993

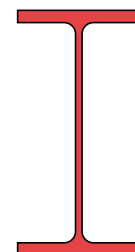
Dimensions nominales: hauteur x largeur en mm

## British section ranges in accordance with BS 4-1: 1993

Nominal sizes: depth x width in mm

## Britische Profilreihen gemäß BS 4-1: 1993

Nennmaße: Höhe x Breite in mm



| UB  |  |  | UC  |                    | UBP   |
|---|--|--|---|--------------------|---|
| pages/Seiten 62-67  | pages/Seiten 62-67   | pages/Seiten 62-67                                     | pages/Seiten 68-69  | pages/Seiten 68-69 | pages/Seiten 70-71  |
| Poutrelles universelles<br>Universal beams<br>Universalträger                                       |  |  | Colonnes universelles<br>Universal columns<br>Universalstützen    |                    | Poutrelles-pieux<br>Wide flange bearing piles<br>Breitflanschpfähle |
| 152 x 89<br>178 x 102<br>203 x 102<br>254 x 102<br>305 x 102<br>356 x 127<br>406 x 140<br>457 x 152 | 203 x 133<br>254 x 146<br>305 x 165<br>356 x 171<br>406 x 178<br>457 x 191<br>533 x 210<br>610 x 229<br>686 x 254<br>762 x 267<br>838 x 292<br>914 x 305 | 610 x 305<br><br><br><br><br><br><br><br><br>914 x 419 | 152 x 152<br><br>203 x 203<br>254 x 254<br>305 x 305<br>356 x 368 | 356 x 406          | 203 x 203<br>254 x 254<br>305 x 305<br>356 x 368                    |

Tonnage minimum et conditions de livraison nécessitent un accord préalable.

Minimum tonnage and delivery conditions upon agreement.

Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.



## Gammes de profilés américains conformes à ASTM A6 / A6M - 98

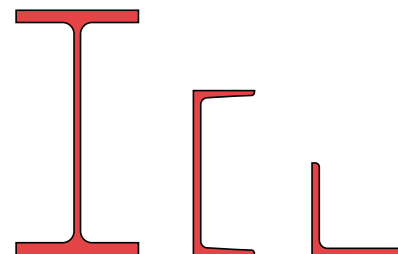
Dimensions nominales : hauteur (x largeur) en mm (pouces)

## American section ranges in accordance with ASTM A6 / A6M - 98

Nominal sizes : depth (x width) in mm (inch)

## Amerikanische Profilreihen gemäß ASTM A6 / A6M - 98

Nennmaße : Höhe (x Breite) in mm (Zoll)



| W   | W   | HP  | C  | L  |
|---|---|---|--|--|
| pages/Seiten 74-85  | pages/Seiten 74-85  | pages/Seiten 86-87  | pages/Seiten 88-89   | pages/Seiten 48-51   |
| Poutrelles américaines à larges ailes<br>American wide flange beams<br>Amerikanische Breitflanschträger | Poutrelles américaines à larges ailes<br>American wide flange beams<br>Amerikanische Breitflanschträger | Poutrelles-pieux<br>Wide flange bearing piles<br>Breitflanschpfähle | Fers U standard<br>Standard channels<br>Standard U-Profile | Cornières à ailes égales<br>Equal leg angles<br>Gleichschenkelige Winkel |

|                    |                     |                      |   |                   |                                     |                                     |                 |
|--------------------|---------------------|----------------------|---|-------------------|-------------------------------------|-------------------------------------|-----------------|
| 150 x 100 6 x 4    | 200 x 135 8 x 5.25  | 200 x 165 8 x 6.5    | 100 x 100 4 x 4<br>130 x 130 5 x 5<br>150 x 150 6 x 6<br>200 x 200 8 x 8<br>250 x 250 10 x 10<br>310 x 310 12 x 12<br>360 x 370 14 x 14.5 | 360 x 410 14 x 16 | 200 8<br>250 10<br>310 12<br>360 14 | 200 8<br>250 10<br>310 12<br>380 15 | 203 x 203 8 x 8 |
| 200 x 100 8 x 4    | 250 x 145 10 x 5.75 | 250 x 165 12 x 6.5   |   |                   |                                     |                                     |                 |
| 250 x 100 10 x 4   | 310 x 165 12 x 6.5  | 360 x 170 14 x 6.75  |   |                   |                                     |                                     |                 |
| 310 x 100 12 x 4   | 360 x 170 14 x 6.75 |                      |   |                   |                                     |                                     |                 |
| 360 x 130 14 x 5   |                     |                      |   |                   |                                     |                                     |                 |
| 410 x 140 16 x 5.5 | 410 x 180 16 x 7    | 460 x 280 18 x 11    |   |                   |                                     |                                     |                 |
| 460 x 150 18 x 6   | 460 x 190 18 x 7.5  | 610 x 325 24 x 12.75 |   |                   |                                     |                                     |                 |
|                    | 530 x 210 21 x 8.25 |                      |   |                   |                                     |                                     |                 |
|                    | 610 x 230 24 x 9    |                      |   |                   |                                     |                                     |                 |
|                    | 690 x 250 27 x 10   |                      |   |                   |                                     |                                     |                 |
|                    | 760 x 265 30 x 10.5 |                      |   |                   |                                     |                                     |                 |
|                    | 840 x 295 33 x 11.5 |                      |   |                   |                                     |                                     |                 |
|                    | 920 x 310 36 x 12   | 920 x 420 36 x 16.5  |   |                   |                                     |                                     |                 |
|                    | 1000 x 300 40 x 12  | 1000 x 400 40 x 16   |   |                   |                                     |                                     |                 |
|                    |                     | 1100 x 400 44 x 16   |   |                   |                                     |                                     |                 |

## Gammes de profilés japonais conformes à JIS G 3192 (1994) et A 5526 (1994)

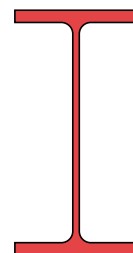
Dimensions nominales : hauteur x largeur en mm

## Japanese section ranges in accordance with JIS G 3192 (1994) and A 5526 (1994)

Nominal sizes : depth x width in mm

## Japanische Profilreihen gemäß JIS G 3192 (1994) und A 5526 (1994)

Nennmaße : Höhe x Breite in mm



| HJ   | HJ   | HJ  |
|--|--|---|
| pages/Seiten 92-95   | pages/Seiten 92-95   | pages/Seiten 92-95  |
| Poutrelles JIS G 3192<br>Beams JIS G 3192<br>Träger JIS G 3192                         | Poutrelles-pieux JIS A 5526<br>Wide flange bearing piles JIS A 5526<br>Breitflanschpfähle JIS A 5526 | Poutrelles JIS G 3192<br>Beams JIS G 3192<br>Träger JIS G 3192                          |
| 100 x 100<br>125 x 125<br>150 x 75<br>150 x 150<br>175 x 175<br>200 x 100<br>200 x 200 | 200 x 200  | 250 x 125<br>250 x 250<br>300 x 150<br>300 x 300<br>350 x 175<br>350 x 350<br>400 x 300 |
|  |  | 250 x 250<br>300 x 300<br>350 x 350<br>400 x 300  |
|  |  | 400 x 400   |
|  |  | 500 x 200<br>500 x 300<br>600 x 300<br>700 x 300<br>800 x 300<br>900 x 300              |
|  |  | 400 x 400   |



Tonnage minimum et conditions de livraison nécessitent un accord préalable.

Minimum tonnage and delivery conditions upon agreement.

Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.



# Eine neue Ästhetik



## Une nouvelle esthétique

L'utilisation de l'acier permet aux architectes **d'ouvrir les espaces**, de privilégier **la modularité des lieux**, **d'alléger les structures** et de **combiner les différents matériaux** afin de donner aux projets l'esthétique et l'élégance souhaitées. L'emploi de la poutrelle permet, grâce à une filière maîtrisée, de **construire rapidement** des bâtiments **compétitifs, durables, et sûrs**.

## New aesthetics

Using steel enables architects to make optimum use of the space available to them, and to customise constructions to best suit their purpose; to **make structures lighter** and to combine different materials to ensure constructions have the required aesthetics and elegance. Our expertise ensures that beams can be used to swiftly **construct safe, long-lasting buildings at competitive prices**.



## Eine neue Ästhetik

Stahl inspiriert Bauherren, Architekten und Ingenieure zu kreativen Leistungen. **Offene, lichtdurchflutete Räume, modulare Bauweise, leichtere Strukturen** und die **Kombination verschiedener Baustoffe** erlauben Ästhetik und Eleganz. Dank bewährter Verfahren können mit Walzträgern **in kürzester Zeit wirtschaftliche, langlebige und sichere** Gebäude errichtet werden.



## Poutrelles I européennes

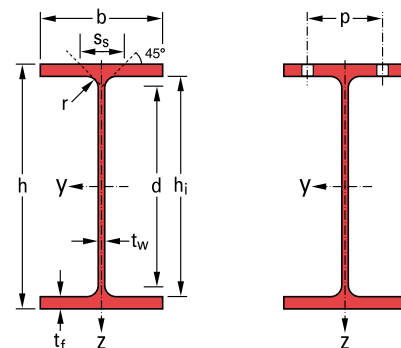
IPE 100 - 600 conformes à l'Euronorme 19-57; IPE A 100 - 600; IPE O 180 - 600; IPE 750

## European I beams

IPE 100 - 600 in accordance with Euronorm 19-57; IPE A 100 - 600; IPE O 180 - 600; IPE 750

## Europäische I-Profile

IPE 100 - 600 gemäß Euronorm 19-57; IPE A 100 - 600; IPE O 180 - 600; IPE 750



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| IPE A 100•                                | 6.9  | 98                        | 55      | 3.6                  | 4.7                  | 7       | 8.78                 | 88.6  | 74.6    | -   | -                      | -                      | 0.397                               | 57.57                               |
| IPE 100                                   | 8.1  | 100                       | 55      | 4.1                  | 5.7                  | 7       | 10.32                | 88.6  | 74.6    | -   | -                      | -                      | 0.400                               | 49.33                               |
| IPE A 120•                                | 8.7  | 117.6                     | 64      | 3.8                  | 5.1                  | 7       | 11.03                | 107.4   | 93.4    | -   | -                      | -                      | 0.472                               | 54.47                               |
| IPE 120                                   | 10.4 | 120                       | 64      | 4.4                  | 6.3                  | 7       | 13.21                | 107.4   | 93.4    | -   | -                      | -                      | 0.475                               | 45.82                               |
| IPE A 140•                                | 10.5 | 137.4                     | 73      | 3.8                  | 5.6                  | 7       | 13.39                | 126.2   | 112.2   | -   | -                      | -                      | 0.547                               | 52.05                               |
| IPE 140                                   | 12.9 | 140                       | 73      | 4.7                  | 6.9                  | 7       | 16.43                | 126.2   | 112.2   | -   | -                      | -                      | 0.551                               | 42.70                               |
| IPE A 160•                                | 12.7 | 157                       | 82      | 4                    | 5.9                  | 9       | 16.18                | 145.2   | 127.2   | -   | -                      | -                      | 0.619                               | 48.70                               |
| IPE 160                                   | 15.8 | 160                       | 82      | 5                    | 7.4                  | 9       | 20.09                | 145.2   | 127.2   | -   | -                      | -                      | 0.623                               | 39.47                               |
| IPE A 180•                                | 15.4 | 177                       | 91      | 4.3                  | 6.5                  | 9       | 19.58                | 164   | 146     | M10 | 48                     | 48                     | 0.694                               | 45.15                               |
| IPE 180                                   | 18.8 | 180                       | 91      | 5.3                  | 8                    | 9       | 23.95                | 164   | 146     | M10 | 48                     | 48                     | 0.698                               | 37.13                               |
| IPE O 180+                                | 21.3 | 182                       | 92      | 6                    | 9                    | 9       | 27.10                | 164   | 146     | M10 | 50                     | 50                     | 0.705                               | 33.12                               |
| IPE A 200•                                | 18.4 | 197                       | 100     | 4.5                  | 7                    | 12      | 23.47                | 183   | 159     | M10 | 54                     | 58                     | 0.764                               | 41.49                               |
| IPE 200                                   | 22.4 | 200                       | 100     | 5.6                  | 8.5                  | 12      | 28.48                | 183   | 159     | M10 | 54                     | 58                     | 0.768                               | 34.36                               |
| IPE O 200+                                | 25.1 | 202                       | 102     | 6.2                  | 9.5                  | 12      | 31.96                | 183   | 159     | M10 | 56                     | 60                     | 0.779                               | 31.05                               |
| IPE A 220•                                | 22.2 | 217                       | 110     | 5                    | 7.7                  | 12      | 28.26                | 201.6   | 177.6   | M12 | 60                     | 62                     | 0.843                               | 38.02                               |
| IPE 220                                   | 26.2 | 220                       | 110     | 5.9                  | 9.2                  | 12      | 33.37                | 201.6   | 177.6   | M12 | 60                     | 62                     | 0.848                               | 32.36                               |
| IPE O 220+                                | 29.4 | 222                       | 112     | 6.6                  | 10.2                 | 12      | 37.39                | 201.6   | 177.6   | M10 | 58                     | 66                     | 0.858                               | 29.24                               |
| IPE A 240•                                | 26.2 | 237                       | 120     | 5.2                  | 8.3                  | 15      | 33.31                | 220.4   | 190.4   | M12 | 64                     | 68                     | 0.918                               | 35.10                               |
| IPE 240                                   | 30.7 | 240                       | 120     | 6.2                  | 9.8                  | 15      | 39.12                | 220.4   | 190.4   | M12 | 66                     | 68                     | 0.922                               | 30.02                               |
| IPE O 240+                                | 34.3 | 242                       | 122     | 7                    | 10.8                 | 15      | 43.71                | 220.4   | 190.4   | M12 | 66                     | 70                     | 0.932                               | 27.17                               |
| IPE A 270•                                | 30.7 | 267                       | 135     | 5.5                  | 8.7                  | 15      | 39.15                | 249.6   | 219.6   | M16 | 70                     | 72                     | 1.037                               | 33.75                               |
| IPE 270                                   | 36.1 | 270                       | 135     | 6.6                  | 10.2                 | 15      | 45.95                | 249.6   | 219.6   | M16 | 72                     | 72                     | 1.041                               | 28.86                               |
| IPE O 270+                                | 42.3 | 274                       | 136     | 7.5                  | 12.2                 | 15      | 53.84                | 249.6   | 219.6   | M16 | 72                     | 72                     | 1.051                               | 24.88                               |
| IPE A 300•                                | 36.5 | 297                       | 150     | 6.1                  | 9.2                  | 15      | 46.53                | 278.6   | 248.6   | M16 | 72                     | 86                     | 1.156                               | 31.65                               |
| IPE 300                                   | 42.2 | 300                       | 150     | 7.1                  | 10.7                 | 15      | 53.81                | 278.6   | 248.6   | M16 | 72                     | 86                     | 1.160                               | 27.46                               |
| IPE O 300+                                | 49.3 | 304                       | 152     | 8                    | 12.7                 | 15      | 62.83                | 278.6   | 248.6   | M16 | 74                     | 88                     | 1.174                               | 23.81                               |
| IPE A 330•                                | 43.0 | 327                       | 160     | 6.5                  | 10                   | 18      | 54.74                | 307   | 271     | M16 | 78                     | 96                     | 1.250                               | 29.09                               |
| IPE 330                                   | 49.1 | 330                       | 160     | 7.5                  | 11.5                 | 18      | 62.61                | 307   | 271     | M16 | 78                     | 96                     | 1.254                               | 25.52                               |
| IPE O 330+                                | 57.0 | 334                       | 162     | 8.5                  | 13.5                 | 18      | 72.62                | 307   | 271     | M16 | 80                     | 98                     | 1.268                               | 22.24                               |



- Commande minimale: pour S 235 JR, cf. conditions techniques de livraison p. 109; pour toute autre qualité 40t ou suivant accord.

+ Commande minimale: 40t par profilé et qualité ou suivant accord.

- Minimum order: for the S 235 JR grade cf. technical delivery conditions p. 109; for any other grade 40t or upon agreement.

+ Minimum order: 40t per section and grade or upon agreement.

- Mindestbestellmenge: für S 235 JR gemäß technischen Lieferbedingungen S. 109; für jede andere Güte 40t oder nach Vereinbarung.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.

# IPE

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | Classification<br>ENV 1993-1-1 |      |      |                     |      |      | HISTAR |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|-----------------------------------|--|-------|--------------------------------|------|------|---------------------|------|------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      |                                   |  |       | pure<br>bending y-y            |      |      | pure<br>compression |      |      |        |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | S235                           | S355 | S460 | S235                | S355 | S460 |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235  | S355                           | S460 | S235 | S355                | S460 |      |        |
| IPE A 100                                 | 6.9                               | 141.2  | 28.81                                  | 32.98                | 4.01                               | 4.44                              | 13.12   | 4.77                                   | 7.54                 | 1.22                 | 21.20                             | 0.77   | 0.28  | 1                              | 1    | -    | 1                   | 1    | -    |        |
| IPE 100                                   | 8.1                               | 171.0  | 34.20                                  | 39.41                | 4.07                               | 5.08                              | 15.92   | 5.79                                   | 9.15                 | 1.24                 | 23.70                             | 1.2  | 0.35  | 1                              | 1    | -    | 1                   | 1    | -    |        |
| IPE A 120                                 | 8.7                               | 257.4  | 43.77                                  | 49.87                | 4.83                               | 5.41                              | 22.39   | 7.00                                   | 10.98                | 1.42                 | 22.20                             | 1.04   | 0.71  | 1                              | 1    | -    | 1                   | 1    | -    |        |
| IPE 120                                   | 10.4                              | 317.8  | 52.96                                  | 60.73                | 4.90                               | 6.31                              | 27.67   | 8.65                                   | 13.58                | 1.45                 | 25.20                             | 1.74   | 0.89  | 1                              | 1    | -    | 1                   | 1    | -    |        |
| IPE A 140                                 | 10.5                              | 434.9  | 63.30                                  | 71.60                | 5.70                               | 6.21                              | 36.42   | 9.98                                   | 15.52                | 1.65                 | 23.20                             | 1.36   | 1.58  | 1                              | 1    | -    | 1                   | 2    | -    |        |
| IPE 140                                   | 12.9                              | 541.2  | 77.32                                  | 88.34                | 5.74                               | 7.64                              | 44.92   | 12.31                                  | 19.25                | 1.65                 | 26.70                             | 2.45   | 1.98  | 1                              | 1    | -    | 1                   | 1    | -    |        |
| IPE A 160                                 | 12.7                              | 689.3  | 87.81                                  | 99.09                | 6.53                               | 7.80                              | 54.43   | 13.27                                  | 20.70                | 1.83                 | 26.34                             | 1.96   | 3.09  | 1                              | 1    | -    | 1                   | 3    | -    |        |
| IPE 160                                   | 15.8                              | 869.3  | 108.7                                  | 123.9                | 6.58                               | 9.66                              | 68.31   | 16.66                                  | 26.10                | 1.84                 | 30.34                             | 3.6  | 3.96  | 1                              | 1    | -    | 1                   | 1    | -    |        |
| IPE A 180                                 | 15.4                              | 1063   | 120.1                                  | 135.3                | 7.37                               | 9.20                              | 81.89   | 18.00                                  | 27.96                | 2.05                 | 27.84                             | 2.7  | 5.93  | 1                              | 1    | -    | 2                   | 3    | -    |        |
| IPE 180                                   | 18.8                              | 1317   | 146.3                                  | 166.4                | 7.42                               | 11.25                             | 100.9   | 22.16                                  | 34.60                | 2.05                 | 31.84                             | 4.79   | 7.43  | 1                              | 1    | -    | 1                   | 2    | -    |        |
| IPE O 180                                 | 21.3                              | 1505   | 165.4                                  | 189.1                | 7.45                               | 12.70                             | 117.3   | 25.50                                  | 39.91                | 2.08                 | 34.54                             | 6.76   | 8.74  | 1                              | 1    | -    | 1                   | 1    | -    |        |
| IPE A 200                                 | 18.4                              | 1591   | 161.6                                  | 181.7                | 8.23                               | 11.47                             | 117.2   | 23.43                                  | 36.54                | 2.23                 | 32.56                             | 4.11   | 10.53 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| IPE 200                                   | 22.4                              | 1943   | 194.3                                  | 220.6                | 8.26                               | 14.00                             | 142.4   | 28.47                                  | 44.61                | 2.24                 | 36.66                             | 6.98   | 12.99 | 1                              | 1    | -    | 1                   | 2    | -    |        |
| IPE O 200                                 | 25.1                              | 2211   | 218.9                                  | 249.4                | 8.32                               | 15.45                             | 168.9   | 33.11                                  | 51.89                | 2.30                 | 39.26                             | 9.45   | 15.57 | 1                              | 1    | -    | 1                   | 1    | -    |        |
| IPE A 220                                 | 22.2                              | 2317   | 213.5                                  | 240.2                | 9.05                               | 13.55                             | 171.4   | 31.17                                  | 48.49                | 2.46                 | 34.46                             | 5.69   | 18.71 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| IPE 220                                   | 26.2                              | 2772   | 252.0                                  | 285.4                | 9.11                               | 15.88                             | 204.9   | 37.25                                  | 58.11                | 2.48                 | 38.36                             | 9.07   | 22.67 | 1                              | 1    | -    | 1                   | 2    | -    |        |
| IPE O 220                                 | 29.4                              | 3134   | 282.3                                  | 321.1                | 9.16                               | 17.66                             | 239.8   | 42.83                                  | 66.91                | 2.53                 | 41.06                             | 12.27  | 26.79 | 1                              | 1    | -    | 1                   | 2    | -    |        |
| IPE A 240                                 | 26.2                              | 3290   | 277.7                                  | 311.6                | 9.94                               | 16.31                             | 240.1   | 40.02                                  | 62.40                | 2.68                 | 39.37                             | 8.35   | 31.26 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| IPE 240                                   | 30.7                              | 3892   | 324.3                                  | 366.6                | 9.97                               | 19.14                             | 283.6   | 47.27                                  | 73.92                | 2.69                 | 43.37                             | 12.88  | 37.39 | 1                              | 1    | -    | 1                   | 2    | -    |        |
| IPE O 240                                 | 34.3                              | 4369   | 361.1                                  | 410.3                | 10.00                              | 21.36                             | 328.5   | 53.86                                  | 84.40                | 2.74                 | 46.17                             | 17.18  | 43.68 | 1                              | 1    | -    | 1                   | 2    | -    |        |
| IPE A 270                                 | 30.7                              | 4917   | 368.3                                  | 412.5                | 11.21                              | 18.75                             | 358.0   | 53.03                                  | 82.34                | 3.02                 | 40.47                             | 10.30  | 59.51 | 1                              | 1    | -    | 3                   | 4    | -    |        |
| IPE 270                                   | 36.1                              | 5790   | 428.9                                  | 484.0                | 11.23                              | 22.14                             | 419.9   | 62.20                                  | 96.95                | 3.02                 | 44.57                             | 15.94  | 70.58 | 1                              | 1    | -    | 2                   | 3    | -    |        |
| IPE O 270                                 | 42.3                              | 6947   | 507.1                                  | 574.6                | 11.36                              | 25.23                             | 513.5   | 75.51                                  | 117.7                | 3.09                 | 49.47                             | 24.90  | 87.64 | 1                              | 1    | -    | 1                   | 2    | -    |        |
| IPE A 300                                 | 36.5                              | 7173   | 483.1                                  | 541.8                | 12.42                              | 22.25                             | 519.0   | 69.20                                  | 107.3                | 3.34                 | 42.07                             | 13.43  | 107.2 | 1                              | 2    | -    | 3                   | 4    | -    |        |
| IPE 300                                   | 42.2                              | 8356   | 557.1                                  | 628.4                | 12.46                              | 25.68                             | 603.8   | 80.50                                  | 125.2                | 3.35                 | 46.07                             | 20.12  | 125.9 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| IPE O 300                                 | 49.3                              | 9994   | 657.5                                  | 743.8                | 12.61                              | 29.05                             | 745.7   | 98.12                                  | 152.6                | 3.45                 | 50.97                             | 31.06  | 157.7 | 1                              | 1    | -    | 1                   | 3    | -    |        |
| IPE A 330                                 | 43.0                              | 10230  | 625.7                                  | 701.9                | 13.67                              | 26.99                             | 685.2   | 85.64                                  | 133.3                | 3.54                 | 47.59                             | 19.57  | 171.5 | 1                              | 1    | -    | 3                   | 4    | -    |        |
| IPE 330                                   | 49.1                              | 11770  | 713.1                                  | 804.3                | 13.71                              | 30.81                             | 788.1   | 98.52                                  | 153.7                | 3.55                 | 51.59                             | 28.15  | 199.1 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| IPE O 330                                 | 57.0                              | 13910  | 833.0                                  | 942.8                | 13.84                              | 34.88                             | 960.4   | 118.6                                  | 185.0                | 3.64                 | 56.59                             | 42.15  | 245.7 | 1                              | 1    | -    | 1                   | 3    | -    |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poutrelles I européennes

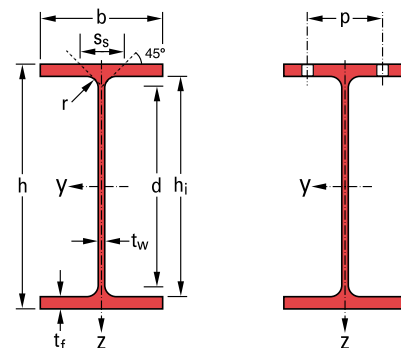
IPE 100 - 600 conformes à l'Euronorme 19-57; IPE A 100 - 600; IPE O 180 - 600; IPE 750

## European I beams

IPE 100 - 600 in accordance with Euronorm 19-57; IPE A 100 - 600; IPE O 180 - 600; IPE 750

## Europäische I-Profile

IPE 100 - 600 gemäß Euronorm 19-57; IPE A 100 - 600; IPE O 180 - 600; IPE 750



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| IPE A 360•                                | 50.2 | 357.6                     | 170     | 6.6                  | 11.5                 | 18      | 63.96                | 334.6   | 298.6   | M22 | 86                     | 88                     | 1.351                               | 26.91                               |
| IPE 360                                   | 57.1 | 360                       | 170     | 8                    | 12.7                 | 18      | 72.73                | 334.6   | 298.6   | M22 | 88                     | 88                     | 1.353                               | 23.70                               |
| IPE O 360 <sup>+</sup>                    | 66.0 | 364                       | 172     | 9.2                  | 14.7                 | 18      | 84.13                | 334.6   | 298.6   | M22 | 90                     | 90                     | 1.367                               | 20.69                               |
| IPE A 400•                                | 57.4 | 397                       | 180     | 7                    | 12                   | 21      | 73.10                | 373   | 331     | M22 | 94                     | 98                     | 1.464                               | 25.51                               |
| IPE 400                                   | 66.3 | 400                       | 180     | 8.6                  | 13.5                 | 21      | 84.46                | 373   | 331     | M22 | 96                     | 98                     | 1.467                               | 22.12                               |
| IPE O 400 <sup>+</sup>                    | 75.7 | 404                       | 182     | 9.7                  | 15.5                 | 21      | 96.39                | 373   | 331     | M22 | 96                     | 100                    | 1.481                               | 19.57                               |
| IPE A 450•                                | 67.2 | 447                       | 190     | 7.6                  | 13.1                 | 21      | 85.55                | 420.8   | 378.8   | M24 | 100                    | 102                    | 1.603                               | 23.87                               |
| IPE 450                                   | 77.6 | 450                       | 190     | 9.4                  | 14.6                 | 21      | 98.82                | 420.8   | 378.8   | M24 | 100                    | 102                    | 1.605                               | 20.69                               |
| IPE O 450 <sup>+</sup>                    | 92.4 | 456                       | 192     | 11                   | 17.6                 | 21      | 117.7                | 420.8   | 378.8   | M24 | 102                    | 104                    | 1.622                               | 17.56                               |
| IPE A 500•                                | 79.4 | 497                       | 200     | 8.4                  | 14.5                 | 21      | 101.1                | 468   | 426     | M24 | 100                    | 112                    | 1.741                               | 21.94                               |
| IPE 500                                   | 90.7 | 500                       | 200     | 10.2                 | 16                   | 21      | 115.5                | 468   | 426     | M24 | 102                    | 112                    | 1.744                               | 19.23                               |
| IPE O 500 <sup>+</sup>                    | 107  | 506                       | 202     | 12                   | 19                   | 21      | 136.7                | 468   | 426     | M24 | 104                    | 114                    | 1.760                               | 16.40                               |
| IPE A 550•                                | 92.1 | 547                       | 210     | 9                    | 15.7                 | 24      | 117.3                | 515.6   | 467.6   | M24 | 106                    | 122                    | 1.875                               | 20.36                               |
| IPE 550                                   | 106  | 550                       | 210     | 11.1                 | 17.2                 | 24      | 134.4                | 515.6   | 467.6   | M24 | 110                    | 122                    | 1.877                               | 17.78                               |
| IPE O 550 <sup>+</sup>                    | 123  | 556                       | 212     | 12.7                 | 20.2                 | 24      | 156.1                | 515.6   | 467.6   | M24 | 110                    | 122                    | 1.893                               | 15.45                               |
| IPE A 600•                                | 108  | 597                       | 220     | 9.8                  | 17.5                 | 24      | 137.0                | 562   | 514     | M27 | 114                    | 118                    | 2.013                               | 18.72                               |
| IPE 600                                   | 122  | 600                       | 220     | 12                   | 19                   | 24      | 156.0                | 562   | 514     | M27 | 116                    | 118                    | 2.015                               | 16.45                               |
| IPE O 600 <sup>+</sup>                    | 154  | 610                       | 224     | 15                   | 24                   | 24      | 196.8                | 562   | 514     | M27 | 118                    | 122                    | 2.045                               | 13.24                               |
| IPE 750 x 147                             | 147  | 753                       | 265     | 13.2                 | 17                   | 17      | 187.5                | 719   | 685     | M27 | 104                    | 164                    | 2.510                               | 17.06                               |
| IPE 750 x 173 <sup>+</sup>                | 173  | 762                       | 267     | 14.4                 | 21.6                 | 17      | 221.3                | 718.8   | 684.8   | M27 | 104                    | 166                    | 2.534                               | 14.58                               |
| IPE 750 x 196 <sup>+</sup>                | 196  | 770                       | 268     | 15.6                 | 25.4                 | 17      | 250.8                | 719.2   | 685.2   | M27 | 106                    | 166                    | 2.552                               | 12.96                               |



- Commande minimale: pour S 235 JR, cf. conditions techniques de livraison p. 109; pour toute autre qualité 40t ou suivant accord.

+ Commande minimale: 40t par profilé et qualité ou suivant accord.

- Minimum order: for the S 235 JR grade cf. technical delivery conditions p. 109; for any other grade 40t or upon agreement.

+ Minimum order: 40t per section and grade or upon agreement.

- Mindestbestellmenge: für S 235 JR gemäß technischen Lieferbedingungen S. 109; für jede andere Güte 40t oder nach Vereinbarung.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.



# IPE

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |             | Classification<br>ENV 1993-1-1 |             |             |                     |             |             | HISTAR |
|---|-----------------------------------|--|---------------------------------------|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|-----------------------------------|--|-------------|--------------------------------|-------------|-------------|---------------------|-------------|-------------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                       |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      |                                   |  |             | pure<br>bending y-y            |             |             | pure<br>compression |             |             |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |             | \$S_{235}\$                    | \$S_{355}\$ | \$S_{460}\$ | \$S_{235}\$         | \$S_{355}\$ | \$S_{460}\$ |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>ply</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | \$S_{235}\$ | \$S_{355}\$                    | \$S_{460}\$ | \$S_{235}\$ | \$S_{355}\$         | \$S_{460}\$ |             |        |
| IPE A 360                                 | 50.2                              | 14520  | 811.8                                 | 906.8                | 15.06                              | 29.76                             | 944.3   | 111.1                                  | 171.9                | 3.84                 | 50.69                             | 26.51  | 282         | 1                              | 1           | -           | 4                   | 4           | -           |        |
| IPE 360                                   | 57.1                              | 16270  | 903.6                                 | 1019                 | 14.95                              | 35.14                             | 1043  | 122.8                                  | 191.1                | 3.79                 | 54.49                             | 37.32  | 313.6       | 1                              | 1           | -           | 2                   | 4           | -           |        |
| IPE O 360                                 | 66.0                              | 19050  | 1047                                  | 1186                 | 15.05                              | 40.21                             | 1251  | 145.5                                  | 226.9                | 3.86                 | 59.69                             | 55.76  | 380.3       | 1                              | 1           | -           | 1                   | 3           | -           |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| IPE A 400                                 | 57.4                              | 20290  | 1022                                  | 1144                 | 16.66                              | 35.78                             | 1171  | 130.1                                  | 202.1                | 4.00                 | 55.60                             | 34.79  | 432.2       | 1                              | 1           | -           | 4                   | 4           | -           |        |
| IPE 400                                   | 66.3                              | 23130  | 1156                                  | 1307                 | 16.55                              | 42.69                             | 1318  | 146.4                                  | 229.0                | 3.95                 | 60.20                             | 51.08  | 490         | 1                              | 1           | -           | 3                   | 4           | -           |        |
| IPE O 400                                 | 75.7                              | 26750  | 1324                                  | 1502                 | 16.66                              | 47.98                             | 1564  | 171.9                                  | 269.1                | 4.03                 | 65.30                             | 73.10  | 587.6       | 1                              | 1           | -           | 2                   | 3           | -           |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| IPE A 450                                 | 67.2                              | 29760  | 1331                                  | 1494                 | 18.65                              | 42.26                             | 1502  | 158.1                                  | 245.7                | 4.19                 | 58.40                             | 45.67  | 704.9       | 1                              | 1           | -           | 4                   | 4           | -           |        |
| IPE 450                                   | 77.6                              | 33740  | 1500                                  | 1702                 | 18.48                              | 50.85                             | 1676  | 176.4                                  | 276.4                | 4.12                 | 63.20                             | 66.87  | 791         | 1                              | 1           | -           | 3                   | 4           | -           |        |
| IPE O 450                                 | 92.4                              | 40920  | 1795                                  | 2046                 | 18.65                              | 59.4                              | 2085  | 217.2                                  | 341.0                | 4.21                 | 70.80                             | 109  | 997.6       | 1                              | 1           | -           | 2                   | 4           | -           |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| IPE A 500                                 | 79.4                              | 42930  | 1728                                  | 1946                 | 20.61                              | 50.41                             | 1939  | 193.9                                  | 301.6                | 4.38                 | 62.00                             | 62.78  | 1125        | 1                              | 1           | -           | 4                   | 4           | -           |        |
| IPE 500                                   | 90.7                              | 48200  | 1928                                  | 2194                 | 20.43                              | 59.87                             | 2142  | 214.2                                  | 335.9                | 4.31                 | 66.80                             | 89.29  | 1249        | 1                              | 1           | 1           | 3                   | 4           | 4           |        |
| IPE O 500                                 | 107                               | 57780  | 2284                                  | 2613                 | 20.56                              | 70.21                             | 2622  | 259.6                                  | 408.5                | 4.38                 | 74.60                             | 143.5  | 1548        | 1                              | 1           | 1           | 2                   | 4           | 4           |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| IPE A 550                                 | 92.1                              | 59980  | 2193                                  | 2475                 | 22.61                              | 60.30                             | 2432  | 231.6                                  | 361.5                | 4.55                 | 68.52                             | 86.53  | 1710        | 1                              | 1           | -           | 4                   | 4           | -           |        |
| IPE 550                                   | 106                               | 67120  | 2441                                  | 2787                 | 22.35                              | 72.34                             | 2668  | 254.1                                  | 400.5                | 4.45                 | 73.62                             | 123.2  | 1884        | 1                              | 1           | 1           | 4                   | 4           | 4           |        |
| IPE O 550                                 | 123                               | 79160  | 2847                                  | 3263                 | 22.52                              | 82.69                             | 3224  | 304.2                                  | 480.5                | 4.55                 | 81.22                             | 187.5  | 2302        | 1                              | 1           | 1           | 2                   | 4           | 4           |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| IPE A 600                                 | 108                               | 82920  | 2778                                  | 3141                 | 24.6                               | 70.14                             | 3116  | 283.3                                  | 442.1                | 4.77                 | 72.92                             | 118.8  | 2607        | 1                              | 1           | -           | 4                   | 4           | -           |        |
| IPE 600                                   | 122                               | 92080  | 3069                                  | 3512                 | 24.3                               | 83.78                             | 3387  | 307.9                                  | 485.6                | 4.66                 | 78.12                             | 165.4  | 2846        | 1                              | 1           | 1           | 4                   | 4           | 4           |        |
| IPE O 600                                 | 154                               | 118300   | 3879                                  | 4471                 | 24.52                              | 104.4                             | 4521  | 403.6                                  | 640.1                | 4.79                 | 91.12                             | 318.1  | 3860        | 1                              | 1           | 1           | 2                   | 4           | 4           |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| IPE 750 x 147                             | 147                               | 166100   | 4411                                  | 5110                 | 29.76                              | 105.4                             | 5289  | 399.2                                  | 630.8                | 5.31                 | 67.12                             | 161.5  | 7141        | 1                              | 1           | -           | 4                   | 4           | -           |        |
| IPE 750 x 173                             | 173                               | 205800   | 5402                                  | 6218                 | 30.49                              | 116.4                             | 6873  | 514.9                                  | 809.9                | 5.57                 | 77.52                             | 273.6  | 9391        | 1                              | 1           | 1           | 4                   | 4           | 4           |        |
| IPE 750 x 196                             | 196                               | 240300   | 6241                                  | 7174                 | 30.95                              | 127.3                             | 8175  | 610.1                                  | 958.8                | 5.71                 | 86.32                             | 408.9  | 11290       | 1                              | 1           | 1           | 4                   | 4           | 4           |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poutrelles normales européennes

inclinaison des ailes: 14%

conformes à DIN 1025-1: 1963, NF A 45-209 (1983)

## European standard beams

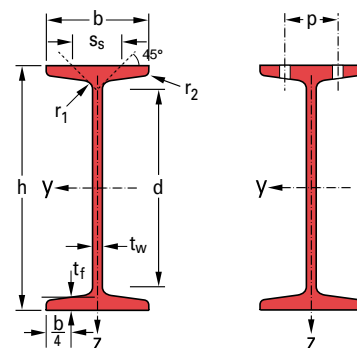
flange slope: 14%

in accordance with DIN 1025-1: 1963, NF A 45-209 (1983)

## Europäische Normalträger

Flanschneigung: 14%

gemäß DIN 1025-1: 1963, NF A 45-209 (1983)



| Désignation<br>Designation<br>Bezeichnung | Dimensions<br>Abmessungen |         |         |                      |                      |                      | A<br>cm <sup>2</sup> | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |       |                        |                        | Surface<br>Oberfläche               |                                     |
|---|---------------------------|---------|---------|----------------------|----------------------|----------------------|----------------------|---|-------|------------------------|------------------------|-------------------------------------|-------------------------------------|
|   | G<br>kg/m                 | h<br>mm | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r <sub>1</sub><br>mm | r <sub>2</sub><br>mm | d<br>mm   | Ø     | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| IPN 120                                   | 11.1                      | 120     | 58      | 5.1                  | 7.7                  | 5.1                  | 3.1                  | 14.2  | 92.4  | -                      | -                      | 0.439                               | 39.38                               |
| IPN 140                                   | 14.3                      | 140     | 66      | 5.7                  | 8.6                  | 5.7                  | 3.4                  | 18.3  | 109.1 | -                      | -                      | 0.502                               | 34.94                               |
| IPN 160                                   | 17.9                      | 160     | 74      | 6.3                  | 9.5                  | 6.3                  | 3.8                  | 22.8  | 125.8 | -                      | -                      | 0.575                               | 32.13                               |
| IPN 180                                   | 21.9                      | 180     | 82      | 6.9                  | 10.4                 | 6.9                  | 4.1                  | 27.9  | 142.4 | -                      | -                      | 0.64                                | 29.22                               |
| IPN 200                                   | 26.2                      | 200     | 90      | 7.5                  | 11.3                 | 7.5                  | 4.5                  | 33.4  | 159.1 | -                      | -                      | 0.709                               | 27.04                               |
| IPN 220                                   | 31.1                      | 220     | 98      | 8.1                  | 12.2                 | 8.1                  | 4.9                  | 39.5  | 175.8 | M10                    | 50                     | 0.775                               | 24.99                               |
| IPN 240                                   | 36.2                      | 240     | 106     | 8.7                  | 13.1                 | 8.7                  | 5.2                  | 46.1  | 192.5 | M10                    | 54                     | 0.844                               | 23.32                               |
| IPN 260                                   | 41.9                      | 260     | 113     | 9.4                  | 14.1                 | 9.4                  | 5.6                  | 53.3  | 208.9 | M12                    | 62                     | 0.906                               | 21.65                               |
| IPN 280                                   | 47.9                      | 280     | 119     | 10.1                 | 15.2                 | 10.1                 | 6.1                  | 61.0  | 225.1 | M12                    | 68                     | 0.966                               | 20.17                               |
| IPN 300                                   | 54.2                      | 300     | 125     | 10.8                 | 16.2                 | 10.8                 | 6.5                  | 69.0  | 241.6 | M12                    | 70                     | 1.03                                | 19.02                               |
| IPN 320                                   | 61.0                      | 320     | 131     | 11.5                 | 17.3                 | 11.5                 | 6.9                  | 77.7  | 257.9 | M12                    | 70                     | 1.09                                | 17.87                               |
| IPN 340                                   | 68.0                      | 340     | 137     | 12.2                 | 18.3                 | 12.2                 | 7.3                  | 86.7  | 274.3 | M12                    | 78                     | 1.15                                | 16.90                               |
| IPN 360                                   | 76.1                      | 360     | 143     | 13                   | 19.5                 | 13                   | 7.8                  | 97.0  | 290.2 | M12                    | 78                     | 1.21                                | 15.89                               |
| IPN 380                                   | 84.0                      | 380     | 149     | 13.7                 | 20.5                 | 13.7                 | 8.2                  | 107   | 306.7 | M16                    | 84                     | 1.27                                | 15.12                               |
| IPN 400                                   | 92.4                      | 400     | 155     | 14.4                 | 21.6                 | 14.4                 | 8.6                  | 118   | 322.9 | M16                    | 86                     | 1.33                                | 14.36                               |
| IPN 450                                   | 115                       | 450     | 170     | 16.2                 | 24.3                 | 16.2                 | 9.7                  | 147   | 363.6 | M16                    | 92                     | 1.48                                | 12.83                               |
| IPN 500                                   | 141                       | 500     | 185     | 18                   | 27                   | 18                   | 10.8                 | 179   | 404.3 | M20                    | 102                    | 1.63                                | 11.60                               |
| IPN 550                                   | 166                       | 550     | 200     | 19                   | 30                   | 19                   | 11.9                 | 212   | 445.6 | M22                    | 112                    | 1.80                                | 10.80                               |



# IPN

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |      | Classification<br>ENV 1993-1-1 |      |                     |      |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|-----------------------------------|--|------|--------------------------------|------|---------------------|------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      |                                   |  |      | pure<br>bending y-y            |      | pure<br>compression |      |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |      | §235                           | §355 | §235                | §355 |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | §235 | §355                           | §235 | §355                |      |
| IPN 120                                   | 11.1                              | 328  | 54.7                                   | 63.6                 | 4.81                               | 6.63                              | 21.5  | 7.41                                   | 12.4                 | 1.23                 | 28.4                              | 2.71   | 0.69 | 1                              | 1    | 1                   | 1    |
| IPN 140                                   | 14.3                              | 573  | 81.9                                   | 95.4                 | 5.61                               | 8.65                              | 35.2  | 10.7                                   | 17.9                 | 1.40                 | 31.8                              | 4.32   | 1.54 | 1                              | 1    | 1                   | 1    |
| IPN 160                                   | 17.9                              | 935  | 117                                    | 136                  | 6.4                                | 10.83                             | 54.7  | 14.8                                   | 24.9                 | 1.55                 | 35.2                              | 6.57   | 3.14 | 1                              | 1    | 1                   | 1    |
| IPN 180                                   | 21.9                              | 1450   | 161                                    | 187                  | 7.2                                | 13.35                             | 81.3  | 19.8                                   | 33.2                 | 1.71                 | 38.6                              | 9.58   | 5.92 | 1                              | 1    | 1                   | 1    |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |      |                                |      |                     |      |
| IPN 200                                   | 26.2                              | 2140   | 214                                    | 250                  | 8.0                                | 16.03                             | 117   | 26.0                                   | 43.5                 | 1.87                 | 42.0                              | 13.5   | 10.5 | 1                              | 1    | 1                   | 1    |
| IPN 220                                   | 31.1                              | 3060   | 278                                    | 324                  | 8.8                                | 19.06                             | 162   | 33.1                                   | 55.7                 | 2.02                 | 45.4                              | 18.6   | 17.8 | 1                              | 1    | 1                   | 1    |
| IPN 240                                   | 36.2                              | 4250   | 354                                    | 412                  | 9.59                               | 22.33                             | 221   | 41.7                                   | 70.0                 | 2.20                 | 48.9                              | 25.0   | 28.7 | 1                              | 1    | 1                   | 1    |
| IPN 260                                   | 41.9                              | 5740   | 442                                    | 514                  | 10.4                               | 26.08                             | 288   | 51.0                                   | 85.9                 | 2.32                 | 52.6                              | 33.5   | 44.1 | 1                              | 1    | 1                   | 1    |
| IPN 280                                   | 47.9                              | 7590   | 542                                    | 632                  | 11.1                               | 30.18                             | 364   | 61.2                                   | 103                  | 2.45                 | 56.4                              | 44.2   | 64.6 | 1                              | 1    | 1                   | 1    |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |      |                                |      |                     |      |
| IPN 300                                   | 54.2                              | 9800   | 653                                    | 762                  | 11.9                               | 34.58                             | 451   | 72.2                                   | 121                  | 2.56                 | 60.1                              | 56.8   | 91.8 | 1                              | 1    | 1                   | 1    |
| IPN 320                                   | 61.0                              | 12510  | 782                                    | 914                  | 12.7                               | 39.26                             | 555   | 84.7                                   | 143                  | 2.67                 | 63.9                              | 72.5   | 129  | 1                              | 1    | 1                   | 1    |
| IPN 340                                   | 68.0                              | 15700  | 923                                    | 1080                 | 13.5                               | 44.27                             | 674   | 98.4                                   | 166                  | 2.80                 | 67.6                              | 90.4   | 176  | 1                              | 1    | 1                   | 1    |
| IPN 360                                   | 76.1                              | 19610  | 1090                                   | 1276                 | 14.2                               | 49.95                             | 818   | 114                                    | 194                  | 2.90                 | 71.8                              | 115  | 240  | 1                              | 1    | 1                   | 1    |
| IPN 380                                   | 84.0                              | 24010  | 1260                                   | 1482                 | 15.0                               | 55.55                             | 975   | 131                                    | 221                  | 3.02                 | 75.4                              | 141  | 319  | 1                              | 1    | 1                   | 1    |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |      |                                |      |                     |      |
| IPN 400                                   | 92.4                              | 29210  | 1460                                   | 1714                 | 15.7                               | 61.69                             | 1160  | 149                                    | 253                  | 3.13                 | 79.3                              | 170  | 420  | 1                              | 1    | 1                   | 1    |
| IPN 450                                   | 115                               | 45850  | 2040                                   | 2400                 | 17.7                               | 77.79                             | 1730  | 203                                    | 345                  | 3.43                 | 88.9                              | 267  | 791  | 1                              | 1    | 1                   | 1    |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |      |                                |      |                     |      |
| IPN 500                                   | 141                               | 68740  | 2750                                   | 3240                 | 19.6                               | 95.6                              | 2480  | 268                                    | 456                  | 3.72                 | 98.5                              | 402  | 1400 | 1                              | 1    | 1                   | 1    |
| IPN 550                                   | 166                               | 99180  | 3610                                   | 4240                 | 21.6                               | 111.3                             | 3490  | 349                                    | 592                  | 4.02                 | 107.3                             | 544  | 2390 | 1                              | 1    | 1                   | 1    |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poutrelles européennes à larges ailes

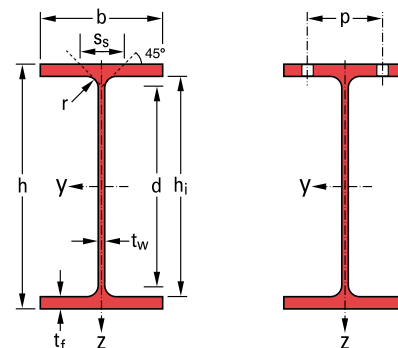
HE A, HE B et HE M 100 - 1000 conformes à l'Euronorme 53-62; HE AA 100 - 1000; HL 920 - 1100

## European wide flange beams

HE A, HE B and HE M 100 - 1000 in accordance with Euronorm 53-62; HE AA 100 - 1000; HL 920 - 1100

## Europäische Breitflanschträger

HE A, HE B und HE M 100 - 1000 gemäß Euronorm 53-62; HE AA 100 - 1000; HL HL 920 - 1100



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |          |          |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------|----------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h<br>mm                   | b<br>mm | tw<br>mm | tf<br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>1</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| HE 100 AA <sup>+</sup>                    | 12.2 | 91                        | 100     | 4.2      | 5.5      | 12      | 15.60                | 80  | 56      | M10 | 54                     | 58                     | 0.553                               | 45.17                               |
| HE 100 A                                  | 16.7 | 96                        | 100     | 5        | 8        | 12      | 21.24                | 80  | 56      | M10 | 54                     | 58                     | 0.561                               | 33.68                               |
| HE 100 B                                  | 20.4 | 100                       | 100     | 6        | 10       | 12      | 26.04                | 80  | 56      | M10 | 56                     | 58                     | 0.567                               | 27.76                               |
| HE 100 M                                  | 41.8 | 120                       | 106     | 12       | 20       | 12      | 53.24                | 80  | 56      | M10 | 62                     | 64                     | 0.619                               | 14.82                               |
| HE 120 AA <sup>+</sup>                    | 14.6 | 109                       | 120     | 4.2      | 5.5      | 12      | 18.55                | 98  | 74      | M12 | 58                     | 68                     | 0.669                               | 45.94                               |
| HE 120 A                                  | 19.9 | 114                       | 120     | 5        | 8        | 12      | 25.34                | 98  | 74      | M12 | 58                     | 68                     | 0.677                               | 34.06                               |
| HE 120 B                                  | 26.7 | 120                       | 120     | 6.5      | 11       | 12      | 34.01                | 98  | 74      | M12 | 60                     | 68                     | 0.686                               | 25.71                               |
| HE 120 M                                  | 52.1 | 140                       | 126     | 12.5     | 21       | 12      | 66.41                | 98  | 74      | M12 | 66                     | 74                     | 0.738                               | 14.16                               |
| HE 140 AA <sup>+</sup>                    | 18.1 | 128                       | 140     | 4.3      | 6        | 12      | 23.02                | 116   | 92      | M16 | 64                     | 76                     | 0.787                               | 43.53                               |
| HE 140 A                                  | 24.7 | 133                       | 140     | 5.5      | 8.5      | 12      | 31.42                | 116   | 92      | M16 | 64                     | 76                     | 0.794                               | 32.21                               |
| HE 140 B                                  | 33.7 | 140                       | 140     | 7        | 12       | 12      | 42.96                | 116   | 92      | M16 | 66                     | 76                     | 0.805                               | 23.88                               |
| HE 140 M                                  | 63.2 | 160                       | 146     | 13       | 22       | 12      | 80.56                | 116   | 92      | M16 | 72                     | 82                     | 0.857                               | 13.56                               |
| HE 160 AA <sup>+</sup>                    | 23.8 | 148                       | 160     | 4.5      | 7        | 15      | 30.36                | 134   | 104     | M20 | 76                     | 84                     | 0.901                               | 37.81                               |
| HE 160 A                                  | 30.4 | 152                       | 160     | 6        | 9        | 15      | 38.77                | 134   | 104     | M20 | 78                     | 84                     | 0.906                               | 29.78                               |
| HE 160 B                                  | 42.6 | 160                       | 160     | 8        | 13       | 15      | 54.25                | 134   | 104     | M20 | 80                     | 84                     | 0.918                               | 21.56                               |
| HE 160 M                                  | 76.2 | 180                       | 166     | 14       | 23       | 15      | 97.05                | 134   | 104     | M20 | 86                     | 90                     | 0.970                               | 12.74                               |
| HE 180 AA <sup>+</sup>                    | 28.7 | 167                       | 180     | 5        | 7.5      | 15      | 36.53                | 152   | 122     | M24 | 84                     | 92                     | 1.018                               | 35.51                               |
| HE 180 A                                  | 35.5 | 171                       | 180     | 6        | 9.5      | 15      | 45.25                | 152   | 122     | M24 | 86                     | 92                     | 1.024                               | 28.83                               |
| HE 180 B                                  | 51.2 | 180                       | 180     | 8.5      | 14       | 15      | 65.25                | 152   | 122     | M24 | 88                     | 92                     | 1.037                               | 20.25                               |
| HE 180 M                                  | 88.9 | 200                       | 186     | 14.5     | 24       | 15      | 113.3                | 152   | 122     | M24 | 94                     | 98                     | 1.089                               | 12.25                               |
| HE 200 AA <sup>+</sup>                    | 34.6 | 186                       | 200     | 5.5      | 8        | 18      | 44.13                | 170   | 134     | M27 | 96                     | 100                    | 1.130                               | 32.62                               |
| HE 200 A                                  | 42.3 | 190                       | 200     | 6.5      | 10       | 18      | 53.83                | 170   | 134     | M27 | 98                     | 100                    | 1.136                               | 26.89                               |
| HE 200 B                                  | 61.3 | 200                       | 200     | 9        | 15       | 18      | 78.08                | 170   | 134     | M27 | 100                    | 100                    | 1.151                               | 18.78                               |
| HE 200 M                                  | 103  | 220                       | 206     | 15       | 25       | 18      | 131.3                | 170   | 134     | M27 | 106                    | 106                    | 1.203                               | 11.67                               |
| HE 220 AA <sup>+</sup>                    | 40.4 | 205                       | 220     | 6        | 8.5      | 18      | 51.46                | 188   | 152     | M27 | 98                     | 118                    | 1.247                               | 30.87                               |
| HE 220 A                                  | 50.5 | 210                       | 220     | 7        | 11       | 18      | 64.34                | 188   | 152     | M27 | 98                     | 118                    | 1.255                               | 24.85                               |
| HE 220 B                                  | 71.5 | 220                       | 220     | 9.5      | 16       | 18      | 91.04                | 188   | 152     | M27 | 100                    | 118                    | 1.270                               | 17.77                               |
| HE 220 M                                  | 117  | 240                       | 226     | 15.5     | 26       | 18      | 149.4                | 188   | 152     | M27 | 108                    | 124                    | 1.322                               | 11.27                               |
| HE 240 AA <sup>+</sup>                    | 47.4 | 224                       | 240     | 6.5      | 9        | 21      | 60.38                | 206   | 164     | M27 | 104                    | 138                    | 1.359                               | 28.67                               |
| HE 240 A                                  | 60.3 | 230                       | 240     | 7.5      | 12       | 21      | 76.84                | 206   | 164     | M27 | 104                    | 138                    | 1.369                               | 22.70                               |
| HE 240 B                                  | 83.2 | 240                       | 240     | 10       | 17       | 21      | 106.0                | 206   | 164     | M27 | 108                    | 138                    | 1.384                               | 16.63                               |
| HE 240 M                                  | 157  | 270                       | 248     | 18       | 32       | 21      | 199.6                | 206   | 164     | M27 | 116                    | 146                    | 1.460                               | 9.318                               |
| HE 260 AA <sup>+</sup>                    | 54.1 | 244                       | 260     | 6.5      | 9.5      | 24      | 68.97                | 225   | 177     | M27 | 110                    | 158                    | 1.474                               | 27.22                               |
| HE 260 A                                  | 68.2 | 250                       | 260     | 7.5      | 12.5     | 24      | 86.82                | 225   | 177     | M27 | 110                    | 158                    | 1.484                               | 21.77                               |
| HE 260 B                                  | 93.0 | 260                       | 260     | 10       | 17.5     | 24      | 118.4                | 225   | 177     | M27 | 114                    | 158                    | 1.499                               | 16.12                               |
| HE 260 M                                  | 172  | 290                       | 268     | 18       | 32.5     | 24      | 219.6                | 225   | 177     | M27 | 122                    | 166                    | 1.575                               | 9.133                               |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

+ Minimum order: 40t per section and grade or upon agreement.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |                                       |                      |                                    |                                   |   |                                       |                      |                      |   |  |       | Classification<br>ENV 1993-1-1 |      |      |                  |      |      | HISTAR |
|---|-----------------------------------|--|---------------------------------------|----------------------|------------------------------------|-----------------------------------|---|---------------------------------------|----------------------|----------------------|---|--|-------|--------------------------------|------|------|------------------|------|------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                       |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                       |                      |                      | S <sub>s</sub> I <sub>t</sub> I <sub>w</sub> x 10 <sup>-3</sup> |  |       | pure bending y-y               |      |      | pure compression |      |      |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |                                       |                      |                      |   |  |       | S235                           | S355 | S460 | S235             | S355 | S460 |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>ply</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>ply</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup>                               | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235  | S355                           | S460 | S235 | S355             | S460 |      |        |
| HE 100 AA                                 | 12.2                              | 236.5  | 51.98                                 | 58.36                | 3.89                               | 6.15                              | 92.06   | 18.41                                 | 28.44                | 2.43                 | 29.26   | 2.51   | 1.68  | 1                              | 3    | -    | 1                | 3    | -    |        |
| HE 100 A                                  | 16.7                              | 349.2  | 72.76                                 | 83.01                | 4.06                               | 7.56                              | 133.8   | 26.76                                 | 41.14                | 2.51                 | 35.06   | 5.24   | 2.58  | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 100 B                                  | 20.4                              | 449.5  | 89.91                                 | 104.2                | 4.16                               | 9.04                              | 167.3   | 33.45                                 | 51.42                | 2.53                 | 40.06   | 9.25   | 3.38  | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 100 M                                  | 41.8                              | 1143   | 190.4                                 | 235.8                | 4.63                               | 18.04                             | 399.2   | 75.31                                 | 116.3                | 2.74                 | 66.06   | 68.21  | 9.93  | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 120 AA                                 | 14.6                              | 413.4  | 75.85                                 | 84.12                | 4.72                               | 6.90                              | 158.8   | 26.47                                 | 40.62                | 2.93                 | 29.26   | 2.78   | 4.24  | 2                              | 3    | -    | 2                | 3    | -    |        |
| HE 120 A                                  | 19.9                              | 606.2  | 106.3                                 | 119.5                | 4.89                               | 8.46                              | 230.9   | 38.48                                 | 58.85                | 3.02                 | 35.06   | 5.99   | 6.47  | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 120 B                                  | 26.7                              | 864.4  | 144.1                                 | 165.2                | 5.04                               | 10.96                             | 317.5   | 52.92                                 | 80.97                | 3.06                 | 42.56   | 13.84  | 9.41  | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 120 M                                  | 52.1                              | 2018   | 288.2                                 | 350.6                | 5.51                               | 21.15                             | 702.8   | 111.6                                 | 171.6                | 3.25                 | 68.56   | 91.66  | 24.79 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 140 AA                                 | 18.1                              | 719.5  | 112.4                                 | 123.8                | 5.59                               | 7.92                              | 274.8   | 39.26                                 | 59.93                | 3.45                 | 30.36   | 3.54   | 10.21 | 3                              | 3    | -    | 3                | 3    | -    |        |
| HE 140 A                                  | 24.7                              | 1033   | 155.4                                 | 173.5                | 5.73                               | 10.12                             | 389.3   | 55.62                                 | 84.85                | 3.52                 | 36.56   | 8.13   | 15.06 | 1                              | 2    | -    | 1                | 2    | -    |        |
| HE 140 B                                  | 33.7                              | 1509   | 215.6                                 | 245.4                | 5.93                               | 13.08                             | 549.7   | 78.52                                 | 119.8                | 3.58                 | 45.06   | 20.06  | 22.48 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 140 M                                  | 63.2                              | 3291   | 411.4                                 | 493.8                | 6.39                               | 24.46                             | 1144  | 156.8                                 | 240.5                | 3.77                 | 71.06   | 120  | 54.33 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 160 AA                                 | 23.8                              | 1283   | 173.4                                 | 190.4                | 6.50                               | 10.38                             | 478.7   | 59.84                                 | 91.36                | 3.97                 | 36.07   | 6.33   | 23.75 | 3                              | 3    | -    | 3                | 3    | -    |        |
| HE 160 A                                  | 30.4                              | 1673   | 220.1                                 | 245.1                | 6.57                               | 13.21                             | 615.6   | 76.95                                 | 117.6                | 3.98                 | 41.57   | 12.19  | 31.41 | 1                              | 2    | -    | 1                | 2    | -    |        |
| HE 160 B                                  | 42.6                              | 2492   | 311.5                                 | 354.0                | 6.78                               | 17.59                             | 889.2   | 111.2                                 | 170.0                | 4.05                 | 51.57   | 31.24  | 47.94 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 160 M                                  | 76.2                              | 5098   | 566.5                                 | 674.6                | 7.25                               | 30.81                             | 1759  | 211.9                                 | 325.5                | 4.26                 | 77.57   | 162.4  | 108.1 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 180 AA                                 | 28.7                              | 1967   | 235.6                                 | 258.2                | 7.34                               | 12.16                             | 730.0   | 81.11                                 | 123.6                | 4.47                 | 37.57   | 8.33   | 46.36 | 3                              | 3    | -    | 3                | 3    | -    |        |
| HE 180 A                                  | 35.5                              | 2510   | 293.6                                 | 324.9                | 7.45                               | 14.47                             | 924.6   | 102.7                                 | 156.5                | 4.52                 | 42.57   | 14.80  | 60.21 | 1                              | 3    | -    | 1                | 3    | -    |        |
| HE 180 B                                  | 51.2                              | 3831   | 425.7                                 | 481.4                | 7.66                               | 20.24                             | 1363  | 151.4                                 | 231.0                | 4.57                 | 54.07   | 42.16  | 93.75 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 180 M                                  | 88.9                              | 7483   | 748.3                                 | 883.4                | 8.13                               | 34.65                             | 2580  | 277.4                                 | 425.2                | 4.77                 | 80.07   | 203.3  | 199.3 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 200 AA                                 | 34.6                              | 2944   | 316.6                                 | 347.1                | 8.17                               | 15.45                             | 1068  | 106.8                                 | 163.2                | 4.92                 | 42.59   | 12.69  | 84.49 | 3                              | 4    | -    | 3                | 4    | -    |        |
| HE 200 A                                  | 42.3                              | 3692   | 388.6                                 | 429.5                | 8.28                               | 18.08                             | 1336  | 133.6                                 | 203.8                | 4.98                 | 47.59   | 20.98  | 108   | 1                              | 3    | -    | 1                | 3    | -    |        |
| HE 200 B                                  | 61.3                              | 5696   | 569.6                                 | 642.5                | 8.54                               | 24.83                             | 2003  | 200.3                                 | 305.8                | 5.07                 | 60.09   | 59.28  | 171.1 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 200 M                                  | 103                               | 10640  | 967.4                                 | 1135                 | 9.00                               | 41.03                             | 3651  | 354.5                                 | 543.2                | 5.27                 | 86.09   | 259.4  | 346.3 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 220 AA                                 | 40.4                              | 4170   | 406.9                                 | 445.5                | 9.00                               | 17.63                             | 1510  | 137.3                                 | 209.3                | 5.42                 | 44.09   | 15.93  | 145.6 | 3                              | 4    | -    | 3                | 4    | -    |        |
| HE 220 A                                  | 50.5                              | 5410   | 515.2                                 | 568.5                | 9.17                               | 20.67                             | 1955  | 177.7                                 | 270.6                | 5.51                 | 50.09   | 28.46  | 193.3 | 1                              | 3    | -    | 1                | 3    | -    |        |
| HE 220 B                                  | 71.5                              | 8091   | 735.5                                 | 827.0                | 9.43                               | 27.92                             | 2843  | 258.5                                 | 393.9                | 5.59                 | 62.59   | 76.57  | 295.4 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 220 M                                  | 117                               | 14600  | 1217                                  | 1419                 | 9.89                               | 45.31                             | 5012  | 443.5                                 | 678.6                | 5.79                 | 88.59   | 315.3  | 572.7 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 240 AA                                 | 47.4                              | 5835   | 521.0                                 | 570.6                | 9.83                               | 21.54                             | 2077  | 173.1                                 | 264.4                | 5.87                 | 49.10   | 22.98  | 239.6 | 3                              | 4    | -    | 3                | 4    | -    |        |
| HE 240 A                                  | 60.3                              | 7763   | 675.1                                 | 744.6                | 10.05                              | 25.18                             | 2769  | 230.7                                 | 351.7                | 6.00                 | 56.10   | 41.55  | 328.5 | 1                              | 3    | -    | 1                | 3    | -    |        |
| HE 240 B                                  | 83.2                              | 11260  | 938.3                                 | 1053                 | 10.31                              | 33.23                             | 3923  | 326.9                                 | 498.4                | 6.08                 | 68.60   | 102.7  | 486.9 | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 240 M                                  | 157                               | 24290  | 1799                                  | 2117                 | 11.03                              | 60.07                             | 8153  | 657.5                                 | 1006                 | 6.39                 | 106.6   | 627.9  | 1152  | 1                              | 1    | -    | 1                | 1    | -    |        |
| HE 260 AA                                 | 54.1                              | 7981   | 654.1                                 | 714.5                | 10.76                              | 24.75                             | 2788  | 214.5                                 | 327.7                | 6.36                 | 53.62   | 30.31  | 382.6 | 3                              | 4    | -    | 3                | 4    | -    |        |
| HE 260 A                                  | 68.2                              | 10450  | 836.4                                 | 919.8                | 10.97                              | 28.76                             | 3668  | 282.1                                 | 430.2                | 6.50                 | 60.62   | 52.37  | 516.4 | 2                              | 3    | 3    | 2                | 3    | 3    |        |
| HE 260 B                                  | 93.0                              | 14920  | 1148                                  | 1283                 | 11.22                              | 37.59                             | 5135  | 395.0                                 | 602.2                | 6.58                 | 73.12   | 123.8  | 753.7 | 1                              | 1    | 2    | 1                | 1    | 2    |        |
| HE 260 M                                  | 172                               | 31310  | 2159                                  | 2524                 | 11.94                              | 66.89                             | 10450   | 779.7                                 | 1192                 | 6.90                 | 111.1   | 719  | 1728  | 1                              | 1    | 1    | 1                | 1    | 1    |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poutrelles européennes à larges ailes

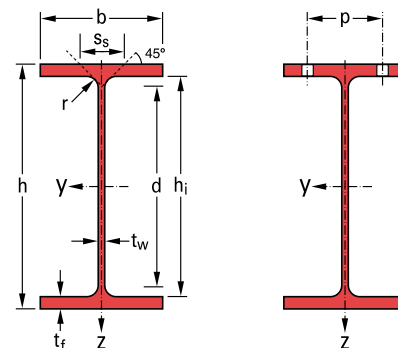
HE A, HE B et HE M 100 - 1000 conformes à l'Euronorme 53-62; HE AA 100 - 1000; HL 920 - 1100

## European wide flange beams

HE A, HE B and HE M 100 - 1000 in accordance with Euronorm 53-62; HE AA 100 - 1000; HL 920 - 1100

## Europäische Breitflanschträger

HE A, HE B und HE M 100 - 1000 gemäß Euronorm 53-62; HE AA 100 - 1000; HL 920 - 1100



| Désignation<br>Designation<br>Bezeichnung | G<br>kg/m | Dimensions<br>Abmessungen |         |          |          |         | A<br>cm <sup>2</sup> | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |            |            | Surface<br>Oberfläche   |                         |
|---|-----------|---------------------------|---------|----------|----------|---------|----------------------|---|---------|-----|------------|------------|-------------------------|-------------------------|
|   |           | h<br>mm                   | b<br>mm | tw<br>mm | tf<br>mm | r<br>mm |                      | h1<br>mm  | d<br>mm | Ø   | Pmin<br>mm | Pmax<br>mm | AL<br>m <sup>2</sup> /m | AG<br>m <sup>2</sup> /t |
| HE 280 AA <sup>+</sup>                    | 61.2      | 264                       | 280     | 7        | 10       | 24      | 78.02                | 244   | 196     | M27 | 110        | 178        | 1.593                   | 26.01                   |
| HE 280 A                                  | 76.4      | 270                       | 280     | 8        | 13       | 24      | 97.26                | 244   | 196     | M27 | 112        | 178        | 1.603                   | 20.99                   |
| HE 280 B                                  | 103       | 280                       | 280     | 10.5     | 18       | 24      | 131.4                | 244   | 196     | M27 | 114        | 178        | 1.618                   | 15.69                   |
| HE 280 M                                  | 189       | 310                       | 288     | 18.5     | 33       | 24      | 240.2                | 244   | 196     | M27 | 122        | 186        | 1.694                   | 8.984                   |
| HE 300 AA <sup>+</sup>                    | 69.8      | 283                       | 300     | 7.5      | 10.5     | 27      | 88.91                | 262   | 208     | M27 | 116        | 198        | 1.705                   | 24.42                   |
| HE 300 A                                  | 88.3      | 290                       | 300     | 8.5      | 14       | 27      | 112.5                | 262   | 208     | M27 | 118        | 198        | 1.717                   | 19.43                   |
| HE 300 B                                  | 117       | 300                       | 300     | 11       | 19       | 27      | 149.1                | 262   | 208     | M27 | 120        | 198        | 1.732                   | 14.80                   |
| HE 300 M                                  | 238       | 340                       | 310     | 21       | 39       | 27      | 303.1                | 262   | 208     | M27 | 132        | 208        | 1.832                   | 7.699                   |
| HE 320 AA <sup>+</sup>                    | 74.2      | 301                       | 300     | 8        | 11       | 27      | 94.58                | 279   | 225     | M27 | 118        | 198        | 1.740                   | 23.43                   |
| HE 320 A                                  | 97.6      | 310                       | 300     | 9        | 15.5     | 27      | 124.4                | 279   | 225     | M27 | 118        | 198        | 1.756                   | 17.98                   |
| HE 320 B                                  | 127       | 320                       | 300     | 11.5     | 20.5     | 27      | 161.3                | 279   | 225     | M27 | 122        | 198        | 1.771                   | 13.98                   |
| HE 320 M                                  | 245       | 359                       | 309     | 21       | 40       | 27      | 312.0                | 279   | 225     | M27 | 132        | 204        | 1.866                   | 7.616                   |
| HE 340 AA <sup>+</sup>                    | 78.9      | 320                       | 300     | 8.5      | 11.5     | 27      | 100.5                | 297   | 243     | M27 | 118        | 198        | 1.777                   | 22.52                   |
| HE 340 A                                  | 105       | 330                       | 300     | 9.5      | 16.5     | 27      | 133.5                | 297   | 243     | M27 | 118        | 198        | 1.795                   | 17.13                   |
| HE 340 B                                  | 134       | 340                       | 300     | 12       | 21.5     | 27      | 170.9                | 297   | 243     | M27 | 122        | 198        | 1.810                   | 13.49                   |
| HE 340 M                                  | 248       | 377                       | 309     | 21       | 40       | 27      | 315.8                | 297   | 243     | M27 | 132        | 204        | 1.902                   | 7.670                   |
| HE 360 AA <sup>+</sup>                    | 83.7      | 339                       | 300     | 9        | 12       | 27      | 106.6                | 315   | 261     | M27 | 118        | 198        | 1.814                   | 21.67                   |
| HE 360 A                                  | 112       | 350                       | 300     | 10       | 17.5     | 27      | 142.8                | 315   | 261     | M27 | 120        | 198        | 1.834                   | 16.36                   |
| HE 360 B                                  | 142       | 360                       | 300     | 12.5     | 22.5     | 27      | 180.6                | 315   | 261     | M27 | 122        | 198        | 1.849                   | 13.04                   |
| HE 360 M                                  | 250       | 395                       | 308     | 21       | 40       | 27      | 318.8                | 315   | 261     | M27 | 132        | 204        | 1.934                   | 7.73                    |
| HE 400 AA <sup>+</sup>                    | 92.4      | 378                       | 300     | 9.5      | 13       | 27      | 117.7                | 352   | 298     | M27 | 118        | 198        | 1.891                   | 20.46                   |
| HE 400 A                                  | 125       | 390                       | 300     | 11       | 19       | 27      | 159.0                | 352   | 298     | M27 | 120        | 198        | 1.912                   | 15.32                   |
| HE 400 B                                  | 155       | 400                       | 300     | 13.5     | 24       | 27      | 197.8                | 352   | 298     | M27 | 124        | 198        | 1.927                   | 12.41                   |
| HE 400 M                                  | 256       | 432                       | 307     | 21       | 40       | 27      | 325.8                | 352   | 298     | M27 | 132        | 202        | 2.004                   | 7.835                   |
| HE 450 AA <sup>+</sup>                    | 99.7      | 425                       | 300     | 10       | 13.5     | 27      | 127.1                | 398   | 344     | M27 | 120        | 198        | 1.984                   | 19.89                   |
| HE 450 A                                  | 140       | 440                       | 300     | 11.5     | 21       | 27      | 178.0                | 398   | 344     | M27 | 122        | 198        | 2.011                   | 14.39                   |
| HE 450 B                                  | 171       | 450                       | 300     | 14       | 26       | 27      | 218.0                | 398   | 344     | M27 | 124        | 198        | 2.026                   | 11.84                   |
| HE 450 M                                  | 263       | 478                       | 307     | 21       | 40       | 27      | 335.4                | 398   | 344     | M27 | 132        | 202        | 2.096                   | 7.959                   |
| HE 500 AA <sup>+</sup>                    | 107       | 472                       | 300     | 10.5     | 14       | 27      | 136.9                | 444   | 390     | M27 | 120        | 198        | 2.077                   | 19.33                   |
| HE 500 A                                  | 155       | 490                       | 300     | 12       | 23       | 27      | 197.5                | 444   | 390     | M27 | 122        | 198        | 2.110                   | 13.60                   |
| HE 500 B                                  | 187       | 500                       | 300     | 14.5     | 28       | 27      | 238.6                | 444   | 390     | M27 | 124        | 198        | 2.125                   | 11.34                   |
| HE 500 M                                  | 270       | 524                       | 306     | 21       | 40       | 27      | 344.3                | 444   | 390     | M27 | 132        | 202        | 2.184                   | 8.079                   |
| HE 550 AA <sup>+</sup>                    | 120       | 522                       | 300     | 11.5     | 15       | 27      | 152.8                | 492   | 438     | M27 | 122        | 198        | 2.175                   | 18.13                   |
| HE 550 A                                  | 166       | 540                       | 300     | 12.5     | 24       | 27      | 211.8                | 492   | 438     | M27 | 122        | 198        | 2.209                   | 13.29                   |
| HE 550 B                                  | 199       | 550                       | 300     | 15       | 29       | 27      | 254.1                | 492   | 438     | M27 | 124        | 198        | 2.224                   | 11.15                   |
| HE 550 M                                  | 278       | 572                       | 306     | 21       | 40       | 27      | 354.4                | 492   | 438     | M27 | 132        | 202        | 2.280                   | 8.195                   |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

+ Minimum order: 40t per section and grade or upon agreement.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.

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| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |                                       |                      |                                    |                                   |   |  |                      |                      |   |  |      | Classification<br>ENV 1993-1-1 |      |      |                  |      |      | HISTAR |
|---|-----------------------------------|--|---------------------------------------|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|---|--|------|--------------------------------|------|------|------------------|------|------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                       |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      | S <sub>s</sub> I <sub>t</sub> I <sub>w</sub> x 10 <sup>-3</sup> |  |      | pure bending y-y               |      |      | pure compression |      |      |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |   |  |      | S235                           | S355 | S460 | S235             | S355 | S460 |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>ply</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup>                               | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235 | S355                           | S460 | S235 | S355             | S460 |      |        |
| HE 280 AA    61.2                         | 10560                             | 799.8  | 873.1                                 | 11.63                | 27.52                              | 3664                              | 261.7   | 399.4                                  | 6.85                 | 55.12                | 36.22   | 590.1  | 3    | 4                              | -    | 3    | 4                | -    |      |        |
| HE 280 A    76.4                          | 13670                             | 1013   | 1112                                  | 11.86                | 31.74                              | 4763                              | 340.2   | 518.1                                  | 7.00                 | 62.12                | 62.10   | 785.4  | 2    | 3                              | 4    | 2    | 3                | 4    |      |        |
| HE 280 B    103                           | 19270                             | 1376   | 1534                                  | 12.11                | 41.09                              | 6595                              | 471.0   | 717.6                                  | 7.09                 | 74.62                | 143.7   | 1130   | 1    | 1                              | 2    | 1    | 1                | 2    |      |        |
| HE 280 M    189                           | 39550                             | 2551   | 2966                                  | 12.83                | 72.03                              | 13160                             | 914.1   | 1397                                   | 7.40                 | 112.6                | 807.3   | 2520   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 300 AA    69.8                         | 13800                             | 975.6  | 1065                                  | 12.46                | 32.37                              | 4734                              | 315.6   | 482.3                                  | 7.30                 | 60.13                | 49.35   | 877.2  | 3    | 4                              | -    | 3    | 4                | -    |      |        |
| HE 300 A    88.3                          | 18260                             | 1260   | 1383                                  | 12.74                | 37.28                              | 6310                              | 420.6   | 641.2                                  | 7.49                 | 68.13                | 85.17   | 1200   | 2    | 3                              | 3    | 2    | 3                | 3    |      |        |
| HE 300 B    117                           | 25170                             | 1678   | 1869                                  | 12.99                | 47.43                              | 8563                              | 570.9   | 870.1                                  | 7.58                 | 80.63                | 185   | 1688   | 1    | 1                              | 3    | 1    | 1                | 3    |      |        |
| HE 300 M    238                           | 59200                             | 3482   | 4078                                  | 13.98                | 90.53                              | 19400                             | 1252  | 1913                                   | 8.00                 | 130.6                | 1408  | 4386   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 320 AA    74.2                         | 16450                             | 1093   | 1196                                  | 13.19                | 35.40                              | 4959                              | 330.6   | 505.7                                  | 7.24                 | 61.63                | 55.87   | 1041   | 3    | 4                              | -    | 3    | 4                | -    |      |        |
| HE 320 A    97.6                          | 22930                             | 1479   | 1628                                  | 13.58                | 41.13                              | 6985                              | 465.7   | 709.7                                  | 7.49                 | 71.63                | 108   | 1512   | 1    | 3                              | 3    | 1    | 3                | 3    |      |        |
| HE 320 B    127                           | 30820                             | 1926   | 2149                                  | 13.82                | 51.77                              | 9239                              | 615.9   | 939.1                                  | 7.57                 | 84.13                | 225.1   | 2069   | 1    | 1                              | 2    | 1    | 1                | 2    |      |        |
| HE 320 M    245                           | 68130                             | 3796   | 4435                                  | 14.78                | 94.85                              | 19710                             | 1276  | 1951                                   | 7.95                 | 132.6                | 1501  | 5004   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 340 AA    78.9                         | 19550                             | 1222   | 1341                                  | 13.95                | 38.69                              | 5185                              | 345.6   | 529.3                                  | 7.18                 | 63.13                | 63.07   | 1231   | 3    | 4                              | -    | 3    | 4                | -    |      |        |
| HE 340 A    105                           | 27690                             | 1678   | 1850                                  | 14.40                | 44.95                              | 7436                              | 495.7   | 755.9                                  | 7.46                 | 74.13                | 127.2   | 1824   | 1    | 3                              | 3    | 1    | 3                | 3    |      |        |
| HE 340 B    134                           | 36660                             | 2156   | 2408                                  | 14.65                | 56.09                              | 9690                              | 646.0   | 985.7                                  | 7.53                 | 86.63                | 257.2   | 2454   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 340 M    248                           | 76370                             | 4052   | 4718                                  | 15.55                | 98.63                              | 19710                             | 1276  | 1953                                   | 7.90                 | 132.6                | 1506  | 5584   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 360 AA    83.7                         | 23040                             | 1359   | 1495                                  | 14.70                | 42.17                              | 5410                              | 360.7   | 553.0                                  | 7.12                 | 64.63                | 70.99   | 1444   | 3    | 4                              | -    | 3    | 4                | -    |      |        |
| HE 360 A    112                           | 33090                             | 1891   | 2088                                  | 15.22                | 48.96                              | 7887                              | 525.8   | 802.3                                  | 7.43                 | 76.63                | 148.8   | 2177   | 1    | 2                              | 3    | 1    | 2                | 3    |      |        |
| HE 360 B    142                           | 43190                             | 2400   | 2683                                  | 15.46                | 60.60                              | 10140                             | 676.1   | 1032                                   | 7.49                 | 89.13                | 292.5   | 2883   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 360 M    250                           | 84870                             | 4297   | 4989                                  | 16.32                | 102.4                              | 19520                             | 1268  | 1942                                   | 7.83                 | 132.6                | 1507  | 6137   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 400 AA    92.4                         | 31250                             | 1654   | 1824                                  | 16.30                | 47.95                              | 5861                              | 390.8   | 599.7                                  | 7.06                 | 67.13                | 84.69   | 1948   | 3    | 3                              | -    | 3    | 3                | -    |      |        |
| HE 400 A    125                           | 45070                             | 2311   | 2562                                  | 16.84                | 57.33                              | 8564                              | 570.9   | 872.9                                  | 7.34                 | 80.63                | 189   | 2942   | 1    | 1                              | 3    | 1    | 2                | 3    |      |        |
| HE 400 B    155                           | 57680                             | 2884   | 3232                                  | 17.08                | 69.98                              | 10820                             | 721.3   | 1104                                   | 7.40                 | 93.13                | 355.7   | 3817   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 400 M    256                           | 104100                            | 4820   | 5571                                  | 17.88                | 110.2                              | 19340                             | 1260  | 1934                                   | 7.70                 | 132.6                | 1515  | 7410   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 450 AA    99.7                         | 41890                             | 1971   | 2183                                  | 18.16                | 54.70                              | 6088                              | 405.8   | 624.4                                  | 6.92                 | 68.63                | 95.61   | 2572   | 3    | 3                              | -    | 3    | 4                | -    |      |        |
| HE 450 A    140                           | 63720                             | 2896   | 3216                                  | 18.92                | 65.78                              | 9465                              | 631.0   | 965.5                                  | 7.29                 | 85.13                | 243.8   | 4148   | 1    | 1                              | 1    | 1    | 2                | 3    |      |        |
| HE 450 B    171                           | 79890                             | 3551   | 3982                                  | 19.14                | 79.66                              | 11720                             | 781.4   | 1198                                   | 7.33                 | 97.63                | 440.5   | 5258   | 1    | 1                              | 1    | 1    | 1                | 2    |      |        |
| HE 450 M    263                           | 131500                            | 5501   | 6331                                  | 19.80                | 119.8                              | 19340                             | 1260  | 1939                                   | 7.59                 | 132.6                | 1529  | 9251   | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 500 AA    107                          | 54640                             | 2315   | 2576                                  | 19.98                | 61.91                              | 6314                              | 420.9   | 649.3                                  | 6.79                 | 70.13                | 107.7   | 3304   | 2    | 3                              | -    | 2    | 4                | -    |      |        |
| HE 500 A    155                           | 86970                             | 3550   | 3949                                  | 20.98                | 74.72                              | 10370                             | 691.1   | 1059                                   | 7.24                 | 89.63                | 309.3   | 5643   | 1    | 1                              | 1    | 1    | 3                | 4    |      |        |
| HE 500 B    187                           | 107200                            | 4287   | 4815                                  | 21.19                | 89.82                              | 12620                             | 841.6   | 1292                                   | 7.27                 | 102.1                | 538.4   | 7018   | 1    | 1                              | 1    | 1    | 2                | 2    |      |        |
| HE 500 M    270                           | 161900                            | 6180   | 7094                                  | 21.69                | 129.5                              | 19150                             | 1252  | 1932                                   | 7.46                 | 132.6                | 1539  | 11190  | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |
| HE 550 AA    120                          | 72870                             | 2792   | 3128                                  | 21.84                | 72.66                              | 6767                              | 451.1   | 698.6                                  | 6.65                 | 73.13                | 133.7   | 4338   | 1    | 3                              | -    | 3    | 4                | -    |      |        |
| HE 550 A    166                           | 111900                            | 4146   | 4622                                  | 22.99                | 83.72                              | 10820                             | 721.3   | 1107                                   | 7.15                 | 92.13                | 351.5   | 7189   | 1    | 1                              | 1    | 2    | 4                | 4    |      |        |
| HE 550 B    199                           | 136700                            | 4971   | 5591                                  | 23.20                | 100.1                              | 13080                             | 871.8   | 1341                                   | 7.17                 | 104.6                | 600.3   | 8856   | 1    | 1                              | 1    | 1    | 2                | 3    |      |        |
| HE 550 M    278                           | 198000                            | 6923   | 7933                                  | 23.64                | 139.6                              | 19160                             | 1252  | 1937                                   | 7.35                 | 132.6                | 1554  | 13520  | 1    | 1                              | 1    | 1    | 1                | 1    |      |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poutrelles européennes à larges ailes

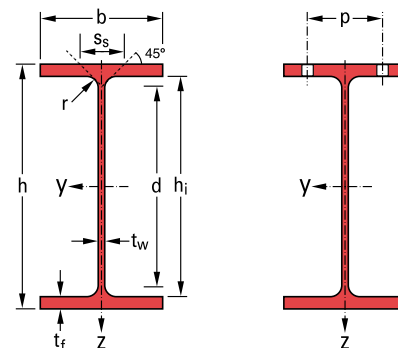
HE A, HE B et HE M 100 - 1000 conformes à l'Euronorme 53-62; HE AA 100 - 1000; HL 920 - 1100

## European wide flange beams

HE A, HE B and HE M 100 - 1000 in accordance with Euronorm 53-62; HE AA 100 - 1000; HL 920 - 1100

## Europäische Breitflanschträger

HE A, HE B und HE M 100 - 1000 gemäß Euronorm 53-62; HE AA 100 - 1000; HL 920 - 1100



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |     |                |                |    |                 | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |     |     |                  |                  | Surface<br>Oberfläche |                   |
|---|------|---------------------------|-----|----------------|----------------|----|-----------------|---|-----|-----|------------------|------------------|-----------------------|-------------------|
| G   | kg/m | h                         | b   | t <sub>w</sub> | t <sub>f</sub> | r  | A               | h <sub>i</sub>  | d   | Ø   | p <sub>min</sub> | p <sub>max</sub> | A <sub>L</sub>        | A <sub>G</sub>    |
| mm  |      | mm                        | mm  | mm             | mm             | mm | cm <sup>2</sup> | mm  | mm  |     | mm               | mm               | m <sup>2</sup> /m     | m <sup>2</sup> /t |
| HE 600 AA <sup>+</sup>                    | 129  | 571                       | 300 | 12             | 15.5           | 27 | 164.1           | 540   | 486 | M27 | 122              | 198              | 2.272                 | 17.64             |
| HE 600 A                                  | 178  | 590                       | 300 | 13             | 25             | 27 | 226.5           | 540   | 486 | M27 | 122              | 198              | 2.308                 | 12.98             |
| HE 600 B                                  | 212  | 600                       | 300 | 15.5           | 30             | 27 | 270.0           | 540   | 486 | M27 | 126              | 198              | 2.323                 | 10.96             |
| HE 600 M                                  | 285  | 620                       | 305 | 21             | 40             | 27 | 363.7           | 540   | 486 | M27 | 132              | 200              | 2.372                 | 8.308             |
| HE 600 x 337 <sup>+</sup>                 | 337  | 632                       | 310 | 25.5           | 46             | 27 | 429.2           | 540   | 486 | M27 | 138              | 202              | 2.407                 | 7.144             |
| HE 600 x 399 <sup>+</sup>                 | 399  | 648                       | 315 | 30             | 54             | 27 | 508.5           | 540   | 486 | M27 | 142              | 208              | 2.450                 | 6.137             |
| HE 650 AA <sup>+</sup>                    | 138  | 620                       | 300 | 12.5           | 16             | 27 | 175.8           | 588   | 534 | M27 | 122              | 198              | 2.369                 | 17.17             |
| HE 650 A                                  | 190  | 640                       | 300 | 13.5           | 26             | 27 | 241.6           | 588   | 534 | M27 | 124              | 198              | 2.407                 | 12.69             |
| HE 650 B                                  | 225  | 650                       | 300 | 16             | 31             | 27 | 286.3           | 588   | 534 | M27 | 126              | 198              | 2.422                 | 10.77             |
| HE 650 M                                  | 293  | 668                       | 305 | 21             | 40             | 27 | 373.7           | 588   | 534 | M27 | 132              | 200              | 2.468                 | 8.411             |
| HE 650 x 343 <sup>+</sup>                 | 343  | 680                       | 309 | 25             | 46             | 27 | 437.5           | 588   | 534 | M27 | 138              | 202              | 2.500                 | 7.278             |
| HE 650 x 407 <sup>+</sup>                 | 407  | 696                       | 314 | 29.5           | 54             | 27 | 518.8           | 588   | 534 | M27 | 142              | 206              | 2.543                 | 6.243             |
| HE 700 AA <sup>+</sup>                    | 150  | 670                       | 300 | 13             | 17             | 27 | 190.9           | 636   | 582 | M27 | 122              | 198              | 2.468                 | 16.46             |
| HE 700 A                                  | 204  | 690                       | 300 | 14.5           | 27             | 27 | 260.5           | 636   | 582 | M27 | 124              | 198              | 2.505                 | 12.25             |
| HE 700 B                                  | 241  | 700                       | 300 | 17             | 32             | 27 | 306.4           | 636   | 582 | M27 | 126              | 198              | 2.520                 | 10.48             |
| HE 700 M                                  | 301  | 716                       | 304 | 21             | 40             | 27 | 383.0           | 636   | 582 | M27 | 132              | 200              | 2.560                 | 8.513             |
| HE 700 x 352 <sup>+</sup>                 | 352  | 728                       | 308 | 25             | 46             | 27 | 448.6           | 636   | 582 | M27 | 138              | 200              | 2.592                 | 7.359             |
| HE 700 x 418 <sup>+</sup>                 | 418  | 744                       | 313 | 29.5           | 54             | 27 | 531.9           | 636   | 582 | M27 | 142              | 206              | 2.635                 | 6.310             |
| HE 800 AA <sup>+</sup>                    | 172  | 770                       | 300 | 14             | 18             | 30 | 218.5           | 734   | 674 | M27 | 130              | 198              | 2.660                 | 15.51             |
| HE 800 A                                  | 224  | 790                       | 300 | 15             | 28             | 30 | 285.8           | 734   | 674 | M27 | 130              | 198              | 2.698                 | 12.03             |
| HE 800 B                                  | 262  | 800                       | 300 | 17.5           | 33             | 30 | 334.2           | 734   | 674 | M27 | 134              | 198              | 2.713                 | 10.34             |
| HE 800 M                                  | 317  | 814                       | 303 | 21             | 40             | 30 | 404.3           | 734   | 674 | M27 | 138              | 198              | 2.746                 | 8.655             |
| HE 800 x 373 <sup>+</sup>                 | 373  | 826                       | 308 | 25             | 46             | 30 | 474.6           | 734   | 674 | M27 | 144              | 200              | 2.782                 | 7.469             |
| HE 800 x 444 <sup>+</sup>                 | 444  | 842                       | 313 | 30             | 54             | 30 | 566.0           | 734   | 674 | M27 | 148              | 206              | 2.824                 | 6.357             |
| HE 900 AA <sup>+</sup>                    | 198  | 870                       | 300 | 15             | 20             | 30 | 252.2           | 830   | 770 | M27 | 130              | 198              | 2.858                 | 14.44             |
| HE 900 A                                  | 252  | 890                       | 300 | 16             | 30             | 30 | 320.5           | 830   | 770 | M27 | 132              | 198              | 2.896                 | 11.51             |
| HE 900 B                                  | 291  | 900                       | 300 | 18.5           | 35             | 30 | 371.3           | 830   | 770 | M27 | 134              | 198              | 2.911                 | 9.990             |
| HE 900 M                                  | 333  | 910                       | 302 | 21             | 40             | 30 | 423.6           | 830   | 770 | M27 | 138              | 198              | 2.934                 | 8.824             |
| HE 900 x 391 <sup>+</sup>                 | 391  | 922                       | 307 | 25             | 46             | 30 | 497.7           | 830   | 770 | M27 | 144              | 200              | 2.970                 | 7.604             |
| HE 900 x 466 <sup>+</sup>                 | 466  | 938                       | 312 | 30             | 54             | 30 | 593.7           | 830   | 770 | M27 | 148              | 204              | 3.012                 | 6.464             |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

+ Minimum order: 40t per section and grade or upon agreement.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |             | Classification<br>ENV 1993-1-1 |             |             |                     |             |             | HISTAR |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|-----------------------------------|--|-------------|--------------------------------|-------------|-------------|---------------------|-------------|-------------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      |                                   |  |             | pure<br>bending y-y            |             |             | pure<br>compression |             |             |        |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |             | \$S_{235}\$                    | \$S_{355}\$ | \$S_{460}\$ | \$S_{235}\$         | \$S_{355}\$ | \$S_{460}\$ |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | \$S_{235}\$ | \$S_{355}\$                    | \$S_{460}\$ | \$S_{235}\$ | \$S_{355}\$         | \$S_{460}\$ |             |        |
| HE 600 AA                                 | 129                               | 91900  | 3218                                   | 3623                 | 23.66                              | 81.29                             | 6993  | 466.2                                  | 724.5                | 6.53                 | 74.63                             | 149.8  | 5381        | 1                              | 3           | -           | 3                   | 4           | -           |        |
| HE 600 A                                  | 178                               | 141200   | 4787                                   | 5350                 | 24.97                              | 93.21                             | 11270   | 751.4                                  | 1156                 | 7.05                 | 94.63                             | 397.8  | 8978        | 1                              | 1           | 1           | 2                   | 4           | 4           | HI     |
| HE 600 B                                  | 212                               | 171000   | 5701                                   | 6425                 | 25.17                              | 110.8                             | 13530   | 902.0                                  | 1391                 | 7.08                 | 107.1                             | 667.2  | 10970       | 1                              | 1           | 1           | 1                   | 3           | 4           | HI     |
| HE 600 M                                  | 285                               | 237400   | 7660                                   | 8772                 | 25.55                              | 149.7                             | 18980   | 1244                                   | 1930                 | 7.22                 | 132.6                             | 1564   | 15910       | 1                              | 1           | 1           | 1                   | 1           | 1           | HI     |
| HE 600 x 337                              | 337                               | 283200   | 8961                                   | 10380                | 25.69                              | 180.5                             | 22940   | 1480                                   | 2310                 | 7.31                 | 149.1                             | 2451   | 19610       | 1                              | 1           | 1           | 1                   | 1           | 1           | HI     |
| HE 600 x 399                              | 399                               | 344600   | 10640                                  | 12460                | 26.03                              | 213.6                             | 28280   | 1796                                   | 2814                 | 7.46                 | 169.6                             | 3966   | 24810       | 1                              | 1           | 1           | 1                   | 1           | 1           | HI     |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| HE 650 AA                                 | 138                               | 113900   | 3676                                   | 4160                 | 25.46                              | 90.40                             | 7221  | 481.4                                  | 750.7                | 6.41                 | 76.13                             | 167.5  | 6567        | 1                              | 3           | -           | 4                   | 4           | -           |        |
| HE 650 A                                  | 190                               | 175200   | 5474                                   | 6136                 | 26.93                              | 103.2                             | 11720   | 781.6                                  | 1205                 | 6.97                 | 97.13                             | 448.3  | 11030       | 1                              | 1           | 1           | 3                   | 4           | 4           | HI     |
| HE 650 B                                  | 225                               | 210600   | 6480                                   | 7320                 | 27.12                              | 122.0                             | 13980   | 932.3                                  | 1441                 | 6.99                 | 109.6                             | 739.2  | 13360       | 1                              | 1           | 1           | 2                   | 3           | 4           | HI     |
| HE 650 M                                  | 293                               | 281700   | 8433                                   | 9657                 | 27.45                              | 159.7                             | 18980   | 1245                                   | 1936                 | 7.13                 | 132.6                             | 1579   | 18650       | 1                              | 1           | 1           | 1                   | 1           | 2           | HI     |
| HE 650 x 343                              | 343                               | 333700   | 9815                                   | 11350                | 27.62                              | 189.6                             | 22720   | 1470                                   | 2300                 | 7.21                 | 148.6                             | 2442   | 22730       | 1                              | 1           | 1           | 1                   | 1           | 1           | HI     |
| HE 650 x 407                              | 407                               | 405400   | 11650                                  | 13620                | 27.95                              | 224.8                             | 28020   | 1785                                   | 2803                 | 7.35                 | 169.1                             | 3958   | 28710       | 1                              | 1           | 1           | 1                   | 1           | 1           | HI     |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| HE 700 AA                                 | 150                               | 142700   | 4260                                   | 4840                 | 27.34                              | 100.3                             | 7673  | 511.5                                  | 799.7                | 6.34                 | 78.63                             | 195.2  | 8155        | 1                              | 2           | -           | 4                   | 4           | -           |        |
| HE 700 A                                  | 204                               | 215300   | 6241                                   | 7032                 | 28.75                              | 117.0                             | 12180   | 811.9                                  | 1257                 | 6.84                 | 100.1                             | 513.9  | 13350       | 1                              | 1           | 1           | 3                   | 4           | 4           | HI     |
| HE 700 B                                  | 241                               | 256900   | 7340                                   | 8327                 | 28.96                              | 137.1                             | 14440   | 962.7                                  | 1495                 | 6.87                 | 112.6                             | 830.9  | 16060       | 1                              | 1           | 1           | 2                   | 4           | 4           | HI     |
| HE 700 M                                  | 301                               | 329300   | 9198                                   | 10540                | 29.32                              | 169.8                             | 18800   | 1237                                   | 1929                 | 7.01                 | 132.6                             | 1589   | 21400       | 1                              | 1           | 1           | 1                   | 2           | 3           | HI     |
| HE 700 x 352                              | 352                               | 389700   | 10710                                  | 12390                | 29.47                              | 201.6                             | 22510   | 1461                                   | 2293                 | 7.08                 | 148.6                             | 2461   | 26050       | 1                              | 1           | 1           | 1                   | 1           | 1           | HI     |
| HE 700 x 418                              | 418                               | 472500   | 12700                                  | 14840                | 29.80                              | 239.0                             | 27760   | 1774                                   | 2797                 | 7.22                 | 169.1                             | 3989   | 32850       | 1                              | 1           | 1           | 1                   | 1           | 1           | HI     |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| HE 800 AA                                 | 172                               | 208900   | 5426                                   | 6225                 | 30.92                              | 123.8                             | 8134  | 542.2                                  | 856.6                | 6.10                 | 85.15                             | 256.8  | 11450       | 1                              | 2           | -           | 4                   | 4           | -           |        |
| HE 800 A                                  | 224                               | 303400   | 7682                                   | 8699                 | 32.58                              | 138.8                             | 12640   | 842.6                                  | 1312                 | 6.65                 | 106.1                             | 596.9  | 18290       | 1                              | 1           | 1           | 4                   | 4           | 4           | HI     |
| HE 800 B                                  | 262                               | 359100   | 8977                                   | 10230                | 32.78                              | 161.8                             | 14900   | 993.6                                  | 1553                 | 6.68                 | 118.6                             | 946  | 21840       | 1                              | 1           | 1           | 3                   | 4           | 4           | HI     |
| HE 800 M                                  | 317                               | 442600   | 10870                                  | 12490                | 33.09                              | 194.3                             | 18630   | 1230                                   | 1930                 | 6.79                 | 136.1                             | 1646   | 27780       | 1                              | 1           | 1           | 1                   | 3           | 4           | HI     |
| HE 800 x 373                              | 373                               | 523900   | 12690                                  | 14700                | 33.23                              | 230.3                             | 22530   | 1463                                   | 2311                 | 6.89                 | 152.1                             | 2554   | 34070       | 1                              | 1           | 1           | 1                   | 2           | 2           | HI     |
| HE 800 x 444                              | 444                               | 634500   | 15070                                  | 17640                | 33.48                              | 276.5                             | 27800   | 1776                                   | 2827                 | 7.01                 | 173.1                             | 4180   | 42840       | 1                              | 1           | 1           | 1                   | 1           | 1           | HI     |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |             |                                |             |             |                     |             |             |        |
| HE 900 AA                                 | 198                               | 301100   | 6923                                   | 7999                 | 34.55                              | 147.2                             | 9041  | 602.8                                  | 957.7                | 5.99                 | 90.15                             | 334.9  | 16260       | 1                              | 1           | -           | 4                   | 4           | -           |        |
| HE 900 A                                  | 252                               | 422100   | 9485                                   | 10810                | 36.29                              | 163.3                             | 13550   | 903.2                                  | 1414                 | 6.50                 | 111.1                             | 736.8  | 24960       | 1                              | 1           | 1           | 4                   | 4           | 4           | HI     |
| HE 900 B                                  | 291                               | 494100   | 10980                                  | 12580                | 36.48                              | 188.8                             | 15820   | 1054                                   | 1658                 | 6.53                 | 123.6                             | 1137   | 29460       | 1                              | 1           | 1           | 3                   | 4           | 4           | HI     |
| HE 900 M                                  | 333                               | 570400   | 12540                                  | 14440                | 36.70                              | 214.4                             | 18450   | 1222                                   | 1929                 | 6.60                 | 136.1                             | 1671   | 34750       | 1                              | 1           | 1           | 2                   | 4           | 4           | HI     |
| HE 900 x 391                              | 391                               | 674300   | 14630                                  | 16990                | 36.81                              | 254.3                             | 22320   | 1454                                   | 2312                 | 6.70                 | 152.1                             | 2597   | 42560       | 1                              | 1           | 1           | 1                   | 3           | 4           | HI     |
| HE 900 x 466                              | 466                               | 814900   | 17380                                  | 20380                | 37.05                              | 305.3                             | 27560   | 1767                                   | 2832                 | 6.81                 | 173.1                             | 4256   | 53400       | 1                              | 1           | 1           | 1                   | 1           | 2           | HI     |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.

## Poutrelles européennes à larges ailes

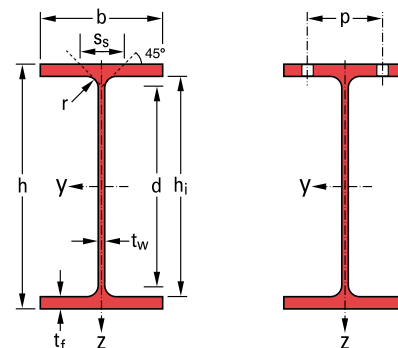
HE A, HE B et HE M 100 - 1000 conformes à l'Euronorme 53-62; HE AA 100 - 1000; HL 920 - 1100

## European wide flange beams

HE A, HE B and HE M 100 - 1000 in accordance with Euronorm 53-62; HE AA 100 - 1000; HL 920 - 1100

## Europäische Breitflanschträger

HE A, HE B und HE M 100 - 1000 gemäß Euronorm 53-62; HE AA 100 - 1000; HL 920 - 1100



| Désignation<br>Designation<br>Bezeichnung |     | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|-----|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |     | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| HE 1000 AA <sup>+</sup>                   | 222 | 970                       | 300     | 16                   | 21                   | 30      | 282.2                | 928   | 868     | M27 | 132                    | 198                    | 3.056                               | 13.80                               |
| HE 1000 A                                 | 272 | 990                       | 300     | 16.5                 | 31                   | 30      | 346.8                | 928   | 868     | M27 | 132                    | 198                    | 3.095                               | 11.37                               |
| HE 1000 B                                 | 314 | 1000                      | 300     | 19                   | 36                   | 30      | 400.0                | 928   | 868     | M27 | 134                    | 198                    | 3.110                               | 9.905                               |
| HE 1000 M                                 | 349 | 1008                      | 302     | 21                   | 40                   | 30      | 444.2                | 928   | 868     | M27 | 138                    | 198                    | 3.130                               | 8.978                               |
| HE 1000 x 393 <sup>+</sup>                | 393 | 1016                      | 303     | 24.4                 | 43.9                 | 30      | 500.2                | 928   | 868     | M27 | 144                    | 196                    | 3.144                               | 8.006                               |
| HE 1000 x 409 <sup>+</sup>                | 409 | 1020                      | 306     | 25                   | 46                   | 30      | 521.2                | 928   | 868     | M27 | 144                    | 198                    | 3.162                               | 7.729                               |
| HE 1000 x 488 <sup>+</sup>                | 488 | 1036                      | 311     | 30                   | 54                   | 30      | 622.0                | 928   | 868     | M27 | 148                    | 204                    | 3.204                               | 6.563                               |
| HE 1000 x 579 <sup>+</sup>                | 579 | 1056                      | 316     | 35                   | 64                   | 30      | 737.0                | 928   | 868     | M27 | 154                    | 208                    | 3.254                               | 5.625                               |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| HL 920 x 342 <sup>+</sup>                 | 342 | 912                       | 418     | 19.3                 | 32.0                 | 24      | 436.1                | 848   | 800     | M27 | 126                    | 312                    | 3.42                                | 9.98                                |
| HL 920 x 365 <sup>+</sup>                 | 365 | 916                       | 419     | 20.3                 | 34.3                 | 24      | 464.4                | 847.4   | 799.4   | M27 | 128                    | 314                    | 3.43                                | 9.40                                |
| HL 920 x 387 <sup>+</sup>                 | 387 | 921                       | 420     | 21.3                 | 36.6                 | 24      | 493.0                | 847.8   | 799.8   | M27 | 128                    | 314                    | 3.44                                | 8.88                                |
| HL 920 x 417 <sup>+</sup>                 | 417 | 928                       | 422     | 22.5                 | 39.9                 | 24      | 532.5                | 848.2   | 800.2   | M27 | 130                    | 316                    | 3.46                                | 8.27                                |
| HL 920 x 446 <sup>+</sup>                 | 446 | 933                       | 423     | 24.0                 | 42.7                 | 24      | 569.6                | 847.6   | 799.6   | M27 | 130                    | 318                    | 3.47                                | 7.76                                |
| HL 920 x 488 <sup>+</sup>                 | 488 | 942                       | 422     | 25.9                 | 47.0                 | 24      | 621.3                | 848   | 800     | M27 | 132                    | 316                    | 3.48                                | 7.13                                |
| HL 920 x 534 <sup>+</sup>                 | 534 | 950                       | 425     | 28.4                 | 51.1                 | 24      | 680.1                | 847.8   | 799.8   | M27 | 136                    | 320                    | 3.50                                | 6.56                                |
| HL 920 x 585 <sup>+</sup>                 | 585 | 960                       | 427     | 31.0                 | 55.9                 | 24      | 745.3                | 848.2   | 800.2   | M27 | 138                    | 322                    | 3.52                                | 6.02                                |
| HL 920 x 653 <sup>+</sup>                 | 653 | 972                       | 431     | 34.5                 | 62.0                 | 24      | 831.9                | 848   | 800     | M27 | 144                    | 320                    | 3.56                                | 5.45                                |
| HL 920 x 784 <sup>+</sup>                 | 784 | 996                       | 437     | 40.9                 | 73.9                 | 24      | 997.7                | 848.2   | 800.2   | M27 | 152                    | 326                    | 3.62                                | 4.62                                |
| HL 920 x 967 <sup>+</sup>                 | 967 | 1028                      | 446     | 50.0                 | 89.9                 | 24      | 1231                 | 848.2   | 800.2   | M27 | 160                    | 334                    | 3.70                                | 3.83                                |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| HL 1000 x 296 <sup>+</sup>                | 296 | 982                       | 400     | 16.5                 | 27                   | 30      | 376.8                | 928   | 868     | M27 | 134                    | 294                    | 3.479                               | 11.76                               |
| HL 1000 A <sup>+</sup>                    | 321 | 990                       | 400     | 16.5                 | 31                   | 30      | 408.8                | 928   | 868     | M27 | 134                    | 294                    | 3.495                               | 10.89                               |
| HL 1000 B <sup>+</sup>                    | 371 | 1000                      | 400     | 19                   | 36                   | 30      | 472.0                | 928   | 868     | M27 | 136                    | 294                    | 3.510                               | 9.474                               |
| HL 1000 M <sup>+</sup>                    | 412 | 1008                      | 402     | 21                   | 40                   | 30      | 524.2                | 928   | 868     | M27 | 142                    | 290                    | 3.530                               | 8.580                               |
| HL 1000 x 477 <sup>+</sup>                | 477 | 1018                      | 404     | 25.5                 | 45                   | 30      | 608.0                | 928   | 868     | M27 | 146                    | 292                    | 3.549                               | 7.437                               |
| HL 1000 x 554 <sup>+</sup>                | 554 | 1032                      | 408     | 29.5                 | 52                   | 30      | 705.8                | 928   | 868     | M27 | 150                    | 296                    | 3.585                               | 6.471                               |
| HL 1000 x 642 <sup>+</sup>                | 642 | 1048                      | 412     | 34                   | 60                   | 30      | 817.6                | 928   | 868     | M27 | 154                    | 300                    | 3.624                               | 5.647                               |
| HL 1000 x 748 <sup>+</sup>                | 748 | 1068                      | 417     | 39                   | 70                   | 30      | 953.4                | 928   | 868     | M27 | 160                    | 304                    | 3.674                               | 4.909                               |
| HL 1000 x 883 <sup>+</sup>                | 883 | 1092                      | 424     | 45.5                 | 82                   | 30      | 1125.3               | 928   | 868     | M27 | 166                    | 312                    | 3.737                               | 4.231                               |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| HL 1100 A <sup>+</sup>                    | 343 | 1090                      | 400     | 18                   | 31                   | 20      | 436.5                | 1028  | 988     | M27 | 116                    | 294                    | 3.710                               | 10.83                               |
| HL 1100 B <sup>+</sup>                    | 390 | 1100                      | 400     | 20                   | 36                   | 20      | 497.0                | 1028  | 988     | M27 | 118                    | 294                    | 3.726                               | 9.549                               |
| HL 1100 M <sup>+</sup>                    | 433 | 1108                      | 402     | 22                   | 40                   | 20      | 551.2                | 1028  | 988     | M27 | 122                    | 290                    | 3.746                               | 8.657                               |
| HL 1100 R <sup>+</sup>                    | 499 | 1118                      | 405     | 26                   | 45                   | 20      | 635.2                | 1028  | 988     | M27 | 126                    | 294                    | 3.770                               | 7.560                               |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

+ Minimum order: 40t per section and grade or upon agreement.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.

# HE/HL

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |     | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      | Classification<br>ENV 1993-1-1    |  |       |       |       |       | HISTAR |                     |
|---|-----|--|-----------------------------------|--------------------------------------|--|----------------------|---|-----------------------------------|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|-------|-------|-------|-------|--------|---------------------|
|   |     | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                   |                                      |  |                      | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                   |                                      |  | pure<br>bending y-y  |                      |                                   |  |       |       |       |       |        | pure<br>compression |
|   |     | G<br>kg/m  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ♦<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup>                    | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ♦<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S 235 | S 355 | S 460 | S 235 |        | S 355               |
| HE 1000 AA                                | 222 | 406500   | 8380                              | 9777                                 | 37.95                                  | 172.2                | 9501  | 633.4                             | 1016                                 | 5.80                                   | 93.15                | 403.4                | 21280                             | 1  | 1     | -     | 4     | 4     | -      |                     |
| HE 1000 A                                 | 272 | 553800   | 11190                             | 12820                                | 39.96                                  | 184.6                | 14000   | 933.6                             | 1470                                 | 6.35                                   | 113.6                | 822.4                | 32070                             | 1  | 1     | 2     | 4     | 4     | 4      | HI                  |
| HE 1000 B                                 | 314 | 644700   | 12890                             | 14860                                | 40.15                                  | 212.5                | 16280   | 1085                              | 1716                                 | 6.38                                   | 126.1                | 1254                 | 37640                             | 1  | 1     | 1     | 4     | 4     | 4      | HI                  |
| HE 1000 M                                 | 349 | 722300   | 14330                             | 16570                                | 40.32                                  | 235.0                | 18460   | 1222                              | 1940                                 | 6.45                                   | 136.1                | 1701                 | 43020                             | 1  | 1     | 1     | 3     | 4     | 4      | HI                  |
| HE 1000 x 393                             | 393 | 807700   | 15900                             | 18540                                | 40.18                                  | 271.3                | 20500   | 1353                              | 2168                                 | 6.40                                   | 147.3                | 2332                 | 48080                             | 1  | 1     | 1     | 2     | 4     | 4      | HI                  |
| HE 1000 x 409                             | 409 | 850800   | 16680                             | 19450                                | 40.40                                  | 278.8                | 22120   | 1446                              | 2313                                 | 6.51                                   | 152.1                | 2642                 | 52100                             | 1  | 1     | 1     | 2     | 4     | 4      | HI                  |
| HE 1000 x 488                             | 488 | 1027000  | 19820                             | 23300                                | 40.62                                  | 334.7                | 27320   | 1757                              | 2837                                 | 6.63                                   | 173.1                | 4334                 | 65270                             | 1  | 1     | 1     | 1     | 2     | 3      | HI                  |
| HE 1000 x 579                             | 579 | 1246000  | 23590                             | 27950                                | 41.11                                  | 393.3                | 34040   | 2154                              | 3498                                 | 6.80                                   | 198.1                | 7102                 | 82800                             | 1  | 1     | 1     | 1     | 1     | 2      | HI                  |
|   |     |  |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   |  |       |       |       |       |        |                     |
|   |     |  |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   |  |       |       |       |       |        |                     |
|   |     |  |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   |  |       |       |       |       |        |                     |
| HL 920 x 342                              | 342 | 624900   | 13700                             | 15450                                | 37.85                                  | 190.1                | 39010   | 1867                              | 2882                                 | 9.46                                   | 111.4                | 1193                 | 75410                             | 1  | 1     | 1     | 3     | 4     | 4      | HI                  |
| HL 920 x 365                              | 365 | 670500   | 14640                             | 16520                                | 38.00                                  | 200.4                | 42120   | 2011                              | 3106                                 | 9.52                                   | 117.0                | 1446                 | 81730                             | 1  | 1     | 1     | 3     | 4     | 4      | HI                  |
| HL 920 x 387                              | 387 | 718300   | 15600                             | 17630                                | 38.17                                  | 210.9                | 45280   | 2156                              | 3332                                 | 9.58                                   | 122.6                | 1734                 | 88370                             | 1  | 1     | 1     | 2     | 4     | 4      | HI                  |
| HL 920 x 417                              | 417 | 787600   | 16970                             | 19210                                | 38.46                                  | 223.9                | 50070   | 2373                              | 3668                                 | 9.70                                   | 130.4                | 2200                 | 98540                             | 1  | 1     | 1     | 2     | 4     | 4      | HI                  |
| HL 920 x 446                              | 446 | 846800   | 18150                             | 20600                                | 38.56                                  | 239.1                | 53980   | 2552                              | 3951                                 | 9.73                                   | 137.5                | 2685                 | 106740                            | 1  | 1     | 1     | 2     | 3     | 4      | HI                  |
| HL 920 x 488                              | 488 | 935390   | 19860                             | 22615                                | 38.80                                  | 259.3                | 59010   | 2797                              | 4336                                 | 9.75                                   | 148.0                | 3514                 | 117890                            | 1  | 1     | 1     | 1     | 2     | 4      | HI                  |
| HL 920 x 534                              | 534 | 1031000  | 21710                             | 24830                                | 38.94                                  | 284.8                | 65560   | 3085                              | 4796                                 | 9.82                                   | 158.7                | 4542                 | 132070                            | 1  | 1     | 1     | 1     | 2     | 3      | HI                  |
| HL 920 x 585                              | 585 | 1143090  | 23814                             | 27363                                | 39.16                                  | 312.0                | 72770   | 3408                              | 5310                                 | 9.88                                   | 170.9                | 5932                 | 148220                            | 1  | 1     | 1     | 1     | 1     | 2      | HI                  |
| HL 920 x 653                              | 653 | 1292000  | 26590                             | 30730                                | 39.41                                  | 348.7                | 83050   | 3854                              | 6022                                 | 9.99                                   | 186.6                | 8124                 | 171280                            | 1  | 1     | 1     | 1     | 1     | 1      | HI                  |
| HL 920 x 784                              | 784 | 1593000  | 31980                             | 37340                                | 39.95                                  | 417.6                | 103300  | 4728                              | 7424                                 | 10.18                                  | 216.8                | 13730                | 218490                            | 1  | 1     | -     | 1     | 1     | -      |                     |
| HL 920 x 967                              | 967 | 2033000  | 39540                             | 46810                                | 40.64                                  | 517.1                | 133900  | 6003                              | 9486                                 | 10.43                                  | 257.9                | 24930                | 292450                            | 1  | 1     | -     | 1     | 1     | -      |                     |
|   |     |  |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   |  |       |       |       |       |        |                     |
| HL 1000 x 296                             | 296 | 618700   | 12600                             | 14220                                | 40.52                                  | 181.5                | 28850   | 1443                              | 2235                                 | 8.75                                   | 105.6                | 756.9                | 65670                             | 1  | 1     | 2     | 4     | 4     | 4      | HI                  |
| HL 1000 A                                 | 321 | 696400   | 14070                             | 15800                                | 41.27                                  | 184.6                | 33120   | 1656                              | 2555                                 | 9.00                                   | 113.6                | 1021                 | 76030                             | 1  | 1     | 2     | 4     | 4     | 4      | HI                  |
| HL 1000 B                                 | 371 | 812100   | 16240                             | 18330                                | 41.48                                  | 212.5                | 38480   | 1924                              | 2976                                 | 9.03                                   | 126.1                | 1565                 | 89210                             | 1  | 1     | 1     | 4     | 4     | 4      | HI                  |
| HL 1000 M                                 | 412 | 909800   | 18050                             | 20440                                | 41.66                                  | 235.0                | 43410   | 2160                              | 3348                                 | 9.10                                   | 136.1                | 2128                 | 101460                            | 1  | 1     | 1     | 3     | 4     | 4      | HI                  |
| HL 1000 x 477                             | 477 | 1047000  | 20570                             | 23530                                | 41.50                                  | 282.8                | 49610   | 2456                              | 3838                                 | 9.03                                   | 150.6                | 3159                 | 117050                            | 1  | 1     | 1     | 2     | 3     | 4      | HI                  |
| HL 1000 x 554                             | 554 | 1232000  | 23880                             | 27500                                | 41.79                                  | 328.0                | 59100   | 2897                              | 4547                                 | 9.15                                   | 168.6                | 4860                 | 141330                            | 1  | 1     | 1     | 1     | 2     | 3      | HI                  |
| HL 1000 x 642                             | 642 | 1451000  | 27680                             | 32100                                | 42.12                                  | 379.6                | 70280   | 3412                              | 5379                                 | 9.27                                   | 189.1                | 7440                 | 170670                            | 1  | 1     | 1     | 1     | 1     | 2      | HI                  |
| HL 1000 x 748                             | 748 | 1732000  | 32430                             | 37880                                | 42.62                                  | 438.9                | 85111   | 4082                              | 6459                                 | 9.45                                   | 214.1                | 11670                | 210650                            | 1  | 1     | 1     | 1     | 1     | 1      | HI                  |
| HL 1000 x 883                             | 883 | 2096000  | 38390                             | 45260                                | 43.16                                  | 516.5                | 105000  | 4952                              | 7874                                 | 9.66                                   | 244.6                | 18750                | 265670                            | 1  | 1     | -     | 1     | 1     | -      |                     |
|   |     |  |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   |  |       |       |       |       |        |                     |
| HL 1100 A                                 | 343 | 867400   | 15920                             | 18060                                | 44.58                                  | 206.5                | 33120   | 1656                              | 2568                                 | 8.71                                   | 103.4                | 1037                 | 92710                             | 1  | 1     | 2     | 4     | 4     | 4      | HI                  |
| HL 1100 B                                 | 390 | 1005000  | 18280                             | 20780                                | 44.98                                  | 230.6                | 38480   | 1924                              | 2988                                 | 8.80                                   | 115.4                | 1564                 | 108680                            | 1  | 1     | 1     | 4     | 4     | 4      | HI                  |
| HL 1100 M                                 | 433 | 1126000  | 20320                             | 23160                                | 45.19                                  | 254.4                | 43410   | 2160                              | 3362                                 | 8.87                                   | 125.4                | 2130                 | 123500                            | 1  | 1     | 1     | 4     | 4     | 4      | HI                  |
| HL 1100 R                                 | 499 | 1294000  | 23150                             | 26600                                | 45.14                                  | 300.4                | 49980   | 2468                              | 3870                                 | 8.87                                   | 139.4                | 3135                 | 143410                            | 1  | 1     | 1     | 2     | 4     | 4      | HI                  |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



# A simple, optimised concept

## Une conception simple et optimisée

La **construction mixte acier-béton** consiste à connecter mécaniquement la poutrelle à la dalle en béton. Cette solution est préconisée **pour les grandes portées** dans les bâtiments et les ponts. L'association des deux matériaux offre la possibilité **d'alléger le poids et d'optimiser les volumes constructifs** des structures traditionnelles.

| Construction type | non-composite  | composite   | composite   | composite   |
|-------------------|--|---|---|---|
| Steel grade       | S 235  | S 235   | S 355   | S 460   |
| Cross section     |  |  |  |  |
| Beam section      | HE 650 A   | HE 550 A  | IPE 550   | IPE 500   |



## A simple, optimised concept

**Steel-concrete composite construction** connects the beam and the concrete slab by a mechanical process. This is recommended in particular for **long spans** in buildings and bridges. Combining the two materials makes **conventional structures lighter in weight**, whilst making optimum use of the space involved.

## Ein einfaches, optimiertes Konzept

Bei **Verbundkonstruktionen aus Stahl und Beton** wird der Walzträger mechanisch mit der Deckenplatte verbunden. Besonders empfehlenswert ist diese Art der Konstruktion **bei großen Spannweiten** in Gebäuden und bei Brücken. Im Verbund ergeben beide Baustoffe die ideale Symbiose, das **Gewicht traditioneller Strukturen zu verringern** und gleichzeitig **das Bauvolumen zu optimieren**.





# The new generation of hot-rolled sections

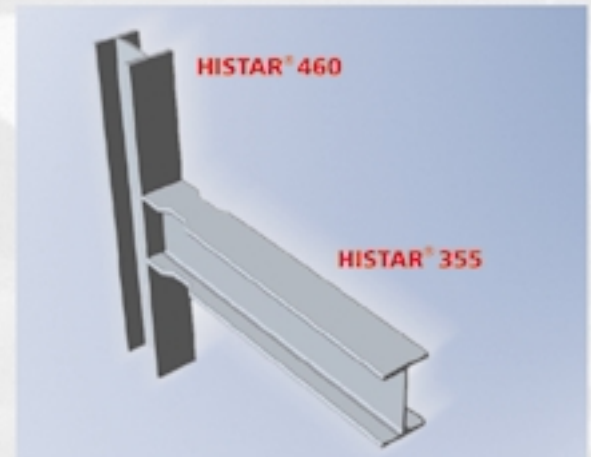
## La nouvelle génération de poutrelles laminées à chaud

Economisez jusqu'à 50 % du poids avec les poutrelles HISTAR® 460 (\*).

Les aciers HISTAR® offrent une **haute limite d'élasticité**, une **très bonne ductilité** à basse température et une **excellente soudabilité**. Ils sont préconisés dans le choix de **solutions antisismiques**. La performance des aciers à haute limite d'élasticité permet de **diminuer les coûts** des structures en **allégeant les matériaux** et en **réduisant les temps** de soudage et de montage.

\* Consultez notre brochure HISTAR®.

## Strong column - weak beam: an anti-seismic solution



## The new generation of hot-rolled sections

Save up to 50 % in weight with HISTAR® 460 sections (\*).

HISTAR® steels provide **high yield strength**, **good ductility** at low temperatures and **excellent weldability**. They are recommended for use in **anti-seismic constructions**. The performance of high yield-strength steels makes it possible to **reduce the costs** of structures by using lighter materials, and cuts welding and assembly times.

\* Please refer to our HISTAR® brochure.

## Eine neue Generation warmgewalzter Träger

Mit HISTAR® 460-Träger können Gewichtseinsparungen von bis zu 50 % (\*) realisiert werden.

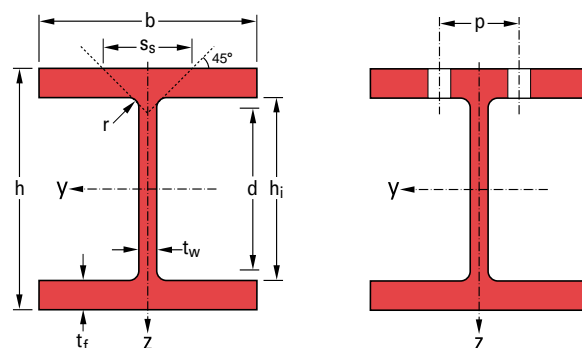
HISTAR® Stahlgüten bieten eine **hohe unreduzierte Streckgrenze**, eine **hervorragende Zähigkeit** bei niedrigen Temperaturen und eine **außerordentlich gute Schweißbarkeit**. Sie sind weiterhin auch optimal für **erdbebensichere Bauten** geeignet. Darüber hinaus lassen sich die **Baukosten** durch die herausragenden Eigenschaften dieser Stahlgüten deutlich **senken**. Denn sie erlauben nicht nur eine **Gewichtseinsparung bei den Baustoffen**, sondern auch eine Verminderung des **Schweißaufwandes und eine Verkürzung der Montagezeiten**.

\* Weitere Informationen finden Sie in unserer HISTAR® Broschüre.

# Poutrelles-poteaux à larges ailes

## Wide flange columns

## Breitflansch-Stützenprofile



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |                      |                      |         | A<br>cm <sup>2</sup> | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm |                      | h <sub>i</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| HD 260 x 54.1 <sup>+</sup>                | 54.1 | 244                       | 260     | 6.5                  | 9.5                  | 24      | 68.97                | 225   | 177     | M27 | 110                    | 158                    | 1.47                                | 27.22                               |
| HD 260 x 68.2                             | 68.2 | 250                       | 260     | 7.5                  | 12.5                 | 24      | 86.82                | 225   | 177     | M27 | 110                    | 158                    | 1.48                                | 21.77                               |
| HD 260 x 93.0                             | 93.0 | 260                       | 260     | 10                   | 17.5                 | 24      | 118.4                | 225   | 177     | M27 | 114                    | 158                    | 1.50                                | 16.12                               |
| HD 260 x 114 <sup>+</sup>                 | 114  | 268                       | 262     | 12.5                 | 21.5                 | 24      | 145.7                | 225   | 177     | M27 | 116                    | 160                    | 1.52                                | 13.27                               |
| HD 260 x 142 <sup>+</sup>                 | 142  | 278                       | 265     | 15.5                 | 26.5                 | 24      | 180.3                | 225   | 177     | M27 | 120                    | 164                    | 1.54                                | 10.91                               |
| HD 260 x 172                              | 172  | 290                       | 268     | 18                   | 32.5                 | 24      | 219.6                | 225   | 177     | M27 | 122                    | 166                    | 1.57                                | 9.13                                |
|   |      |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| HD 320 x 74.2 <sup>+</sup>                | 74.2 | 301                       | 300     | 8                    | 11                   | 27      | 94.58                | 279   | 225     | M27 | 118                    | 198                    | 1.74                                | 23.43                               |
| HD 320 x 97.6                             | 97.6 | 310                       | 300     | 9                    | 15.5                 | 27      | 124.4                | 279   | 225     | M27 | 118                    | 198                    | 1.76                                | 17.98                               |
| HD 320 x 127                              | 127  | 320                       | 300     | 11.5                 | 20.5                 | 27      | 161.3                | 279   | 225     | M27 | 122                    | 198                    | 1.77                                | 13.98                               |
| HD 320 x 158 <sup>+</sup>                 | 158  | 330                       | 303     | 14.5                 | 25.5                 | 27      | 201.2                | 279   | 225     | M27 | 124                    | 202                    | 1.80                                | 11.37                               |
| HD 320 x 198 <sup>+</sup>                 | 198  | 343                       | 306     | 18                   | 32                   | 27      | 252.3                | 279   | 225     | M27 | 128                    | 204                    | 1.83                                | 9.23                                |
| HD 320 x 245                              | 245  | 359                       | 309     | 21                   | 40                   | 27      | 312.0                | 279   | 225     | M27 | 132                    | 204                    | 1.87                                | 7.62                                |
| HD 320 x 300 <sup>+</sup>                 | 300  | 375                       | 313     | 27                   | 48                   | 27      | 382.1                | 279   | 225     | M27 | 138                    | 208                    | 1.90                                | 6.34                                |
|   |      |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| HD 360 x 134°                             | 134  | 356                       | 369     | 11.2                 | 18                   | 15      | 170.6                | 320   | 290     | M27 | 100                    | 264                    | 2.14                                | 15.98                               |
| HD 360 x 147°                             | 147  | 360                       | 370     | 12.3                 | 19.8                 | 15      | 187.9                | 320.4   | 290.4   | M27 | 100                    | 264                    | 2.15                                | 14.58                               |
| HD 360 x 162°                             | 162  | 364                       | 371     | 13.3                 | 21.8                 | 15      | 206.3                | 320.4   | 290.4   | M27 | 102                    | 266                    | 2.16                                | 13.34                               |
| HD 360 x 179°                             | 179  | 368                       | 373     | 15                   | 23.9                 | 15      | 228.3                | 320.2   | 290.2   | M27 | 104                    | 268                    | 2.17                                | 12.12                               |
| HD 360 x 196°                             | 196  | 372                       | 374     | 16.4                 | 26.2                 | 15      | 250.3                | 319.6   | 289.6   | M27 | 104                    | 268                    | 2.18                                | 11.10                               |
|   |      |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| HD 400 x 187                              | 187  | 368                       | 391     | 15                   | 24                   | 15      | 237.6                | 320   | 290     | M27 | 104                    | 286                    | 2.24                                | 12.03                               |
| HD 400 x 216°                             | 216  | 375                       | 394     | 17.3                 | 27.7                 | 15      | 275.5                | 319.6   | 289.6   | M27 | 106                    | 288                    | 2.27                                | 10.48                               |
| HD 400 x 237°                             | 237  | 380                       | 395     | 18.9                 | 30.2                 | 15      | 300.9                | 319.6   | 289.6   | M27 | 108                    | 290                    | 2.28                                | 9.64                                |
| HD 400 x 262°                             | 262  | 387                       | 398     | 21.1                 | 33.3                 | 15      | 334.6                | 320.4   | 290.4   | M27 | 110                    | 292                    | 2.30                                | 8.75                                |
| HD 400 x 287°                             | 287  | 393                       | 399     | 22.6                 | 36.6                 | 15      | 366.3                | 319.8   | 289.8   | M27 | 112                    | 294                    | 2.31                                | 8.04                                |
| HD 400 x 314°                             | 314  | 399                       | 401     | 24.9                 | 39.6                 | 15      | 399.2                | 319.8   | 289.8   | M27 | 114                    | 296                    | 2.33                                | 7.42                                |
| HD 400 x 347°                             | 347  | 407                       | 404     | 27.2                 | 43.7                 | 15      | 442.0                | 319.6   | 289.6   | M27 | 116                    | 298                    | 2.35                                | 6.77                                |
| HD 400 x 382°                             | 382  | 416                       | 406     | 29.8                 | 48                   | 15      | 487.1                | 320   | 290     | M27 | 118                    | 300                    | 2.37                                | 6.20                                |
| HD 400 x 421°                             | 421  | 425                       | 409     | 32.8                 | 52.6                 | 15      | 537.1                | 319.8   | 289.8   | M27 | 122                    | 304                    | 2.39                                | 5.68                                |
| HD 400 x 463°                             | 463  | 435                       | 412     | 35.8                 | 57.4                 | 15      | 589.5                | 320.2   | 290.2   | M27 | 124                    | 306                    | 2.42                                | 5.23                                |
| HD 400 x 509°                             | 509  | 446                       | 416     | 39.1                 | 62.7                 | 15      | 649.0                | 320.6   | 290.6   | M27 | 128                    | 310                    | 2.45                                | 4.81                                |
| HD 400 x 551°                             | 551  | 455                       | 418     | 42                   | 67.6                 | 15      | 701.4                | 319.8   | 289.8   | M27 | 132                    | 312                    | 2.47                                | 4.49                                |
| HD 400 x 592°                             | 592  | 465                       | 421     | 45                   | 72.3                 | 15      | 754.9                | 320.4   | 290.4   | M27 | 134                    | 316                    | 2.50                                | 4.22                                |
| HD 400 x 634°                             | 634  | 474                       | 424     | 47.6                 | 77.1                 | 15      | 808.0                | 319.8   | 289.8   | M27 | 140                    | 312                    | 2.52                                | 3.98                                |
| HD 400 x 677°                             | 677  | 483                       | 428     | 51.2                 | 81.5                 | 15      | 863.4                | 320   | 290     | M27 | 144                    | 316                    | 2.55                                | 3.76                                |
| HD 400 x 744°                             | 744  | 498                       | 432     | 55.6                 | 88.9                 | 15      | 948.1                | 320.2   | 290.2   | M27 | 148                    | 320                    | 2.59                                | 3.48                                |
| HD 400 x 818°                             | 818  | 514                       | 437     | 60.5                 | 97                   | 15      | 1043                 | 320   | 290     | M27 | 154                    | 326                    | 2.63                                | 3.21                                |
| HD 400 x 900°                             | 900  | 531                       | 442     | 65.9                 | 106                  | 15      | 1149                 | 319   | 289     | M27 | 158                    | 330                    | 2.67                                | 2.96                                |
| HD 400 x 990°                             | 990  | 550                       | 448     | 71.9                 | 115                  | 15      | 1262                 | 320   | 290     | M27 | 164                    | 336                    | 2.72                                | 2.75                                |
| HD 400 x 1086°                            | 1086 | 569                       | 454     | 78                   | 125                  | 15      | 1386                 | 319   | 289     | M27 | 170                    | 342                    | 2.77                                | 2.55                                |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.  
 ° Profilé conforme à ASTM A6 / A6M - 98.

+ Minimum order: 40t per section and grade or upon agreement.  
 ° Section in accordance with ASTM A6 / A6M - 98.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.  
 ° Profil gemäß ASTM A6 / A6M - 98.



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |      | Valeurs statiques / Section properties / Statische Kennwerte |                                      |  |                      |                                    |   |                                      |  |                      |   |       |       | Classification<br>ENV 1993-1-1 |      |      |                  |      |      | HISTAR |
|---|------|--|--------------------------------------|--|----------------------|------------------------------------|---|--------------------------------------|--|----------------------|---|-------|-------|--------------------------------|------|------|------------------|------|------|--------|
|   |      | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                      |  |                      |                                    | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                      |  |                      | S <sub>s</sub> I <sub>t</sub> I <sub>w</sub> x 10 <sup>-3</sup> |       |       | pure bending y-y               |      |      | pure compression |      |      |        |
|   |      |  |                                      |  |                      |                                    |   |                                      |  |                      |   |       |       | S235                           | S355 | S460 | S235             | S355 | S460 |        |
| G<br>kg/m                                 |      | I <sub>y</sub><br>cm <sup>4</sup>                            | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup>                     | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm |   |       |       | S235                           | S355 | S460 | S235             | S355 | S460 |        |
| HD 260 x 54.1                             | 54.1 | 7981   | 654.1                                | 714.5                                  | 10.76                | 24.75                              | 2788  | 214.5                                | 327.7                                  | 6.36                 | 53.62   | 30.31 | 382.6 | 3                              | 4    | -    | 3                | 4    | -    |        |
| HD 260 x 68.2                             | 68.2 | 10450  | 836.4                                | 919.8                                  | 10.97                | 28.76                              | 3668  | 282.1                                | 430.2                                  | 6.50                 | 60.62   | 52.37 | 516.4 | 2                              | 3    | -    | 2                | 3    | -    |        |
| HD 260 x 93.0                             | 93.0 | 14920  | 1148                                 | 1283                                   | 11.22                | 37.59                              | 5135  | 395.0                                | 602.2                                  | 6.58                 | 73.12   | 123.8 | 753.7 | 1                              | 1    | 2    | 1                | 1    | 2    | HI     |
| HD 260 x 114                              | 114  | 18910  | 1411                                 | 1600                                   | 11.39                | 46.08                              | 6456  | 492.8                                | 752.5                                  | 6.66                 | 83.62   | 222.4 | 979   | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 260 x 142                              | 142  | 24330  | 1750                                 | 2015                                   | 11.62                | 56.65                              | 8236  | 621.6                                | 950.5                                  | 6.76                 | 96.62   | 406.8 | 1300  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 260 x 172                              | 172  | 31310  | 2159                                 | 2524                                   | 11.94                | 66.89                              | 10450   | 779.7                                | 1192                                   | 6.90                 | 111.1   | 719   | 1728  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
|   |      |  |                                      |  |                      |                                    |   |                                      |  |                      |   |       |       |                                |      |      |                  |      |      |        |
| HD 320 x 74.2                             | 74.2 | 16450  | 1093                                 | 1196                                   | 13.19                | 35.40                              | 4959  | 330.6                                | 505.7                                  | 7.24                 | 61.63   | 55.87 | 1041  | 3                              | 4    | -    | 3                | 4    | -    |        |
| HD 320 x 97.6                             | 97.6 | 22930  | 1479                                 | 1628                                   | 13.58                | 41.13                              | 6985  | 465.7                                | 709.7                                  | 7.49                 | 71.63   | 108   | 1512  | 1                              | 3    | 3    | 1                | 3    | 3    | HI     |
| HD 320 x 127                              | 127  | 30820  | 1926                                 | 2149                                   | 13.82                | 51.77                              | 9239  | 615.9                                | 939.1                                  | 7.57                 | 84.13   | 225.1 | 2069  | 1                              | 1    | 2    | 1                | 1    | 2    | HI     |
| HD 320 x 158                              | 158  | 39640  | 2403                                 | 2718                                   | 14.04                | 64.18                              | 11840   | 781.7                                | 1194                                   | 7.67                 | 97.13   | 420.5 | 2741  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 320 x 198                              | 198  | 51900  | 3026                                 | 3479                                   | 14.34                | 79.52                              | 15310   | 1001                                 | 1530                                   | 7.79                 | 113.6   | 805.3 | 3695  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 320 x 245                              | 245  | 68130  | 3796                                 | 4435                                   | 14.78                | 94.85                              | 19710   | 1276                                 | 1951                                   | 7.95                 | 132.6   | 1501  | 5004  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 320 x 300                              | 300  | 86900  | 4635                                 | 5522                                   | 15.08                | 120.47                             | 24600   | 1572                                 | 2414                                   | 8.02                 | 154.6   | 2650  | 6558  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
|   |      |  |                                      |  |                      |                                    |   |                                      |  |                      |   |       |       |                                |      |      |                  |      |      |        |
| HD 360 x 134                              | 134  | 41510  | 2332                                 | 2562                                   | 15.60                | 45.19                              | 15080   | 817.3                                | 1237                                   | 9.40                 | 64.77   | 168.8 | 4305  | 2                              | 3    | 3    | 2                | 3    | 3    | HI     |
| HD 360 x 147                              | 147  | 46290  | 2572                                 | 2838                                   | 15.70                | 49.72                              | 16720   | 903.9                                | 1369                                   | 9.43                 | 69.47   | 223.7 | 4836  | 1                              | 3    | 3    | 1                | 3    | 3    | HI     |
| HD 360 x 162                              | 162  | 51540  | 2832                                 | 3139                                   | 15.81                | 53.98                              | 18560   | 1001                                 | 1516                                   | 9.49                 | 74.47   | 295.5 | 5432  | 1                              | 2    | 3    | 1                | 2    | 3    | HI     |
| HD 360 x 179                              | 179  | 57440  | 3122                                 | 3482                                   | 15.86                | 60.72                              | 20680   | 1109                                 | 1683                                   | 9.52                 | 80.37   | 393.8 | 6119  | 1                              | 1    | 2    | 1                | 1    | 2    | HI     |
| HD 360 x 196                              | 196  | 63630  | 3421                                 | 3837                                   | 15.94                | 66.50                              | 22860   | 1222                                 | 1856                                   | 9.56                 | 86.37   | 517.1 | 6829  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
|   |      |  |                                      |  |                      |                                    |   |                                      |  |                      |   |       |       |                                |      |      |                  |      |      |        |
| HD 400 x 187                              | 187  | 60180  | 3271                                 | 3642                                   | 15.91                | 60.73                              | 23920   | 1224                                 | 1855                                   | 10.03                | 80.57   | 414.6 | 7074  | 1                              | 2    | 3    | 1                | 2    | 3    | HI     |
| HD 400 x 216                              | 216  | 71140  | 3794                                 | 4262                                   | 16.07                | 70.32                              | 28250   | 1434                                 | 2176                                   | 10.13                | 90.27   | 637.3 | 8515  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 237                              | 237  | 78780  | 4146                                 | 4686                                   | 16.18                | 77.10                              | 31040   | 1572                                 | 2387                                   | 10.16                | 96.87   | 825.5 | 9489  | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 262                              | 263  | 89410  | 4620                                 | 5260                                   | 16.35                | 86.55                              | 35020   | 1760                                 | 2676                                   | 10.23                | 105.3   | 1116  | 10940 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 287                              | 287  | 99710  | 5074                                 | 5813                                   | 16.50                | 93.46                              | 38780   | 1944                                 | 2957                                   | 10.29                | 113.4   | 1464  | 12300 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 314                              | 314  | 110200   | 5525                                 | 6374                                   | 16.62                | 103.3                              | 42600   | 2125                                 | 3236                                   | 10.33                | 121.7   | 1870  | 13740 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 347                              | 347  | 124900   | 6140                                 | 7139                                   | 16.81                | 113.9                              | 48090   | 2380                                 | 3629                                   | 10.43                | 132.2   | 2510  | 15850 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 382                              | 382  | 141300   | 6794                                 | 7965                                   | 17.03                | 126.0                              | 53620   | 2641                                 | 4031                                   | 10.49                | 143.4   | 3326  | 18130 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 421                              | 421  | 159600   | 7510                                 | 8880                                   | 17.24                | 139.9                              | 60080   | 2938                                 | 4489                                   | 10.58                | 155.6   | 4398  | 20800 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 463                              | 463  | 180200   | 8283                                 | 9878                                   | 17.48                | 154.3                              | 67040   | 3254                                 | 4978                                   | 10.66                | 168.2   | 5735  | 23850 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 509                              | 509  | 204500   | 9172                                 | 11030                                  | 17.75                | 170.6                              | 75400   | 3625                                 | 5552                                   | 10.78                | 182.1   | 7513  | 27630 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 551                              | 551  | 226100   | 9939                                 | 12050                                  | 17.95                | 184.9                              | 82490   | 3947                                 | 6051                                   | 10.85                | 194.8   | 9410  | 30870 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 592                              | 592  | 250200   | 10760                                | 13140                                  | 18.20                | 200.3                              | 90170   | 4284                                 | 6574                                   | 10.93                | 207.2   | 11560 | 34670 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 634                              | 634  | 274200   | 11570                                | 14220                                  | 18.42                | 214.0                              | 98250   | 4634                                 | 7117                                   | 11.03                | 219.4   | 14020 | 38570 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 677                              | 677  | 299500   | 12400                                | 15350                                  | 18.62                | 231.9                              | 106900  | 4994                                 | 7680                                   | 11.13                | 231.8   | 16790 | 42920 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 744                              | 744  | 342100   | 13740                                | 17170                                  | 19.00                | 256.1                              | 119900  | 5552                                 | 8549                                   | 11.25                | 251.0   | 21840 | 49980 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 818                              | 818  | 392200   | 15260                                | 19260                                  | 19.39                | 283.3                              | 135500  | 6203                                 | 9561                                   | 11.40                | 272.1   | 28510 | 58650 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 900                              | 900  | 450200   | 16960                                | 21620                                  | 19.79                | 313.8                              | 153300  | 6938                                 | 10710                                  | 11.55                | 295.5   | 37350 | 68890 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 990                              | 990  | 518900   | 18870                                | 24280                                  | 20.27                | 349.2                              | 173400  | 7739                                 | 11960                                  | 11.72                | 319.5   | 48210 | 81530 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |
| HD 400 x 1086                             | 1086 | 595700   | 20940                                | 27210                                  | 20.73                | 385.8                              | 196200  | 8645                                 | 13380                                  | 11.90                | 345.6   | 62290 | 96080 | 1                              | 1    | 1    | 1                | 1    | 1    | HI     |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

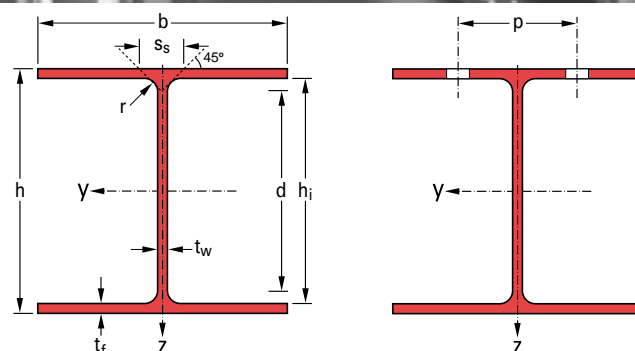
♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



# Poutrelles-pieux à larges ailes

## Wide flange bearing piles

## Breitflanschpfähle



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| HP 200 x 43 <sup>+</sup>                  | 42.5 | 200                       | 205     | 9                    | 9                    | 10      | 54.14                | 182.0   | 162.0   | M27 | 100                    | 106                    | 1.18                                | 27.88                               |
| HP 200 x 53 <sup>+</sup>                  | 53.5 | 204                       | 207     | 11.3                 | 11.3                 | 10      | 68.14                | 181.4   | 161.4   | M27 | 104                    | 108                    | 1.20                                | 22.36                               |
| HP 220 x 57 <sup>+</sup>                  | 57.2 | 210                       | 224.5   | 11                   | 11                   | 18      | 72.85                | 188.0   | 152.0   | M27 | 102                    | 122                    | 1.27                                | 22.12                               |
| HP 260 x 75 <sup>+</sup>                  | 75.0 | 249                       | 265     | 12                   | 12                   | 24      | 95.54                | 225.0   | 177.0   | M27 | 116                    | 164                    | 1.49                                | 19.90                               |
| HP 260 x 87 <sup>+</sup>                  | 87.3 | 253                       | 267     | 14                   | 14                   | 24      | 111.2                | 225.0   | 177.0   | M27 | 118                    | 166                    | 1.50                                | 17.24                               |
| HP 305 x 79                               | 78.4 | 299.3                     | 306.4   | 11                   | 11                   | 15.2    | 99.9                 | 277.3   | 246.9   | M27 | 102                    | 204                    | 1.78                                | 22.65                               |
| HP 305 x 88                               | 88.0 | 301.7                     | 307.8   | 12.4                 | 12.3                 | 15.2    | 112.1                | 277.1   | 246.7   | M27 | 104                    | 206                    | 1.78                                | 20.28                               |
| HP 305 x 95                               | 94.9 | 303.7                     | 308.7   | 13.3                 | 13.3                 | 15.2    | 121.0                | 277.1   | 246.7   | M27 | 106                    | 206                    | 1.79                                | 18.85                               |
| HP 305 x 110                              | 110  | 307.9                     | 310.7   | 15.3                 | 15.4                 | 15.2    | 140.1                | 277.1   | 246.7   | M27 | 108                    | 208                    | 1.80                                | 16.39                               |
| HP 305 x 126                              | 126  | 312.3                     | 312.9   | 17.5                 | 17.6                 | 15.2    | 160.6                | 277.1   | 246.7   | M27 | 110                    | 210                    | 1.82                                | 14.40                               |
| HP 305 x 149                              | 149  | 318.5                     | 316     | 20.6                 | 20.7                 | 15.2    | 189.9                | 277.1   | 246.7   | M27 | 114                    | 214                    | 1.83                                | 12.30                               |
| HP 305 x 180                              | 180  | 326.7                     | 319.7   | 24.8                 | 24.8                 | 15.2    | 229.3                | 277.1   | 246.7   | M27 | 118                    | 218                    | 1.86                                | 10.31                               |
| HP 305 x 186                              | 186  | 328.3                     | 320.9   | 25.5                 | 25.6                 | 15.2    | 236.9                | 277.1   | 246.7   | M27 | 118                    | 218                    | 1.86                                | 10.02                               |
| HP 305 x 223                              | 223  | 337.9                     | 325.7   | 30.3                 | 30.4                 | 15.2    | 284.0                | 277.1   | 246.7   | M27 | 124                    | 220                    | 1.89                                | 8.49                                |
| HP 320 x 88 <sup>+</sup>                  | 88.5 | 303                       | 304     | 12                   | 12                   | 27      | 112.7                | 279.0   | 225.0   | M27 | 122                    | 202                    | 1.75                                | 19.80                               |
| HP 320 x 103 <sup>+</sup>                 | 103  | 307                       | 306     | 14                   | 14                   | 27      | 131.0                | 279.0   | 225.0   | M27 | 124                    | 204                    | 1.76                                | 17.15                               |
| HP 320 x 117 <sup>+</sup>                 | 117  | 311                       | 308     | 16                   | 16                   | 27      | 149.5                | 279.0   | 225.0   | M27 | 126                    | 206                    | 1.78                                | 15.13                               |
| HP 320 x 147 <sup>+</sup>                 | 147  | 319                       | 312     | 20                   | 20                   | 27      | 186.9                | 279.0   | 225.0   | M27 | 130                    | 210                    | 1.80                                | 12.27                               |
| HP 320 x 184 <sup>+</sup>                 | 184  | 329                       | 317     | 25                   | 25                   | 27      | 234.5                | 279.0   | 225.0   | M27 | 136                    | 216                    | 1.83                                | 9.94                                |
| HP 360 x 84 <sup>+</sup>                  | 84.3 | 340                       | 367     | 10                   | 10                   | 15.2    | 107.4                | 320.0   | 289.6   | M27 | 98                     | 262                    | 2.10                                | 24.93                               |
| HP 360 x 109                              | 109  | 346.4                     | 371     | 12.8                 | 12.9                 | 15.2    | 138.7                | 320.6   | 290.2   | M27 | 102                    | 266                    | 2.13                                | 19.51                               |
| HP 360 x 133                              | 133  | 352                       | 373.8   | 15.6                 | 15.7                 | 15.2    | 169.4                | 320.6   | 290.2   | M27 | 104                    | 268                    | 2.14                                | 16.11                               |
| HP 360 x 152                              | 152  | 356.4                     | 376     | 17.8                 | 17.9                 | 15.2    | 193.7                | 320.6   | 290.2   | M27 | 106                    | 270                    | 2.16                                | 14.18                               |
| HP 360 x 174                              | 174  | 361.4                     | 378.5   | 20.3                 | 20.4                 | 15.2    | 221.5                | 320.6   | 290.2   | M27 | 110                    | 272                    | 2.17                                | 12.48                               |
| HP 360 x 180                              | 180  | 362.9                     | 378.8   | 21.1                 | 21.1                 | 15.2    | 229.5                | 320.7   | 290.3   | M27 | 110                    | 272                    | 2.17                                | 12.06                               |
| HP 400 x 122 <sup>+</sup>                 | 122  | 348                       | 390     | 14                   | 14                   | 15      | 155.9                | 320.0   | 290.0   | M27 | 102                    | 284                    | 2.20                                | 17.99                               |
| HP 400 x 140 <sup>+</sup>                 | 140  | 352                       | 392     | 16                   | 16                   | 15      | 178.6                | 320.0   | 290.0   | M27 | 104                    | 286                    | 2.21                                | 15.8                                |
| HP 400 x 158 <sup>+</sup>                 | 158  | 356                       | 394     | 18                   | 18                   | 15      | 201.4                | 320.0   | 290.0   | M27 | 106                    | 288                    | 2.23                                | 14.08                               |
| HP 400 x 176 <sup>+</sup>                 | 176  | 360                       | 396     | 20                   | 20                   | 15      | 224.3                | 320.0   | 290.0   | M27 | 108                    | 290                    | 2.24                                | 12.71                               |
| HP 400 x 194 <sup>+</sup>                 | 194  | 364                       | 398     | 22                   | 22                   | 15      | 247.5                | 320.0   | 290.0   | M27 | 110                    | 292                    | 2.25                                | 11.58                               |
| HP 400 x 213 <sup>+</sup>                 | 213  | 368                       | 400     | 24                   | 24                   | 15      | 270.7                | 320.0   | 290.0   | M27 | 112                    | 294                    | 2.26                                | 10.64                               |
| HP 400 x 231 <sup>+</sup>                 | 231  | 372                       | 402     | 26                   | 26                   | 15      | 294.2                | 320.0   | 290.0   | M27 | 114                    | 296                    | 2.27                                | 9.85                                |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

+ Minimum order: 40t per section and grade or upon agreement.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | Classification<br>ENV 1993-1-1 |      |      |                     |      |      | HISTAR |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|-----------------------------------|--|-------|--------------------------------|------|------|---------------------|------|------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      |                                   |  |       | pure<br>bending y-y            |      |      | pure<br>compression |      |      |        |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | S235                           | S355 | S460 | S235                | S355 | S460 |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235  | S355                           | S460 | S235 | S355                | S460 |      |        |
| HP 200 x 43                               | 42.5                              | 3888   | 388.8                                  | 434.5                | 8.47                               | 19.85                             | 1294  | 126.2                                  | 193.4                | 4.89                 | 38.72                             | 17.68  | 117.9 | 3                              | 3    | -    | 3                   | 3    | -    |        |
| HP 200 x 53                               | 53.5                              | 4977   | 488.0                                  | 551.3                | 8.55                               | 24.89                             | 1673  | 161.7                                  | 248.6                | 4.96                 | 45.62                             | 34.20  | 155.1 | 1                              | 3    | -    | 1                   | 3    | -    |        |
| HP 220 x 57                               | 57.2                              | 5729   | 545.6                                  | 613.7                | 8.87                               | 28.63                             | 2079  | 185.2                                  | 285.5                | 5.34                 | 54.09                             | 44.18  | 205.4 | 2                              | 3    | -    | 2                   | 3    | -    |        |
| HP 260 x 75                               | 75.0                              | 10650  | 855.1                                  | 958.5                | 10.56                              | 39.14                             | 3733  | 281.7                                  | 435.1                | 6.25                 | 64.12                             | 79.29  | 522.6 | 3                              | 3    | -    | 3                   | 3    | -    |        |
| HP 260 x 87                               | 87.3                              | 12590  | 994.9                                  | 1124                 | 10.64                              | 45.12                             | 4455  | 333.7                                  | 516.2                | 6.33                 | 70.12                             | 115.7  | 634.2 | 1                              | 3    | -    | 1                   | 3    | -    |        |
| HP 305 x 79                               | 78.4                              | 16331  | 1091                                   | 1210                 | 12.79                              | 37.04                             | 5278  | 344.5                                  | 526.5                | 7.27                 | 50.81                             | 50.64  | 1096  | 3                              | 4    | -    | 3                   | 4    | -    |        |
| HP 305 x 88                               | 88.0                              | 18420  | 1221                                   | 1360                 | 12.82                              | 41.61                             | 5984  | 388.9                                  | 595.2                | 7.31                 | 54.81                             | 70.05  | 1252  | 3                              | 4    | -    | 3                   | 4    | -    |        |
| HP 305 x 95                               | 94.9                              | 20040  | 1320                                   | 1474                 | 12.87                              | 44.65                             | 6529  | 423.0                                  | 648.0                | 7.35                 | 57.71                             | 86.69  | 1375  | 3                              | 3    | -    | 3                   | 3    | -    |        |
| HP 305 x 110                              | 110                               | 23560  | 1531                                   | 1720                 | 12.97                              | 51.42                             | 7709  | 496.2                                  | 761.7                | 7.4                  | 63.91                             | 131.4  | 1647  | 2                              | 3    | 3    | 2                   | 3    | 3    |        |
| HP 305 x 126                              | 126                               | 27410  | 1755                                   | 1986                 | 13.06                              | 58.91                             | 9002  | 575.4                                  | 885.2                | 7.49                 | 70.51                             | 194.3  | 1951  | 1                              | 2    | 3    | 1                   | 2    | 3    |        |
| HP 305 x 149                              | 149                               | 33070  | 2076                                   | 2370                 | 13.20                              | 69.62                             | 10910   | 690.5                                  | 1066                 | 7.58                 | 79.81                             | 314.2  | 2414  | 1                              | 1    | 2    | 1                   | 1    | 2    |        |
| HP 305 x 180                              | 180                               | 40970  | 2508                                   | 2897                 | 13.37                              | 84.39                             | 13550   | 847.4                                  | 1313                 | 7.69                 | 92.21                             | 541.7  | 3077  | 1                              | 1    | 1    | 1                   | 1    | 1    |        |
| HP 305 x 186                              | 186                               | 42610  | 2596                                   | 3003                 | 13.41                              | 86.95                             | 14140   | 881.5                                  | 1366                 | 7.73                 | 94.51                             | 593.7  | 3230  | 1                              | 1    | 1    | 1                   | 1    | 1    |        |
| HP 305 x 223                              | 223                               | 52700  | 3119                                   | 3653                 | 13.62                              | 104.4                             | 17580   | 1079                                   | 1680                 | 7.87                 | 108.9                             | 998.4  | 4138  | 1                              | 1    | 1    | 1                   | 1    | 1    |        |
| HP 320 x 88                               | 88.5                              | 18740  | 1237                                   | 1379                 | 12.90                              | 47.66                             | 5634  | 370.6                                  | 572.1                | 7.07                 | 67.6                              | 99.04  | 1190  | 3                              | 4    | -    | 3                   | 4    | -    |        |
| HP 320 x 103                              | 103                               | 22050  | 1437                                   | 1611                 | 12.97                              | 54.84                             | 6704  | 438.2                                  | 677.3                | 7.15                 | 73.6                              | 142.3  | 1435  | 2                              | 3    | 4    | 2                   | 3    | 4    |        |
| HP 320 x 117                              | 117                               | 25480  | 1638                                   | 1849                 | 13.06                              | 62.10                             | 7815  | 507.5                                  | 785.5                | 7.23                 | 79.6                              | 198.5  | 1695  | 1                              | 3    | 3    | 1                   | 3    | 3    |        |
| HP 320 x 147                              | 147                               | 32670  | 2048                                   | 2338                 | 13.22                              | 76.86                             | 10160   | 651.3                                  | 1011                 | 7.37                 | 91.6                              | 357.1  | 2263  | 1                              | 1    | 2    | 1                   | 1    | 2    |        |
| HP 320 x 184                              | 184                               | 42340  | 2574                                   | 2979                 | 13.44                              | 95.76                             | 13330   | 841.2                                  | 1311                 | 7.54                 | 106.6                             | 662  | 3067  | 1                              | 1    | 1    | 1                   | 1    | 1    |        |
| HP 360 x 84                               | 84.3                              | 23210  | 1365                                   | 1498                 | 14.70                              | 38.02                             | 8243  | 449.2                                  | 683.1                | 8.76                 | 47.81                             | 44.41  | 2243  | 4                              | 4    | -    | 4                   | 4    | -    |        |
| HP 360 x 109                              | 109                               | 30630  | 1769                                   | 1956                 | 14.86                              | 48.59                             | 10990   | 592.3                                  | 902.9                | 8.90                 | 56.41                             | 90.73  | 3053  | 3                              | 4    | -    | 3                   | 4    | -    |        |
| HP 360 x 133                              | 133                               | 37980  | 2158                                   | 2406                 | 14.98                              | 59.22                             | 13680   | 731.9                                  | 1119                 | 8.99                 | 64.81                             | 160.7  | 3864  | 3                              | 3    | 4    | 3                   | 3    | 4    |        |
| HP 360 x 152                              | 152                               | 43970  | 2468                                   | 2767                 | 15.07                              | 67.68                             | 15880   | 844.5                                  | 1293                 | 9.05                 | 71.41                             | 236.4  | 4543  | 2                              | 3    | 3    | 2                   | 3    | 3    |        |
| HP 360 x 174                              | 174                               | 51010  | 2823                                   | 3186                 | 15.18                              | 77.41                             | 18460   | 975.6                                  | 1497                 | 9.13                 | 78.91                             | 348.5  | 5360  | 1                              | 3    | 3    | 1                   | 3    | 3    |        |
| HP 360 x 180                              | 180                               | 53040  | 2923                                   | 3306                 | 15.2                               | 80.52                             | 19140   | 1011                                   | 1552                 | 9.13                 | 81.11                             | 387.2  | 5583  | 1                              | 3    | 3    | 1                   | 3    | 3    |        |
| HP 400 x 122                              | 122                               | 34770  | 1998                                   | 2212                 | 14.93                              | 52.89                             | 13850   | 710.3                                  | 1082                 | 9.42                 | 59.57                             | 118.7  | 3860  | 3                              | 4    | -    | 3                   | 4    | -    |        |
| HP 400 x 140                              | 140                               | 40270  | 2288                                   | 2547                 | 15.02                              | 60.49                             | 16080   | 820.2                                  | 1252                 | 9.49                 | 65.57                             | 175.3  | 4534  | 3                              | 4    | 4    | 3                   | 4    | 4    |        |
| HP 400 x 158                              | 158                               | 45940  | 2581                                   | 2888                 | 15.10                              | 68.17                             | 18370   | 932.4                                  | 1425                 | 9.55                 | 71.57                             | 248  | 5241  | 2                              | 3    | 4    | 2                   | 3    | 4    |        |
| HP 400 x 176                              | 176                               | 51770  | 2876                                   | 3235                 | 15.19                              | 75.93                             | 20720   | 1047                                   | 1603                 | 9.61                 | 77.57                             | 338.9  | 5982  | 1                              | 3    | 3    | 1                   | 3    | 3    |        |
| HP 400 x 194                              | 194                               | 57760  | 3174                                   | 3588                 | 15.28                              | 83.77                             | 23150   | 1163                                   | 1784                 | 9.67                 | 83.57                             | 450.2  | 6759  | 1                              | 3    | 3    | 1                   | 3    | 3    |        |
| HP 400 x 213                              | 213                               | 63920  | 3474                                   | 3947                 | 15.37                              | 91.69                             | 25640   | 1282                                   | 1969                 | 9.73                 | 89.57                             | 584.2  | 7574  | 1                              | 2    | 3    | 1                   | 2    | 3    |        |
| HP 400 x 231                              | 231                               | 70260  | 3777                                   | 4312                 | 15.45                              | 99.69                             | 28200   | 1403                                   | 2158                 | 9.79                 | 95.57                             | 743.1  | 8425  | 1                              | 1    | 2    | 1                   | 1    | 2    |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.

## Fers U à ailes parallèles

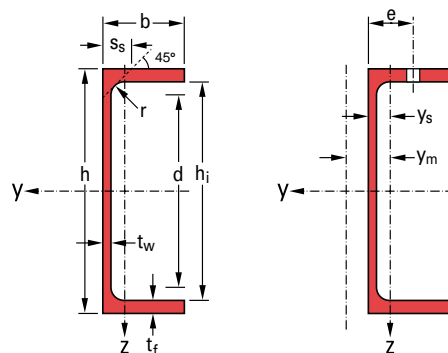
conformes à NF A 45-255 (1983)

## Channels with parallel flanges

in accordance with NF A 45-255 (1983)

## U-Profile mit parallelen Flanschen

gemäß NF A 45-255 (1983)



| Désignation<br>Designation<br>Bezeichnung | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | e <sub>min</sub><br>mm | e <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| UAP 80<br>8.4                             | 80                        | 45      | 5                    | 8                    | 8       | 10.67                | 64  | 48      | -   | -                      | -                      | 0.32                                | 38.56                               |
| UAP 100<br>10.5                           | 100                       | 50      | 5.5                  | 8.5                  | 8.5     | 13.38                | 83  | 66      | M10 | 25                     | 30                     | 0.38                                | 36.35                               |
| UAP 130<br>13.7                           | 130                       | 55      | 6                    | 9.5                  | 9.5     | 17.50                | 111   | 92      | M10 | 27                     | 35                     | 0.46                                | 33.48                               |
| UAP 150<br>17.9                           | 150                       | 65      | 7                    | 10.25                | 10.25   | 22.84                | 129.5   | 109     | M16 | 33                     | 36                     | 0.54                                | 29.96                               |
| UAP 175<br>21.2                           | 175                       | 70      | 7.5                  | 10.75                | 10.75   | 27.06                | 153.5   | 132     | M16 | 34                     | 41                     | 0.61                                | 28.52                               |
| UAP 200<br>25.1                           | 200                       | 75      | 8                    | 11.5                 | 11.5    | 31.98                | 177   | 154     | M16 | 35                     | 46                     | 0.67                                | 26.86                               |
| UAP 220<br>28.5                           | 220                       | 80      | 8                    | 12.5                 | 12.5    | 36.27                | 195   | 170     | M16 | 36                     | 51                     | 0.73                                | 25.75                               |
| UAP 250<br>34.4                           | 250                       | 85      | 9                    | 13.5                 | 13.5    | 43.80                | 223   | 196     | M22 | 43                     | 47                     | 0.81                                | 23.57                               |
| UAP 300<br>46.0                           | 300                       | 100     | 9.5                  | 16                   | 16      | 58.56                | 268   | 236     | M27 | 51                     | 53                     | 0.97                                | 21.04                               |

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung | Valeurs statiques / Section properties / Statische Kennwerte |                          |                               |                                 |             |                             |   |                               |                                 |             |             |                          |   |             |             | Classification<br>ENV 1993-1-1 |       |                     |       |
|---|--|--------------------------|-------------------------------|---------------------------------|-------------|-----------------------------|---|-------------------------------|---------------------------------|-------------|-------------|--------------------------|---|-------------|-------------|--------------------------------|-------|---------------------|-------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                          |                               |                                 |             |                             | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                               |                                 |             |             |                          |   |             |             | pure<br>bending y-y            |       | pure<br>compression |       |
|   | G<br>kg/m  | $I_y$<br>cm <sup>4</sup> | $W_{el,y}$<br>cm <sup>3</sup> | $W_{pl,y}$ ■<br>cm <sup>3</sup> | $i_y$<br>cm | $A_{vz}$<br>cm <sup>2</sup> | $I_z$<br>cm <sup>4</sup>                              | $W_{el,z}$<br>cm <sup>3</sup> | $W_{pl,z}$ ■<br>cm <sup>3</sup> | $i_z$<br>cm | $s_s$<br>mm | $I_t$<br>cm <sup>4</sup> | $I_w \times 10^{-3}$<br>cm <sup>6</sup> | $y_s$<br>cm | $y_m$<br>cm | S 235                          | S 355 | S 235               | S 355 |
| UAP 80                                    | 8.4  | 107.1                    | 26.78                         | 31.87                           | 3.17        | 4.51                        | 21.33   | 7.38                          | 13.64                           | 1.41        | 17.7        | 1.9                      | 0.18                                    | 1.61        | 3.17        | 1                              | 1     | 1                   | 1     |
| UAP 100                                   | 10.5   | 209.5                    | 41.90                         | 49.59                           | 3.96        | 6.07                        | 32.83   | 9.95                          | 18.47                           | 1.57        | 19.0        | 2.65                     | 0.45                                    | 1.70        | 3.38        | 1                              | 1     | 1                   | 1     |
| UAP 130                                   | 13.7   | 459.6                    | 70.70                         | 83.51                           | 5.12        | 8.52                        | 51.34   | 13.78                         | 25.55                           | 1.71        | 21.1        | 4.15                     | 1.22                                    | 1.77        | 3.56        | 1                              | 1     | 1                   | 1     |
| UAP 150                                   | 17.9   | 796.1                    | 106.1                         | 125.3                           | 5.90        | 11.28                       | 93.25   | 20.97                         | 38.78                           | 2.02        | 23.3        | 6.51                     | 2.99                                    | 2.05        | 4.15        | 1                              | 1     | 1                   | 1     |
| UAP 175                                   | 21.2   | 1270                     | 145.1                         | 171.5                           | 6.85        | 13.97                       | 126.4   | 25.92                         | 47.47                           | 2.16        | 24.5        | 8.43                     | 5.62                                    | 2.12        | 4.32        | 1                              | 1     | 1                   | 1     |
| UAP 200                                   | 25.1   | 1946                     | 194.6                         | 230.1                           | 7.80        | 16.97                       | 169.7   | 32.13                         | 58.29                           | 2.30        | 26.2        | 11.24                    | 9.98                                    | 2.22        | 4.53        | 1                              | 1     | 1                   | 1     |
| UAP 220                                   | 28.5   | 2710                     | 246.4                         | 289.9                           | 8.64        | 18.83                       | 222.3   | 39.68                         | 72.56                           | 2.48        | 27.8        | 14.4                     | 15.82                                   | 2.40        | 4.94        | 1                              | 1     | 1                   | 1     |
| UAP 250                                   | 34.4   | 4136                     | 330.9                         | 391.8                           | 9.72        | 23.89                       | 295.4   | 48.87                         | 87.65                           | 2.60        | 30.4        | 20.38                    | 27.43                                   | 2.45        | 5.04        | 1                              | 1     | 1                   | 1     |
| UAP 300                                   | 46.0   | 8170                     | 544.7                         | 639.3                           | 11.81       | 30.64                       | 562.1   | 79.88                         | 145.8                           | 3.10        | 34.9        | 36.3                     | 75.04                                   | 2.96        | 6.17        | 1                              | 1     | 1                   | 1     |

■  $W_{pl,y}$  est calculé selon l'hypothèse d'un diagramme de contraintes bi-rectangulaire et n'est applicable que si deux ou plusieurs fers U sont associés de façon à constituer une section doublement symétrique pour laquelle un moment de flexion agissant dans le plan du centre de gravité n'engendre pas de torsion.

■  $W_{pl,y}$  is determined assuming a bi-rectangular stress block distribution. Thus, the given value applies only if two or more U shapes are combined in such a way to form a doubly symmetric cross-section so that the bending moment acting in the plane of the gravity centre will not lead to torsion.

■ Für die Berechnung von  $W_{pl,y}$  wurde eine doppel-rechteckige Spannungsverteilung angenommen. Der angegebene Wert ist daher nur anwendbar, wenn zwei oder mehr U-Profile so miteinander kombiniert sind, dass sie einen doppelsymmetrischen Querschnitt bilden, womit ein Biegemoment, das in der Schwerpunktebene angreift, keine Torsion hervorruft.

## Fers U normaux européens

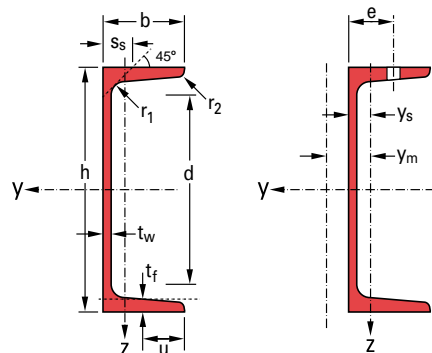
conformes à DIN 1026-1: 2000, NF A 45-202 (1983)

## European standard channels

in accordance with DIN 1026-1: 2000, NF A 45-202 (1983)

## Europäische U-Stahl-Normalprofile

gemäß DIN 1026-1: 2000, NF A 45-202 (1983)



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |                      |                      |                      |                      |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|----------------------|----------------------|----------------------|---|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r <sub>1</sub><br>mm | r <sub>2</sub><br>mm | A<br>cm <sup>2</sup> | d<br>mm   | ∅   | e <sub>min</sub><br>mm | e <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| UPN 100                                   | 10.6 | 100                       | 50      | 6                    | 8.5                  | 8.5                  | 4.5                  | 13.5                 | 64  | -   | -                      | -                      | 0.372                               | 35.1                                |
| UPN 120                                   | 13.4 | 120                       | 55      | 7                    | 9                    | 9                    | 4.5                  | 17.0                 | 82  | -   | -                      | -                      | 0.434                               | 32.52                               |
| UPN 140                                   | 16.0 | 140                       | 60      | 7                    | 10                   | 10                   | 5                    | 20.4                 | 98  | M12 | 33                     | 37                     | 0.489                               | 30.54                               |
| UPN 160                                   | 18.8 | 160                       | 65      | 7.5                  | 10.5                 | 10.5                 | 5.5                  | 24.0                 | 115   | M12 | 34                     | 42                     | 0.546                               | 28.98                               |
| UPN 180                                   | 22.0 | 180                       | 70      | 8                    | 11                   | 11                   | 5.5                  | 28.0                 | 133   | M16 | 38                     | 41                     | 0.611                               | 27.8                                |
| UPN 200                                   | 25.3 | 200                       | 75      | 8.5                  | 11.5                 | 11.5                 | 6                    | 32.2                 | 151   | M16 | 39                     | 46                     | 0.661                               | 26.15                               |
| UPN 220                                   | 29.4 | 220                       | 80      | 9                    | 12.5                 | 12.5                 | 6.5                  | 37.4                 | 167   | M16 | 40                     | 51                     | 0.718                               | 24.46                               |
| UPN 240                                   | 33.2 | 240                       | 85      | 9.5                  | 13                   | 13                   | 6.5                  | 42.3                 | 184   | M20 | 46                     | 50                     | 0.775                               | 23.34                               |
| UPN 260                                   | 37.9 | 260                       | 90      | 10                   | 14                   | 14                   | 7                    | 48.3                 | 200   | M22 | 50                     | 52                     | 0.834                               | 22                                  |
| UPN 280                                   | 41.8 | 280                       | 95      | 10                   | 15                   | 15                   | 7.5                  | 53.3                 | 216   | M22 | 52                     | 57                     | 0.89                                | 21.27                               |
| UPN 300                                   | 46.2 | 300                       | 100     | 10                   | 16                   | 16                   | 8                    | 58.8                 | 232   | M24 | 55                     | 59                     | 0.95                                | 20.58                               |
| UPN 320                                   | 59.5 | 320                       | 100     | 14                   | 17.5                 | 17.5                 | 8.75                 | 75.8                 | 246   | M22 | 58                     | 62                     | 0.982                               | 16.5                                |
| UPN 350                                   | 60.6 | 350                       | 100     | 14                   | 16                   | 16                   | 8                    | 77.3                 | 282   | M22 | 56                     | 62                     | 1.047                               | 17.25                               |
| UPN 380                                   | 63.1 | 380                       | 102     | 13.5                 | 16                   | 16                   | 8                    | 80.4                 | 313   | M24 | 59                     | 60                     | 1.11                                | 17.59                               |
| UPN 400                                   | 71.8 | 400                       | 110     | 14                   | 18                   | 18                   | 9                    | 91.5                 | 324   | M27 | 61                     | 62                     | 1.182                               | 16.46                               |

|   | $h \leq 300$  | $h > 300$           |
|---|---------------|---------------------|
| $u$   | $\frac{b}{2}$ | $\frac{b - t_w}{2}$ |
| inclinaison des ailes<br>flange slope<br>Flanschneigung | 8 %           | 5 %                 |



# UPN

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung | Valeurs statiques / Section properties / Statische Kennwerte |                          |                               |                                 |             |                             |   |                               |                                 |             |             |                          |   |             |             | Classification<br>ENV 1993-1-1 |       |                     |       |
|---|--|--------------------------|-------------------------------|---------------------------------|-------------|-----------------------------|---|-------------------------------|---------------------------------|-------------|-------------|--------------------------|---|-------------|-------------|--------------------------------|-------|---------------------|-------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                          |                               |                                 |             |                             | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                               |                                 |             |             |                          |   |             |             | pure<br>bending y-y            |       | pure<br>compression |       |
|   | G<br>kg/m  | $I_y$<br>cm <sup>4</sup> | $W_{el,y}$<br>cm <sup>3</sup> | $W_{pl,y}$ ■<br>cm <sup>3</sup> | $i_y$<br>cm | $A_{vz}$<br>cm <sup>2</sup> | $I_z$<br>cm <sup>4</sup>                              | $W_{el,z}$<br>cm <sup>3</sup> | $W_{pl,z}$ ■<br>cm <sup>3</sup> | $i_z$<br>cm | $s_s$<br>mm | $I_t$<br>cm <sup>4</sup> | $I_w \times 10^{-3}$<br>cm <sup>6</sup> | $y_s$<br>cm | $y_m$<br>cm | S 235                          | S 355 | S 235               | S 355 |
| UPN 100                                   | 10.6   | 206                      | 41.2                          | 49                              | 3.91        | 6.46                        | 29.3  | 8.49                          | 16.2                            | 1.47        | 20.3        | 2.81                     | 0.41                                    | 1.55        | 2.93        | 1                              | 1     | 1                   | 1     |
| UPN 120                                   | 13.4   | 364                      | 60.7                          | 72.6                            | 4.62        | 8.8                         | 43.2  | 11.1                          | 21.2                            | 1.59        | 22.2        | 4.15                     | 0.9                                     | 1.6         | 3.03        | 1                              | 1     | 1                   | 1     |
| UPN 140                                   | 16.0   | 605                      | 86.4                          | 103                             | 5.45        | 10.41                       | 62.7  | 14.8                          | 28.3                            | 1.75        | 23.9        | 5.68                     | 1.8                                     | 1.75        | 3.37        | 1                              | 1     | 1                   | 1     |
| UPN 160                                   | 18.8   | 925                      | 116                           | 138                             | 6.21        | 12.6                        | 85.3  | 18.3                          | 35.2                            | 1.89        | 25.3        | 7.39                     | 3.26                                    | 1.84        | 3.56        | 1                              | 1     | 1                   | 1     |
| UPN 180                                   | 22.0   | 1350                     | 150                           | 179                             | 6.95        | 15.09                       | 114   | 22.4                          | 42.9                            | 2.02        | 26.7        | 9.55                     | 5.57                                    | 1.92        | 3.75        | 1                              | 1     | 1                   | 1     |
| UPN 200                                   | 25.3   | 1910                     | 191                           | 228                             | 7.7         | 17.71                       | 148   | 27                            | 51.8                            | 2.14        | 28.1        | 11.9                     | 9.07                                    | 2.01        | 3.94        | 1                              | 1     | 1                   | 1     |
| UPN 220                                   | 29.4   | 2690                     | 245                           | 292                             | 8.48        | 20.62                       | 197   | 33.6                          | 64.1                            | 2.3         | 30.3        | 16                       | 14.6                                    | 2.14        | 4.2         | 1                              | 1     | 1                   | 1     |
| UPN 240                                   | 33.2   | 3600                     | 300                           | 358                             | 9.22        | 23.71                       | 248   | 39.6                          | 75.7                            | 2.42        | 31.7        | 19.7                     | 22.1                                    | 2.23        | 4.39        | 1                              | 1     | 1                   | 1     |
| UPN 260                                   | 37.9   | 4820                     | 371                           | 442                             | 9.99        | 27.12                       | 317   | 47.7                          | 91.6                            | 2.56        | 33.9        | 25.5                     | 33.3                                    | 2.36        | 4.66        | 1                              | 1     | 1                   | 1     |
| UPN 280                                   | 41.8   | 6280                     | 448                           | 532                             | 10.9        | 29.28                       | 399   | 57.2                          | 109                             | 2.74        | 35.6        | 31                       | 48.5                                    | 2.53        | 5.02        | 1                              | 1     | 1                   | 1     |
| UPN 300                                   | 46.2   | 8030                     | 535                           | 632                             | 11.7        | 31.77                       | 495   | 67.8                          | 130                             | 2.9         | 37.3        | 37.4                     | 69.1                                    | 2.7         | 5.41        | 1                              | 1     | 1                   | 1     |
| UPN 320                                   | 59.5   | 10870                    | 679                           | 826                             | 12.1        | 47.11                       | 597   | 80.6                          | 152                             | 2.81        | 43          | 66.7                     | 96.1                                    | 2.6         | 4.82        | 1                              | 1     | 1                   | 1     |
| UPN 350                                   | 60.6   | 12840                    | 734                           | 918                             | 12.9        | 50.84                       | 570   | 75                            | 143                             | 2.72        | 40.7        | 61.2                     | 114                                     | 2.4         | 4.45        | 1                              | 1     | 1                   | 1     |
| UPN 380                                   | 63.1   | 15760                    | 829                           | 1014                            | 14          | 53.23                       | 615   | 78.7                          | 148                             | 2.77        | 40.3        | 59.1                     | 146                                     | 2.38        | 4.58        | 1                              | 1     | 1                   | 1     |
| UPN 400                                   | 71.8   | 20350                    | 1020                          | 1240                            | 14.9        | 58.55                       | 846   | 102                           | 190                             | 3.04        | 44          | 81.6                     | 221                                     | 2.65        | 5.11        | 1                              | 1     | 1                   | 1     |

■  $W_{pl,y}$  est calculé selon l'hypothèse d'un diagramme de contraintes bi-rectangulaire et n'est applicable que si deux ou plusieurs fers U sont associés de façon à constituer une section doublement symétrique pour laquelle un moment de flexion agissant dans le plan du centre de gravité n'engendre pas de torsion.

■  $W_{pl,y}$  is determined assuming a bi-rectangular stress block distribution. Thus, the given value applies only if two or more U shapes are combined in such a way to form a doubly symmetric cross-section so that the bending moment acting in the plane of the gravity centre will not lead to torsion.

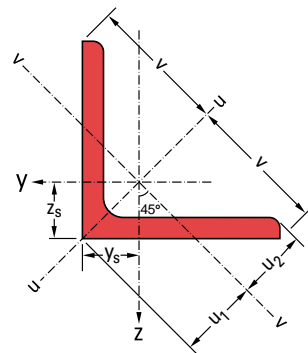
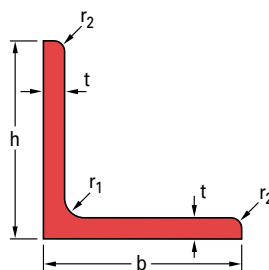
■ Für die Berechnung von  $W_{pl,y}$  wurde eine doppel-rechteckige Spannungsverteilung angenommen. Der angegebene Wert ist daher nur anwendbar, wenn zwei oder mehr U-Profile so miteinander kombiniert sind, dass sie einen doppelsymmetrischen Querschnitt bilden, womit ein Biegemoment, das in der Schwerpunktebene angreift, keine Torsion hervorruft.



# Cornières à ailes égales

## Equal leg angles

## Gleichschenkliger Winkelstahl



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |                      |                      |                      | Position des axes<br>Position of axes<br>Lage der Achsen |         |                      |                      | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|----------------------|--|---------|----------------------|----------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h=b<br>mm                 | t<br>mm | r <sub>1</sub><br>mm | r <sub>2</sub><br>mm | A<br>cm <sup>2</sup> | z <sub>s</sub> =y <sub>s</sub><br>cm                     | v<br>cm | u <sub>1</sub><br>cm | u <sub>2</sub><br>cm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| L 100 x 100 x 8 <sup>~</sup>              | 12.2 | 100                       | 8       | 12                   | 6                    | 15.51                | 2.74   | 7.07    | 3.87                 | 3.52                 | 0.390                               | 32.00                               |
| L 100 x 100 x 10 <sup>~</sup>             | 15.0 | 100                       | 10      | 12                   | 6                    | 19.20                | 2.82   | 7.07    | 3.99                 | 3.54                 | 0.390                               | 25.92                               |
| L 100 x 100 x 12 <sup>~</sup>             | 17.8 | 100                       | 12      | 12                   | 6                    | 22.71                | 2.90   | 7.07    | 4.11                 | 3.57                 | 0.390                               | 21.86                               |
|   |      |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 110 x 110 x 10                          | 16.6 | 110                       | 10      | 13                   | 6.5                  | 21.18                | 3.06   | 7.78    | 4.33                 | 3.88                 | 0.429                               | 25.79                               |
| L 110 x 110 x 12                          | 19.7 | 110                       | 12      | 13                   | 6.5                  | 25.14                | 3.15   | 7.78    | 4.45                 | 3.91                 | 0.429                               | 21.73                               |
|   |      |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 120 x 120 x 10 <sup>~</sup>             | 18.2 | 120                       | 10      | 13                   | 6.5                  | 23.18                | 3.31   | 8.49    | 4.69                 | 4.24                 | 0.469                               | 25.76                               |
| L 120 x 120 x 11                          | 19.9 | 120                       | 11      | 13                   | 6.5                  | 25.37                | 3.36   | 8.49    | 4.75                 | 4.25                 | 0.469                               | 23.54                               |
| L 120 x 120 x 12 <sup>~</sup>             | 21.6 | 120                       | 12      | 13                   | 6.5                  | 27.54                | 3.40   | 8.49    | 4.80                 | 4.26                 | 0.469                               | 21.69                               |
| L 120 x 120 x 13                          | 23.3 | 120                       | 13      | 13                   | 6.5                  | 29.69                | 3.44   | 8.49    | 4.86                 | 4.28                 | 0.469                               | 20.12                               |
| L 120 x 120 x 15                          | 26.6 | 120                       | 15      | 13                   | 6.5                  | 33.93                | 3.51   | 8.49    | 4.97                 | 4.31                 | 0.469                               | 17.60                               |
|   |      |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 130 x 130 x 12 <sup>~</sup>             | 23.5 | 130                       | 12      | 14                   | 7                    | 30.00                | 3.64   | 9.19    | 5.15                 | 4.60                 | 0.508                               | 21.59                               |
|   |      |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 140 x 140 x 10 <sup>~</sup>             | 21.4 | 140                       | 10      | 15                   | 7.5                  | 27.24                | 3.79   | 9.90    | 5.37                 | 4.93                 | 0.547                               | 25.59                               |
| L 140 x 140 x 13                          | 27.4 | 140                       | 13      | 15                   | 7.5                  | 34.95                | 3.92   | 9.90    | 5.55                 | 4.96                 | 0.547                               | 19.94                               |
|   |      |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 150 x 150 x 10 <sup>~</sup>             | 23.0 | 150                       | 10      | 16                   | 8                    | 29.27                | 4.03   | 10.61   | 5.71                 | 5.28                 | 0.586                               | 25.51                               |
| L 150 x 150 x 12 <sup>~</sup>             | 27.3 | 150                       | 12      | 16                   | 8                    | 34.83                | 4.12   | 10.61   | 5.83                 | 5.29                 | 0.586                               | 21.44                               |
| L 150 x 150 x 14                          | 31.6 | 150                       | 14      | 16                   | 8                    | 40.31                | 4.21   | 10.61   | 5.95                 | 5.32                 | 0.586                               | 18.53                               |
| L 150 x 150 x 15 <sup>~</sup>             | 33.8 | 150                       | 15      | 16                   | 8                    | 43.02                | 4.25   | 10.61   | 6.01                 | 5.33                 | 0.586                               | 17.36                               |
| L 150 x 150 x 18                          | 40.1 | 150                       | 18      | 16                   | 8                    | 51.03                | 4.37   | 10.61   | 6.17                 | 5.37                 | 0.586                               | 14.63                               |
|   |      |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 160 x 160 x 14                          | 33.9 | 160                       | 14      | 17                   | 8.5                  | 43.15                | 4.45   | 11.31   | 6.29                 | 5.66                 | 0.625                               | 18.46                               |
| L 160 x 160 x 15 <sup>~</sup>             | 36.2 | 160                       | 15      | 17                   | 8.5                  | 46.06                | 4.49   | 11.31   | 6.35                 | 5.67                 | 0.625                               | 17.30                               |
| L 160 x 160 x 16                          | 38.4 | 160                       | 16      | 17                   | 8.5                  | 48.95                | 4.53   | 11.31   | 6.41                 | 5.69                 | 0.625                               | 16.28                               |
| L 160 x 160 x 17                          | 40.7 | 160                       | 17      | 17                   | 8.5                  | 51.82                | 4.57   | 11.31   | 6.46                 | 5.70                 | 0.625                               | 15.37                               |
|   |      |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 180 x 180 x 13                          | 35.7 | 180                       | 13      | 18                   | 9                    | 45.46                | 4.90   | 12.73   | 6.93                 | 6.35                 | 0.705                               | 19.74                               |
| L 180 x 180 x 14                          | 38.3 | 180                       | 14      | 18                   | 9                    | 48.79                | 4.94   | 12.73   | 6.99                 | 6.36                 | 0.705                               | 18.40                               |
| L 180 x 180 x 15                          | 40.9 | 180                       | 15      | 18                   | 9                    | 52.10                | 4.98   | 12.73   | 7.05                 | 6.37                 | 0.705                               | 17.23                               |
| L 180 x 180 x 16 <sup>~</sup>             | 43.5 | 180                       | 16      | 18                   | 9                    | 55.39                | 5.02   | 12.73   | 7.10                 | 6.38                 | 0.705                               | 16.20                               |
| L 180 x 180 x 17                          | 46.0 | 180                       | 17      | 18                   | 9                    | 58.66                | 5.06   | 12.73   | 7.16                 | 6.40                 | 0.705                               | 15.30                               |
| L 180 x 180 x 18 <sup>~</sup>             | 48.6 | 180                       | 18      | 18                   | 9                    | 61.91                | 5.10   | 12.73   | 7.22                 | 6.41                 | 0.705                               | 14.50                               |
| L 180 x 180 x 19                          | 51.1 | 180                       | 19      | 18                   | 9                    | 65.14                | 5.14   | 12.73   | 7.27                 | 6.42                 | 0.705                               | 13.78                               |
| L 180 x 180 x 20                          | 53.7 | 180                       | 20      | 18                   | 9                    | 68.35                | 5.18   | 12.73   | 7.33                 | 6.44                 | 0.705                               | 13.13                               |



▲ Commande minimale: 25t  
D'autres épaisseurs sont disponibles dans le cas d'une commande minimale de 25t ou de 100t suivant le profilé - veuillez contacter notre agence locale.

- Profilé conforme à EN 10056-1: 1998.

▲ Minimum order: 25t  
Other thicknesses are available provided that a 25t or 100t minimum order is placed, depending on the section - please contact our local representative.

- Section in accordance with EN 10056-1: 1998.

▲ Mindestbestellmenge: 25t  
Ab einer Mindestbestellmenge von 25t bzw. 100t (je nach Profil) sind weitere Materialstärken verfügbar - bitte erkundigen Sie sich bei unserer örtlichen Niederlassung.

- Profil gemäß EN 10056-1: 1998.



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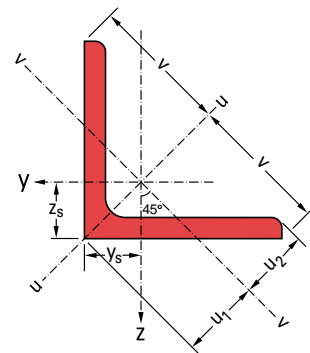
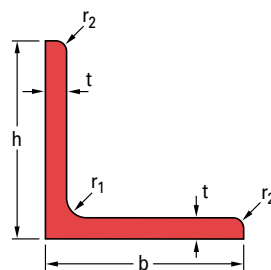
| Désignation<br>Designation<br>Bezeichnung | Valeurs statiques / Section properties / Statische Kennwerte      |  |                 |                                  |             |                                  |             |                             | Classification<br>ENV 1993-1-1 |       |
|---|---|--|-----------------|----------------------------------|-------------|----------------------------------|-------------|-----------------------------|--------------------------------|-------|
|   | axe y-y / axe z-z<br>axis y-y / axis z-z<br>Achse y-y / Achse z-z |  |                 | axe u-u<br>axis u-u<br>Achse u-u |             | axe v-v<br>axis v-v<br>Achse v-v |             |                             | pure<br>compression            |       |
|   | $I_y=I_z$<br>cm <sup>4</sup>                                      | $W_{el,y}=W_{el,z}$<br>cm <sup>3</sup> | $i_y=i_z$<br>cm | $I_u$<br>cm <sup>4</sup>         | $i_u$<br>cm | $I_v$<br>cm <sup>4</sup>         | $i_v$<br>cm | $I_{yz}$<br>cm <sup>4</sup> | S 235                          | S 355 |
| G<br>kg/m                                 |   |  |                 |                                  |             |                                  |             |                             |                                |       |
| L 100 x 100 x 8 12.2                      | 144.8   | 19.94                                  | 3.06            | 230.2                            | 3.85        | 59.47                            | 1.96        | -85.37                      | 4                              | 4     |
| L 100 x 100 x 10 15.0                     | 176.7   | 24.62                                  | 3.04            | 280.7                            | 3.83        | 72.65                            | 1.95        | -104.0                      | 1                              | 4     |
| L 100 x 100 x 12 17.8                     | 206.7   | 29.12                                  | 3.02            | 328.0                            | 3.80        | 85.42                            | 1.94        | -121.3                      | 1                              | 2     |
| L 110 x 110 x 10 16.6                     | 238.0   | 29.99                                  | 3.35            | 378.2                            | 4.23        | 97.72                            | 2.15        | -140.3                      | 2                              | 4     |
| L 110 x 110 x 12 19.7                     | 279.1   | 35.54                                  | 3.33            | 443.3                            | 4.20        | 115.0                            | 2.14        | -164.1                      | 1                              | 3     |
| L 120 x 120 x 10 18.2                     | 312.9   | 36.03                                  | 3.67            | 497.6                            | 4.63        | 128.3                            | 2.35        | -184.6                      | 4                              | 4     |
| L 120 x 120 x 11 19.9                     | 340.6   | 39.41                                  | 3.66            | 541.5                            | 4.62        | 139.8                            | 2.35        | -200.9                      | 2                              | 4     |
| L 120 x 120 x 12 21.6                     | 367.7   | 42.73                                  | 3.65            | 584.3                            | 4.61        | 151.0                            | 2.34        | -216.6                      | 1                              | 4     |
| L 120 x 120 x 13 23.3                     | 394.0   | 46.01                                  | 3.64            | 625.9                            | 4.59        | 162.2                            | 2.34        | -231.8                      | 1                              | 3     |
| L 120 x 120 x 15 26.6                     | 444.9   | 52.43                                  | 3.62            | 705.6                            | 4.56        | 184.2                            | 2.33        | -260.7                      | 1                              | 1     |
| L 130 x 130 x 12 23.5                     | 472.2   | 50.44                                  | 3.97            | 750.6                            | 5.00        | 193.7                            | 2.54        | -278.5                      | 2                              | 4     |
| L 140 x 140 x 10 21.4                     | 504.4   | 49.43                                  | 4.30            | 802                              | 5.43        | 206.8                            | 2.76        | -297.6                      | 4                              | 4     |
| L 140 x 140 x 13 27.4                     | 638.5   | 63.37                                  | 4.27            | 1015                             | 5.39        | 262.0                            | 2.74        | -376.6                      | 2                              | 4     |
| L 150 x 150 x 10 23.0                     | 624.0   | 56.91                                  | 4.62            | 992                              | 5.82        | 256.0                            | 2.96        | -368.0                      | 4                              | 4     |
| L 150 x 150 x 12 27.3                     | 736.9   | 67.75                                  | 4.60            | 1172                             | 5.80        | 302.0                            | 2.94        | -434.9                      | 4                              | 4     |
| L 150 x 150 x 14 31.6                     | 845.4   | 78.33                                  | 4.58            | 1344                             | 5.77        | 346.9                            | 2.93        | -498.5                      | 2                              | 4     |
| L 150 x 150 x 15 33.8                     | 898.1   | 83.52                                  | 4.57            | 1427                             | 5.76        | 368.9                            | 2.93        | -529.1                      | 1                              | 4     |
| L 150 x 150 x 18 40.1                     | 1050  | 98.74                                  | 4.54            | 1666                             | 5.71        | 433.8                            | 2.92        | -616.2                      | 1                              | 2     |
| L 160 x 160 x 14 33.9                     | 1034  | 89.50                                  | 4.89            | 1644                             | 6.17        | 423.8                            | 3.13        | -610.0                      | 3                              | 4     |
| L 160 x 160 x 15 36.2                     | 1099  | 95.5                                   | 4.88            | 1747                             | 6.16        | 450.8                            | 3.13        | -648.0                      | 2                              | 4     |
| L 160 x 160 x 16 38.4                     | 1163  | 101.4                                  | 4.87            | 1848                             | 6.14        | 477.6                            | 3.12        | -685.1                      | 1                              | 4     |
| L 160 x 160 x 17 40.7                     | 1225  | 107.2                                  | 4.86            | 1947                             | 6.13        | 504.1                            | 3.12        | -721.3                      | 1                              | 4     |
| L 180 x 180 x 13 35.7                     | 1396  | 106.5                                  | 5.54            | 2221                             | 6.99        | 571.6                            | 3.55        | -824.5                      | 4                              | 4     |
| L 180 x 180 x 14 38.3                     | 1493  | 114.3                                  | 5.53            | 2375                             | 6.98        | 611.3                            | 3.54        | -882                        | 4                              | 4     |
| L 180 x 180 x 15 40.9                     | 1589  | 122.0                                  | 5.52            | 2527                             | 6.96        | 650.5                            | 3.53        | -938                        | 4                              | 4     |
| L 180 x 180 x 16 43.5                     | 1682  | 129.7                                  | 5.51            | 2675                             | 6.95        | 689.4                            | 3.53        | -993                        | 3                              | 4     |
| L 180 x 180 x 17 46.0                     | 1775  | 137.2                                  | 5.50            | 2822                             | 6.94        | 727.8                            | 3.52        | -1047                       | 2                              | 4     |
| L 180 x 180 x 18 48.6                     | 1866  | 144.7                                  | 5.49            | 2965                             | 6.92        | 766.0                            | 3.52        | -1100                       | 1                              | 4     |
| L 180 x 180 x 19 51.1                     | 1955  | 152.1                                  | 5.48            | 3106                             | 6.91        | 803.8                            | 3.51        | -1151                       | 1                              | 4     |
| L 180 x 180 x 20 53.7                     | 2043  | 159.4                                  | 5.47            | 3244                             | 6.89        | 841.3                            | 3.51        | -1202                       | 1                              | 3     |



# Cornières à ailes égales

## Equal leg angles

## Gleichschenkliger Winkelstahl



| Désignation<br>Designation<br>Bezeichnung<br>(metric) |       | Dimensions<br>Abmessungen |         |                      |                      |                      | Position des axes<br>Position of axes<br>Lage der Achsen |         |                      |                      | Surface<br>Oberfläche               |                                     |
|---|-------|---------------------------|---------|----------------------|----------------------|----------------------|--|---------|----------------------|----------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m   |       | h=b<br>mm                 | t<br>mm | r <sub>1</sub><br>mm | r <sub>2</sub><br>mm | A<br>cm <sup>2</sup> | z <sub>5</sub> =y <sub>5</sub><br>cm                     | v<br>cm | u <sub>1</sub><br>cm | u <sub>2</sub><br>cm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| L 200 x 200 x 15                                      | 45.6  | 200                       | 15      | 18                   | 9                    | 58.10                | 5.48   | 14.14   | 7.75                 | 7.08                 | 0.785                               | 17.20                               |
| L 200 x 200 x 16                                      | 48.5  | 200                       | 16      | 18                   | 9                    | 61.79                | 5.52   | 14.14   | 7.81                 | 7.09                 | 0.785                               | 16.18                               |
| L 200 x 200 x 17                                      | 51.4  | 200                       | 17      | 18                   | 9                    | 65.46                | 5.56   | 14.14   | 7.87                 | 7.10                 | 0.785                               | 15.27                               |
| L 200 x 200 x 18                                      | 54.3  | 200                       | 18      | 18                   | 9                    | 69.11                | 5.60   | 14.14   | 7.93                 | 7.12                 | 0.785                               | 14.46                               |
| L 200 x 200 x 19                                      | 57.1  | 200                       | 19      | 18                   | 9                    | 72.74                | 5.64   | 14.14   | 7.98                 | 7.13                 | 0.785                               | 13.74                               |
| L 200 x 200 x 20                                      | 59.9  | 200                       | 20      | 18                   | 9                    | 76.35                | 5.68   | 14.14   | 8.04                 | 7.15                 | 0.785                               | 13.09                               |
| L 200 x 200 x 21                                      | 62.8  | 200                       | 21      | 18                   | 9                    | 79.94                | 5.72   | 14.14   | 8.09                 | 7.16                 | 0.785                               | 12.50                               |
| L 200 x 200 x 22                                      | 65.6  | 200                       | 22      | 18                   | 9                    | 83.51                | 5.76   | 14.14   | 8.15                 | 7.18                 | 0.785                               | 11.97                               |
| L 200 x 200 x 23                                      | 68.3  | 200                       | 23      | 18                   | 9                    | 87.06                | 5.80   | 14.14   | 8.20                 | 7.19                 | 0.785                               | 11.48                               |
| L 200 x 200 x 24                                      | 71.1  | 200                       | 24      | 18                   | 9                    | 90.59                | 5.84   | 14.14   | 8.26                 | 7.21                 | 0.785                               | 11.03                               |
| L 200 x 200 x 25                                      | 73.9  | 200                       | 25      | 18                   | 9                    | 94.10                | 5.88   | 14.14   | 8.31                 | 7.23                 | 0.785                               | 10.62                               |
| L 200 x 200 x 26                                      | 76.6  | 200                       | 26      | 18                   | 9                    | 97.59                | 5.91   | 14.14   | 8.36                 | 7.25                 | 0.785                               | 10.24                               |
|   |       |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 250 x 250 x 20                                      | 75.6  | 250                       | 20      | 18                   | 9                    | 96.35                | 6.93   | 17.68   | 9.81                 | 8.91                 | 0.985                               | 13.02                               |
| L 250 x 250 x 21                                      | 79.2  | 250                       | 21      | 18                   | 9                    | 100.94               | 6.97   | 17.68   | 9.86                 | 8.93                 | 0.985                               | 12.43                               |
| L 250 x 250 x 22                                      | 82.8  | 250                       | 22      | 18                   | 9                    | 105.51               | 7.01   | 17.68   | 9.92                 | 8.94                 | 0.985                               | 11.89                               |
| L 250 x 250 x 23                                      | 86.4  | 250                       | 23      | 18                   | 9                    | 110.06               | 7.05   | 17.68   | 9.97                 | 8.96                 | 0.985                               | 11.40                               |
| L 250 x 250 x 24                                      | 90.0  | 250                       | 24      | 18                   | 9                    | 114.59               | 7.09   | 17.68   | 10.03                | 8.98                 | 0.985                               | 10.95                               |
| L 250 x 250 x 25                                      | 93.5  | 250                       | 25      | 18                   | 9                    | 119.10               | 7.13   | 17.68   | 10.08                | 8.99                 | 0.985                               | 10.53                               |
| L 250 x 250 x 26                                      | 97.0  | 250                       | 26      | 18                   | 9                    | 123.59               | 7.17   | 17.68   | 10.13                | 9.01                 | 0.985                               | 10.15                               |
| L 250 x 250 x 27                                      | 100.5 | 250                       | 27      | 18                   | 9                    | 128.06               | 7.20   | 17.68   | 10.19                | 9.03                 | 0.985                               | 9.79                                |
| L 250 x 250 x 28                                      | 104.0 | 250                       | 28      | 18                   | 9                    | 132.51               | 7.24   | 17.68   | 10.24                | 9.04                 | 0.985                               | 9.47                                |
|   |       |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
|   |       |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
|   |       |                           |         |                      |                      |                      |  |         |                      |                      |                                     |                                     |
| L 203 x 203 x 19°                                     | 57.9  | 203                       | 19      | 8                    | 4                    | 73.60                | 5.76   | 14.35   | 8.15                 | 7.38                 | 0.805                               | 13.94                               |
| L 203 x 203 x 22.2°                                   | 67.0  | 203                       | 22.2    | 8                    | 4                    | 85.27                | 5.88   | 14.35   | 8.32                 | 7.44                 | 0.805                               | 12.03                               |
| L 203 x 203 x 25.4°                                   | 75.9  | 203                       | 25.4    | 8                    | 4                    | 96.74                | 6.00   | 14.35   | 8.48                 | 7.50                 | 0.805                               | 10.60                               |
| L 203 x 203 x 28.6°                                   | 84.7  | 203                       | 28.6    | 8                    | 4                    | 108.01               | 6.11   | 14.35   | 8.65                 | 7.57                 | 0.805                               | 9.50                                |



- Profilé conforme à EN 10056-1: 1998.  
 ° Profilé conforme à ASTM A6 / A6M - 98.

- Section in accordance with EN 10056-1: 1998.  
 ° Section in accordance with ASTM A6 / A6M - 98.

- Profil gemäß EN 10056-1: 1998.  
 ° Profil gemäß ASTM A6 / A6M - 98.

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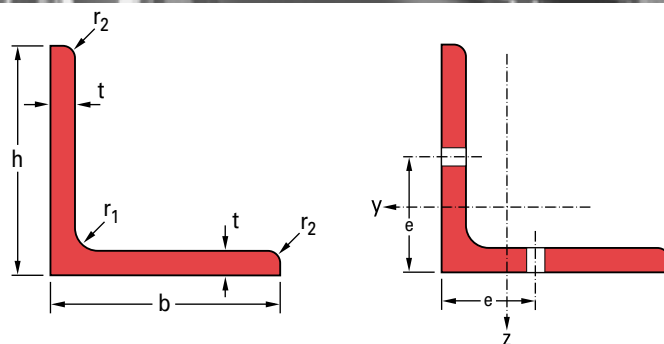
| Désignation<br>Designation<br>Bezeichnung<br>(metric/imperial) | Valeurs statiques / Section properties / Statische Kennwerte      |  |                 |                                  |             |                                  |             |                             | Classification<br>ENV 1993-1-1 |       |
|--|---|--|-----------------|----------------------------------|-------------|----------------------------------|-------------|-----------------------------|--------------------------------|-------|
|  | axe y-y / axe z-z<br>axis y-y / axis z-z<br>Achse y-y / Achse z-z |  |                 | axe u-u<br>axis u-u<br>Achse u-u |             | axe v-v<br>axis v-v<br>Achse v-v |             |                             | pure<br>compression            |       |
|  | $I_y=I_z$<br>cm <sup>4</sup>                                      | $W_{el,y}=W_{el,z}$<br>cm <sup>3</sup> | $i_y=i_z$<br>cm | $I_u$<br>cm <sup>4</sup>         | $i_u$<br>cm | $I_v$<br>cm <sup>4</sup>         | $i_v$<br>cm | $I_{yz}$<br>cm <sup>4</sup> | S 235                          | S 355 |
| G<br>kg/m  |   |  |                 |                                  |             |                                  |             |                             |                                |       |
| L 200 x 200 x 15 45.6  | 2209  | 152.2                                  | 6.17            | 3516                             | 7.78        | 903                              | 3.94        | -1306                       | 4                              | 4     |
| L 200 x 200 x 16 48.5  | 2341  | 161.7                                  | 6.16            | 3726                             | 7.77        | 957                              | 3.94        | -1384                       | 4                              | 4     |
| L 200 x 200 x 17 51.4  | 2472  | 171.2                                  | 6.14            | 3932                             | 7.75        | 1011                             | 3.93        | -1461                       | 4                              | 4     |
| L 200 x 200 x 18 54.3  | 2600  | 180.6                                  | 6.13            | 4135                             | 7.74        | 1064                             | 3.92        | -1536                       | 3                              | 4     |
| L 200 x 200 x 19 57.1  | 2726  | 189.9                                  | 6.12            | 4335                             | 7.72        | 1117                             | 3.92        | -1609                       | 2                              | 4     |
| L 200 x 200 x 20 59.9  | 2851  | 199.1                                  | 6.11            | 4532                             | 7.70        | 1169                             | 3.91        | -1681                       | 1                              | 4     |
| L 200 x 200 x 21 62.8  | 2973  | 208.2                                  | 6.10            | 4725                             | 7.69        | 1221                             | 3.91        | -1752                       | 1                              | 4     |
| L 200 x 200 x 22 65.6  | 3094  | 217.3                                  | 6.09            | 4915                             | 7.67        | 1273                             | 3.90        | -1821                       | 1                              | 3     |
| L 200 x 200 x 23 68.3  | 3213  | 226.3                                  | 6.08            | 5102                             | 7.66        | 1324                             | 3.90        | -1889                       | 1                              | 2     |
| L 200 x 200 x 24 71.1  | 3331  | 235.2                                  | 6.06            | 5286                             | 7.64        | 1375                             | 3.90        | -1955                       | 1                              | 2     |
| L 200 x 200 x 25 73.9  | 3446  | 244.0                                  | 6.05            | 5467                             | 7.62        | 1426                             | 3.89        | -2020                       | 1                              | 1     |
| L 200 x 200 x 26 76.6  | 3560  | 252.7                                  | 6.04            | 5645                             | 7.61        | 1476                             | 3.89        | -2084                       | 1                              | 1     |
| L 250 x 250 x 20 75.6  | 5743  | 317.9                                  | 7.72            | 9144                             | 9.74        | 2341                             | 4.93        | -3401                       | 4                              | 4     |
| L 250 x 250 x 21 79.2  | 5997  | 332.7                                  | 7.71            | 9548                             | 9.73        | 2447                             | 4.92        | -3550                       | 4                              | 4     |
| L 250 x 250 x 22 82.8  | 6249  | 347.4                                  | 7.70            | 9946                             | 9.71        | 2551                             | 4.92        | -3697                       | 3                              | 4     |
| L 250 x 250 x 23 86.4  | 6497  | 362.0                                  | 7.68            | 10339                            | 9.69        | 2655                             | 4.91        | -3842                       | 2                              | 4     |
| L 250 x 250 x 24 90.0  | 6743  | 376.5                                  | 7.67            | 10727                            | 9.68        | 2759                             | 4.91        | -3984                       | 2                              | 4     |
| L 250 x 250 x 25 93.5  | 6986  | 390.9                                  | 7.66            | 11110                            | 9.66        | 2861                             | 4.90        | -4124                       | 1                              | 4     |
| L 250 x 250 x 26 97.0  | 7226  | 405.2                                  | 7.65            | 11488                            | 9.64        | 2963                             | 4.90        | -4262                       | 1                              | 4     |
| L 250 x 250 x 27 100.5   | 7463  | 419.3                                  | 7.63            | 11861                            | 9.62        | 3065                             | 4.89        | -4398                       | 1                              | 3     |
| L 250 x 250 x 28 104.0   | 7697  | 433.4                                  | 7.62            | 12229                            | 9.61        | 3166                             | 4.89        | -4532                       | 1                              | 2     |
| L 8 x 8 x 3/4 57.9   | 2881  | 198.2                                  | 6.26            | 4588                             | 7.90        | 1174                             | 3.99        | -1707                       | 2                              | 4     |
| L 8 x 8 x 7/8 67.0   | 3293  | 228.4                                  | 6.21            | 5236                             | 7.84        | 1350                             | 3.98        | -1943                       | 1                              | 3     |
| L 8 x 8 x 1 75.9   | 3686  | 257.7                                  | 6.17            | 5850                             | 7.78        | 1522                             | 3.97        | -2164                       | 1                              | 1     |
| L 8 x 8 x 1 1/8 84.7   | 4062  | 286.3                                  | 6.13            | 6432                             | 7.72        | 1692                             | 3.96        | -2370                       | 1                              | 1     |



# Cornières à ailes égales

## Equal leg angles

## Gleichschenkliger Winkelstahl



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |                      |                      |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |                        |                        |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|----------------------|---|------------------------|------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h=b<br>mm                 | t<br>mm | r <sub>1</sub><br>mm | r <sub>2</sub><br>mm | A<br>cm <sup>2</sup> | Ø   | e <sub>min</sub><br>mm | e <sub>max</sub><br>mm | A <sub>net</sub><br>cm <sup>2</sup> |
| L 100 x 100 x 8 <sup>-</sup>              | 12.2 | 100                       | 8       | 12                   | 6                    | 15.51                | M27   | 48                     | 53                     | 13.11                               |
| L 100 x 100 x 10 <sup>-</sup>             | 15.0 | 100                       | 10      | 12                   | 6                    | 19.15                | M27   | 50                     | 53                     | 16.15                               |
| L 100 x 100 x 12 <sup>-</sup>             | 17.8 | 100                       | 12      | 12                   | 6                    | 22.71                | M27   | 52                     | 53                     | 19.11                               |
|   |      |                           |         |                      |                      |                      |   |                        |                        |                                     |
| L 110 x 110 x 10                          | 16.6 | 110                       | 10      | 13                   | 6.5                  | 21.18                | M27   | 50                     | 62                     | 18.18                               |
| L 110 x 110 x 12                          | 19.7 | 110                       | 12      | 13                   | 6.5                  | 25.14                | M27   | 52                     | 62                     | 21.54                               |
|   |      |                           |         |                      |                      |                      |   |                        |                        |                                     |
| L 120 x 120 x 10 <sup>+</sup>             | 18.2 | 120                       | 10      | 13                   | 6.5                  | 23.18                | M27   | 50                     | 72                     | 20.18                               |
| L 120 x 120 x 11                          | 19.9 | 120                       | 11      | 13                   | 6.5                  | 25.37                | M27   | 51                     | 72                     | 22.07                               |
| L 120 x 120 x 12 <sup>-</sup>             | 21.6 | 120                       | 12      | 13                   | 6.5                  | 27.54                | M27   | 52                     | 72                     | 23.94                               |
| L 120 x 120 x 13                          | 23.3 | 120                       | 13      | 13                   | 6.5                  | 29.69                | M27   | 53                     | 72                     | 25.79                               |
| L 120 x 120 x 15                          | 26.6 | 120                       | 15      | 13                   | 6.5                  | 33.93                | M27   | 55                     | 72                     | 29.43                               |
|   |      |                           |         |                      |                      |                      |   |                        |                        |                                     |
| L 130 x 130 x 12 <sup>-</sup>             | 23.5 | 130                       | 12      | 14                   | 7                    | 29.97                | M27   | 52                     | 82                     | 26.37                               |
|   |      |                           |         |                      |                      |                      |   |                        |                        |                                     |
| L 140 x 140 x 10 <sup>+</sup>             | 21.4 | 140                       | 10      | 15                   | 7.5                  | 27.24                | M27   | 51                     | 92                     | 24.24                               |
| L 140 x 140 x 13                          | 27.4 | 140                       | 13      | 15                   | 7.5                  | 34.95                | M27   | 54                     | 92                     | 31.05                               |
|   |      |                           |         |                      |                      |                      |   |                        |                        |                                     |
| L 150 x 150 x 10 <sup>+</sup>             | 23.0 | 150                       | 10      | 16                   | 8                    | 29.27                | M27   | 52                     | 102                    | 26.27                               |
| L 150 x 150 x 12 <sup>-</sup>             | 27.3 | 150                       | 12      | 16                   | 8                    | 34.83                | M27   | 54                     | 102                    | 31.23                               |
| L 150 x 150 x 14                          | 31.6 | 150                       | 14      | 16                   | 8                    | 40.31                | M27   | 56                     | 102                    | 36.11                               |
| L 150 x 150 x 15 <sup>-</sup>             | 33.8 | 150                       | 15      | 16                   | 8                    | 43.02                | M27   | 57                     | 102                    | 38.52                               |
| L 150 x 150 x 18                          | 40.1 | 150                       | 18      | 16                   | 8                    | 51.03                | M27   | 61                     | 102                    | 45.63                               |
|   |      |                           |         |                      |                      |                      |   |                        |                        |                                     |
| L 160 x 160 x 14                          | 33.9 | 160                       | 14      | 17                   | 8.5                  | 43.15                | M27   | 57                     | 111                    | 38.95                               |
| L 160 x 160 x 15 <sup>-</sup>             | 36.2 | 160                       | 15      | 17                   | 8.5                  | 46.06                | M27   | 58                     | 111                    | 41.56                               |
| L 160 x 160 x 16                          | 38.4 | 160                       | 16      | 17                   | 8.5                  | 48.95                | M27   | 60                     | 111                    | 44.15                               |
| L 160 x 160 x 17                          | 40.7 | 160                       | 17      | 17                   | 8.5                  | 51.82                | M27   | 61                     | 111                    | 46.72                               |
|   |      |                           |         |                      |                      |                      |   |                        |                        |                                     |
| L 180 x 180 x 13                          | 35.7 | 180                       | 13      | 18                   | 9                    | 45.46                | M27   | 57                     | 131                    | 41.56                               |
| L 180 x 180 x 14                          | 38.3 | 180                       | 14      | 18                   | 9                    | 48.79                | M27   | 58                     | 131                    | 44.59                               |
| L 180 x 180 x 15                          | 40.9 | 180                       | 15      | 18                   | 9                    | 52.10                | M27   | 59                     | 131                    | 47.60                               |
| L 180 x 180 x 16 <sup>-</sup>             | 43.5 | 180                       | 16      | 18                   | 9                    | 55.39                | M27   | 61                     | 131                    | 50.59                               |
| L 180 x 180 x 17                          | 46.0 | 180                       | 17      | 18                   | 9                    | 58.66                | M27   | 62                     | 131                    | 53.56                               |
| L 180 x 180 x 18 <sup>-</sup>             | 48.6 | 180                       | 18      | 18                   | 9                    | 61.91                | M27   | 63                     | 131                    | 56.51                               |
| L 180 x 180 x 19                          | 51.1 | 180                       | 19      | 18                   | 9                    | 65.14                | M27   | 64                     | 131                    | 59.44                               |
| L 180 x 180 x 20                          | 53.7 | 180                       | 20      | 18                   | 9                    | 68.35                | M27   | 65                     | 131                    | 62.35                               |



- Profilé conforme à EN 10056-1: 1998.

▲ Commande minimale: 25t  
D'autres épaisseurs sont disponibles dans le cas d'une commande minimale de 25t ou de 100t suivant le profilé - veuillez contacter notre agence locale.

- Section in accordance with EN 10056-1: 1998.

▲ Minimum order: 25t  
Other thicknesses are available provided that a 25t or 100t minimum order is placed, depending on the section - please contact our local representative.

- Profil gemäß EN 10056-1: 1998.

▲ Mindestbestellmenge: 25t  
Ab einer Mindestbestellmenge von 25t bzw. 100t (je nach Profil) sind weitere Materialstärken verfügbar - bitte erkundigen Sie sich bei unserer örtlichen Niederlassung.



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| Désignation<br>Designation<br>Bezeichnung |       | Dimensions<br>Abmessungen |         |                      |                      |          | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |                        |                        |                         |
|---|-------|---------------------------|---------|----------------------|----------------------|----------|---|------------------------|------------------------|-------------------------|
| G<br>kg/m                                 |       | h=b<br>mm                 | t<br>mm | r <sub>1</sub><br>mm | r <sub>2</sub><br>mm | A<br>cm² | Ø   | e <sub>min</sub><br>mm | e <sub>max</sub><br>mm | A <sub>net</sub><br>cm² |
| L 200 x 200 x 15                          | 45.6  | 200                       | 15      | 18                   | 9                    | 58.10    | M27   | 59                     | 151                    | 53.60                   |
| L 200 x 200 x 16°                         | 48.5  | 200                       | 16      | 18                   | 9                    | 61.79    | M27   | 61                     | 151                    | 56.99                   |
| L 200 x 200 x 17                          | 51.4  | 200                       | 17      | 18                   | 9                    | 65.46    | M27   | 62                     | 151                    | 60.36                   |
| L 200 x 200 x 18°                         | 54.3  | 200                       | 18      | 18                   | 9                    | 69.11    | M27   | 63                     | 151                    | 63.71                   |
| L 200 x 200 x 19                          | 57.1  | 200                       | 19      | 18                   | 9                    | 72.74    | M27   | 64                     | 151                    | 67.04                   |
| L 200 x 200 x 20°                         | 59.9  | 200                       | 20      | 18                   | 9                    | 76.35    | M27   | 65                     | 151                    | 70.35                   |
| L 200 x 200 x 21                          | 62.8  | 200                       | 21      | 18                   | 9                    | 79.94    | M27   | 66                     | 151                    | 73.64                   |
| L 200 x 200 x 22                          | 65.6  | 200                       | 22      | 18                   | 9                    | 83.51    | M27   | 67                     | 151                    | 76.91                   |
| L 200 x 200 x 23                          | 68.3  | 200                       | 23      | 18                   | 9                    | 87.06    | M27   | 68                     | 151                    | 80.16                   |
| L 200 x 200 x 24°                         | 71.1  | 200                       | 24      | 18                   | 9                    | 90.59    | M27   | 69                     | 151                    | 83.39                   |
| L 200 x 200 x 25                          | 73.9  | 200                       | 25      | 18                   | 9                    | 94.10    | M27   | 70                     | 151                    | 86.60                   |
| L 200 x 200 x 26                          | 76.6  | 200                       | 26      | 18                   | 9                    | 97.59    | M27   | 71                     | 151                    | 89.79                   |
|   |       |                           |         |                      |                      |          |   |                        |                        |                         |
| L 250 x 250 x 20                          | 75.6  | 250                       | 20      | 18                   | 9                    | 96.35    | M27   | 40                     | 240                    | 96.35                   |
| L 250 x 250 x 21                          | 79.2  | 250                       | 21      | 18                   | 9                    | 100.94   | M27   | 41                     | 246                    | 100.94                  |
| L 250 x 250 x 22                          | 82.8  | 250                       | 22      | 18                   | 9                    | 105.51   | M27   | 42                     | 246                    | 105.51                  |
| L 250 x 250 x 23                          | 86.4  | 250                       | 23      | 18                   | 9                    | 110.06   | M27   | 43                     | 246                    | 110.06                  |
| L 250 x 250 x 24                          | 90.0  | 250                       | 24      | 18                   | 9                    | 114.59   | M27   | 44                     | 246                    | 114.59                  |
| L 250 x 250 x 25                          | 93.5  | 250                       | 25      | 18                   | 9                    | 119.10   | M27   | 45                     | 246                    | 119.10                  |
| L 250 x 250 x 26                          | 97.0  | 250                       | 26      | 18                   | 9                    | 123.59   | M27   | 46                     | 246                    | 123.59                  |
| L 250 x 250 x 27                          | 100.5 | 250                       | 27      | 18                   | 9                    | 128.06   | M27   | 47                     | 246                    | 128.06                  |
| L 250 x 250 x 28°                         | 104.0 | 250                       | 28      | 18                   | 9                    | 132.51   | M27   | 48                     | 246                    | 132.51                  |
|   |       |                           |         |                      |                      |          |   |                        |                        |                         |
|   |       |                           |         |                      |                      |          |   |                        |                        |                         |
|   |       |                           |         |                      |                      |          |   |                        |                        |                         |
| L 203 x 203 x 19°                         | 57.9  | 203                       | 19      | 8                    | 4                    | 73.60    | M27   | 64                     | 155                    | 67.90                   |
| L 203 x 203 x 22.2°                       | 67.0  | 203                       | 22.2    | 8                    | 4                    | 85.27    | M27   | 67                     | 155                    | 78.61                   |
| L 203 x 203 x 25.4°                       | 75.9  | 203                       | 25.4    | 8                    | 4                    | 96.74    | M27   | 70                     | 155                    | 89.12                   |
| L 203 x 203 x 28.6°                       | 84.7  | 203                       | 28.6    | 8                    | 4                    | 108.01   | M27   | 73                     | 155                    | 99.43                   |

° Profilé conforme à ASTM A6 / A6M - 98.  
- Profilé conforme à EN 10056-1: 1998.

° Section in accordance with ASTM A6 / A6M - 98.  
- Section in accordance with EN 10056-1: 1998.

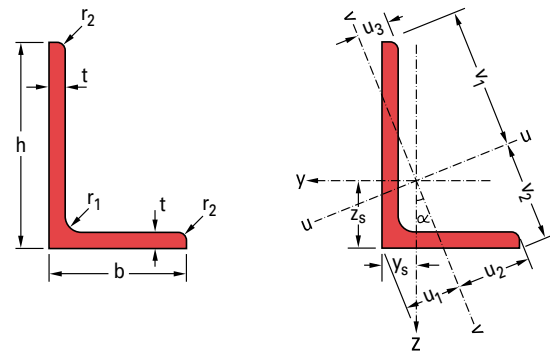
° Profil gemäß ASTM A6 / A6M - 98.  
- Profil gemäß EN 10056-1: 1998.



# Cornières à ailes inégales

## Unequal leg angles

## Ungleichschenkliger Winkelstahl



| Désignation<br>Designation<br>Bezeichnung | G<br>kg/m | Dimensions<br>Abmessungen |         |         |                      |                      | A<br>cm <sup>2</sup> | Position des axes<br>Position of axes<br>Lage der Achsen |                      |                      |                      |                      |                      |                      | Surface<br>Oberfläche               |                                     |
|---|-----------|---------------------------|---------|---------|----------------------|----------------------|----------------------|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-------------------------------------|-------------------------------------|
|   |           | h<br>mm                   | b<br>mm | t<br>mm | r <sub>1</sub><br>mm | r <sub>2</sub><br>mm |                      | z <sub>s</sub><br>cm                                     | y <sub>s</sub><br>cm | v <sub>1</sub><br>cm | v <sub>2</sub><br>cm | u <sub>1</sub><br>cm | u <sub>2</sub><br>cm | u <sub>3</sub><br>cm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| L 120 x 80 x 8 <sup>-</sup>               | 12.2      | 120                       | 80      | 8       | 11                   | 5.5                  | 15.49                | 3.83   | 1.87                 | 8.23                 | 5.97                 | 3.25                 | 4.19                 | 2.09                 | 0.391                               | 32.12                               |
| L 120 x 80 x 10 <sup>-</sup>              | 15.0      | 120                       | 80      | 10      | 11                   | 5.5                  | 19.13                | 3.92   | 1.95                 | 8.19                 | 6.01                 | 3.35                 | 4.17                 | 2.15                 | 0.391                               | 26.01                               |
| L 120 x 80 x 12 <sup>▲</sup>              | 17.8      | 120                       | 80      | 12      | 11                   | 5.5                  | 22.69                | 4.00   | 2.03                 | 8.14                 | 6.04                 | 3.45                 | 4.16                 | 2.20                 | 0.391                               | 21.93                               |
| L 130 x 65 x 8                            | 11.8      | 130                       | 65      | 8       | 11                   | 5.5                  | 15.09                | 4.56   | 1.37                 | 8.51                 | 5.71                 | 2.48                 | 3.82                 | 1.39                 | 0.381                               | 32.13                               |
| L 130 x 65 x 10                           | 14.6      | 130                       | 65      | 10      | 11                   | 5.5                  | 18.63                | 4.65   | 1.45                 | 8.44                 | 5.77                 | 2.57                 | 3.78                 | 1.46                 | 0.381                               | 26.02                               |
| L 150 x 90 x 10 <sup>-</sup>              | 18.2      | 150                       | 90      | 10      | 12                   | 6                    | 23.15                | 5.00   | 2.04                 | 10.10                | 7.07                 | 3.61                 | 4.97                 | 2.20                 | 0.470                               | 25.84                               |
| L 150 x 90 x 11                           | 19.9      | 150                       | 90      | 11      | 12                   | 6                    | 25.34                | 5.04   | 2.08                 | 10.07                | 7.09                 | 3.66                 | 4.95                 | 2.23                 | 0.470                               | 23.61                               |
| L 150 x 100 x 10 <sup>-</sup>             | 19.0      | 150                       | 100     | 10      | 12                   | 6                    | 24.15                | 4.81   | 2.34                 | 10.27                | 7.48                 | 4.08                 | 5.25                 | 2.64                 | 0.490                               | 25.83                               |
| L 150 x 100 x 12 <sup>-</sup>             | 22.5      | 150                       | 100     | 12      | 12                   | 6                    | 28.71                | 4.90   | 2.42                 | 10.23                | 7.52                 | 4.18                 | 5.23                 | 2.70                 | 0.490                               | 21.72                               |
| L 150 x 100 x 14 <sup>▲</sup>             | 26.1      | 150                       | 100     | 14      | 12                   | 6                    | 33.19                | 4.98   | 2.50                 | 10.19                | 7.55                 | 4.28                 | 5.22                 | 2.75                 | 0.490                               | 18.79                               |
| L 160 x 80 x 10                           | 18.2      | 160                       | 80      | 10      | 13                   | 6.5                  | 23.18                | 5.63   | 1.69                 | 10.46                | 7.04                 | 3.06                 | 4.70                 | 1.73                 | 0.469                               | 25.76                               |
| L 160 x 80 x 12                           | 21.6      | 160                       | 80      | 12      | 13                   | 6.5                  | 27.54                | 5.72   | 1.77                 | 10.40                | 7.10                 | 3.15                 | 4.66                 | 1.80                 | 0.469                               | 21.69                               |
| L 200 x 100 x 10 <sup>-</sup>             | 23.0      | 200                       | 100     | 10      | 15                   | 7.5                  | 29.24                | 6.93   | 2.01                 | 13.15                | 8.74                 | 3.72                 | 5.94                 | 2.09                 | 0.587                               | 25.58                               |
| L 200 x 100 x 12 <sup>-</sup>             | 27.3      | 200                       | 100     | 12      | 15                   | 7.5                  | 34.80                | 7.03   | 2.10                 | 13.08                | 8.81                 | 3.82                 | 5.89                 | 2.17                 | 0.587                               | 21.49                               |
| L 200 x 100 x 14                          | 31.6      | 200                       | 100     | 14      | 15                   | 7.5                  | 40.28                | 7.12   | 2.18                 | 13.01                | 8.86                 | 3.91                 | 5.85                 | 2.24                 | 0.587                               | 18.57                               |



- Profilé conforme à EN 10056-1: 1998.

▲ Commande minimale: 25t

D'autres épaisseurs sont disponibles dans le cas d'une commande minimale de 25t ou de 100t suivant le profilé - veuillez contacter notre agence locale.

- Section in accordance with EN 10056-1: 1998.

▲ Minimum order: 25t

Other thicknesses are available provided that a 25t or 100t minimum order is placed, depending on the section - please contact our local representative.

- Profil gemäß EN 10056-1: 1998.

▲ Mindestbestellmenge: 25t

Ab einer Mindestbestellmenge von 25t bzw. 100t (je nach Profil) sind weitere Materialstärken verfügbar - bitte erkundigen Sie sich bei unserer örtlichen Niederlassung.



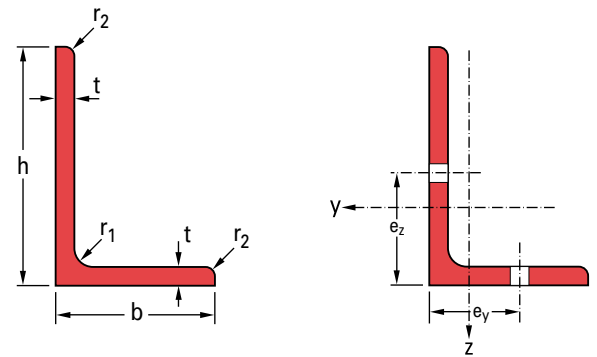
Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |      | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |                                  |                                   |                                      |                                  |                                   |                                  |                                   |                      |                                    | Classification<br>ENV 1993-1-1 |       |
|---|------|--|-----------------------------------|--------------------------------------|----------------------------------|-----------------------------------|--------------------------------------|----------------------------------|-----------------------------------|----------------------------------|-----------------------------------|----------------------|------------------------------------|--------------------------------|-------|
|   |      | axe y-y<br>axis y-y<br>Achse y-y                             |                                   |                                      | axe z-z<br>axis z-z<br>Achse z-z |                                   |                                      | axe u-u<br>axis u-u<br>Achse u-u |                                   | axe v-v<br>axis v-v<br>Achse v-v |                                   |                      |                                    |                                |       |
|   |      | G<br>kg/m  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | i <sub>y</sub><br>cm             | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup> | i <sub>z</sub><br>cm             | I <sub>u</sub><br>cm <sup>4</sup> | i <sub>u</sub><br>cm             | I <sub>v</sub><br>cm <sup>4</sup> | i <sub>v</sub><br>cm | I <sub>yz</sub><br>cm <sup>4</sup> | α<br>°                         | S 235 |
| L 120 x 80 x 8                            | 12.2 | 225.7  | 27.63                             | 3.82                                 | 80.76                            | 13.17                             | 2.28                                 | 260.0                            | 4.10                              | 46.39                            | 1.73                              | -78.50               | 23.65                              | 4                              | 4     |
| L 120 x 80 x 10                           | 15.0 | 275.5  | 34.10                             | 3.80                                 | 98.11                            | 16.21                             | 2.26                                 | 317.0                            | 4.07                              | 56.60                            | 1.72                              | -95.34               | 23.53                              | 3                              | 4     |
| L 120 x 80 x 12                           | 17.8 | 322.8  | 40.37                             | 3.77                                 | 114.33                           | 19.14                             | 2.24                                 | 370.7                            | 4.04                              | 66.46                            | 1.71                              | -110.8               | 23.37                              | 1                              | 4     |
|   |      |  |                                   |                                      |                                  |                                   |                                      |                                  |                                   |                                  |                                   |                      |                                    |                                |       |
| L 130 x 65 x 8                            | 11.8 | 262.5  | 31.10                             | 4.17                                 | 44.77                            | 8.72                              | 1.72                                 | 278.6                            | 4.30                              | 28.72                            | 1.38                              | -61.25               | 14.68                              | 4                              | 4     |
| L 130 x 65 x 10                           | 14.6 | 320.5  | 38.39                             | 4.15                                 | 54.20                            | 10.73                             | 1.71                                 | 339.6                            | 4.27                              | 35.02                            | 1.37                              | -73.99               | 14.53                              | 3                              | 4     |
|   |      |  |                                   |                                      |                                  |                                   |                                      |                                  |                                   |                                  |                                   |                      |                                    |                                |       |
| L 150 x 90 x 10                           | 18.2 | 533.1  | 53.29                             | 4.80                                 | 146.1                            | 20.98                             | 2.51                                 | 591.3                            | 5.05                              | 87.93                            | 1.95                              | -160.9               | 19.87                              | 4                              | 4     |
| L 150 x 90 x 11                           | 19.9 | 580.7  | 58.30                             | 4.79                                 | 158.7                            | 22.91                             | 2.50                                 | 643.7                            | 5.04                              | 95.71                            | 1.94                              | -174.7               | 19.81                              | 3                              | 4     |
| L 150 x 100 x 10                          | 19.0 | 552.6  | 54.23                             | 4.78                                 | 198.5                            | 25.92                             | 2.87                                 | 637.3                            | 5.14                              | 113.8                            | 2.17                              | -192.8               | 23.72                              | 4                              | 4     |
| L 150 x 100 x 12                          | 22.5 | 650.5  | 64.38                             | 4.76                                 | 232.6                            | 30.69                             | 2.85                                 | 749.3                            | 5.11                              | 133.9                            | 2.16                              | -225.8               | 23.61                              | 3                              | 4     |
| L 150 x 100 x 14                          | 26.1 | 744.4  | 74.27                             | 4.74                                 | 264.9                            | 35.32                             | 2.82                                 | 855.9                            | 5.08                              | 153.4                            | 2.15                              | -256.8               | 23.48                              | 2                              | 4     |
|   |      |  |                                   |                                      |                                  |                                   |                                      |                                  |                                   |                                  |                                   |                      |                                    |                                |       |
| L 160 x 80 x 10                           | 18.2 | 611.3  | 58.94                             | 5.14                                 | 104.4                            | 16.55                             | 2.12                                 | 648.7                            | 5.29                              | 67.01                            | 1.70                              | -142.7               | 14.69                              | 4                              | 4     |
| L 160 x 80 x 12                           | 21.6 | 719.5  | 69.98                             | 5.11                                 | 122.0                            | 19.59                             | 2.10                                 | 762.8                            | 5.26                              | 78.77                            | 1.69                              | -166.5               | 14.57                              | 3                              | 4     |
|   |      |  |                                   |                                      |                                  |                                   |                                      |                                  |                                   |                                  |                                   |                      |                                    |                                |       |
| L 200 x 100 x 10                          | 23.0 | 1219   | 93.24                             | 6.46                                 | 210.3                            | 26.33                             | 2.68                                 | 1294                             | 6.65                              | 134.5                            | 2.14                              | -286.8               | 14.82                              | 4                              | 4     |
| L 200 x 100 x 12                          | 27.3 | 1440   | 111.0                             | 6.43                                 | 247.2                            | 31.28                             | 2.67                                 | 1529                             | 6.63                              | 158.5                            | 2.13                              | -337.3               | 14.74                              | 4                              | 4     |
| L 200 x 100 x 14                          | 31.6 | 1654   | 128.4                             | 6.41                                 | 282.2                            | 36.08                             | 2.65                                 | 1755                             | 6.60                              | 181.7                            | 2.12                              | -384.8               | 14.65                              | 3                              | 4     |

# Cornières à ailes inégales

## Unequal leg angles

## Ungleichschenkliger Winkelstahl



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |         |                      |                      |          | Dimensions de construction / Dimensions for detailing / Konstruktionsmaße |                           |                           |                            |   |                           |                           |                            |
|---|------|---------------------------|---------|---------|----------------------|----------------------|----------|---|---------------------------|---------------------------|----------------------------|---|---------------------------|---------------------------|----------------------------|
|   |      |                           |         |         |                      |                      |          | aile longue<br>long leg<br>langer Schenkel                                |                           |                           |                            | aile courte<br>short leg<br>kurzer Schenkel |                           |                           |                            |
| G<br>kg/m                                 |      | h<br>mm                   | b<br>mm | t<br>mm | r <sub>1</sub><br>mm | r <sub>2</sub><br>mm | A<br>cm² | Ø <sub>z</sub>  | e <sub>z</sub> .min<br>mm | e <sub>z</sub> .max<br>mm | A <sub>z</sub> .net<br>cm² | Ø <sub>y</sub>                              | e <sub>y</sub> .min<br>mm | e <sub>y</sub> .max<br>mm | A <sub>y</sub> .net<br>cm² |
| L 120 x 80 x 8 <sup>-</sup>               | 12.2 | 120                       | 80      | 8       | 11                   | 5.5                  | 15.49    | M27   | 48                        | 72                        | 13.09                      | M16   | 38                        | 51                        | 14.05                      |
| L 120 x 80 x 10 <sup>-</sup>              | 15.0 | 120                       | 80      | 10      | 11                   | 5.5                  | 19.13    | M27   | 50                        | 72                        | 16.13                      | M16   | 40                        | 51                        | 17.33                      |
| L 120 x 80 x 12 <sup>▲</sup>              | 17.8 | 120                       | 80      | 12      | 11                   | 5.5                  | 22.69    | M27   | 52                        | 72                        | 19.09                      | M16   | 42                        | 51                        | 20.53                      |
|   |      |                           |         |         |                      |                      |          |   |                           |                           |                            |   |                           |                           |                            |
| L 130 x 65 x 8                            | 11.8 | 130                       | 65      | 8       | 11                   | 5.5                  | 15.09    | M27   | 48                        | 82                        | 12.69                      | M12   | 35                        | 42                        | 13.97                      |
| L 130 x 65 x 10                           | 14.6 | 130                       | 65      | 10      | 11                   | 5.5                  | 18.63    | M27   | 50                        | 82                        | 15.63                      | M12   | 37                        | 42                        | 17.23                      |
|   |      |                           |         |         |                      |                      |          |   |                           |                           |                            |   |                           |                           |                            |
| L 150 x 90 x 10 <sup>-</sup>              | 18.2 | 150                       | 90      | 10      | 12                   | 6                    | 23.15    | M27   | 50                        | 102                       | 20.15                      | M24   | 47                        | 49                        | 20.55                      |
| L 150 x 90 x 11                           | 19.9 | 150                       | 90      | 11      | 12                   | 6                    | 25.34    | M27   | 51                        | 102                       | 22.04                      | M24   | 48                        | 49                        | 22.48                      |
| L 150 x 100 x 10 <sup>-</sup>             | 19.0 | 150                       | 100     | 10      | 12                   | 6                    | 24.15    | M27   | 50                        | 102                       | 21.15                      | M27   | 50                        | 53                        | 21.15                      |
| L 150 x 100 x 12 <sup>-</sup>             | 22.5 | 150                       | 100     | 12      | 12                   | 6                    | 28.71    | M27   | 52                        | 102                       | 25.11                      | M27   | 52                        | 53                        | 25.11                      |
| L 150 x 100 x 14 <sup>▲</sup>             | 26.1 | 150                       | 100     | 14      | 12                   | 6                    | 33.19    | M27   | 54                        | 102                       | 28.99                      | M24   | 51                        | 59                        | 29.55                      |
|   |      |                           |         |         |                      |                      |          |   |                           |                           |                            |   |                           |                           |                            |
| L 160 x 80 x 10                           | 18.2 | 160                       | 80      | 10      | 13                   | 6.5                  | 23.18    | M27   | 50                        | 111                       | 20.18                      | M16   | 40                        | 51                        | 21.38                      |
| L 160 x 80 x 12                           | 21.6 | 160                       | 80      | 12      | 13                   | 6.5                  | 27.54    | M27   | 52                        | 111                       | 23.94                      | M16   | 42                        | 51                        | 25.38                      |
|   |      |                           |         |         |                      |                      |          |   |                           |                           |                            |   |                           |                           |                            |
| L 200 x 100 x 10 <sup>-</sup>             | 23.0 | 200                       | 100     | 10      | 15                   | 7.5                  | 29.24    | M27   | 54                        | 150                       | 26.24                      | M27   | 51                        | 53                        | 26.24                      |
| L 200 x 100 x 12 <sup>-</sup>             | 27.3 | 200                       | 100     | 12      | 15                   | 7.5                  | 34.80    | M27   | 54                        | 150                       | 31.20                      | M27   | 53                        | 53                        | 31.20                      |
| L 200 x 100 x 14                          | 31.6 | 200                       | 100     | 14      | 15                   | 7.5                  | 40.28    | M27   | 55                        | 151                       | 36.08                      | M24   | 52                        | 59                        | 36.64                      |



- Profilé conforme à EN 10056-1: 1998.

▲ Commande minimale: 25t  
D'autres épaisseurs sont disponibles dans le cas d'une commande minimale de 25t ou de 100t suivant le profilé - veuillez contacter notre agence locale.

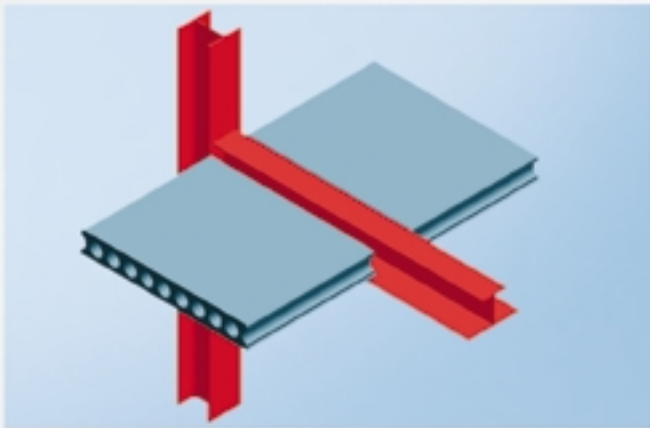
- Section in accordance with EN 10056-1: 1998.

▲ Minimum order: 25t  
Other thicknesses are available provided that a 25t or 100t minimum order is placed, depending on the section - please contact our local representative.

- Profil gemäß EN 10056-1: 1998.

▲ Mindestbestellmenge: 25t  
Ab einer Mindestbestellmenge von 25t bzw. 100t (je nach Profil) sind weitere Materialstärken verfügbar - bitte erkundigen Sie sich bei unserer örtlichen Niederlassung.

# Les poutrelles intégrées IFB et SFB: Une conception pour architectes



Plancher - dalle type avec poutres intégrées IFB

## Les poutrelles intégrées IFB et SFB: Une conception pour architectes

Le plancher à base de poutrelles intégrées, qui **combine acier et béton**, est la **solution innovante et économique** qui permet **d'optimiser le volume utile** du bâtiment tout en répondant aux **exigences de protection au feu**.

## Integrated IFB and SFB beams: A concept for architects

Floors based on integrated beams combining **steel and concrete** are the ideal **cheap, innovative** solution since they help to **optimise the construction's usable space** and also satisfy **fire safety requirements**.



## Integrierte IFB- und SFB-Träger: Das Konzept für Architekten

Decken mit integrierten Trägern, bei denen **Stahl und Beton** miteinander **kombiniert** werden, stellen ein **innovatives und wirtschaftliches Konzept** dar: Unter der vollen Ausnutzung der Möglichkeiten der Stahlbau- montage **erhöhen Sie das Nutzvolumen** eines Gebäudes und tragen den **Brandschutzbestimmungen** dabei voll und ganz Rechnung.

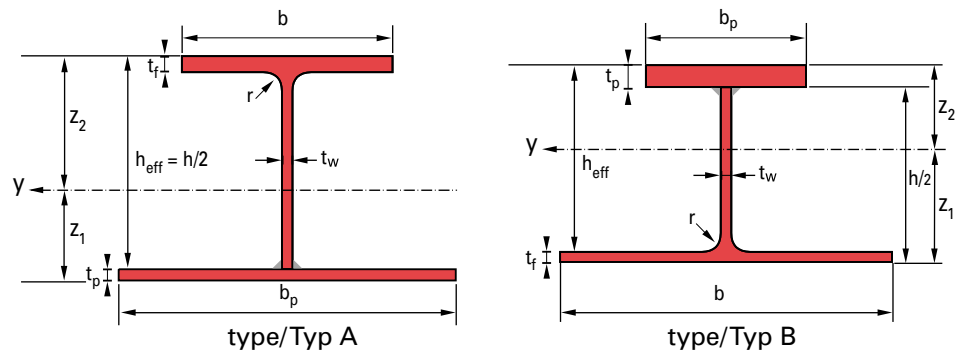




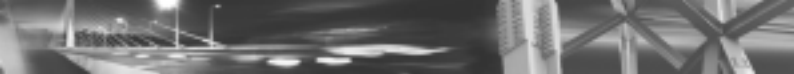
## Poutrelles IFB

### IFB beams

### IFB-Träger



| Désignation<br>Designation<br>Bezeichnung |  |             |           | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Valeurs statiques<br>Section properties<br>Statische Kennwerte |                                      |                      |                      |
|---|--|-------------|-----------|---------------------------|---------|----------------------|----------------------|---------|----------------------|--|--------------------------------------|----------------------|----------------------|
|   | b <sub>p</sub> x t <sub>p</sub><br>mm x mm | type<br>Typ | G<br>kg/m | h <sub>eff</sub><br>mm    | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | I <sub>y</sub><br>cm <sup>4</sup>                              | W <sub>el,y</sub><br>cm <sup>3</sup> | z <sub>1</sub><br>cm | z <sub>2</sub><br>cm |
| 1/2 IPE 400                               | 380 x 10                                   | A           | 63.0      | 200.0                     | 180.0   | 8.6                  | 13.5                 | 21.0    | 80.2                 | 6558   | 542                                  | 8.9                  | 12.1                 |
| 1/2 IPE O 400                             | 390 x 12                                   | A           | 74.6      | 202.0                     | 182.0   | 9.7                  | 15.5                 | 21.0    | 95.0                 | 7893   | 627                                  | 8.8                  | 12.6                 |
| 1/2 IPE 450                               | 390 x 12                                   | A           | 75.5      | 225.0                     | 190.0   | 9.4                  | 14.6                 | 21.0    | 96.2                 | 9857   | 707                                  | 9.8                  | 13.9                 |
| 1/2 IPE O 450                             | 400 x 12                                   | A           | 83.9      | 228.0                     | 192.0   | 11.0                 | 17.6                 | 21.0    | 106.8                | 11230  | 832                                  | 10.5                 | 13.5                 |
| 1/2 IPE 500                               | 400 x 12                                   | A           | 83.0      | 250.0                     | 200.0   | 10.2                 | 16.0                 | 21.0    | 105.8                | 13332  | 895                                  | 11.3                 | 14.9                 |
| 1/2 IPE O 500                             | 410 x 15                                   | A           | 101.9     | 253.0                     | 202.0   | 12.0                 | 19.0                 | 21.0    | 129.9                | 16701  | 1071                                 | 11.2                 | 15.6                 |
| 1/2 IPE 550                               | 410 x 15                                   | A           | 101.0     | 275.0                     | 210.0   | 11.1                 | 17.2                 | 24.0    | 128.7                | 19499  | 1145                                 | 12.0                 | 17.0                 |
| 1/2 IPE O 550                             | 420 x 15                                   | A           | 110.7     | 278.0                     | 212.0   | 12.7                 | 20.2                 | 24.0    | 141.0                | 21826  | 1318                                 | 12.7                 | 16.6                 |
| 1/2 IPE 600                               | 420 x 15                                   | A           | 110.7     | 300.0                     | 220.0   | 12.0                 | 19.0                 | 24.0    | 141.0                | 25375  | 1419                                 | 13.6                 | 17.9                 |
| 1/2 IPE O 600                             | 430 x 15                                   | A           | 127.9     | 305.0                     | 224.0   | 15.0                 | 24.0                 | 24.0    | 162.9                | 29831  | 1747                                 | 14.9                 | 17.1                 |
| 1/2 IPE O 600                             | 430 x 20                                   | A           | 144.7     | 305.0                     | 224.0   | 15.0                 | 24.0                 | 24.0    | 184.4                | 34207  | 1815                                 | 13.7                 | 18.8                 |
| 1/2 HE 220 M                              | 430 x 15                                   | A           | 109.3     | 120.0                     | 226.0   | 15.5                 | 26.0                 | 18.0    | 139.2                | 4209   | 581                                  | 6.3                  | 7.2                  |
| 1/2 HE 240 M                              | 450 x 20                                   | A           | 149.0     | 135.0                     | 248.0   | 18.0                 | 32.0                 | 21.0    | 189.8                | 7323   | 872                                  | 7.1                  | 8.4                  |
| 1/2 HE 260 B                              | 460 x 12                                   | A           | 89.8      | 130.0                     | 260.0   | 10.0                 | 17.5                 | 24.0    | 114.4                | 4252   | 553                                  | 6.5                  | 7.7                  |
| 1/2 HE 260 M                              | 470 x 20                                   | A           | 160.0     | 145.0                     | 268.0   | 18.0                 | 32.5                 | 24.0    | 203.8                | 9088   | 1036                                 | 7.7                  | 8.8                  |
| 1/2 HE 280 M                              | 490 x 20                                   | A           | 171.2     | 155.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 218.1                | 11111  | 1214                                 | 8.3                  | 9.2                  |
| 1/2 HE 280 M                              | 490 x 25                                   | A           | 190.4     | 155.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 242.6                | 12740  | 1272                                 | 8.0                  | 10.0                 |
| 1/2 HE 300 B                              | 500 x 15                                   | A           | 117.4     | 150.0                     | 300.0   | 11.0                 | 19.0                 | 27.0    | 149.5                | 7483   | 820                                  | 7.4                  | 9.1                  |
| 1/2 HE 300 M                              | 510 x 25                                   | A           | 219.0     | 170.0                     | 310.0   | 21.0                 | 39.0                 | 27.0    | 279.0                | 17207  | 1676                                 | 9.2                  | 10.3                 |
| 1/2 HE 320 B                              | 500 x 15                                   | A           | 122.2     | 160.0                     | 300.0   | 11.5                 | 20.5                 | 27.0    | 155.7                | 8806   | 931                                  | 8.0                  | 9.5                  |
| 1/2 HE 320 M                              | 510 x 25                                   | A           | 222.6     | 179.5                     | 309.0   | 21.0                 | 40.0                 | 27.0    | 283.5                | 19393  | 1814                                 | 9.8                  | 10.7                 |
| 1/2 HE 320 M                              | 510 x 30                                   | A           | 242.6     | 179.5                     | 309.0   | 21.0                 | 40.0                 | 27.0    | 309.0                | 21737  | 1887                                 | 9.4                  | 11.5                 |
| 1/2 HE 340 B                              | 500 x 15                                   | A           | 126.0     | 170.0                     | 300.0   | 12.0                 | 21.5                 | 27.0    | 160.4                | 10173  | 1033                                 | 8.7                  | 9.8                  |
| 1/2 HE 340 M                              | 510 x 25                                   | A           | 224.0     | 188.5                     | 309.0   | 21.0                 | 40.0                 | 27.0    | 285.4                | 21503  | 1930                                 | 10.2                 | 11.1                 |
| 1/2 HE 340 M                              | 510 x 30                                   | A           | 244.1     | 188.5                     | 309.0   | 21.0                 | 40.0                 | 27.0    | 310.9                | 24062  | 2005                                 | 9.8                  | 12.0                 |
| 1/2 HE 360 B                              | 500 x 15                                   | A           | 129.8     | 180.0                     | 300.0   | 12.5                 | 22.5                 | 27.0    | 165.3                | 11661  | 1140                                 | 9.3                  | 10.2                 |
| 1/2 HE 360 M                              | 510 x 25                                   | A           | 225.2     | 197.5                     | 308.0   | 21.0                 | 40.0                 | 27.0    | 286.9                | 23691  | 2040                                 | 10.6                 | 11.6                 |
| 1/2 HE 360 M                              | 510 x 30                                   | A           | 245.2     | 197.5                     | 308.0   | 21.0                 | 40.0                 | 27.0    | 312.4                | 26468  | 2118                                 | 10.3                 | 12.5                 |
| 1/2 HE 400 B                              | 500 x 20                                   | A           | 156.1     | 200.0                     | 300.0   | 13.5                 | 24.0                 | 27.0    | 198.9                | 17420  | 1407                                 | 9.6                  | 12.4                 |
| 1/2 HE 400 M                              | 510 x 25                                   | A           | 228.0     | 216.0                     | 307.0   | 21.0                 | 40.0                 | 27.0    | 290.4                | 28579  | 2276                                 | 11.5                 | 12.6                 |
| 1/2 HE 400 M                              | 510 x 30                                   | A           | 248.0     | 216.0                     | 307.0   | 21.0                 | 40.0                 | 27.0    | 315.9                | 31840  | 2357                                 | 11.1                 | 13.5                 |
| 1/2 HE 450 B                              | 500 x 20                                   | A           | 164.1     | 225.0                     | 300.0   | 14.0                 | 26.0                 | 27.0    | 209.0                | 22963  | 1707                                 | 11.0                 | 13.5                 |
| 1/2 HE 450 M                              | 510 x 25                                   | A           | 231.7     | 239.0                     | 307.0   | 21.0                 | 40.0                 | 27.0    | 295.2                | 35397  | 2580                                 | 12.7                 | 13.7                 |
| 1/2 HE 450 M                              | 510 x 30                                   | A           | 251.8     | 239.0                     | 307.0   | 21.0                 | 40.0                 | 27.0    | 320.7                | 39324  | 2667                                 | 12.2                 | 14.7                 |
| 1/2 HE 500 A                              | 500 x 20                                   | A           | 156.0     | 245.0                     | 300.0   | 12.0                 | 23.0                 | 27.0    | 198.8                | 25945  | 1722                                 | 11.4                 | 15.1                 |
| 1/2 HE 500 B                              | 500 x 20                                   | A           | 172.2     | 250.0                     | 300.0   | 14.5                 | 28.0                 | 27.0    | 219.3                | 29448  | 2034                                 | 12.5                 | 14.5                 |
| 1/2 HE 500 M                              | 510 x 25                                   | A           | 235.2     | 262.0                     | 306.0   | 21.0                 | 40.0                 | 27.0    | 299.6                | 42929  | 2882                                 | 13.8                 | 14.9                 |
| 1/2 HE 500 M                              | 510 x 30                                   | A           | 255.2     | 262.0                     | 306.0   | 21.0                 | 40.0                 | 27.0    | 325.1                | 47572  | 2974                                 | 13.2                 | 16.0                 |



# IFB

## IFB = "Integrated Floor Beam"

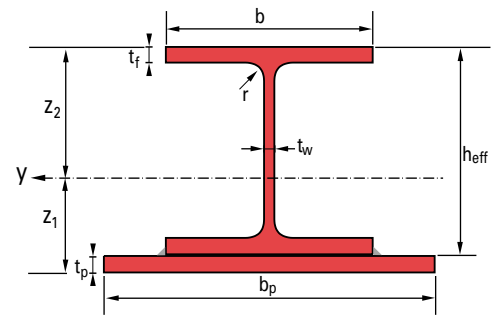
Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |  |             |           | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Valeurs statiques<br>Section properties<br>Statische Kennwerte |                                      |                      |                      |
|---|--|-------------|-----------|---------------------------|---------|----------------------|----------------------|---------|----------------------|--|--------------------------------------|----------------------|----------------------|
|   | b <sub>p</sub> x t <sub>p</sub><br>mm x mm | type<br>Typ | G<br>kg/m | h <sub>eff</sub><br>mm    | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | I <sub>y</sub><br>cm <sup>4</sup>                              | W <sub>el,y</sub><br>cm <sup>3</sup> | z <sub>1</sub><br>cm | z <sub>2</sub><br>cm |
| 1/2 HE 550 A                              | 500 x 20                                   | A           | 161.6     | 270.0                     | 300.0   | 12.5                 | 24.0                 | 27.0    | 205.9                | 32357  | 1990                                 | 12.7                 | 16.3                 |
| 1/2 HE 550 B                              | 500 x 20                                   | A           | 178.2     | 275.0                     | 300.0   | 15.0                 | 29.0                 | 27.0    | 227.0                | 36480  | 2334                                 | 13.9                 | 15.6                 |
| 1/2 HE 550 B                              | 500 x 25                                   | A           | 197.8     | 275.0                     | 300.0   | 15.0                 | 29.0                 | 27.0    | 252.0                | 40972  | 2406                                 | 13.0                 | 17.0                 |
| 1/2 HE 550 M                              | 510 x 25                                   | A           | 239.2     | 286.0                     | 306.0   | 21.0                 | 40.0                 | 27.0    | 304.7                | 51691  | 3210                                 | 15.0                 | 16.1                 |
| 1/2 HE 550 M                              | 510 x 30                                   | A           | 259.2     | 286.0                     | 306.0   | 21.0                 | 40.0                 | 27.0    | 330.2                | 57160  | 3307                                 | 14.3                 | 17.3                 |
| 1/2 HE 550 M                              | 510 x 35                                   | A           | 279.2     | 286.0                     | 306.0   | 21.0                 | 40.0                 | 27.0    | 355.7                | 62184  | 3393                                 | 13.8                 | 18.3                 |
| 1/2 HE 600 A                              | 500 x 20                                   | A           | 167.4     | 295.0                     | 300.0   | 13.0                 | 25.0                 | 27.0    | 213.2                | 39636  | 2275                                 | 14.1                 | 17.4                 |
| 1/2 HE 600 B                              | 500 x 20                                   | A           | 184.5     | 300.0                     | 300.0   | 15.5                 | 30.0                 | 27.0    | 235.0                | 44424  | 2652                                 | 15.2                 | 16.8                 |
| 1/2 HE 600 B                              | 500 x 25                                   | A           | 204.1     | 300.0                     | 300.0   | 15.5                 | 30.0                 | 27.0    | 260.0                | 49851  | 2732                                 | 14.3                 | 18.2                 |
| 1/2 HE 600 M                              | 510 x 30                                   | A           | 262.8     | 310.0                     | 305.0   | 21.0                 | 40.0                 | 27.0    | 334.8                | 67584  | 3636                                 | 15.4                 | 18.6                 |
| 1/2 HE 600 M                              | 510 x 35                                   | A           | 282.9     | 310.0                     | 305.0   | 21.0                 | 40.0                 | 27.0    | 360.3                | 73398  | 3727                                 | 14.8                 | 19.7                 |
| 1/2 HE 650 A                              | 500 x 20                                   | A           | 173.3     | 320.0                     | 300.0   | 13.5                 | 26.0                 | 27.0    | 220.8                | 47826  | 2577                                 | 15.4                 | 18.6                 |
| 1/2 HE 650 B                              | 500 x 25                                   | A           | 210.5     | 325.0                     | 300.0   | 16.0                 | 31.0                 | 27.0    | 268.2                | 59792  | 3077                                 | 15.6                 | 19.4                 |
| 1/2 HE 650 M                              | 510 x 25                                   | A           | 246.8     | 334.0                     | 305.0   | 21.0                 | 40.0                 | 27.0    | 314.4                | 71752  | 3869                                 | 17.4                 | 18.5                 |
| 1/2 HE 650 M                              | 510 x 30                                   | A           | 266.8     | 334.0                     | 305.0   | 21.0                 | 40.0                 | 27.0    | 339.9                | 79061  | 3979                                 | 16.5                 | 19.9                 |
| 1/2 HE 650 M                              | 510 x 35                                   | A           | 286.8     | 334.0                     | 305.0   | 21.0                 | 40.0                 | 27.0    | 365.4                | 85742  | 4075                                 | 15.9                 | 21.0                 |
| 1/2 HE 280 A                              | 80 x 40                                    | B           | 63.3      | 162.0                     | 280.0   | 8.0                  | 13.0                 | 24.0    | 80.6                 | 4004   | 396                                  | 7.4                  | 10.1                 |
| 1/2 HE 300 A                              | 100 x 30                                   | B           | 67.7      | 161.0                     | 300.0   | 8.5                  | 14.0                 | 27.0    | 86.3                 | 4375   | 417                                  | 7.0                  | 10.5                 |
| 1/2 HP 360x109                            | 170 x 20                                   | B           | 81.2      | 180.3                     | 370.5   | 12.9                 | 12.9                 | 15.2    | 103.5                | 6739   | 606                                  | 8.2                  | 11.1                 |
| 1/2 HP 360x109                            | 170 x 30                                   | B           | 94.6      | 190.3                     | 370.5   | 12.9                 | 12.9                 | 15.2    | 120.5                | 8714   | 831                                  | 9.8                  | 10.5                 |
| 1/2 HP 360x133                            | 170 x 20                                   | B           | 92.8      | 180.4                     | 373.3   | 15.6                 | 15.6                 | 15.2    | 118.2                | 7509   | 635                                  | 7.8                  | 11.8                 |
| 1/2 HP 360x133                            | 170 x 30                                   | B           | 106.2     | 190.4                     | 373.3   | 15.6                 | 15.6                 | 15.2    | 135.2                | 9768   | 866                                  | 9.3                  | 11.3                 |
| 1/2 HP 360x152                            | 170 x 30                                   | B           | 116.1     | 190.3                     | 375.5   | 17.9                 | 17.9                 | 15.2    | 147.9                | 10583  | 894                                  | 9.0                  | 11.8                 |
| 1/2 HP 360x152                            | 170 x 40                                   | B           | 129.4     | 200.3                     | 375.5   | 17.9                 | 17.9                 | 15.2    | 164.9                | 12904  | 1116                                 | 10.3                 | 11.6                 |
| 1/2 HP 400x122                            | 190 x 20                                   | B           | 91.0      | 180.0                     | 390.0   | 14.0                 | 14.0                 | 15.0    | 116.0                | 7597   | 678                                  | 8.2                  | 11.2                 |
| 1/2 HP 400x122                            | 190 x 30                                   | B           | 105.9     | 190.0                     | 390.0   | 14.0                 | 14.0                 | 15.0    | 135.0                | 9837   | 931                                  | 9.8                  | 10.6                 |
| 1/2 HP 400x140                            | 190 x 30                                   | B           | 114.8     | 190.0                     | 392.0   | 16.0                 | 16.0                 | 15.0    | 146.3                | 10658  | 958                                  | 9.5                  | 11.1                 |
| 1/2 HP 400x140                            | 190 x 40                                   | B           | 129.7     | 200.0                     | 392.0   | 16.0                 | 16.0                 | 15.0    | 165.3                | 12931  | 1199                                 | 10.8                 | 10.8                 |
| 1/2 HP 400x158                            | 190 x 30                                   | B           | 123.8     | 190.0                     | 394.0   | 18.0                 | 18.0                 | 15.0    | 157.7                | 11435  | 984                                  | 9.2                  | 11.6                 |
| 1/2 HP 400x158                            | 190 x 40                                   | B           | 138.7     | 200.0                     | 394.0   | 18.0                 | 18.0                 | 15.0    | 176.7                | 13926  | 1231                                 | 10.5                 | 11.3                 |
| 1/2 HP 400x176                            | 190 x 30                                   | B           | 132.8     | 190.0                     | 396.0   | 20.0                 | 20.0                 | 15.0    | 169.2                | 12179  | 1010                                 | 8.9                  | 12.1                 |
| 1/2 HP 400x176                            | 190 x 40                                   | B           | 147.7     | 200.0                     | 396.0   | 20.0                 | 20.0                 | 15.0    | 188.2                | 14874  | 1262                                 | 10.2                 | 11.8                 |
| 1/2 HP 400x194                            | 190 x 30                                   | B           | 141.9     | 190.0                     | 398.0   | 22.0                 | 22.0                 | 15.0    | 180.7                | 12899  | 1036                                 | 8.7                  | 12.5                 |
| 1/2 HP 400x194                            | 190 x 40                                   | B           | 156.8     | 200.0                     | 398.0   | 22.0                 | 22.0                 | 15.0    | 199.7                | 15785  | 1292                                 | 10.0                 | 12.2                 |

## Poutrelles SFB

## SFB beams

## SFB-Träger



| Désignation<br>Designation<br>Bezeichnung |  |           | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Valeurs statiques<br>Section properties<br>Statische Kennwerte |                                      |                      |                      |
|---|--|-----------|---------------------------|---------|----------------------|----------------------|---------|----------------------|--|--------------------------------------|----------------------|----------------------|
|   | b <sub>p</sub> x t <sub>p</sub><br>mm x mm | G<br>kg/m | h <sub>eff</sub><br>mm    | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | I <sub>y</sub><br>cm <sup>4</sup>                              | W <sub>el,y</sub><br>cm <sup>3</sup> | z <sub>1</sub><br>cm | z <sub>2</sub><br>cm |
| HEB 140                                   | 340 x 10                                   | 60.4      | 140.0                     | 140.0   | 7.0                  | 12.0                 | 12.0    | 77.0                 | 2580   | 250                                  | 4.7                  | 10.3                 |
| HEM 140                                   | 350 x 10                                   | 90.7      | 160.0                     | 146.0   | 13.0                 | 22.0                 | 12.0    | 115.6                | 5057   | 478                                  | 6.4                  | 10.6                 |
| HEM 140                                   | 350 x 15                                   | 104.4     | 160.0                     | 146.0   | 13.0                 | 22.0                 | 12.0    | 133.1                | 5735   | 501                                  | 6.0                  | 11.5                 |
| HEM 140                                   | 350 x 20                                   | 118.2     | 160.0                     | 146.0   | 13.0                 | 22.0                 | 12.0    | 150.6                | 6348   | 521                                  | 5.8                  | 12.2                 |
| HEB 160                                   | 360 x 10                                   | 70.8      | 160.0                     | 160.0   | 8.0                  | 13.0                 | 15.0    | 90.3                 | 4058   | 356                                  | 5.6                  | 11.4                 |
| HEM 160                                   | 370 x 10                                   | 105.2     | 180.0                     | 166.0   | 14.0                 | 23.0                 | 15.0    | 134.1                | 7519   | 647                                  | 7.4                  | 11.6                 |
| HEM 160                                   | 370 x 15                                   | 119.8     | 180.0                     | 166.0   | 14.0                 | 23.0                 | 15.0    | 152.6                | 8465   | 675                                  | 7.0                  | 12.5                 |
| HEM 160                                   | 370 x 20                                   | 134.3     | 180.0                     | 166.0   | 14.0                 | 23.0                 | 15.0    | 171.1                | 9322   | 699                                  | 6.7                  | 13.3                 |
| HEM 160                                   | 370 x 25                                   | 148.8     | 180.0                     | 166.0   | 14.0                 | 23.0                 | 15.0    | 189.6                | 10122  | 723                                  | 6.5                  | 14.0                 |
| HEB 180                                   | 380 x 10                                   | 81.1      | 180.0                     | 180.0   | 8.5                  | 14.0                 | 15.0    | 103.3                | 6002   | 480                                  | 6.5                  | 12.5                 |
| HEB 180                                   | 380 x 15                                   | 96.0      | 180.0                     | 180.0   | 8.5                  | 14.0                 | 15.0    | 122.3                | 6734   | 497                                  | 6.0                  | 13.5                 |
| HEM 180                                   | 390 x 10                                   | 119.5     | 200.0                     | 186.0   | 14.5                 | 24.0                 | 15.0    | 152.3                | 10685  | 842                                  | 8.3                  | 12.7                 |
| HEM 180                                   | 390 x 15                                   | 134.8     | 200.0                     | 186.0   | 14.5                 | 24.0                 | 15.0    | 171.8                | 11952  | 875                                  | 7.8                  | 13.7                 |
| HEM 180                                   | 390 x 20                                   | 150.1     | 200.0                     | 186.0   | 14.5                 | 24.0                 | 15.0    | 191.3                | 13098  | 904                                  | 7.5                  | 14.5                 |
| HEM 180                                   | 390 x 25                                   | 165.4     | 200.0                     | 186.0   | 14.5                 | 24.0                 | 15.0    | 210.8                | 14165  | 932                                  | 7.3                  | 15.2                 |
| HEB 200                                   | 400 x 10                                   | 92.7      | 200.0                     | 200.0   | 9.0                  | 15.0                 | 18.0    | 118.1                | 8616   | 636                                  | 7.4                  | 13.6                 |
| HEB 200                                   | 400 x 15                                   | 108.4     | 200.0                     | 200.0   | 9.0                  | 15.0                 | 18.0    | 138.1                | 9628   | 656                                  | 6.8                  | 14.7                 |
| HEM 200                                   | 410 x 10                                   | 135.2     | 220.0                     | 206.0   | 15.0                 | 25.0                 | 18.0    | 172.3                | 14777  | 1076                                 | 9.3                  | 13.7                 |
| HEM 200                                   | 410 x 15                                   | 151.3     | 220.0                     | 206.0   | 15.0                 | 25.0                 | 18.0    | 192.8                | 16436  | 1114                                 | 8.8                  | 14.7                 |
| HEM 200                                   | 410 x 20                                   | 167.4     | 220.0                     | 206.0   | 15.0                 | 25.0                 | 18.0    | 213.3                | 17937  | 1149                                 | 8.4                  | 15.6                 |
| HEM 200                                   | 410 x 25                                   | 183.5     | 220.0                     | 206.0   | 15.0                 | 25.0                 | 18.0    | 233.8                | 19333  | 1181                                 | 8.1                  | 16.4                 |
| HEM 200                                   | 410 x 30                                   | 199.6     | 220.0                     | 206.0   | 15.0                 | 25.0                 | 18.0    | 254.3                | 20656  | 1212                                 | 8.0                  | 17.0                 |
| HEB 220                                   | 420 x 10                                   | 104.4     | 220.0                     | 220.0   | 9.5                  | 16.0                 | 18.0    | 133.0                | 11895  | 813                                  | 8.4                  | 14.6                 |
| HEB 220                                   | 420 x 15                                   | 120.9     | 220.0                     | 220.0   | 9.5                  | 16.0                 | 18.0    | 154.0                | 13243  | 838                                  | 7.7                  | 15.8                 |
| HEB 220                                   | 420 x 20                                   | 137.4     | 220.0                     | 220.0   | 9.5                  | 16.0                 | 18.0    | 175.0                | 14410  | 860                                  | 7.2                  | 16.8                 |
| HEM 220                                   | 430 x 10                                   | 151.1     | 240.0                     | 226.0   | 15.5                 | 26.0                 | 18.0    | 192.4                | 19826  | 1340                                 | 10.2                 | 14.8                 |
| HEM 220                                   | 430 x 15                                   | 167.9     | 240.0                     | 226.0   | 15.5                 | 26.0                 | 18.0    | 213.9                | 21941  | 1385                                 | 9.7                  | 15.8                 |
| HEM 220                                   | 430 x 20                                   | 184.8     | 240.0                     | 226.0   | 15.5                 | 26.0                 | 18.0    | 235.4                | 23859  | 1425                                 | 9.3                  | 16.7                 |
| HEM 220                                   | 430 x 25                                   | 201.7     | 240.0                     | 226.0   | 15.5                 | 26.0                 | 18.0    | 256.9                | 25638  | 1461                                 | 9.0                  | 17.5                 |
| HEM 220                                   | 430 x 30                                   | 218.6     | 240.0                     | 226.0   | 15.5                 | 26.0                 | 18.0    | 278.4                | 27320  | 1497                                 | 8.7                  | 18.3                 |
| HEB 240                                   | 440 x 10                                   | 117.7     | 240.0                     | 240.0   | 10.0                 | 17.0                 | 21.0    | 150.0                | 16121  | 1029                                 | 9.3                  | 15.7                 |
| HEB 240                                   | 440 x 15                                   | 135.0     | 240.0                     | 240.0   | 10.0                 | 17.0                 | 21.0    | 172.0                | 17883  | 1059                                 | 8.6                  | 16.9                 |
| HEB 240                                   | 440 x 20                                   | 152.3     | 240.0                     | 240.0   | 10.0                 | 17.0                 | 21.0    | 194.0                | 19414  | 1085                                 | 8.1                  | 17.9                 |
| HEM 240                                   | 450 x 10                                   | 192.0     | 270.0                     | 248.0   | 18.0                 | 32.0                 | 21.0    | 244.6                | 31491  | 1959                                 | 11.9                 | 16.1                 |
| HEM 240                                   | 450 x 15                                   | 209.7     | 270.0                     | 248.0   | 18.0                 | 32.0                 | 21.0    | 267.1                | 34545  | 2020                                 | 11.4                 | 17.1                 |
| HEM 240                                   | 450 x 20                                   | 227.3     | 270.0                     | 248.0   | 18.0                 | 32.0                 | 21.0    | 289.6                | 37361  | 2075                                 | 11.0                 | 18.0                 |
| HEM 240                                   | 450 x 25                                   | 245.0     | 270.0                     | 248.0   | 18.0                 | 32.0                 | 21.0    | 312.1                | 40001  | 2126                                 | 10.7                 | 18.8                 |



# SFB

## SFB = "Slim Floor Beam"

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |  |           | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Valeurs statiques<br>Section properties<br>Statische Kennwerte |                                      |                      |                      |
|---|--|-----------|---------------------------|---------|----------------------|----------------------|---------|----------------------|--|--------------------------------------|----------------------|----------------------|
|   | b <sub>p</sub> x t <sub>p</sub><br>mm x mm | G<br>kg/m | h <sub>eff</sub><br>mm    | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | I <sub>y</sub><br>cm <sup>4</sup>                              | W <sub>el,y</sub><br>cm <sup>3</sup> | z <sub>1</sub><br>cm | z <sub>2</sub><br>cm |
| HEM 240                                   | 450 x 30                                   | 262.6     | 270.0                     | 248.0   | 18.0                 | 32.0                 | 21.0    | 334.6                | 42510  | 2174                                 | 10.4                 | 19.6                 |
| HEM 240                                   | 450 x 35                                   | 280.3     | 270.0                     | 248.0   | 18.0                 | 32.0                 | 21.0    | 357.1                | 44923  | 2221                                 | 10.3                 | 20.2                 |
| HEM 240                                   | 450 x 40                                   | 298.0     | 270.0                     | 248.0   | 18.0                 | 32.0                 | 21.0    | 379.6                | 47268  | 2267                                 | 10.1                 | 20.9                 |
| HEB 260                                   | 460 x 10                                   | 129.1     | 260.0                     | 260.0   | 10.0                 | 17.5                 | 24.0    | 164.4                | 20962  | 1249                                 | 10.2                 | 16.8                 |
| HEB 260                                   | 460 x 15                                   | 147.1     | 260.0                     | 260.0   | 10.0                 | 17.5                 | 24.0    | 187.4                | 23176  | 1283                                 | 9.4                  | 18.1                 |
| HEB 260                                   | 460 x 20                                   | 165.2     | 260.0                     | 260.0   | 10.0                 | 17.5                 | 24.0    | 210.4                | 25099  | 1313                                 | 8.9                  | 19.1                 |
| HEM 260                                   | 470 x 10                                   | 209.3     | 290.0                     | 268.0   | 18.0                 | 32.5                 | 24.0    | 266.6                | 40022  | 2334                                 | 12.9                 | 17.1                 |
| HEM 260                                   | 470 x 15                                   | 227.8     | 290.0                     | 268.0   | 18.0                 | 32.5                 | 24.0    | 290.1                | 43732  | 2402                                 | 12.3                 | 18.2                 |
| HEM 260                                   | 470 x 20                                   | 246.2     | 290.0                     | 268.0   | 18.0                 | 32.5                 | 24.0    | 313.6                | 47153  | 2463                                 | 11.9                 | 19.1                 |
| HEM 260                                   | 470 x 25                                   | 264.7     | 290.0                     | 268.0   | 18.0                 | 32.5                 | 24.0    | 337.1                | 50357  | 2519                                 | 11.5                 | 20.0                 |
| HEM 260                                   | 470 x 30                                   | 283.1     | 290.0                     | 268.0   | 18.0                 | 32.5                 | 24.0    | 360.6                | 53396  | 2573                                 | 11.2                 | 20.8                 |
| HEM 260                                   | 470 x 35                                   | 301.6     | 290.0                     | 268.0   | 18.0                 | 32.5                 | 24.0    | 384.1                | 56312  | 2624                                 | 11.0                 | 21.5                 |
| HEM 260                                   | 470 x 40                                   | 320.0     | 290.0                     | 268.0   | 18.0                 | 32.5                 | 24.0    | 407.6                | 59136  | 2675                                 | 10.9                 | 22.1                 |
| HEB 280                                   | 480 x 10                                   | 140.8     | 280.0                     | 280.0   | 10.5                 | 18.0                 | 24.0    | 179.4                | 26666  | 1491                                 | 11.1                 | 17.9                 |
| HEB 280                                   | 480 x 15                                   | 159.6     | 280.0                     | 280.0   | 10.5                 | 18.0                 | 24.0    | 203.4                | 29402  | 1530                                 | 10.3                 | 19.2                 |
| HEB 280                                   | 480 x 20                                   | 178.5     | 280.0                     | 280.0   | 10.5                 | 18.0                 | 24.0    | 227.4                | 31782  | 1563                                 | 9.7                  | 20.3                 |
| HEM 280                                   | 490 x 10                                   | 227.0     | 310.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 289.2                | 49970  | 2744                                 | 13.8                 | 18.2                 |
| HEM 280                                   | 490 x 15                                   | 246.2     | 310.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 313.7                | 54422  | 2819                                 | 13.2                 | 19.3                 |
| HEM 280                                   | 490 x 20                                   | 265.5     | 310.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 338.2                | 58528  | 2886                                 | 12.7                 | 20.3                 |
| HEM 280                                   | 490 x 25                                   | 284.7     | 310.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 362.7                | 62371  | 2948                                 | 12.3                 | 21.2                 |
| HEM 280                                   | 490 x 30                                   | 303.9     | 310.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 387.2                | 66010  | 3007                                 | 12.0                 | 22.0                 |
| HEM 280                                   | 490 x 35                                   | 323.2     | 310.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 411.7                | 69494  | 3063                                 | 11.8                 | 22.7                 |
| HEM 280                                   | 490 x 40                                   | 342.4     | 310.0                     | 288.0   | 18.5                 | 33.0                 | 24.0    | 436.2                | 72860  | 3118                                 | 11.6                 | 23.4                 |
| HEB 300                                   | 500 x 10                                   | 156.3     | 300.0                     | 300.0   | 11.0                 | 19.0                 | 27.0    | 199.1                | 34165  | 1808                                 | 12.1                 | 18.9                 |
| HEB 300                                   | 500 x 15                                   | 175.9     | 300.0                     | 300.0   | 11.0                 | 19.0                 | 27.0    | 224.1                | 37557  | 1853                                 | 11.2                 | 20.3                 |
| HEB 300                                   | 500 x 20                                   | 195.5     | 300.0                     | 300.0   | 11.0                 | 19.0                 | 27.0    | 249.1                | 40521  | 1891                                 | 10.6                 | 21.4                 |
| HEB 300                                   | 500 x 25                                   | 215.2     | 300.0                     | 300.0   | 11.0                 | 19.0                 | 27.0    | 274.1                | 43185  | 1927                                 | 10.1                 | 22.4                 |
| HEM 300                                   | 510 x 10                                   | 278.0     | 340.0                     | 310.0   | 21.0                 | 39.0                 | 27.0    | 354.1                | 72574  | 3718                                 | 15.5                 | 19.5                 |
| HEM 300                                   | 510 x 15                                   | 298.0     | 340.0                     | 310.0   | 21.0                 | 39.0                 | 27.0    | 379.6                | 78460  | 3813                                 | 14.9                 | 20.6                 |
| HEM 300                                   | 510 x 20                                   | 318.0     | 340.0                     | 310.0   | 21.0                 | 39.0                 | 27.0    | 405.1                | 83961  | 3899                                 | 14.5                 | 21.5                 |
| HEM 300                                   | 510 x 25                                   | 338.0     | 340.0                     | 310.0   | 21.0                 | 39.0                 | 27.0    | 430.6                | 89158  | 3980                                 | 14.1                 | 22.4                 |
| HEM 300                                   | 510 x 30                                   | 358.0     | 340.0                     | 310.0   | 21.0                 | 39.0                 | 27.0    | 456.1                | 94113  | 4056                                 | 13.8                 | 23.2                 |
| HEM 300                                   | 510 x 35                                   | 378.0     | 340.0                     | 310.0   | 21.0                 | 39.0                 | 27.0    | 481.6                | 98877  | 4129                                 | 13.6                 | 23.9                 |
| HEM 300                                   | 510 x 40                                   | 398.1     | 340.0                     | 310.0   | 21.0                 | 39.0                 | 27.0    | 507.1                | 103490   | 4199                                 | 13.4                 | 24.6                 |
| HEB 320                                   | 500 x 10                                   | 165.9     | 320.0                     | 300.0   | 11.5                 | 20.5                 | 27.0    | 211.3                | 41220  | 2071                                 | 13.1                 | 19.9                 |
| HEB 320                                   | 500 x 15                                   | 185.5     | 320.0                     | 300.0   | 11.5                 | 20.5                 | 27.0    | 236.3                | 45202  | 2121                                 | 12.2                 | 21.3                 |
| HEB 320                                   | 500 x 20                                   | 205.2     | 320.0                     | 300.0   | 11.5                 | 20.5                 | 27.0    | 261.3                | 48699  | 2164                                 | 11.5                 | 22.5                 |
| HEB 320                                   | 500 x 25                                   | 224.8     | 320.0                     | 300.0   | 11.5                 | 20.5                 | 27.0    | 286.3                | 51847  | 2203                                 | 11.0                 | 23.5                 |

# ARBED Cellular Beams und Wabenträger: Die intelligente Lösung für große Spannweiten



## Les poutrelles alvéolaires: La solution intelligente pour les grandes portées

L'utilisation des poutrelles alvéolaires permet **d'alléger les structures, d'augmenter les portées** et d'assurer la **modularité des lieux**. D'une technologie **souple, économique** et **esthétique**, elles correspondent aux nouvelles attentes des concepteurs.

## Castellated beams: The smart choice for large spans

Using castellated beams makes it possible to construct lighter structures, **increase spans** and custom-design buildings. They are based on a **flexible, economic** and **aesthetic** technology, which enables them to meet the new demands of the architects.

## Lochstegträger: Die intelligente Lösung für große Spannweiten

Lochstegträger bzw. ARBED Cellular Beams ermöglichen **leichtere Strukturen, größere Spannweiten** und die Anwendung der **Modulbauweise. Anpassungsfähig, wirtschaftlich** und **ästhetisch** erfüllen sie höchste Anforderungen der Bauherren, der Architekten und der Ingenieure.







Sowohl **ARBED Cellular Beams** als auch Wabenträger bieten entscheidende Vorteile:

- **Ästhetik:** Die ansprechende maßgeschneiderte Form der Träger entspricht den gestalterischen Vorstellungen der Architekten
- **Flexibilität:** Die Stegöffnungen integrieren problemlos alle **Installationsvarianten**
- **Gewichtersparnis:** Lochstegträger sind Leichtgewichte
- **Freie Konstruktion:** Die großen Spannweiten und die optimierte Deckenkonstruktion ermöglichen ein Höchstmaß an gestalterischer Freiheit
- **Schneller Baufortschritt:** Die präzise Vorfertigung und die großen Spannweiten erlauben eine rasche Fertigstellung der Konstruktion.

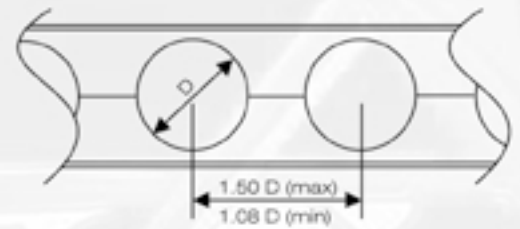
Wenn Sie das **ARBED Cellular Beams Bemessungsprogramm** oder die **Broschüre** bestellen möchten, wenden Sie sich an unsere Abteilung Technische Beratung oder kontaktieren Sie uns über Internet unter [www.europrofil.lu](http://www.europrofil.lu)

Les poutrelles alvéolaires

**ARBED Cellular Beams** et les poutrelles à ouvertures hexagonales offrent de multiples avantages:

- **l'esthétique**, en employant judicieusement les propriétés géométriques
- **la flexibilité**, en permettant **le passage des conduites** dans l'âme des poutrelles
- **la légèreté**, en diminuant le poids de la structure
- **l'optimisation du volume**, en augmentant la hauteur libre sous plafond et les grandes portées
- **la rapidité de mise en œuvre**, en facilitant la construction

Le logiciel **ARBED Cellular Beams** et notre **brochure** sont disponibles sur demande auprès de notre service Assistance Technique ou sur notre site Internet, [www.europrofil.lu](http://www.europrofil.lu)



**ARBED Cellular Beams** as well as castellated beams with hexagonal openings offer the following advantages:

- **aesthetics:** architecturally appealing shape of the beams
- **flexibility:** easy accommodation of the **service ducts** through the web openings
- **weight savings:** lightweight construction due to the high stiffness of the beams and the possibility of designing asymmetrical beams
- **optimising space:** reduction in the number of columns needed; maximising the space between ceiling and floor
- ease of construction: **speed of assembly.**

The **ARBED Cellular Beams computer programme** and our catalogue are available upon request from our Technical Assistance department or from our Internet site, [www.europrofil.lu](http://www.europrofil.lu)





# Poutrelles universelles britanniques\*

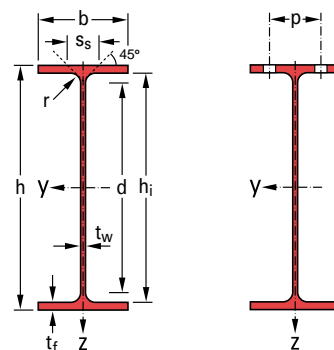
conformes à BS 4-1: 1993

## British universal beams\*

in accordance with BS 4-1: 1993

## Britische Universalträger\*

gemäß BS 4-1: 1993



| Désignation<br>Designation<br>Bezeichnung | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| UB 152 x 89 x 16 16.0                     | 152.4                     | 88.7    | 4.5                  | 7.7                  | 7.6     | 20.32                | 137   | 121.8   | -   | -                      | -                      | 0.638                               | 39.97                               |
| UB 178 x 102 x 19 19.0                    | 177.8                     | 101.2   | 4.8                  | 7.9                  | 7.6     | 24.26                | 162   | 146.8   | M10 | 50                     | 58                     | 0.738                               | 38.74                               |
| UB 203 x 102 x 23 23.1                    | 203.2                     | 101.8   | 5.4                  | 9.3                  | 7.6     | 29.40                | 184.6   | 169.4   | M10 | 54                     | 58                     | 0.79                                | 34.22                               |
| UB 203 x 133 x 25 25.1                    | 203.2                     | 133.2   | 5.7                  | 7.8                  | 7.6     | 31.97                | 187.6   | 172.4   | M16 | 64                     | 70                     | 0.915                               | 36.45                               |
| UB 203 x 133 x 30 30.0                    | 206.8                     | 133.9   | 6.4                  | 9.6                  | 7.6     | 38.21                | 187.6   | 172.4   | M16 | 66                     | 70                     | 0.923                               | 30.78                               |
| UB 254 x 102 x 22 22.0                    | 254                       | 101.6   | 5.7                  | 6.8                  | 7.6     | 28.02                | 240.4   | 225.2   | M10 | 50                     | 58                     | 0.89                                | 40.47                               |
| UB 254 x 102 x 25 25.2                    | 257.2                     | 101.9   | 6                    | 8.4                  | 7.6     | 32.04                | 240.4   | 225.2   | M10 | 52                     | 58                     | 0.897                               | 35.66                               |
| UB 254 x 102 x 28 28.3                    | 260.4                     | 102.2   | 6.3                  | 10                   | 7.6     | 36.08                | 240.4   | 225.2   | M12 | 54                     | 54                     | 0.904                               | 31.92                               |
| UB 254 x 146 x 31 31.1                    | 251.4                     | 146.1   | 6                    | 8.6                  | 7.6     | 39.68                | 234.2   | 219     | M16 | 66                     | 82                     | 1.062                               | 34.1                                |
| UB 254 x 146 x 37 37.0                    | 256                       | 146.4   | 6.3                  | 10.9                 | 7.6     | 47.17                | 234.2   | 219     | M16 | 66                     | 82                     | 1.072                               | 28.95                               |
| UB 254 x 146 x 43 43.0                    | 259.6                     | 147.3   | 7.2                  | 12.7                 | 7.6     | 54.77                | 234.2   | 219     | M16 | 66                     | 84                     | 1.081                               | 25.14                               |
| UB 305 x 102 x 25 24.8                    | 305.1                     | 101.6   | 5.8                  | 7                    | 7.6     | 31.60                | 291.1   | 275.9   | M10 | 56                     | 58                     | 0.992                               | 39.98                               |
| UB 305 x 102 x 28 28.2                    | 308.7                     | 101.8   | 6                    | 8.8                  | 7.6     | 35.88                | 291.1   | 275.9   | M10 | 58                     | 58                     | 1.000                               | 35.49                               |
| UB 305 x 102 x 33 32.8                    | 312.7                     | 102.4   | 6.6                  | 10.8                 | 7.6     | 41.83                | 291.1   | 275.9   | M10 | 58                     | 60                     | 1.009                               | 30.72                               |
| UB 305 x 165 x 40 40.3                    | 303.4                     | 165     | 6                    | 10.2                 | 8.9     | 51.32                | 283   | 265.2   | M22 | 76                     | 84                     | 1.24                                | 30.77                               |
| UB 305 x 165 x 46 46.1                    | 306.6                     | 165.7   | 6.7                  | 11.8                 | 8.9     | 58.75                | 283   | 265.2   | M22 | 76                     | 84                     | 1.247                               | 27.05                               |
| UB 305 x 165 x 54 54.0                    | 310.4                     | 166.9   | 7.9                  | 13.7                 | 8.9     | 68.77                | 283   | 265.2   | M22 | 78                     | 84                     | 1.257                               | 23.29                               |
| UB 356 x 127 x 33 33.1                    | 349                       | 125.4   | 6                    | 8.5                  | 10.2    | 42.13                | 332   | 311.6   | M12 | 62                     | 74                     | 1.170                               | 35.38                               |
| UB 356 x 127 x 39 39.1                    | 353.4                     | 126     | 6.6                  | 10.7                 | 10.2    | 49.77                | 332   | 311.6   | M12 | 62                     | 74                     | 1.180                               | 30.21                               |
| UB 356 x 171 x 45 45.0                    | 351.4                     | 171.1   | 7                    | 9.7                  | 10.2    | 57.33                | 332   | 311.6   | M22 | 82                     | 90                     | 1.356                               | 30.13                               |
| UB 356 x 171 x 51 51.0                    | 355                       | 171.5   | 7.4                  | 11.5                 | 10.2    | 64.91                | 332   | 311.6   | M22 | 82                     | 90                     | 1.364                               | 26.76                               |
| UB 356 x 171 x 57 57.0                    | 358                       | 172.2   | 8.1                  | 13                   | 10.2    | 72.56                | 332   | 311.6   | M22 | 82                     | 90                     | 1.371                               | 24.07                               |
| UB 356 x 171 x 67 67.1                    | 363.4                     | 173.2   | 9.1                  | 15.7                 | 10.2    | 85.49                | 332   | 311.6   | M22 | 84                     | 92                     | 1.384                               | 20.62                               |
| UB 406 x 140 x 39 39.0                    | 398                       | 141.8   | 6.4                  | 8.6                  | 10.2    | 49.65                | 380.8   | 360.4   | M16 | 68                     | 78                     | 1.333                               | 34.20                               |
| UB 406 x 140 x 46 46.0                    | 403.2                     | 142.2   | 6.8                  | 11.2                 | 10.2    | 58.64                | 380.8   | 360.4   | M16 | 68                     | 78                     | 1.344                               | 29.20                               |



\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

\* Minimum tonnage and delivery conditions upon agreement.

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | Classification<br>ENV 1993-1-1 |      |      |                     |      |      | HISTAR |
|---|-----------------------------------|--|---------------------------------------|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|-----------------------------------|--|-------|--------------------------------|------|------|---------------------|------|------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                       |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      |                                   |  |       | pure<br>bending y-y            |      |      | pure<br>compression |      |      |        |
|   |                                   |  |                                       |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | S235                           | S355 | S460 | S235                | S355 | S460 |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>ply</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235  | S355                           | S460 | S235 | S355                | S460 |      |        |
| UB 152 x 89 x 16                          | 16.0                              | 834  | 109.5                                 | 123.3                | 6.41                               | 8.18                              | 89.75   | 20.24                                  | 31.18                | 2.10                 | 28.80                             | 3.55   | 4.69  | 1                              | 1    | -    | 1                   | 2    | -    |        |
| UB 178 x 102 x 19                         | 19.0                              | 1356   | 152.5                                 | 171.3                | 7.48                               | 9.85                              | 136.7   | 27.02                                  | 41.59                | 2.37                 | 29.50                             | 4.42   | 9.85  | 1                              | 1    | -    | 1                   | 2    | -    |        |
| UB 203 x 102 x 23                         | 23.1                              | 2105   | 207.2                                 | 234.1                | 8.46                               | 12.38                             | 163.9   | 32.19                                  | 49.75                | 2.36                 | 32.90                             | 7.02   | 15.37 | 1                              | 1    | -    | 1                   | 3    | -    |        |
| UB 203 x 133 x 25                         | 25.1                              | 2340   | 230.3                                 | 257.7                | 8.56                               | 12.82                             | 307.6   | 46.19                                  | 70.94                | 3.10                 | 30.20                             | 6.10   | 29.33 | 1                              | 2    | -    | 1                   | 2    | -    |        |
| UB 203 x 133 x 30                         | 30.0                              | 2896   | 280                                   | 314.4                | 8.71                               | 14.58                             | 384.7   | 57.45                                  | 88.22                | 3.17                 | 34.50                             | 10.43  | 37.34 | 1                              | 1    | -    | 1                   | 2    | -    |        |
| UB 254 x 102 x 22                         | 22.0                              | 2841   | 223.7                                 | 259                  | 10.07                              | 15.62                             | 119.3   | 23.49                                  | 37.27                | 2.06                 | 28.20                             | 4.35   | 18.16 | 1                              | 1    | -    | 3                   | 4    | -    |        |
| UB 254 x 102 x 25                         | 25.2                              | 3415   | 265.5                                 | 305.5                | 10.32                              | 16.70                             | 148.7   | 29.18                                  | 46.01                | 2.15                 | 31.70                             | 6.56   | 22.92 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| UB 254 x 102 x 28                         | 28.3                              | 4005   | 307.6                                 | 352.8                | 10.54                              | 17.79                             | 178.5   | 34.94                                  | 54.85                | 2.22                 | 35.20                             | 9.66   | 27.89 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| UB 254 x 146 x 31                         | 31.1                              | 4413   | 351.1                                 | 393.1                | 10.55                              | 16.37                             | 447.5   | 61.26                                  | 94.13                | 3.36                 | 32.10                             | 8.68   | 65.88 | 1                              | 2    | -    | 2                   | 4    | -    |        |
| UB 254 x 146 x 37                         | 37.0                              | 5537   | 432.6                                 | 483.2                | 10.83                              | 17.59                             | 570.6   | 77.96                                  | 119.4                | 3.48                 | 37.00                             | 15.37  | 85.61 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| UB 254 x 146 x 43                         | 43.0                              | 6544   | 504.1                                 | 566.3                | 10.93                              | 20.20                             | 677.4   | 91.97                                  | 141.1                | 3.52                 | 41.50                             | 23.97  | 103.1 | 1                              | 1    | -    | 1                   | 2    | -    |        |
| UB 305 x 102 x 25                         | 24.8                              | 4455   | 292.1                                 | 342.0                | 11.87                              | 18.85                             | 122.9   | 24.20                                  | 38.81                | 1.97                 | 28.70                             | 4.98   | 27.18 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| UB 305 x 102 x 28                         | 28.2                              | 5366   | 347.6                                 | 402.9                | 12.23                              | 19.83                             | 155.4   | 30.53                                  | 48.45                | 2.08                 | 32.50                             | 7.51   | 34.79 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| UB 305 x 102 x 33                         | 32.8                              | 6501   | 415.8                                 | 480.8                | 12.47                              | 22.06                             | 194.1   | 37.91                                  | 60.04                | 2.15                 | 37.10                             | 12.29  | 44.04 | 1                              | 1    | -    | 3                   | 4    | -    |        |
| UB 305 x 165 x 40                         | 40.3                              | 8503   | 560.5                                 | 623.1                | 12.87                              | 20.09                             | 764.4   | 92.65                                  | 141.7                | 3.86                 | 36.83                             | 14.74  | 164.1 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| UB 305 x 165 x 46                         | 46.1                              | 9899   | 645.7                                 | 720                  | 12.98                              | 22.53                             | 895.7   | 108.1                                  | 165.5                | 3.90                 | 40.73                             | 22.20  | 194.4 | 1                              | 1    | -    | 3                   | 4    | -    |        |
| UB 305 x 165 x 54                         | 54.0                              | 11700  | 753.6                                 | 846.1                | 13.04                              | 26.56                             | 1063  | 127.4                                  | 195.6                | 3.93                 | 45.73                             | 34.90  | 233.6 | 1                              | 1    | -    | 2                   | 3    | -    |        |
| UB 356 x 127 x 33                         | 33.1                              | 8249   | 472.7                                 | 542.9                | 13.99                              | 23.06                             | 280.2   | 44.69                                  | 70.29                | 2.58                 | 34.95                             | 8.97   | 80.97 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| UB 356 x 127 x 39                         | 39.1                              | 10172  | 575.6                                 | 658.5                | 14.30                              | 25.69                             | 357.8   | 56.80                                  | 89.05                | 2.68                 | 39.95                             | 15.15  | 104.7 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| UB 356 x 171 x 45                         | 45.0                              | 12070  | 686.7                                 | 774.6                | 14.51                              | 26.79                             | 811.1   | 94.81                                  | 146.6                | 3.76                 | 38.35                             | 16.16  | 236.4 | 1                              | 2    | -    | 4                   | 4    | -    |        |
| UB 356 x 171 x 51                         | 51.0                              | 14140  | 796.4                                 | 896.0                | 14.76                              | 28.66                             | 968.3   | 112.9                                  | 174.2                | 3.86                 | 42.35                             | 24.00  | 285.2 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| UB 356 x 171 x 57                         | 57.0                              | 16040  | 896                                   | 1010                 | 14.87                              | 31.49                             | 1108  | 128.7                                  | 198.8                | 3.91                 | 46.05                             | 33.59  | 329.2 | 1                              | 1    | -    | 3                   | 4    | -    |        |
| UB 356 x 171 x 67                         | 67.1                              | 19460  | 1071                                  | 1211                 | 15.09                              | 35.74                             | 1362  | 157.3                                  | 243                  | 3.99                 | 52.45                             | 55.90  | 410.9 | 1                              | 1    | -    | 2                   | 4    | -    |        |
| UB 406 x 140 x 39                         | 39.0                              | 12508  | 628.6                                 | 723.7                | 15.87                              | 27.57                             | 409.8   | 57.80                                  | 90.85                | 2.87                 | 35.55                             | 10.99  | 154.9 | 1                              | 2    | -    | 4                   | 4    | -    |        |
| UB 406 x 140 x 46                         | 46.0                              | 15685  | 778.0                                 | 887.6                | 16.35                              | 29.83                             | 538.1   | 75.68                                  | 118.1                | 3.03                 | 41.15                             | 19.07  | 206.2 | 1                              | 1    | -    | 4                   | 4    | -    |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.

# Poutrelles universelles britanniques\*

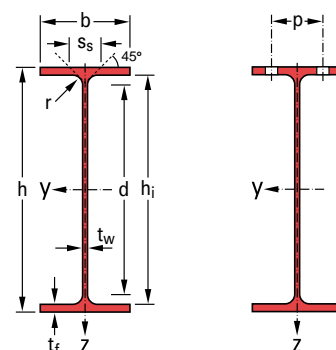
conformes à BS 4-1: 1993

## British universal beams\*

in accordance with BS 4-1: 1993

## Britische Universalträger\*

gemäß BS 4-1: 1993



| Désignation<br>Designation<br>Bezeichnung | Dimensions<br>Abmessungen |         |         |                      |                      | A<br>cm <sup>2</sup> | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|---------------------------|---------|---------|----------------------|----------------------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
|   | G<br>kg/m                 | h<br>mm | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm |                      | h <sub>1</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| UB 406 x 178 x 54                         | 54.1                      | 402.6   | 177.7   | 7.7                  | 10.9                 | 68.95                | 380.8   | 360.4   | M24 | 88                     | 90                     | 1.483                               | 27.4                                |
| UB 406 x 178 x 60                         | 60.1                      | 406.4   | 177.9   | 7.9                  | 12.8                 | 76.52                | 380.8   | 360.4   | M24 | 88                     | 90                     | 1.491                               | 24.82                               |
| UB 406 x 178 x 67                         | 67.1                      | 409.4   | 178.8   | 8.8                  | 14.3                 | 85.54                | 380.8   | 360.4   | M24 | 88                     | 90                     | 1.499                               | 22.32                               |
| UB 406 x 178 x 74                         | 74.2                      | 412.8   | 179.5   | 9.5                  | 16                   | 94.51                | 380.8   | 360.4   | M24 | 88                     | 92                     | 1.507                               | 20.31                               |
| UB 457 x 152 x 52                         | 52.3                      | 449.8   | 152.4   | 7.6                  | 10.9                 | 66.64                | 428   | 407.6   | M20 | 76                     | 76                     | 1.476                               | 28.22                               |
| UB 457 x 152 x 60                         | 59.8                      | 454.6   | 152.9   | 8.1                  | 13.3                 | 76.23                | 428   | 407.6   | M20 | 76                     | 76                     | 1.487                               | 24.85                               |
| UB 457 x 152 x 67                         | 67.2                      | 458     | 153.8   | 9                    | 15                   | 85.55                | 428   | 407.6   | M20 | 78                     | 78                     | 1.496                               | 22.27                               |
| UB 457 x 152 x 74                         | 74.2                      | 462     | 154.4   | 9.6                  | 17                   | 94.48                | 428   | 407.6   | M20 | 78                     | 78                     | 1.505                               | 20.29                               |
| UB 457 x 152 x 82                         | 82.1                      | 465.8   | 155.3   | 10.5                 | 18.9                 | 104.5                | 428   | 407.6   | M20 | 80                     | 80                     | 1.514                               | 18.45                               |
| UB 457 x 191 x 67                         | 67.1                      | 453.4   | 189.9   | 8.5                  | 12.7                 | 85.51                | 428   | 407.6   | M27 | 90                     | 90                     | 1.632                               | 24.31                               |
| UB 457 x 191 x 74                         | 74.3                      | 457     | 190.4   | 9                    | 14.5                 | 94.63                | 428   | 407.6   | M27 | 90                     | 90                     | 1.64                                | 22.08                               |
| UB 457 x 191 x 82                         | 82.0                      | 460     | 191.3   | 9.9                  | 16                   | 104.5                | 428   | 407.6   | M27 | 92                     | 92                     | 1.648                               | 20.09                               |
| UB 457 x 191 x 89                         | 89.3                      | 463.4   | 191.9   | 10.5                 | 17.7                 | 113.8                | 428   | 407.6   | M27 | 92                     | 92                     | 1.656                               | 18.54                               |
| UB 457 x 191 x 98                         | 98.3                      | 467.2   | 192.8   | 11.4                 | 19.6                 | 125.3                | 428   | 407.6   | M27 | 92                     | 92                     | 1.665                               | 16.94                               |
| UB 533 x 210 x 82                         | 82.2                      | 528.3   | 208.8   | 9.6                  | 13.2                 | 104.7                | 501.9   | 476.5   | M27 | 90                     | 108                    | 1.851                               | 22.52                               |
| UB 533 x 210 x 92                         | 92.1                      | 533.1   | 209.3   | 10.1                 | 15.6                 | 117.4                | 501.9   | 476.5   | M27 | 92                     | 110                    | 1.861                               | 20.2                                |
| UB 533 x 210 x 101                        | 101                       | 536.7   | 210     | 10.8                 | 17.4                 | 128.7                | 501.9   | 476.5   | M27 | 92                     | 110                    | 1.87                                | 18.51                               |
| UB 533 x 210 x 109                        | 109                       | 539.5   | 210.8   | 11.6                 | 18.8                 | 138.9                | 501.9   | 476.5   | M27 | 94                     | 108                    | 1.877                               | 17.22                               |
| UB 533 x 210 x 122                        | 122                       | 544.5   | 211.9   | 12.7                 | 21.3                 | 155.4                | 501.9   | 476.5   | M27 | 94                     | 110                    | 1.889                               | 15.49                               |
| UB 610 x 229 x 101                        | 101                       | 602.6   | 227.6   | 10.5                 | 14.8                 | 128.9                | 573   | 547.6   | M27 | 92                     | 126                    | 2.073                               | 20.48                               |
| UB 610 x 229 x 113                        | 113                       | 607.6   | 228.2   | 11.1                 | 17.3                 | 143.9                | 573   | 547.6   | M27 | 92                     | 126                    | 2.084                               | 18.44                               |
| UB 610 x 229 x 125                        | 125                       | 612.2   | 229     | 11.9                 | 19.6                 | 159.3                | 573   | 547.6   | M27 | 94                     | 128                    | 2.095                               | 16.75                               |
| UB 610 x 229 x 140                        | 140                       | 617.2   | 230.2   | 13.1                 | 22.1                 | 178.2                | 573   | 547.6   | M27 | 94                     | 128                    | 2.107                               | 15.06                               |
| UB 610 x 305 x 149                        | 149                       | 612.4   | 304.8   | 11.8                 | 19.7                 | 190.0                | 573   | 540     | M27 | 100                    | 202                    | 2.392                               | 16.03                               |
| UB 610 x 305 x 179                        | 179                       | 620.2   | 307.1   | 14.1                 | 23.6                 | 228.1                | 573   | 540     | M27 | 104                    | 206                    | 2.412                               | 13.47                               |
| UB 610 x 305 x 238                        | 238                       | 635.8   | 311.4   | 18.4                 | 31.4                 | 303.3                | 573   | 540     | M27 | 108                    | 210                    | 2.452                               | 10.3                                |
| UB 686 x 254 x 125                        | 125                       | 677.9   | 253     | 11.7                 | 16.2                 | 159.5                | 645.5   | 615.1   | M27 | 98                     | 152                    | 2.318                               | 18.52                               |
| UB 686 x 254 x 140                        | 140                       | 683.5   | 253.7   | 12.4                 | 19                   | 178.4                | 645.5   | 615.1   | M27 | 100                    | 152                    | 2.331                               | 16.64                               |
| UB 686 x 254 x 152                        | 152                       | 687.5   | 254.5   | 13.2                 | 21                   | 194.1                | 645.5   | 615.1   | M27 | 100                    | 152                    | 2.341                               | 15.36                               |
| UB 686 x 254 x 170                        | 170                       | 692.9   | 255.8   | 14.5                 | 23.7                 | 216.8                | 645.5   | 615.1   | M27 | 102                    | 154                    | 2.354                               | 13.83                               |



\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

\* Minimum tonnage and delivery conditions upon agreement.

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   | Classification<br>ENV 1993-1-1                       |                     |      |      |                     |      | HISTAR |      |
|---|--|-----------------------------------|--------------------------------------|--|----------------------|------------------------------------|---|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|---------------------|------|------|---------------------|------|--------|------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                   |                                      |  |                      |                                    | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                      |  |                      |                      |                                   |  | pure<br>bending y-y |      |      | pure<br>compression |      |        |      |
|   | G<br>kg/m  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup>                     | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235                | S355 | S460 | S235                | S355 |        | S460 |
| UB 406 x 178 x 54                         | 54.1   | 18720                             | 930                                  | 1055                                   | 16.48                | 33.28                              | 1021  | 114.9                                | 178.3                                  | 3.85                 | 41.45                | 23.50                             | 391  | 1                   | 2    | -    | 4                   | 4    | -      |      |
| UB 406 x 178 x 60                         | 60.1   | 21600                             | 1063                                 | 1199                                   | 16.8                 | 34.60                              | 1203  | 135.3                                | 209                                    | 3.97                 | 45.45                | 33.49                             | 465.2  | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 406 x 178 x 67                         | 67.1   | 24330                             | 1189                                 | 1346                                   | 16.87                | 38.58                              | 1365  | 152.7                                | 236.6                                  | 3.99                 | 49.35                | 46.40                             | 531.7  | 1                   | 1    | -    | 3                   | 4    | -      |      |
| UB 406 x 178 x 74                         | 74.2   | 27310                             | 1323                                 | 1501                                   | 17.00                | 41.85                              | 1545  | 172.2                                | 267                                    | 4.04                 | 53.45                | 63.10                             | 607.1  | 1                   | 1    | -    | 2                   | 4    | -      |      |
| UB 457 x 152 x 52                         | 52.3   | 21370                             | 950                                  | 1096                                   | 17.91                | 36.47                              | 645   | 84.64                                | 133.3                                  | 3.11                 | 41.35                | 21.71                             | 309.7  | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 457 x 152 x 60                         | 59.8   | 25500                             | 1122                                 | 1287                                   | 18.29                | 39.35                              | 794.6   | 103.9                                | 163.1                                  | 3.23                 | 46.65                | 34.02                             | 385.8  | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 457 x 152 x 67                         | 67.2   | 28930                             | 1263                                 | 1453                                   | 18.39                | 43.82                              | 912.6   | 118.7                                | 186.7                                  | 3.27                 | 50.95                | 47.95                             | 446.2  | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 457 x 152 x 74                         | 74.2   | 32670                             | 1414                                 | 1627                                   | 18.6                 | 47.08                              | 1047  | 135.6                                | 213.1                                  | 3.33                 | 55.55                | 66.18                             | 516.3  | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 457 x 152 x 82                         | 82.1   | 36590                             | 1571                                 | 1811                                   | 18.71                | 51.67                              | 1185  | 152.5                                | 240.4                                  | 3.37                 | 60.25                | 89.65                             | 589.1  | 1                   | 1    | -    | 3                   | 4    | -      |      |
| UB 457 x 191 x 67                         | 67.1   | 29380                             | 1296                                 | 1471                                   | 18.54                | 40.94                              | 1452  | 152.9                                | 237.3                                  | 4.12                 | 45.85                | 37.54                             | 703.8  | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 457 x 191 x 74                         | 74.3   | 33320                             | 1458                                 | 1653                                   | 18.76                | 43.68                              | 1671  | 175.5                                | 272.1                                  | 4.20                 | 49.95                | 52.14                             | 816.6  | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 457 x 191 x 82                         | 82.0   | 37050                             | 1611                                 | 1831                                   | 18.83                | 48.11                              | 1871  | 195.6                                | 303.9                                  | 4.23                 | 53.85                | 69.72                             | 920.1  | 1                   | 1    | -    | 3                   | 4    | -      |      |
| UB 457 x 191 x 89                         | 89.3   | 41020                             | 1770                                 | 2014                                   | 18.99                | 51.30                              | 2089  | 217.8                                | 338.4                                  | 4.29                 | 57.85                | 91.26                             | 1035   | 1                   | 1    | -    | 3                   | 4    | -      |      |
| UB 457 x 191 x 98                         | 98.3   | 45730                             | 1957                                 | 2232                                   | 19.11                | 55.92                              | 2347  | 243.5                                | 378.9                                  | 4.33                 | 62.55                | 122.1                             | 1173   | 1                   | 1    | -    | 2                   | 4    | -      |      |
| UB 533 x 210 x 82                         | 82.2   | 47540                             | 1800                                 | 2059                                   | 21.31                | 54.19                              | 2007  | 192.3                                | 300.4                                  | 4.38                 | 50.88                | 52.54                             | 1328   | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 533 x 210 x 92                         | 92.1   | 55230                             | 2072                                 | 2360                                   | 21.69                | 57.61                              | 2389  | 228.3                                | 355.6                                  | 4.51                 | 56.18                | 76.34                             | 1596   | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 533 x 210 x 101                        | 101  | 61520                             | 2292                                 | 2612                                   | 21.87                | 61.89                              | 2692  | 256.4                                | 399.4                                  | 4.57                 | 60.48                | 101.6                             | 1811   | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 533 x 210 x 109                        | 109  | 66820                             | 2477                                 | 2828                                   | 21.94                | 66.56                              | 2943  | 279.2                                | 435.8                                  | 4.60                 | 64.08                | 127.3                             | 1989   | 1                   | 1    | -    | 3                   | 4    | -      |      |
| UB 533 x 210 x 122                        | 122  | 76040                             | 2793                                 | 3196                                   | 22.12                | 73.24                              | 3388  | 319.7                                | 499.7                                  | 4.67                 | 70.18                | 179.6                             | 2312   | 1                   | 1    | -    | 2                   | 4    | -      |      |
| UB 610 x 229 x 101                        | 101  | 75780                             | 2515                                 | 2881                                   | 24.24                | 66.86                              | 2915  | 256.1                                | 400.2                                  | 4.75                 | 54.98                | 78.16                             | 2512   | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 610 x 229 x 113                        | 113  | 87320                             | 2874                                 | 3281                                   | 24.63                | 71.30                              | 3434  | 301.0                                | 469.3                                  | 4.88                 | 60.58                | 112.3                             | 2985   | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 610 x 229 x 125                        | 125  | 98610                             | 3221                                 | 3676                                   | 24.88                | 76.88                              | 3932  | 343.4                                | 535.4                                  | 4.97                 | 65.98                | 155.2                             | 3444   | 1                   | 1    | 1    | 4                   | 4    | 4      | HI   |
| UB 610 x 229 x 140                        | 140  | 111800                            | 3622                                 | 4142                                   | 25.05                | 84.96                              | 4505  | 391.4                                | 611.4                                  | 5.03                 | 72.18                | 217.8                             | 3978   | 1                   | 1    | 1    | 3                   | 4    | 4      | HI   |
| UB 610 x 305 x 149                        | 149  | 125900                            | 4111                                 | 4594                                   | 25.74                | 78.78                              | 9308  | 610.7                                | 937.3                                  | 7.00                 | 70.53                | 200.4                             | 8165   | 1                   | 1    | 2    | 4                   | 4    | 4      | HI   |
| UB 610 x 305 x 179                        | 179  | 153000                            | 4935                                 | 5547                                   | 25.9                 | 94.25                              | 11408   | 743.0                                | 1144                                   | 7.07                 | 80.63                | 341.6                             | 10140  | 1                   | 1    | 1    | 3                   | 4    | 4      | HI   |
| UB 610 x 305 x 238                        | 238  | 209500                            | 6589                                 | 7486                                   | 26.28                | 123.9                              | 15837   | 1017                                 | 1574                                   | 7.23                 | 100.5                | 790.6                             | 14430  | 1                   | 1    | 1    | 1                   | 2    | 3      | HI   |
| UB 686 x 254 x 125                        | 125  | 118000                            | 3481                                 | 3994                                   | 27.2                 | 84.33                              | 4383  | 346.5                                | 542.4                                  | 5.24                 | 61.91                | 118.3                             | 4786   | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 686 x 254 x 140                        | 140  | 136300                            | 3987                                 | 4558                                   | 27.64                | 90.16                              | 5183  | 408.6                                | 638.2                                  | 5.39                 | 68.21                | 170.3                             | 5708   | 1                   | 1    | -    | 4                   | 4    | -      |      |
| UB 686 x 254 x 152                        | 152  | 150400                            | 4374                                 | 5000                                   | 27.83                | 96.35                              | 5784  | 454.5                                | 710.2                                  | 5.46                 | 73.01                | 221.3                             | 6407   | 1                   | 1    | 1    | 4                   | 4    | 4      | HI   |
| UB 686 x 254 x 170                        | 170  | 170300                            | 4916                                 | 5631                                   | 28.03                | 106.2                              | 6630  | 518.4                                | 811.4                                  | 5.53                 | 79.71                | 309.8                             | 7402   | 1                   | 1    | 1    | 4                   | 4    | 4      | HI   |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poutrelles universelles britanniques\*

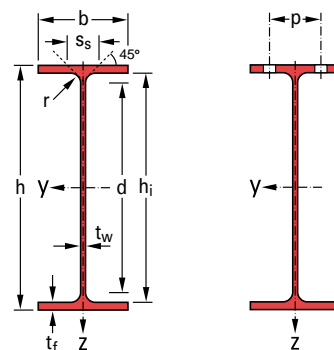
conformes à BS 4-1: 1993

## British universal beams\*

in accordance with BS 4-1: 1993

## Britische Universalträger\*

gemäß BS 4-1: 1993



| Désignation<br>Designation<br>Bezeichnung | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| UB 762 x 267 x 147 147                    | 754                       | 265.2   | 12.8                 | 17.5                 | 16.5    | 187.2                | 719   | 686     | M27 | 104                    | 164                    | 2.515                               | 17.11                               |
| UB 762 x 267 x 173 173                    | 762.2                     | 266.7   | 14.3                 | 21.6                 | 16.5    | 220.4                | 719   | 686     | M27 | 104                    | 164                    | 2.534                               | 14.65                               |
| UB 762 x 267 x 197 197                    | 769.8                     | 268     | 15.6                 | 25.4                 | 16.5    | 250.6                | 719   | 686     | M27 | 106                    | 166                    | 2.552                               | 12.97                               |
| UB 838 x 292 x 176 176                    | 834.9                     | 291.7   | 14                   | 18.8                 | 17.8    | 224.0                | 797.3   | 761.7   | M27 | 106                    | 190                    | 2.778                               | 15.8                                |
| UB 838 x 292 x 194 194                    | 840.7                     | 292.4   | 14.7                 | 21.7                 | 17.8    | 246.8                | 797.3   | 761.7   | M27 | 108                    | 190                    | 2.791                               | 14.4                                |
| UB 838 x 292 x 226 227                    | 850.9                     | 293.8   | 16.1                 | 26.8                 | 17.8    | 288.6                | 797.3   | 761.7   | M27 | 108                    | 192                    | 2.814                               | 12.42                               |
| UB 914 x 305 x 201 201                    | 903                       | 303.3   | 15.1                 | 20.2                 | 19.1    | 255.9                | 862.6   | 824.4   | M27 | 110                    | 202                    | 2.956                               | 14.72                               |
| UB 914 x 305 x 224 224                    | 910.4                     | 304.1   | 15.9                 | 23.9                 | 19.1    | 285.6                | 862.6   | 824.4   | M27 | 110                    | 202                    | 2.973                               | 13.26                               |
| UB 914 x 305 x 253 253                    | 918.4                     | 305.5   | 17.3                 | 27.9                 | 19.1    | 322.8                | 862.6   | 824.4   | M27 | 112                    | 204                    | 2.991                               | 11.8                                |
| UB 914 x 305 x 289 289                    | 926.6                     | 307.7   | 19.5                 | 32                   | 19.1    | 368.3                | 862.6   | 824.4   | M27 | 114                    | 206                    | 3.012                               | 10.42                               |
| UB 914 x 419 x 343 343                    | 911.8                     | 418.5   | 19.4                 | 32                   | 24.1    | 437.3                | 847.8   | 799.6   | M27 | 126                    | 312                    | 3.417                               | 9.955                               |
| UB 914 x 419 x 388 388                    | 921                       | 420.5   | 21.4                 | 36.6                 | 24.1    | 494.2                | 847.8   | 799.6   | M27 | 128                    | 314                    | 3.44                                | 8.866                               |



\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

\* Minimum tonnage and delivery conditions upon agreement.

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   | Classification<br>ENV 1993-1-1                       |                     |      |      |      |      | HISTAR |
|---|--|-----------------------------------|--------------------------------------|--|----------------------|---|-----------------------------------|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|---------------------|------|------|------|------|--------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                   |                                      |  |                      | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                   |                                      |  |                      | pure<br>bending y-y  |                                   |  | pure<br>compression |      |      |      |      |        |
|   | G<br>kg/m  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup>                    | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235                | S355 | S460 | S235 | S355 |        |
| UB 762 x 267 x 147 147                    | 168500   | 4470                              | 5156                                 | 30.00                                  | 102.4                | 5455  | 411.4                             | 647.2                                | 5.40                                   | 67.13                | 162.2                | 7377                              | 1 1 -  | 4 4 -               |      |      |      |      |        |
| UB 762 x 267 x 173 173                    | 205300   | 5387                              | 6198                                 | 30.52                                  | 115.4                | 6850  | 513.7                             | 807.5                                | 5.58                                   | 76.83                | 270.3                | 9364                              | 1 1 1  | 4 4 4               |      |      |      |      | HI     |
| UB 762 x 267 x 197 197                    | 240000   | 6234                              | 7167                                 | 30.94                                  | 126.8                | 8175  | 610.1                             | 958.6                                | 5.71                                   | 85.73                | 407.3                | 11290                             | 1 1 1  | 4 4 4               |      |      |      |      | HI     |
|   |  |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   |  |                     |      |      |      |      |        |
| UB 838 x 292 x 176 176                    | 246000   | 5893                              | 6808                                 | 33.14                                  | 123.7                | 7799  | 534.7                             | 841.9                                | 5.90                                   | 72.45                | 226.2                | 12950                             | 1 1 -  | 4 4 -               |      |      |      |      |        |
| UB 838 x 292 x 194 194                    | 279200   | 6641                              | 7640                                 | 33.63                                  | 130.8                | 9066  | 620.1                             | 973.8                                | 6.06                                   | 78.95                | 309.6                | 15160                             | 1 1 2  | 4 4 4               |      |      |      |      | HI     |
| UB 838 x 292 x 226 227                    | 339700   | 7985                              | 9155                                 | 34.31                                  | 144.9                | 11360   | 773.3                             | 1212                                 | 6.27                                   | 90.55                | 516.5                | 19230                             | 1 1 1  | 4 4 4               |      |      |      |      | HI     |
|   |  |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   |  |                     |      |      |      |      |        |
| UB 914 x 305 x 201 201                    | 325300   | 7204                              | 8351                                 | 35.65                                  | 144.2                | 9423  | 621.4                             | 982.0                                | 6.07                                   | 77.88                | 297.9                | 18300                             | 1 1 -  | 4 4 -               |      |      |      |      |        |
| UB 914 x 305 x 224 224                    | 376400   | 8269                              | 9535                                 | 36.3                                   | 153.2                | 11240   | 739.0                             | 1163                                 | 6.27                                   | 86.08                | 427.2                | 22010                             | 1 1 2  | 4 4 4               |      |      |      |      | HI     |
| UB 914 x 305 x 253 253                    | 436300   | 9501                              | 10940                                | 36.76                                  | 167.8                | 13300   | 870.8                             | 1371                                 | 6.42                                   | 95.48                | 630.5                | 26280                             | 1 1 1  | 4 4 4               |      |      |      |      | HI     |
| UB 914 x 305 x 289 289                    | 504200   | 10880                             | 12570                                | 37.00                                  | 189.8                | 15600   | 1014                              | 1601                                 | 6.51                                   | 105.9                | 933.6                | 31090                             | 1 1 1  | 4 4 4               |      |      |      |      | HI     |
|   |  |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   |  |                     |      |      |      |      |        |
| UB 914 x 419 x 343 343                    | 625800   | 13730                             | 15480                                | 37.83                                  | 191.1                | 39160   | 1871                              | 2890                                 | 9.46                                   | 111.6                | 1199                 | 75650                             | 1 1 1  | 3 4 4               |      |      |      |      | HI     |
| UB 914 x 419 x 388 388                    | 719600   | 15630                             | 17670                                | 38.16                                  | 211.9                | 45440   | 2161                              | 3341                                 | 9.59                                   | 122.8                | 1741                 | 88690                             | 1 1 1  | 2 4 4               |      |      |      |      | HI     |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poteaux universels britanniques\*

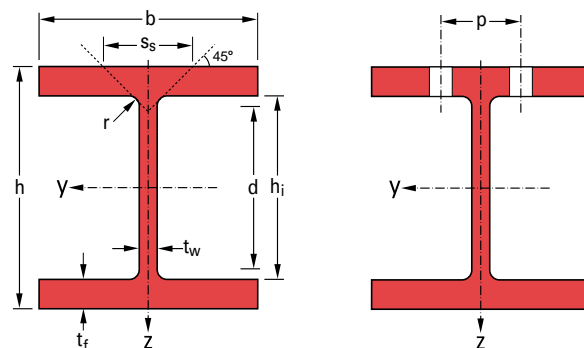
conformes à BS 4-1: 1993

## British universal columns\*

in accordance with BS 4-1: 1993

## Britische Universalstützen\*

gemäß BS 4-1: 1993



| Désignation<br>Designation<br>Bezeichnung |      | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |      | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| UC 152 x 152 x 23                         | 23.0 | 152.4                     | 152.2   | 5.8                  | 6.8                  | 7.6     | 29.25                | 138.8   | 123.6   | M20 | 72                     | 76                     | 0.89                                | 38.72                               |
| UC 152 x 152 x 30                         | 30.0 | 157.6                     | 152.9   | 6.5                  | 9.4                  | 7.6     | 38.26                | 138.8   | 123.6   | M20 | 72                     | 76                     | 0.90                                | 29.99                               |
| UC 152 x 152 x 37                         | 37.0 | 161.8                     | 154.4   | 8                    | 11.5                 | 7.6     | 47.11                | 138.8   | 123.6   | M20 | 74                     | 78                     | 0.91                                | 24.66                               |
| UC 203 x 203 x 46                         | 46.1 | 203.2                     | 203.6   | 7.2                  | 11                   | 10.2    | 58.73                | 181.2   | 160.8   | M27 | 90                     | 104                    | 1.19                                | 25.79                               |
| UC 203 x 203 x 52                         | 52.0 | 206.2                     | 204.3   | 7.9                  | 12.5                 | 10.2    | 66.28                | 181.2   | 160.8   | M27 | 90                     | 104                    | 1.20                                | 22.99                               |
| UC 203 x 203 x 60                         | 60.0 | 209.6                     | 205.8   | 9.4                  | 14.2                 | 10.2    | 76.37                | 181.2   | 160.8   | M27 | 90                     | 106                    | 1.21                                | 20.12                               |
| UC 203 x 203 x 71                         | 71.0 | 215.8                     | 206.4   | 10                   | 17.3                 | 10.2    | 90.43                | 181.2   | 160.8   | M27 | 92                     | 106                    | 1.22                                | 17.18                               |
| UC 203 x 203 x 86                         | 86.1 | 222.2                     | 209.1   | 12.7                 | 20.5                 | 10.2    | 109.6                | 181.2   | 160.8   | M27 | 94                     | 110                    | 1.24                                | 14.38                               |
| UC 254 x 254 x 73                         | 73.1 | 254.1                     | 254.6   | 8.6                  | 14.2                 | 12.7    | 93.1                 | 225.7   | 200.3   | M27 | 100                    | 152                    | 1.49                                | 20.35                               |
| UC 254 x 254 x 89                         | 88.9 | 260.3                     | 256.3   | 10.3                 | 17.3                 | 12.7    | 113.3                | 225.7   | 200.3   | M27 | 102                    | 154                    | 1.50                                | 16.90                               |
| UC 254 x 254 x 107                        | 107  | 266.7                     | 258.8   | 12.8                 | 20.5                 | 12.7    | 136.4                | 225.7   | 200.3   | M27 | 104                    | 156                    | 1.52                                | 14.21                               |
| UC 254 x 254 x 132                        | 132  | 276.3                     | 261.3   | 15.3                 | 25.3                 | 12.7    | 168.1                | 225.7   | 200.3   | M27 | 108                    | 160                    | 1.55                                | 11.71                               |
| UC 254 x 254 x 167                        | 167  | 289.1                     | 265.2   | 19.2                 | 31.7                 | 12.7    | 212.9                | 225.7   | 200.3   | M27 | 112                    | 164                    | 1.58                                | 9.45                                |
| UC 305 x 305 x 97                         | 96.9 | 307.9                     | 305.3   | 9.9                  | 15.4                 | 15.2    | 123.4                | 277.1   | 246.7   | M27 | 102                    | 204                    | 1.79                                | 18.48                               |
| UC 305 x 305 x 118                        | 118  | 314.5                     | 307.4   | 12                   | 18.7                 | 15.2    | 150.2                | 277.1   | 246.7   | M27 | 104                    | 206                    | 1.81                                | 15.34                               |
| UC 305 x 305 x 137                        | 137  | 320.5                     | 309.2   | 13.8                 | 21.7                 | 15.2    | 174.4                | 277.1   | 246.7   | M27 | 106                    | 208                    | 1.82                                | 13.32                               |
| UC 305 x 305 x 158                        | 158  | 327.1                     | 311.2   | 15.8                 | 25                   | 15.2    | 201.4                | 277.1   | 246.7   | M27 | 108                    | 210                    | 1.84                                | 11.65                               |
| UC 305 x 305 x 198                        | 198  | 339.9                     | 314.5   | 19.1                 | 31.4                 | 15.2    | 252.4                | 277.1   | 246.7   | M27 | 112                    | 212                    | 1.87                                | 9.46                                |
| UC 305 x 305 x 240                        | 240  | 352.5                     | 318.4   | 23                   | 37.7                 | 15.2    | 305.8                | 277.1   | 246.7   | M27 | 116                    | 216                    | 1.91                                | 7.94                                |
| UC 305 x 305 x 283                        | 283  | 365.3                     | 322.2   | 26.8                 | 44.1                 | 15.2    | 360.4                | 277.1   | 246.7   | M27 | 120                    | 218                    | 1.94                                | 6.86                                |
| UC 356 x 368 x 129                        | 129  | 355.6                     | 368.6   | 10.4                 | 17.5                 | 15.2    | 164.3                | 320.6   | 290.2   | M27 | 98                     | 262                    | 2.14                                | 16.58                               |
| UC 356 x 368 x 153                        | 153  | 362                       | 370.5   | 12.3                 | 20.7                 | 15.2    | 194.8                | 320.6   | 290.2   | M27 | 100                    | 264                    | 2.16                                | 14.09                               |
| UC 356 x 368 x 177                        | 177  | 368.2                     | 372.6   | 14.4                 | 23.8                 | 15.2    | 225.5                | 320.6   | 290.2   | M27 | 102                    | 266                    | 2.17                                | 12.27                               |
| UC 356 x 368 x 202                        | 202  | 374.6                     | 374.7   | 16.5                 | 27                   | 15.2    | 257.2                | 320.6   | 290.2   | M27 | 104                    | 268                    | 2.19                                | 10.84                               |
| UC 356 x 406 x 235                        | 235  | 381                       | 394.8   | 18.4                 | 30.2                 | 15.2    | 299                  | 320.6   | 290.2   | M27 | 106                    | 288                    | 2.28                                | 9.69                                |
| UC 356 x 406 x 287                        | 287  | 393.6                     | 399     | 22.6                 | 36.5                 | 15.2    | 365.7                | 320.6   | 290.2   | M27 | 112                    | 294                    | 2.31                                | 8.05                                |
| UC 356 x 406 x 340                        | 340  | 406.4                     | 403     | 26.6                 | 42.9                 | 15.2    | 433                  | 320.6   | 290.2   | M27 | 118                    | 292                    | 2.35                                | 6.90                                |
| UC 356 x 406 x 393                        | 393  | 419                       | 407     | 30.6                 | 49.2                 | 15.2    | 500.6                | 320.6   | 290.2   | M27 | 122                    | 296                    | 2.38                                | 6.05                                |
| UC 356 x 406 x 467                        | 467  | 436.6                     | 412.2   | 35.8                 | 58                   | 15.2    | 594.9                | 320.6   | 290.2   | M27 | 128                    | 300                    | 2.424                               | 5.191                               |
| UC 356 x 406 x 551                        | 551  | 455.6                     | 418.5   | 42.1                 | 67.5                 | 15.2    | 701.9                | 320.6   | 290.2   | M27 | 134                    | 306                    | 2.475                               | 4.492                               |
| UC 356 x 406 x 634                        | 634  | 474.6                     | 424     | 47.6                 | 77                   | 15.2    | 807.5                | 320.6   | 290.2   | M27 | 140                    | 312                    | 2.524                               | 3.981                               |



\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

\* Minimum tonnage and delivery conditions upon agreement.

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.



# UC

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |                                      |   |                      |                      |                                   |  |       | Classification<br>ENV 1993-1-1 |                     |      |      |      |   | HISTAR |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|--------------------------------------|---|----------------------|----------------------|-----------------------------------|--|-------|--------------------------------|---------------------|------|------|------|---|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   |                                      | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                      |                      |                                   |  |       |                                |                     |      |      |      |   |        |
|   |                                   |  |  |                      |                                    |                                   |                                      |   |                      |                      |                                   | pure<br>bending y-y                                  |       |                                | pure<br>compression |      |      |      |   |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup>                | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235  | S355                           | S460                | S235 | S355 | S460 |   |        |
| UC 152 x 152 x 23                         | 23.0                              | 1250   | 164                                    | 182                  | 6.54                               | 9.97                              | 399.9                                | 52.55   | 80.16                | 3.7                  | 28.3                              | 4.86   | 21.18 | 3                              | 3                   | -    | 3    | 3    | - |        |
| UC 152 x 152 x 30                         | 30.0                              | 1748   | 221.8                                  | 247.7                | 6.76                               | 11.56                             | 560.5                                | 73.31   | 111.6                | 3.83                 | 34.2                              | 10.67  | 30.75 | 1                              | 1                   | -    | 1    | 1    | - |        |
| UC 152 x 152 x 37                         | 37.0                              | 2210   | 273.2                                  | 308.8                | 6.85                               | 14.27                             | 706.2                                | 91.48   | 139.6                | 3.87                 | 39.9                              | 19.49  | 39.84 | 1                              | 1                   | -    | 1    | 1    | - |        |
| UC 203 x 203 x 46                         | 46.1                              | 4568   | 449.6                                  | 497.4                | 8.82                               | 16.98                             | 1548                                 | 152.1   | 230.9                | 5.13                 | 41.2                              | 22.34  | 142.9 | 1                              | 3                   | -    | 1    | 3    | - |        |
| UC 203 x 203 x 52                         | 52.0                              | 5259   | 510.1                                  | 567.4                | 8.91                               | 18.75                             | 1778                                 | 174   | 264.2                | 5.18                 | 44.9                              | 31.97  | 166.6 | 1                              | 2                   | -    | 1    | 2    | - |        |
| UC 203 x 203 x 60                         | 60.0                              | 6125   | 584.4                                  | 656.1                | 8.96                               | 22.16                             | 2065                                 | 200.6   | 305.3                | 5.2                  | 49.8                              | 47.78  | 196.9 | 1                              | 1                   | -    | 1    | 1    | - |        |
| UC 203 x 203 x 71                         | 71.0                              | 7618   | 706                                    | 798.8                | 9.18                               | 24.27                             | 2537                                 | 245.9   | 373.7                | 5.3                  | 56.6                              | 80.63  | 249.7 | 1                              | 1                   | -    | 1    | 1    | - |        |
| UC 203 x 203 x 86                         | 86.1                              | 9449   | 850.5                                  | 976.7                | 9.28                               | 30.69                             | 3127                                 | 299.1   | 456.2                | 5.34                 | 65.7                              | 138.3  | 317.7 | 1                              | 1                   | -    | 1    | 1    | - |        |
| UC 254 x 254 x 73                         | 73.1                              | 11410  | 897.9                                  | 992.1                | 11.07                              | 25.62                             | 3908                                 | 307   | 465.4                | 6.48                 | 51.9                              | 57.74  | 562   | 1                              | 3                   | 3    | 1    | 3    | 3 |        |
| UC 254 x 254 x 89                         | 88.9                              | 14270  | 1096                                   | 1224                 | 11.22                              | 30.81                             | 4857                                 | 379   | 575.3                | 6.55                 | 59.8                              | 102.7  | 716.6 | 1                              | 1                   | 2    | 1    | 1    | 2 |        |
| UC 254 x 254 x 107                        | 107                               | 17510  | 1313                                   | 1484                 | 11.33                              | 38.11                             | 5928                                 | 458.1   | 697                  | 6.59                 | 68.7                              | 173.9  | 897.5 | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 254 x 254 x 132                        | 132                               | 22530  | 1631                                   | 1869                 | 11.58                              | 46.21                             | 7531                                 | 576.4   | 878.4                | 6.69                 | 80.8                              | 321.5  | 1185  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 254 x 254 x 167                        | 167                               | 30000  | 2075                                   | 2424                 | 11.87                              | 58.86                             | 9870                                 | 744.3   | 1137                 | 6.81                 | 97.5                              | 633.8  | 1632  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 305 x 305 x 97                         | 96.9                              | 22250  | 1445                                   | 1592                 | 13.42                              | 35.62                             | 7308                                 | 478.7   | 726.1                | 7.69                 | 58.5                              | 91.8   | 1562  | 1                              | 3                   | 3    | 1    | 3    | 3 |        |
| UC 305 x 305 x 118                        | 118                               | 27670  | 1760                                   | 1958                 | 13.57                              | 43.16                             | 9059                                 | 589.4   | 895.4                | 7.77                 | 67.2                              | 162.3  | 1980  | 1                              | 2                   | 3    | 1    | 2    | 3 |        |
| UC 305 x 305 x 137                        | 137                               | 32810  | 2048                                   | 2297                 | 13.72                              | 49.81                             | 10700                                | 692.1   | 1053                 | 7.83                 | 75.0                              | 251.1  | 2386  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 305 x 305 x 158                        | 158                               | 38750  | 2369                                   | 2680                 | 13.87                              | 57.32                             | 12570                                | 807.8   | 1230                 | 7.9                  | 83.6                              | 381.6  | 2865  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 305 x 305 x 198                        | 198                               | 50900  | 2995                                   | 3440                 | 14.20                              | 70.45                             | 16300                                | 1037  | 1581                 | 8.04                 | 99.7                              | 741.2  | 3873  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 305 x 305 x 240                        | 240                               | 64200  | 3643                                   | 4247                 | 14.49                              | 85.85                             | 20310                                | 1276  | 1951                 | 8.15                 | 116.2                             | 1287   | 5025  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 305 x 305 x 283                        | 283                               | 78870  | 4318                                   | 5105                 | 14.79                              | 101.5                             | 24630                                | 1529  | 2342                 | 8.27                 | 132.8                             | 2062   | 6341  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 356 x 368 x 129                        | 129                               | 40250  | 2264                                   | 2479                 | 15.65                              | 42.47                             | 14610                                | 792.8   | 1199                 | 9.43                 | 63.2                              | 152.7  | 4174  | 2                              | 3                   | 3    | 2    | 3    | 3 |        |
| UC 356 x 368 x 153                        | 153                               | 48590  | 2684                                   | 2965                 | 15.79                              | 50.26                             | 17550                                | 947.5   | 1435                 | 9.49                 | 71.5                              | 251.2  | 5110  | 1                              | 2                   | 3    | 1    | 2    | 3 |        |
| UC 356 x 368 x 177                        | 177                               | 57120  | 3103                                   | 3455                 | 15.91                              | 58.81                             | 20530                                | 1102  | 1671                 | 9.54                 | 79.8                              | 383.5  | 6084  | 1                              | 1                   | 2    | 1    | 1    | 2 |        |
| UC 356 x 368 x 202                        | 202                               | 66260  | 3538                                   | 3972                 | 16.05                              | 67.55                             | 23690                                | 1264  | 1920                 | 9.6                  | 88.3                              | 561.4  | 7151  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 356 x 406 x 235                        | 235                               | 79080  | 4151                                   | 4687                 | 16.25                              | 75.71                             | 30990                                | 1570  | 2383                 | 10.2                 | 96.6                              | 817.7  | 9529  | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 356 x 406 x 287                        | 287                               | 99880  | 5075                                   | 5812                 | 16.53                              | 93.78                             | 38680                                | 1939  | 2949                 | 10.28                | 113.4                             | 1455   | 12320 | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 356 x 406 x 340                        | 340                               | 122500   | 6031                                   | 6999                 | 16.82                              | 111.7                             | 46850                                | 2325  | 3544                 | 10.4                 | 130.2                             | 2370   | 15460 | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 356 x 406 x 393                        | 393                               | 146600   | 6998                                   | 8222                 | 17.11                              | 130.1                             | 55370                                | 2721  | 4154                 | 10.52                | 146.8                             | 3592   | 18900 | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 356 x 406 x 467                        | 467                               | 183000   | 8383                                   | 10000                | 17.54                              | 155.2                             | 67830                                | 3291  | 5034                 | 10.68                | 169.6                             | 5896   | 24260 | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 356 x 406 x 551                        | 551                               | 226900   | 9962                                   | 12080                | 17.98                              | 185.9                             | 82670                                | 3951  | 6058                 | 10.85                | 194.9                             | 9402   | 31050 | 1                              | 1                   | 1    | 1    | 1    | 1 |        |
| UC 356 x 406 x 634                        | 634                               | 274800   | 11580                                  | 14240                | 18.45                              | 214.6                             | 98130                                | 4629  | 7108                 | 11.02                | 219.4                             | 13990  | 38660 | 1                              | 1                   | 1    | 1    | 1    | 1 |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poutrelles-pieux britanniques à larges ailes\*

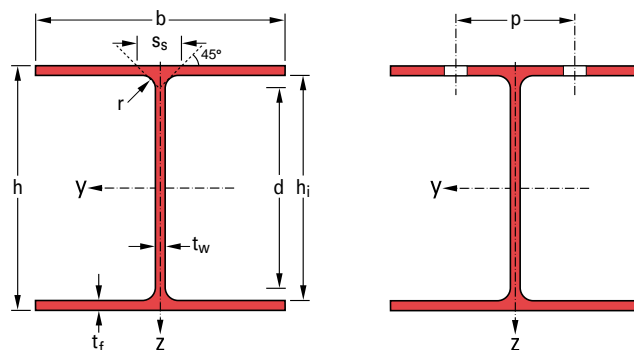
conformes à BS 4-1: 1993

## British wide flange bearing piles\*

in accordance with BS 4-1: 1993

## Britische Breitflanschpfähle\*

gemäß BS 4-1: 1993



| Désignation<br>Designation<br>Bezeichnung | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| UBP 203 x 203 x 45 44.9                   | 200.2                     | 205.9   | 9.5                  | 9.5                  | 10.2    | 57.23                | 181.2   | 160.8   | M27 | 90                     | 106                    | 1.19                                | 26.43                               |
| UBP 203 x 203 x 54 53.9                   | 204                       | 207.7   | 11.3                 | 11.4                 | 10.2    | 68.72                | 181.2   | 160.8   | M27 | 94                     | 108                    | 1.20                                | 22.22                               |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| UBP 254 x 254 x 63 63.0                   | 247.1                     | 256.6   | 10.6                 | 10.7                 | 12.7    | 80.22                | 225.7   | 200.3   | M27 | 102                    | 154                    | 1.48                                | 23.46                               |
| UBP 254 x 254 x 71 71.0                   | 249.7                     | 258     | 12                   | 12                   | 12.7    | 90.39                | 225.7   | 200.3   | M27 | 104                    | 156                    | 1.49                                | 20.94                               |
| UBP 254 x 254 x 85 85.1                   | 254.3                     | 260.4   | 14.4                 | 14.3                 | 12.7    | 108.4                | 225.7   | 200.3   | M27 | 106                    | 158                    | 1.50                                | 17.63                               |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| UBP 305 x 305 x 79 78.9                   | 299.3                     | 306.4   | 11                   | 11.1                 | 15.2    | 100.5                | 277.1   | 246.7   | M27 | 102                    | 204                    | 1.78                                | 22.52                               |
| UBP 305 x 305 x 88 88.0                   | 301.7                     | 307.8   | 12.4                 | 12.3                 | 15.2    | 112.1                | 277.1   | 246.7   | M27 | 104                    | 206                    | 1.78                                | 20.28                               |
| UBP 305 x 305 x 95 94.9                   | 303.7                     | 308.7   | 13.3                 | 13.3                 | 15.2    | 120.9                | 277.1   | 246.7   | M27 | 106                    | 206                    | 1.79                                | 18.85                               |
| UBP 305 x 305 x 110 110                   | 307.9                     | 310.7   | 15.3                 | 15.4                 | 15.2    | 140.1                | 277.1   | 246.7   | M27 | 108                    | 208                    | 1.80                                | 16.39                               |
| UBP 305 x 305 x 126 126                   | 312.3                     | 312.9   | 17.5                 | 17.6                 | 15.2    | 160.6                | 277.1   | 246.7   | M27 | 110                    | 210                    | 1.82                                | 14.40                               |
| UBP 305 x 305 x 149 149                   | 318.5                     | 316     | 20.6                 | 20.7                 | 15.2    | 189.9                | 277.1   | 246.7   | M27 | 114                    | 214                    | 1.83                                | 12.30                               |
| UBP 305 x 305 x 186 186                   | 328.3                     | 320.9   | 25.5                 | 25.6                 | 15.2    | 236.9                | 277.1   | 246.7   | M27 | 118                    | 218                    | 1.86                                | 10.02                               |
| UBP 305 x 305 x 223 223                   | 337.9                     | 325.7   | 30.3                 | 30.4                 | 15.2    | 284.0                | 277.1   | 246.7   | M27 | 124                    | 220                    | 1.89                                | 8.49                                |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| UBP 356 x 368 x 109 109                   | 346.4                     | 371     | 12.8                 | 12.9                 | 15.2    | 138.7                | 320.6   | 290.2   | M27 | 102                    | 266                    | 2.13                                | 19.51                               |
| UBP 356 x 368 x 133 133                   | 352                       | 373.8   | 15.6                 | 15.7                 | 15.2    | 169.4                | 320.6   | 290.2   | M27 | 104                    | 268                    | 2.14                                | 16.11                               |
| UBP 356 x 368 x 152 152                   | 356.4                     | 376     | 17.8                 | 17.9                 | 15.2    | 193.7                | 320.6   | 290.2   | M27 | 106                    | 270                    | 2.16                                | 14.18                               |
| UBP 356 x 368 x 174 174                   | 361.4                     | 378.5   | 20.3                 | 20.4                 | 15.2    | 221.5                | 320.6   | 290.2   | M27 | 110                    | 272                    | 2.17                                | 12.48                               |



\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

\* Minimum tonnage and delivery conditions upon agreement.

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   | Classification<br>ENV 1993-1-1                       |      |      |                     |      |      | HISTAR |      |
|---|--|-----------------------------------|--------------------------------------|--|----------------------|---|-----------------------------------|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|------|------|---------------------|------|------|--------|------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                   |                                      |  |                      | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                   |                                      |  |                      |                      |                                   | pure<br>bending y-y                                  |      |      | pure<br>compression |      |      |        |      |
|   | G<br>kg/m  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup>                    | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235 | S355 | S460                | S235 | S355 |        | S460 |
| UBP 203 x 203 x 45                        | 44.9   | 4100                              | 409.6                                | 458.9                                  | 8.46                 | 20.95   | 1384                              | 134.4                                | 206.1                                  | 4.92                 | 40.45                | 20.8                              | 125.7  | 2    | 3    | -                   | 2    | 3    | -      |      |
| UBP 203 x 203 x 54                        | 53.9   | 5027                              | 492.8                                | 556.7                                  | 8.55                 | 24.98   | 1705                              | 164.2                                | 252.4                                  | 4.98                 | 46.05                | 34.97                             | 157.9  | 1    | 3    | -                   | 1    | 3    | -      |      |
| UBP 254 x 254 x 63                        | 63.0   | 8860                              | 717.2                                | 799.3                                  | 10.51                | 29.16   | 3016                              | 235.1                                | 359.7                                  | 6.13                 | 46.88                | 37.2                              | 421.0  | 3    | 3    | -                   | 3    | 3    | -      |      |
| UBP 254 x 254 x 71                        | 71.0   | 10070                             | 806.7                                | 904.0                                  | 10.56                | 32.96   | 3439                              | 266.6                                | 408.7                                  | 6.17                 | 50.88                | 52.27                             | 485.2  | 2    | 3    | -                   | 2    | 3    | -      |      |
| UBP 254 x 254 x 85                        | 85.1   | 12280                             | 966.1                                | 1092                                   | 10.65                | 39.58   | 4215                              | 323.8                                | 497.9                                  | 6.24                 | 57.88                | 87.82                             | 606.0  | 1    | 3    | 3                   | 1    | 3    | 3      | HI   |
| UBP 305 x 305 x 79                        | 78.9   | 16440                             | 1099                                 | 1218                                   | 12.79                | 37.06   | 5326                              | 347.7                                | 531.2                                  | 7.28                 | 51.01                | 51.37                             | 1105   | 3    | 4    | -                   | 3    | 4    | -      |      |
| UBP 305 x 305 x 88                        | 88.0   | 18420                             | 1221                                 | 1360                                   | 12.82                | 41.61   | 5984                              | 388.9                                | 595.2                                  | 7.31                 | 54.81                | 70.05                             | 1252   | 3    | 4    | -                   | 3    | 4    | -      |      |
| UBP 305 x 305 x 95                        | 94.9   | 20040                             | 1320                                 | 1474                                   | 12.87                | 44.65   | 6529                              | 423.0                                | 648.0                                  | 7.35                 | 57.71                | 86.69                             | 1375   | 3    | 3    | -                   | 3    | 3    | -      |      |
| UBP 305 x 305 x 110                       | 110  | 23560                             | 1531                                 | 1720                                   | 12.97                | 51.42   | 7709                              | 496.2                                | 761.7                                  | 7.42                 | 63.91                | 131.4                             | 1647   | 2    | 3    | 3                   | 2    | 3    | 3      | HI   |
| UBP 305 x 305 x 126                       | 126  | 27410                             | 1755                                 | 1986                                   | 13.06                | 58.91   | 9002                              | 575.4                                | 885.2                                  | 7.49                 | 70.51                | 194.3                             | 1951   | 1    | 2    | 3                   | 1    | 2    | 3      | HI   |
| UBP 305 x 305 x 149                       | 149  | 33070                             | 2076                                 | 2370                                   | 13.20                | 69.62   | 10910                             | 690.5                                | 1066                                   | 7.58                 | 79.81                | 314.2                             | 2414   | 1    | 1    | 2                   | 1    | 1    | 2      | HI   |
| UBP 305 x 305 x 186                       | 186  | 42610                             | 2596                                 | 3003                                   | 13.41                | 86.95   | 14140                             | 881.5                                | 1366                                   | 7.73                 | 94.51                | 593.7                             | 3230   | 1    | 1    | 1                   | 1    | 1    | 1      | HI   |
| UBP 305 x 305 x 223                       | 223  | 52700                             | 3119                                 | 3653                                   | 13.62                | 104.40  | 17580                             | 1079                                 | 1680                                   | 7.87                 | 108.9                | 998.4                             | 4138   | 1    | 1    | 1                   | 1    | 1    | 1      | HI   |
| UBP 356 x 368 x 109                       | 109  | 30630                             | 1769                                 | 1956                                   | 14.86                | 48.59   | 10990                             | 592.3                                | 902.9                                  | 8.90                 | 56.41                | 90.73                             | 3053   | 3    | 4    | -                   | 3    | 4    | -      |      |
| UBP 356 x 368 x 133                       | 133  | 37980                             | 2158                                 | 2406                                   | 14.98                | 59.22   | 13680                             | 731.9                                | 1119                                   | 8.99                 | 64.81                | 160.7                             | 3864   | 3    | 3    | 4                   | 3    | 3    | 4      | HI   |
| UBP 356 x 368 x 152                       | 152  | 43970                             | 2468                                 | 2767                                   | 15.07                | 67.68   | 15880                             | 844.5                                | 1293                                   | 9.05                 | 71.41                | 236.4                             | 4543   | 2    | 3    | 3                   | 2    | 3    | 3      | HI   |
| UBP 356 x 368 x 174                       | 174  | 51010                             | 2823                                 | 3186                                   | 15.18                | 77.41   | 18460                             | 975.6                                | 1497                                   | 9.13                 | 78.91                | 348.5                             | 5360   | 1    | 3    | 3                   | 1    | 3    | 3      | HI   |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

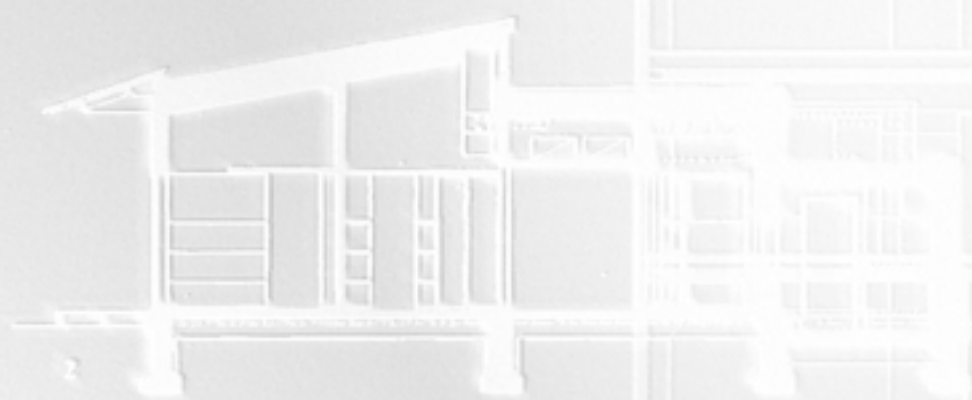
♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.

**En symbiose parfaite  
avec les concepteurs et les entrepreneurs**



**ISO 9001**





## En symbiose parfaite avec les concepteurs et les entrepreneurs

Les poutrelles laminées à chaud répondent aux exigences du XXI<sup>e</sup> siècle : **respect de l'environnement, esthétique, compétitivité, rapidité de mise en oeuvre, flexibilité, légèreté et sécurité**. L'acier est plus qu'un produit : **c'est un concept** qui répond aux besoins des créateurs et des décideurs. **En s'associant** parfaitement **aux autres matériaux**, la poutrelle permet **audace et innovation** grâce à l'emploi de poutrelles alvéolaires et intégrées ainsi qu'aux structures mixtes acier-béton et aux aciers à haute limite d'élasticité. ProfilARBED a l'avantage de vous proposer une **gamme complète** de poutrelles de 100 à 1100 mm de hauteur dans des nuances **d'aciers certifiés** allant du S 235 au S 460, et de vous offrir un **service de qualité et personnalisé**.



## In perfect harmony with architects and contractors

Hot-rolled beams satisfy all the demands of the 21<sup>st</sup> century : in **compliance with environmental standards, and in terms of aesthetics, competitiveness, speed of implementation, flexibility, lightness and safety**. Steel is more than a mere product : **it is a concept** that meets both creators' and decision-makers' needs. Beams can be used in conjunction with **other materials** allowing architects **to be bold and innovative** in their use of integrated and castellated beams, steel-concrete composite structures and high-yield strength steel.

ProfilARBED boasts a **full range** of 100 to 1100 mm high H beams in **certified steel grades**, from S 235 to S 460, and we pride ourselves on offering a **quality, personalised service**.

## Perfekte Symbiose mit Architekten und Bauunternehmern

Warmgewalzte Träger sind Produkte für das 21. Jahrhundert : **umweltfreundlich, ästhetisch, wirtschaftlich, schnell zu verarbeiten, flexibel, leicht und sicher**. Stahl ist mehr als nur ein Produkt : **Stahl ist ein Konzept**, das den Anforderungen von Architekten und Bauherren voll entspricht. Integrierte Träger und Lochstegträger, der Stahlbetonverbundbau, Stahlsorten mit hoher Streckgrenze, die **optimalen Verbindungsmöglichkeiten** von Stahlwalzträgern **mit anderen Materialien** erlauben **kühne und innovative** Architektur. ProfilARBED bietet Ihnen nicht nur die **gesamte Trägerpalette** mit Höhen von 100 bis 1100mm in **zertifizierten Stahlgüten** von S 235 bis S 460, sondern auch einen **maßgeschneiderten und qualitätsorientierten Service**.



# Poutrelles américaines à larges ailes

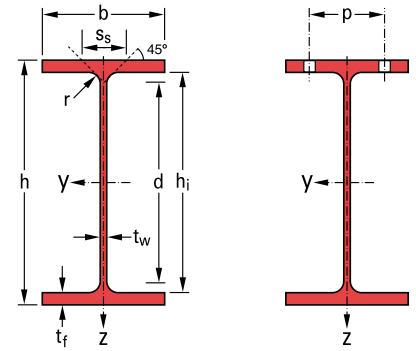
conformes à ASTM A6 / A6M - 98

## American wide flange beams

in accordance with ASTM A6 / A6M - 98

## Amerikanische Breitflanschträger

gemäß ASTM A6 / A6M - 98



| Désignation<br>Designation<br>Bezeichnung<br>(metric) | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |       |                        |                        | Surface<br>Oberfläche               |                                     |       |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-------|------------------------|------------------------|-------------------------------------|-------------------------------------|-------|
| G<br>kg/m   | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø     | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |       |
| W 100 x 100 x 19.3 <sup>+</sup>                       | 19.3                      | 106     | 103                  | 7.1                  | 8.8     | 6                    | 24.71   | 88.4    | 76.4  | -                      | -                      | -                                   | 0.599                               | 30.90 |
| W 130 x 130 x 23.8 <sup>+</sup>                       | 23.8                      | 127     | 127                  | 6.1                  | 9.1     | 8                    | 30.30   | 108.8   | 92.8  | M12                    | 60                     | 70                                  | 0.736                               | 30.95 |
| W 130 x 130 x 28.1 <sup>+</sup>                       | 28.1                      | 131     | 128                  | 6.9                  | 10.9    | 8                    | 35.94   | 109.2   | 93.2  | M12                    | 62                     | 70                                  | 0.747                               | 26.46 |
| W 150 x 100 x 13.5 <sup>+</sup>                       | 13.5                      | 150     | 100                  | 4.3                  | 5.5     | 6                    | 17.31   | 139     | 127   | -                      | -                      | -                                   | 0.681                               | 50.11 |
| W 150 x 100 x 18.0 <sup>+</sup>                       | 18.0                      | 153     | 102                  | 5.8                  | 7.1     | 6                    | 23.28   | 138.4   | 126.4 | -                      | -                      | -                                   | 0.692                               | 37.86 |
| W 150 x 100 x 24.0 <sup>+</sup>                       | 24.0                      | 160     | 102                  | 6.6                  | 10.3    | 6                    | 30.52   | 139.4   | 127.4 | -                      | -                      | -                                   | 0.704                               | 29.40 |
| W 150 x 150 x 22.5 <sup>+</sup>                       | 22.5                      | 152     | 152                  | 5.8                  | 6.6     | 6                    | 28.48   | 138.8   | 126.8 | M16                    | 70                     | 82                                  | 0.890                               | 39.81 |
| W 150 x 150 x 29.8 <sup>+</sup>                       | 29.8                      | 157     | 153                  | 6.6                  | 9.3     | 6                    | 37.90   | 138.4   | 126.4 | M16                    | 72                     | 84                                  | 0.902                               | 30.33 |
| W 150 x 150 x 37.1 <sup>+</sup>                       | 37.1                      | 162     | 154                  | 8.1                  | 11.6    | 6                    | 47.32   | 138.8   | 126.8 | M16                    | 74                     | 84                                  | 0.913                               | 24.59 |
| W 200 x 100 x 15.0 <sup>+</sup>                       | 15.0                      | 200     | 100                  | 4.3                  | 5.2     | 8                    | 19.14   | 189.6   | 173.6 | -                      | -                      | -                                   | 0.778                               | 51.76 |
| W 200 x 100 x 19.3 <sup>+</sup>                       | 19.3                      | 203     | 102                  | 5.8                  | 6.5     | 8                    | 24.91   | 190     | 174   | -                      | -                      | -                                   | 0.789                               | 40.34 |
| W 200 x 100 x 22.5 <sup>+</sup>                       | 22.5                      | 206     | 102                  | 6.2                  | 8.0     | 8                    | 28.69   | 190     | 174   | -                      | -                      | -                                   | 0.794                               | 35.25 |
| W 200 x 135 x 21 <sup>++</sup>                        | 21.0                      | 203     | 133                  | 5.0                  | 6.4     | 8                    | 27.08   | 190.2   | 174.2 | M12                    | 62                     | 76                                  | 0.914                               | 43.00 |
| W 200 x 135 x 26.6 <sup>+</sup>                       | 26.6                      | 207     | 133                  | 5.8                  | 8.4     | 8                    | 34.00   | 190.2   | 174.2 | M12                    | 62                     | 76                                  | 0.921                               | 34.49 |
| W 200 x 135 x 31.3 <sup>+</sup>                       | 31.3                      | 210     | 134                  | 6.4                  | 10.2    | 8                    | 39.92   | 189.6   | 173.6 | M12                    | 64                     | 76                                  | 0.930                               | 29.66 |
| W 200 x 165 x 35.9 <sup>+</sup>                       | 35.9                      | 201     | 165                  | 6.2                  | 10.2    | 10                   | 45.75   | 180.6   | 160.6 | M16                    | 78                     | 96                                  | 1.03                                | 28.75 |
| W 200 x 165 x 41.7 <sup>+</sup>                       | 41.7                      | 205     | 166                  | 7.2                  | 11.8    | 10                   | 53.17   | 181.4   | 161.4 | M16                    | 80                     | 96                                  | 1.04                                | 24.97 |
| W 200 x 200 x 46.1 <sup>+</sup>                       | 46.1                      | 203     | 203                  | 7.2                  | 11.0    | 10                   | 58.62   | 181     | 161   | M24                    | 94                     | 110                                 | 1.19                                | 25.78 |
| W 200 x 200 x 52 <sup>+</sup>                         | 52.0                      | 206     | 204                  | 7.9                  | 12.6    | 10                   | 66.50   | 180.8   | 160.8 | M24                    | 94                     | 110                                 | 1.20                                | 22.89 |
| W 200 x 200 x 59 <sup>+</sup>                         | 59.0                      | 210     | 205                  | 9.1                  | 14.2    | 10                   | 75.68   | 181.6   | 161.6 | M24                    | 96                     | 112                                 | 1.20                                | 20.28 |
| W 200 x 200 x 71 <sup>+</sup>                         | 71.0                      | 216     | 206                  | 10.2                 | 17.4    | 10                   | 90.96   | 181.2   | 161.2 | M24                    | 98                     | 112                                 | 1.22                                | 17.07 |
| W 200 x 200 x 86 <sup>+</sup>                         | 86.0                      | 222     | 209                  | 13.0                 | 20.6    | 10                   | 110.4   | 180.8   | 160.8 | M24                    | 100                    | 116                                 | 1.24                                | 14.28 |
| W 200 x 200 x 100 <sup>+</sup>                        | 100                       | 229     | 210                  | 14.5                 | 23.7    | 10                   | 126.7   | 181.6   | 161.6 | M24                    | 102                    | 116                                 | 1.25                                | 12.59 |
| W 250 x 100 x 17.9 <sup>+</sup>                       | 17.9                      | 251     | 101                  | 4.8                  | 5.3     | 8                    | 22.87   | 240.4   | 224.4 | -                      | -                      | -                                   | 0.883                               | 49.17 |
| W 250 x 100 x 22.3 <sup>+</sup>                       | 22.3                      | 254     | 102                  | 5.8                  | 6.9     | 8                    | 28.65   | 240.2   | 224.2 | -                      | -                      | -                                   | 0.891                               | 39.59 |
| W 250 x 100 x 25.3 <sup>+</sup>                       | 25.3                      | 257     | 102                  | 6.1                  | 8.4     | 8                    | 32.34   | 240.2   | 224.2 | -                      | -                      | -                                   | 0.896                               | 35.30 |
| W 250 x 100 x 28.4 <sup>+</sup>                       | 28.4                      | 260     | 102                  | 6.4                  | 10.0    | 8                    | 36.19   | 240     | 224   | -                      | -                      | -                                   | 0.902                               | 31.74 |
| W 250 x 145 x 24 <sup>++</sup>                        | 24.0                      | 253     | 145                  | 5.0                  | 6.4     | 8                    | 31.12   | 240.2   | 224.2 | M16                    | 72                     | 76                                  | 1.06                                | 43.48 |
| W 250 x 145 x 32.7 <sup>+</sup>                       | 32.7                      | 258     | 146                  | 6.1                  | 9.1     | 8                    | 41.75   | 239.8   | 223.8 | M16                    | 72                     | 76                                  | 1.07                                | 32.77 |
| W 250 x 145 x 38.5 <sup>+</sup>                       | 38.5                      | 262     | 147                  | 6.6                  | 11.2    | 8                    | 49.29   | 239.6   | 223.6 | M16                    | 74                     | 78                                  | 1.09                                | 28.04 |
| W 250 x 145 x 44.8 <sup>+</sup>                       | 44.8                      | 266     | 148                  | 7.6                  | 13.0    | 8                    | 57.32   | 240     | 224   | M16                    | 74                     | 78                                  | 1.10                                | 24.34 |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

\* Profilé canadien

+ Minimum order: 40t per section and grade or upon agreement.

\* Canadian section

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.

\* Kanadisches Walzprofil



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung<br>(imperial) |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |                                      |   |                      |                      |                                   |  |       | Classification<br>ENV 1993-1-1 |                     |       |       |       |   | HISTAR |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|--------------------------------------|---|----------------------|----------------------|-----------------------------------|--|-------|--------------------------------|---------------------|-------|-------|-------|---|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   |                                      | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                      |                      |                                   |  |       |                                |                     |       |       |       |   |        |
|   |                                   |  |  |                      |                                    |                                   |                                      |   |                      |                      |                                   | pure<br>bending y-y                                  |       |                                | pure<br>compression |       |       |       |   |        |
| G<br>lbs/ft   | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup>                | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | \$235 | \$355                          | \$460               | \$235 | \$355 | \$460 |   |        |
| W 4 x 4 x 13  | 13                                | 475.9  | 89.79                                  | 103.3                | 4.39                               | 8.27                              | 160.6                                | 31.19   | 47.94                | 2.55                 | 31.73                             | 6.52   | 3.79  | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 5 x 5 x 16  | 16                                | 885.5  | 139.5                                  | 157.2                | 5.41                               | 9.20                              | 311.0                                | 48.98   | 74.66                | 3.20                 | 33.67                             | 8.10   | 10.8  | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 5 x 5 x 19  | 19                                | 1099   | 167.7                                  | 190.9                | 5.53                               | 10.53                             | 381.4                                | 59.60   | 90.86                | 3.26                 | 38.03                             | 13.33  | 13.74 | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 6 x 4 x 9   | 9                                 | 685.5  | 91.40                                  | 102.4                | 6.29                               | 7.21                              | 91.80                                | 18.36   | 28.26                | 2.30                 | 22.35                             | 1.74   | 4.79  | 1                              | 3                   | -     | 1     | 3     | - |        |
| W 6 x 4 x 12  | 12                                | 915.9  | 122.1                                  | 138.6                | 6.33                               | 9.69                              | 125.9                                | 25.37   | 39.29                | 2.36                 | 27.47                             | 3.86   | 6.68  | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 6 x 4 x 16  | 16                                | 1342   | 167.8                                  | 191.5                | 6.63                               | 11.43                             | 182.6                                | 35.80   | 55.24                | 2.45                 | 34.23                             | 9.35   | 10.21 | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 6 x 6 x 15  | 15                                | 1206   | 158.6                                  | 176.1                | 6.51                               | 9.59                              | 386.6                                | 50.87   | 77.56                | 3.68                 | 26.07                             | 4.34   | 20.42 | 3                              | 3                   | -     | 3     | 3     | - |        |
| W 6 x 6 x 20  | 20                                | 1714   | 218.4                                  | 243.9                | 6.73                               | 11.17                             | 555.5                                | 72.62   | 110.5                | 3.83                 | 32.23                             | 10.16  | 30.28 | 1                              | 2                   | -     | 1     | 2     | - |        |
| W 6 x 6 x 25  | 25                                | 2220   | 274.1                                  | 309.9                | 6.85                               | 13.93                             | 706.8                                | 91.79   | 140.0                | 3.86                 | 38.36                             | 19.51  | 39.93 | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 8 x 4 x 10  | 10                                | 1280   | 128.0                                  | 145.2                | 8.18                               | 9.80                              | 86.89                                | 17.38   | 27.10                | 2.13                 | 24.09                             | 1.93   | 8.22  | 1                              | 3                   | -     | 3     | 4     | - |        |
| W 8 x 4 x 13  | 13                                | 1662   | 163.7                                  | 188.1                | 8.17                               | 13.06                             | 115.4                                | 22.63   | 35.69                | 2.15                 | 28.21                             | 3.99   | 11.1  | 1                              | 1                   | -     | 1     | 2     | - |        |
| W 8 x 4 x 15  | 15                                | 2004   | 194.5                                  | 222.8                | 8.36                               | 14.14                             | 142.0                                | 27.85   | 43.72                | 2.22                 | 31.59                             | 5.97   | 13.87 | 1                              | 1                   | -     | 1     | 2     | - |        |
| W 8 x 5.25 x 14   | 14                                | 1980   | 195.1                                  | 217.7                | 8.55                               | 11.40                             | 251.3                                | 37.78   | 58.03                | 3.05                 | 27.17                             | 3.74   | 24.25 | 2                              | 3                   | -     | 2     | 4     | - |        |
| W 8 x 5.25 x 18   | 18                                | 2587   | 250.0                                  | 279.8                | 8.72                               | 13.49                             | 329.8                                | 49.60   | 76.17                | 3.11                 | 32.01                             | 7.35   | 32.48 | 1                              | 1                   | -     | 1     | 2     | - |        |
| W 8 x 5.25 x 21   | 21                                | 3139   | 298.9                                  | 335.3                | 8.87                               | 14.87                             | 409.6                                | 61.13   | 93.76                | 3.20                 | 36.12                             | 12.04  | 40.82 | 1                              | 1                   | -     | 1     | 2     | - |        |
| W 8 x 6.5 x 24  | 24                                | 3438   | 342.1                                  | 379.4                | 8.67                               | 14.77                             | 764.3                                | 92.64   | 141.1                | 4.09                 | 38.34                             | 14.56  | 69.5  | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 8 x 6.5 x 28  | 28                                | 4088   | 398.8                                  | 445.6                | 8.77                               | 17.21                             | 900.5                                | 108.5   | 165.5                | 4.12                 | 42.56                             | 22.39  | 83.95 | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 8 x 8 x 31  | 31                                | 4545   | 447.8                                  | 495.6                | 8.81                               | 16.96                             | 1535                                 | 151.2   | 229.5                | 5.12                 | 40.96                             | 22.27  | 141.3 | 1                              | 3                   | -     | 1     | 3     | - |        |
| W 8 x 8 x 35  | 35                                | 5268   | 511.5                                  | 569.0                | 8.90                               | 18.60                             | 1784                                 | 174.9   | 265.5                | 5.18                 | 44.79                             | 32.41  | 166.7 | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 8 x 8 x 40  | 40                                | 6113   | 582.2                                  | 652.9                | 8.99                               | 21.59                             | 2040                                 | 199.1   | 302.8                | 5.19                 | 49.26                             | 46.86  | 195.4 | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 8 x 8 x 48  | 48                                | 7658   | 709.0                                  | 802.8                | 9.18                               | 24.52                             | 2537                                 | 246.3   | 374.5                | 5.28                 | 56.68                             | 82.02  | 250   | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 8 x 8 x 58  | 58                                | 9467   | 852.9                                  | 980.5                | 9.26                               | 31.06                             | 3138                                 | 300.3   | 458.2                | 5.33                 | 65.87                             | 140.8  | 317.8 | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 8 x 8 x 67  | 67                                | 11325  | 989.1                                  | 1149                 | 9.45                               | 35.33                             | 3663                                 | 348.9   | 532.9                | 5.38                 | 73.60                             | 211.3  | 385.5 | 1                              | 1                   | -     | 1     | 1     | - |        |
| W 10 x 4 x 12   | 12                                | 2252   | 179.5                                  | 207.8                | 9.92                               | 13.26                             | 91.34                                | 18.09   | 28.67                | 2.00                 | 24.80                             | 2.50   | 13.74 | 1                              | 3                   | -     | 4     | 4     | - |        |
| W 10 x 4 x 15   | 15                                | 2901   | 228.4                                  | 264.6                | 10.06                              | 16.08                             | 122.6                                | 24.03   | 38.20                | 2.07                 | 29.01                             | 4.68   | 18.63 | 1                              | 1                   | -     | 3     | 4     | - |        |
| W 10 x 4 x 17   | 17                                | 3430   | 266.9                                  | 307.5                | 10.30                              | 17.06                             | 149.2                                | 29.25   | 46.20                | 2.15                 | 32.27                             | 6.77   | 22.95 | 1                              | 1                   | -     | 2     | 4     | - |        |
| W 10 x 4 x 19   | 19                                | 3998   | 307.5                                  | 352.9                | 10.51                              | 18.02                             | 177.5                                | 34.81   | 54.71                | 2.21                 | 35.72                             | 9.80   | 27.64 | 1                              | 1                   | -     | 2     | 4     | - |        |
| W 10 x 5.75 x 16  | 16                                | 3477   | 274.8                                  | 307.5                | 10.57                              | 13.90                             | 325.6                                | 44.90   | 69.02                | 3.23                 | 27.17                             | 4.16   | 49.44 | 3                              | 3                   | -     | 4     | 4     | - |        |
| W 10 x 5.75 x 22  | 22                                | 4895   | 379.4                                  | 424.9                | 10.83                              | 17.19                             | 472.6                                | 64.74   | 99.48                | 3.36                 | 33.67                             | 10.05  | 73.10 | 1                              | 1                   | -     | 2     | 4     | - |        |
| W 10 x 5.75 x 26  | 26                                | 6014   | 459.1                                  | 514.1                | 11.05                              | 18.89                             | 593.7                                | 80.77   | 123.9                | 3.47                 | 38.37                             | 17.03  | 93.24 | 1                              | 1                   | -     | 2     | 3     | - |        |
| W 10 x 5.75 x 30  | 30                                | 7118   | 535.2                                  | 603.0                | 11.14                              | 21.91                             | 703.5                                | 95.06   | 146.2                | 3.50                 | 42.99                             | 26.45  | 112.4 | 1                              | 1                   | -     | 1     | 2     | - |        |

◆  $W_{pl}$ : Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

◆  $W_{pl}$ : For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

◆  $W_{pl}$ : Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



# Poutrelles américaines à larges ailes

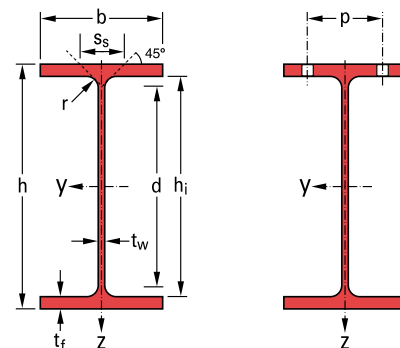
conformes à ASTM A6 / A6M - 98

## American wide flange beams

in accordance with ASTM A6 / A6M - 98

## Amerikanische Breitflanschträger

gemäß ASTM A6 / A6M - 98



| Désignation<br>Designation<br>Bezeichnung<br>(metric) | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |       |                        |                        | Surface<br>Oberfläche               |                                     |       |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-------|------------------------|------------------------|-------------------------------------|-------------------------------------|-------|
| G<br>kg/m   | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø     | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |       |
| W 250 x 250 x 73 <sup>+</sup>                         | 73.0                      | 253     | 254                  | 8.6                  | 14.2    | 13                   | 92.99   | 224.6   | 198.6 | M27                    | 102                    | 148                                 | 1.48                                | 20.31 |
| W 250 x 250 x 80 <sup>+</sup>                         | 80.0                      | 256     | 255                  | 9.4                  | 15.6    | 13                   | 102.1   | 224.8   | 198.8 | M27                    | 102                    | 150                                 | 1.49                                | 18.59 |
| W 250 x 250 x 89 <sup>+</sup>                         | 89.0                      | 260     | 256                  | 10.7                 | 17.3    | 13                   | 114.1   | 225.4   | 199.4 | M27                    | 104                    | 150                                 | 1.50                                | 16.75 |
| W 250 x 250 x 101 <sup>+</sup>                        | 101                       | 264     | 257                  | 11.9                 | 19.6    | 13                   | 129.0   | 224.8   | 198.8 | M27                    | 106                    | 152                                 | 1.51                                | 14.91 |
| W 250 x 250 x 115 <sup>+</sup>                        | 115                       | 269     | 259                  | 13.5                 | 22.1    | 13                   | 146.2   | 224.8   | 198.8 | M27                    | 106                    | 154                                 | 1.52                                | 13.29 |
| W 250 x 250 x 131 <sup>+</sup>                        | 131                       | 275     | 261                  | 15.4                 | 25.1    | 13                   | 167.0   | 224.8   | 198.8 | M27                    | 108                    | 156                                 | 1.54                                | 11.75 |
| W 250 x 250 x 149 <sup>+</sup>                        | 149                       | 282     | 263                  | 17.3                 | 28.4    | 13                   | 189.7   | 225.2   | 199.2 | M27                    | 110                    | 158                                 | 1.56                                | 10.47 |
| W 250 x 250 x 167 <sup>+</sup>                        | 167                       | 289     | 265                  | 19.2                 | 31.8    | 13                   | 213.2   | 225.4   | 199.4 | M27                    | 112                    | 160                                 | 1.58                                | 9.42  |
|   |                           |         |                      |                      |         |                      |   |         |       |                        |                        |                                     |                                     |       |
| W 310 x 100 x 21.0 <sup>+</sup>                       | 21.0                      | 303     | 101                  | 5.1                  | 5.7     | 8                    | 26.88   | 291.6   | 275.6 | -                      | -                      | -                                   | 0.986                               | 46.74 |
| W 310 x 100 x 23.8 <sup>+</sup>                       | 23.8                      | 305     | 101                  | 5.6                  | 6.7     | 8                    | 30.38   | 291.6   | 275.6 | -                      | -                      | -                                   | 0.989                               | 41.47 |
| W 310 x 100 x 28.3 <sup>+</sup>                       | 28.3                      | 309     | 102                  | 6.0                  | 8.9     | 8                    | 36.09   | 291.2   | 275.2 | -                      | -                      | -                                   | 1.00                                | 35.31 |
| W 310 x 100 x 32.7 <sup>+</sup>                       | 32.7                      | 313     | 102                  | 6.6                  | 10.8    | 8                    | 41.81   | 291.4   | 275.4 | -                      | -                      | -                                   | 1.01                                | 30.68 |
|   |                           |         |                      |                      |         |                      |   |         |       |                        |                        |                                     |                                     |       |
| W 310 x 165 x 31 <sup>++</sup>                        | 31.0                      | 306     | 164                  | 5.0                  | 7.4     | 8                    | 39.38   | 291.2   | 275.2 | M20                    | 78                     | 82                                  | 1.24                                | 40.25 |
| W 310 x 165 x 38.7 <sup>+</sup>                       | 38.7                      | 310     | 165                  | 5.8                  | 9.7     | 8                    | 49.53   | 290.6   | 274.6 | M20                    | 80                     | 84                                  | 1.25                                | 32.27 |
| W 310 x 165 x 44.5 <sup>+</sup>                       | 44.5                      | 313     | 166                  | 6.6                  | 11.2    | 8                    | 56.91   | 290.6   | 274.6 | M20                    | 80                     | 84                                  | 1.26                                | 28.27 |
| W 310 x 165 x 52 <sup>+</sup>                         | 52.0                      | 317     | 167                  | 7.6                  | 13.2    | 8                    | 66.78   | 290.6   | 274.6 | M20                    | 82                     | 86                                  | 1.27                                | 24.28 |
|   |                           |         |                      |                      |         |                      |   |         |       |                        |                        |                                     |                                     |       |
| W 310 x 310 x 97 <sup>++</sup>                        | 97.0                      | 308     | 305                  | 9.9                  | 15.4    | 15                   | 123.3   | 277.2   | 247.2 | M27                    | 102                    | 200                                 | 1.79                                | 18.50 |
| W 310 x 310 x 107 <sup>+</sup>                        | 107                       | 311     | 306                  | 10.9                 | 17.0    | 15                   | 136.2   | 277     | 247   | M27                    | 104                    | 200                                 | 1.80                                | 16.83 |
| W 310 x 310 x 117 <sup>+</sup>                        | 117                       | 314     | 307                  | 11.9                 | 18.7    | 15                   | 149.7   | 276.6   | 246.6 | M27                    | 106                    | 202                                 | 1.81                                | 15.38 |
| W 310 x 310 x 129 <sup>+</sup>                        | 129                       | 318     | 308                  | 13.1                 | 20.6    | 15                   | 165.1   | 276.8   | 246.8 | M27                    | 106                    | 202                                 | 1.82                                | 14.01 |
| W 310 x 310 x 143 <sup>+</sup>                        | 143                       | 323     | 309                  | 14.0                 | 22.9    | 15                   | 182.3   | 277.2   | 247.2 | M27                    | 108                    | 204                                 | 1.83                                | 12.78 |
| W 310 x 310 x 158 <sup>+</sup>                        | 158                       | 327     | 310                  | 15.5                 | 25.1    | 15                   | 200.5   | 276.8   | 246.8 | M27                    | 108                    | 204                                 | 1.84                                | 11.68 |
| W 310 x 310 x 179 <sup>+</sup>                        | 179                       | 333     | 313                  | 18.0                 | 28.1    | 15                   | 227.7   | 276.8   | 246.8 | M27                    | 112                    | 208                                 | 1.86                                | 10.39 |
| W 310 x 310 x 202 <sup>+</sup>                        | 202                       | 341     | 315                  | 20.1                 | 31.8    | 15                   | 258.0   | 277.4   | 247.4 | M27                    | 114                    | 210                                 | 1.88                                | 9.26  |
| W 310 x 310 x 226 <sup>+</sup>                        | 226                       | 348     | 317                  | 22.1                 | 35.6    | 15                   | 288.8   | 276.8   | 246.8 | M27                    | 116                    | 212                                 | 1.89                                | 8.35  |
| W 310 x 310 x 253 <sup>+</sup>                        | 253                       | 356     | 319                  | 24.4                 | 39.6    | 15                   | 322.1   | 276.8   | 246.8 | M27                    | 118                    | 214                                 | 1.91                                | 7.57  |
| W 310 x 310 x 283 <sup>+</sup>                        | 283                       | 365     | 322                  | 26.9                 | 44.1    | 15                   | 360.4   | 276.8   | 246.8 | M27                    | 120                    | 216                                 | 1.94                                | 6.85  |
| W 310 x 310 x 313 <sup>+</sup>                        | 313                       | 374     | 325                  | 30.0                 | 48.3    | 15                   | 399.1   | 277.4   | 247.4 | M27                    | 124                    | 220                                 | 1.96                                | 6.26  |
| W 310 x 310 x 342 <sup>+</sup>                        | 342                       | 382     | 328                  | 32.6                 | 52.6    | 15                   | 437.2   | 276.8   | 246.8 | M27                    | 126                    | 222                                 | 1.99                                | 5.78  |
|   |                           |         |                      |                      |         |                      |   |         |       |                        |                        |                                     |                                     |       |
| W 360 x 130 x 32.9 <sup>+</sup>                       | 32.9                      | 349     | 127                  | 5.8                  | 8.5     | 10                   | 41.70   | 332     | 312   | M12                    | 62                     | 70                                  | 1.18                                | 35.96 |
| W 360 x 130 x 39.0 <sup>+</sup>                       | 39.0                      | 353     | 128                  | 6.5                  | 10.7    | 10                   | 49.80   | 331.6   | 311.6 | M12                    | 64                     | 70                                  | 1.19                                | 30.38 |
|   |                           |         |                      |                      |         |                      |   |         |       |                        |                        |                                     |                                     |       |
| W 360 x 170 x 44 <sup>+</sup>                         | 44.0                      | 352     | 171                  | 6.9                  | 9.8     | 10                   | 57.18   | 332.4   | 312.4 | M22                    | 82                     | 84                                  | 1.36                                | 30.24 |
| W 360 x 170 x 51 <sup>+</sup>                         | 51.0                      | 355     | 171                  | 7.2                  | 11.6    | 10                   | 64.55   | 331.8   | 311.8 | M22                    | 84                     | 84                                  | 1.36                                | 26.88 |
| W 360 x 170 x 57.8 <sup>+</sup>                       | 57.8                      | 358     | 172                  | 7.9                  | 13.1    | 10                   | 72.13   | 331.8   | 311.8 | M22                    | 84                     | 84                                  | 1.37                                | 24.21 |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

\* Profilé canadien

+ Minimum order: 40t per section and grade or upon agreement.

\* Canadian section

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.

\* Kanadisches Walzprofil



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung<br>(imperial) |     | Valeurs statiques / Section properties / Statische Kennwerte |                               |   |             |                             |   |                               |   |             |             |                          | Classification<br>ENV 1993-1-1          |           |           |           |           |           | HISTAR |           |
|---|-----|--|-------------------------------|---|-------------|-----------------------------|---|-------------------------------|---|-------------|-------------|--------------------------|---|-----------|-----------|-----------|-----------|-----------|--------|-----------|
|   |     | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                               |   |             |                             | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                               |   |             |             |                          |   |           |           |           |           |           |        |           |
|   |     | $I_y$<br>cm <sup>4</sup>                                     | $W_{el,y}$<br>cm <sup>3</sup> | $W_{pl,y} \blacklozenge$<br>cm <sup>3</sup> | $i_y$<br>cm | $A_{vz}$<br>cm <sup>2</sup> | $I_z$<br>cm <sup>4</sup>                              | $W_{el,z}$<br>cm <sup>3</sup> | $W_{pl,z} \blacklozenge$<br>cm <sup>3</sup> | $i_z$<br>cm | $S_s$<br>mm | $I_t$<br>cm <sup>4</sup> | $I_w \times 10^{-3}$<br>cm <sup>6</sup> | $S_{235}$ | $S_{355}$ | $S_{460}$ | $S_{235}$ | $S_{355}$ |        | $S_{460}$ |
| G<br>lbs/ft   |     |  |                               |   |             |                             |   |                               |   |             |             |                          |   |           |           |           |           |           |        |           |
| W 10 x 10 x 49  | 49  | 11290  | 892.1                         | 986.1                                       | 11.02       | 25.78                       | 3880  | 305.5                         | 463.3                                       | 6.46        | 52.27       | 57.94                    | 552.9                                   | 1         | 2         | 3         | 1         | 2         | 3      | HI        |
| W 10 x 10 x 54  | 54  | 12570  | 982.4                         | 1091  | 11.10       | 28.10                       | 4314  | 338.3                         | 513.3                                       | 6.50        | 55.83       | 76.15                    | 622.9                                   | 1         | 2         | 3         | 1         | 2         | 3      | HI        |
| W 10 x 10 x 60  | 60  | 14260  | 1097                          | 1226  | 11.18       | 31.84                       | 4841  | 378.2                         | 574.5                                       | 6.51        | 60.50       | 104.4                    | 712.4                                   | 1         | 1         | 2         | 1         | 1         | 2      | HI        |
| W 10 x 10 x 68  | 68  | 16380  | 1241                          | 1398  | 11.27       | 35.73                       | 5549  | 431.9                         | 656.6                                       | 6.56        | 66.37       | 150.3                    | 828                                     | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 10 x 10 x 77  | 77  | 18940  | 1408                          | 1599  | 11.38       | 40.43                       | 6405  | 494.6                         | 752.8                                       | 6.62        | 72.89       | 215.3                    | 975.3                                   | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 10 x 10 x 88  | 88  | 22150  | 1611                          | 1847  | 11.52       | 46.39                       | 7446  | 570.6                         | 869.7                                       | 6.68        | 80.80       | 315.9                    | 1161                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 10 x 10 x 100   | 100 | 25940  | 1840                          | 2129  | 11.69       | 52.63                       | 8622  | 655.7                         | 1001  | 6.74        | 89.30       | 456.5                    | 1384                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 10 x 10 x 112   | 112 | 30020  | 2078                          | 2427  | 11.87       | 59.05                       | 9879  | 745.6                         | 1139  | 6.81        | 98.01       | 639.3                    | 1631                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
|   |     |  |                               |   |             |                             |   |                               |   |             |             |                          |   |           |           |           |           |           |        |           |
| W 12 x 4 x 14   | 14  | 3708   | 244.8                         | 287.1                                       | 11.75       | 16.56                       | 98.31   | 19.47                         | 31.19                                       | 1.91        | 25.85       | 3.17                     | 21.63                                   | 1         | 2         | -         | 4         | 4         | -      |           |
| W 12 x 4 x 16   | 16  | 4280   | 280.7                         | 328.6                                       | 11.87       | 18.30                       | 115.6   | 22.89                         | 36.70                                       | 1.95        | 28.36       | 4.50                     | 25.59                                   | 1         | 1         | -         | 4         | 4         | -      |           |
| W 12 x 4 x 19   | 19  | 5431   | 351.5                         | 406.9                                       | 12.27       | 19.89                       | 158.1   | 30.99                         | 49.15                                       | 2.09        | 33.14       | 7.72                     | 35.44                                   | 1         | 1         | -         | 4         | 4         | -      |           |
| W 12 x 4 x 22   | 22  | 6507   | 415.8                         | 480.9                                       | 12.47       | 22.22                       | 191.9   | 37.62                         | 59.63                                       | 2.14        | 37.57       | 12.36                    | 43.61                                   | 1         | 1         | -         | 3         | 4         | -      |           |
|   |     |  |                               |   |             |                             |   |                               |   |             |             |                          |   |           |           |           |           |           |        |           |
| W 12 x 6.5 x 21   | 21  | 6554   | 428.4                         | 476.3                                       | 12.90       | 16.66                       | 544.4   | 66.39                         | 101.6                                       | 3.72        | 29.17       | 6.25                     | 121.3                                   | 3         | 3         | -         | 4         | 4         | -      |           |
| W 12 x 6.5 x 26   | 26  | 8527   | 550.1                         | 611.8                                       | 13.12       | 19.64                       | 726.8   | 88.10                         | 134.8                                       | 3.83        | 34.61       | 12.76                    | 163.7                                   | 1         | 2         | -         | 4         | 4         | -      |           |
| W 12 x 6.5 x 30   | 30  | 9934   | 634.8                         | 708.3                                       | 13.21       | 22.26                       | 854.7   | 103.0                         | 157.8                                       | 3.88        | 38.37       | 19.30                    | 194.4                                   | 1         | 1         | -         | 3         | 4         | -      |           |
| W 12 x 6.5 x 35   | 35  | 11851  | 747.7                         | 838.5                                       | 13.32       | 25.81                       | 1026  | 122.9                         | 188.6                                       | 3.92        | 43.39       | 31.10                    | 236.4                                   | 1         | 1         | -         | 2         | 4         | -      |           |
|   |     |  |                               |   |             |                             |   |                               |   |             |             |                          |   |           |           |           |           |           |        |           |
| W 12 x 12 x 65  | 65  | 22240  | 1444                          | 1591  | 13.43       | 35.52                       | 7286  | 477.8                         | 724.7                                       | 7.69        | 58.27       | 91.50                    | 1559                                    | 1         | 3         | 3         | 1         | 3         | 3      | HI        |
| W 12 x 12 x 72  | 72  | 24790  | 1594                          | 1765  | 13.49       | 39.08                       | 8123  | 530.9                         | 805.8                                       | 7.72        | 62.47       | 122.1                    | 1754                                    | 1         | 3         | 3         | 1         | 3         | 3      | HI        |
| W 12 x 12 x 79  | 79  | 27510  | 1753                          | 1949  | 13.56       | 42.68                       | 9024  | 587.9                         | 892.8                                       | 7.76        | 66.87       | 161.1                    | 1966                                    | 1         | 2         | 3         | 1         | 2         | 3      | HI        |
| W 12 x 12 x 87  | 87  | 30770  | 1935                          | 2164  | 13.65       | 47.07                       | 10040   | 651.9                         | 990.9                                       | 7.80        | 71.87       | 214.5                    | 2218                                    | 1         | 1         | 2         | 1         | 1         | 2      | HI        |
| W 12 x 12 x 96  | 96  | 34760  | 2153                          | 2419  | 13.81       | 50.82                       | 11270   | 729.4                         | 1109  | 7.86        | 77.37       | 288.3                    | 2535                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 12 x 12 x 106   | 106 | 38630  | 2363                          | 2672  | 13.88       | 56.26                       | 12470   | 804.8                         | 1225  | 7.89        | 83.27       | 380.3                    | 2840                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 12 x 12 x 120   | 120 | 44530  | 2675                          | 3053  | 13.99       | 65.24                       | 14380   | 918.7                         | 1401  | 7.95        | 91.77       | 543.7                    | 3338                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 12 x 12 x 136   | 136 | 51982  | 3049                          | 3510  | 14.19       | 73.62                       | 16588   | 1053                          | 1608  | 8.02        | 101.3       | 782.7                    | 3959                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 12 x 12 x 152   | 152 | 59560  | 3423                          | 3975  | 14.36       | 81.65                       | 18930   | 1194                          | 1825  | 8.10        | 110.9       | 1089                     | 4611                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 12 x 12 x 170   | 170 | 68230  | 3833                          | 4490  | 14.55       | 91.01                       | 21460   | 1346                          | 2059  | 8.16        | 121.2       | 1495                     | 5362                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 12 x 12 x 190   | 190 | 78680  | 4311                          | 5098  | 14.78       | 101.5                       | 24590   | 1527                          | 2340  | 8.26        | 132.7       | 2062                     | 6317                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 12 x 12 x 210   | 210 | 89560  | 4789                          | 5716  | 14.98       | 114.1                       | 27700   | 1705                          | 2617  | 8.33        | 144.2       | 2742                     | 7329                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
| W 12 x 12 x 230   | 230 | 100510   | 5262                          | 6334  | 15.16       | 125.1                       | 31020   | 1892                          | 2907  | 8.42        | 155.4       | 3552                     | 8392                                    | 1         | 1         | 1         | 1         | 1         | 1      | HI        |
|   |     |  |                               |   |             |                             |   |                               |   |             |             |                          |   |           |           |           |           |           |        |           |
| W 14 x 5 x 22   | 22  | 8258   | 473.2                         | 541.5                                       | 14.07       | 22.31                       | 291.0   | 45.82                         | 71.8  | 2.64        | 34.52       | 8.65                     | 84.11                                   | 1         | 1         | -         | 4         | 4         | -      |           |
| W 14 x 5 x 26   | 26  | 10231  | 579.7                         | 661.5                                       | 14.33       | 25.25                       | 375.0   | 58.6                          | 91.6  | 2.74        | 39.62       | 15.04                    | 109.6                                   | 1         | 1         | -         | 4         | 4         | -      |           |
|   |     |  |                               |   |             |                             |   |                               |   |             |             |                          |   |           |           |           |           |           |        |           |
| W 14 x 6.75 x 30  | 30  | 12140  | 690.1                         | 777.0                                       | 14.57       | 26.29                       | 817.9   | 95.66                         | 147.7                                       | 3.78        | 38.18       | 16.10                    | 239.1                                   | 1         | 2         | -         | 4         | 4         | -      |           |
| W 14 x 6.75 x 34  | 34  | 14130  | 796.3                         | 894.5                                       | 14.80       | 28.04                       | 968.1   | 113.2                         | 174.4                                       | 3.87        | 42.16       | 23.92                    | 285                                     | 1         | 1         | -         | 4         | 4         | -      |           |
| W 14 x 6.75 x 38  | 38  | 16040  | 896.2                         | 1009  | 14.91       | 30.73                       | 1113  | 129.4                         | 199.5                                       | 3.93        | 45.82       | 33.46                    | 330.4                                   | 1         | 1         | -         | 3         | 4         | -      |           |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



# Poutrelles américaines à larges ailes

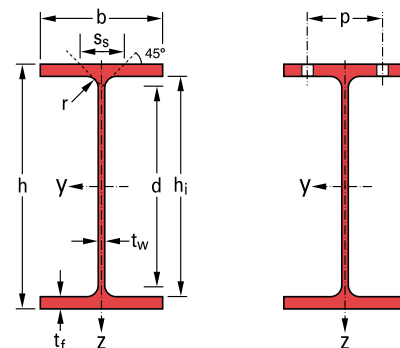
conformes à ASTM A6 / A6M - 98

## American wide flange beams

in accordance with ASTM A6 / A6M - 98

## Amerikanische Breitflanschträger

gemäß ASTM A6 / A6M - 98



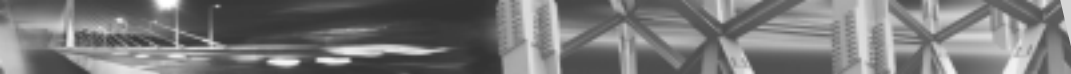
| Désignation<br>Designation<br>Bezeichnung<br>(metric) | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m   | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| W 360 x 370 x 134 134                                 | 356                       | 369     | 11.2                 | 18.0                 | 15      | 170.6                | 320   | 290     | M27 | 100                    | 264                    | 2.14                                | 15.98                               |
| W 360 x 370 x 147 147                                 | 360                       | 370     | 12.3                 | 19.8                 | 15      | 187.9                | 320.4   | 290.4   | M27 | 100                    | 264                    | 2.15                                | 14.58                               |
| W 360 x 370 x 162 162                                 | 364                       | 371     | 13.3                 | 21.8                 | 15      | 206.3                | 320.4   | 290.4   | M27 | 102                    | 266                    | 2.16                                | 13.34                               |
| W 360 x 370 x 179 179                                 | 368                       | 373     | 15.0                 | 23.9                 | 15      | 228.3                | 320.2   | 290.2   | M27 | 104                    | 268                    | 2.17                                | 12.12                               |
| W 360 x 370 x 196 196                                 | 372                       | 374     | 16.4                 | 26.2                 | 15      | 250.3                | 319.6   | 289.6   | M27 | 104                    | 268                    | 2.18                                | 11.10                               |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 360 x 410 x 216 216                                 | 375                       | 394     | 17.3                 | 27.7                 | 15      | 275.5                | 319.6   | 289.6   | M27 | 106                    | 288                    | 2.27                                | 10.48                               |
| W 360 x 410 x 237 237                                 | 380                       | 395     | 18.9                 | 30.2                 | 15      | 300.9                | 319.6   | 289.6   | M27 | 108                    | 290                    | 2.28                                | 9.64                                |
| W 360 x 410 x 262 262                                 | 387                       | 398     | 21.1                 | 33.3                 | 15      | 334.6                | 320.4   | 290.4   | M27 | 110                    | 292                    | 2.30                                | 8.75                                |
| W 360 x 410 x 287 287                                 | 393                       | 399     | 22.6                 | 36.6                 | 15      | 366.3                | 319.8   | 289.8   | M27 | 112                    | 294                    | 2.31                                | 8.04                                |
| W 360 x 410 x 314 314                                 | 399                       | 401     | 24.9                 | 39.6                 | 15      | 399.2                | 319.8   | 289.8   | M27 | 114                    | 296                    | 2.33                                | 7.42                                |
| W 360 x 410 x 347 347                                 | 407                       | 404     | 27.2                 | 43.7                 | 15      | 442.0                | 319.6   | 289.6   | M27 | 116                    | 298                    | 2.35                                | 6.77                                |
| W 360 x 410 x 382 382                                 | 416                       | 406     | 29.8                 | 48.0                 | 15      | 487.1                | 320   | 290     | M27 | 118                    | 300                    | 2.37                                | 6.20                                |
| W 360 x 410 x 421 421                                 | 425                       | 409     | 32.8                 | 52.6                 | 15      | 537.1                | 319.8   | 289.8   | M27 | 122                    | 304                    | 2.39                                | 5.68                                |
| W 360 x 410 x 463 463                                 | 435                       | 412     | 35.8                 | 57.4                 | 15      | 589.5                | 320.2   | 290.2   | M27 | 124                    | 306                    | 2.42                                | 5.23                                |
| W 360 x 410 x 509 509                                 | 446                       | 416     | 39.1                 | 62.7                 | 15      | 649.0                | 320.6   | 290.6   | M27 | 128                    | 310                    | 2.45                                | 4.81                                |
| W 360 x 410 x 551 551                                 | 455                       | 418     | 42.0                 | 67.6                 | 15      | 701.4                | 319.8   | 289.8   | M27 | 132                    | 312                    | 2.47                                | 4.49                                |
| W 360 x 410 x 592 592                                 | 465                       | 421     | 45.0                 | 72.3                 | 15      | 754.9                | 320.4   | 290.4   | M27 | 134                    | 316                    | 2.50                                | 4.22                                |
| W 360 x 410 x 634 634                                 | 474                       | 424     | 47.6                 | 77.1                 | 15      | 808.0                | 319.8   | 289.8   | M27 | 140                    | 312                    | 2.52                                | 3.98                                |
| W 360 x 410 x 677 677                                 | 483                       | 428     | 51.2                 | 81.5                 | 15      | 863.4                | 320   | 290     | M27 | 144                    | 316                    | 2.55                                | 3.76                                |
| W 360 x 410 x 744 744                                 | 498                       | 432     | 55.6                 | 88.9                 | 15      | 948.1                | 320.2   | 290.2   | M27 | 148                    | 320                    | 2.59                                | 3.48                                |
| W 360 x 410 x 818 818                                 | 514                       | 437     | 60.5                 | 97.0                 | 15      | 1043                 | 320   | 290     | M27 | 154                    | 326                    | 2.63                                | 3.21                                |
| W 360 x 410 x 900 900                                 | 531                       | 442     | 65.9                 | 106.0                | 15      | 1149                 | 319   | 289     | M27 | 158                    | 330                    | 2.67                                | 2.96                                |
| W 360 x 410 x 990 990                                 | 550                       | 448     | 71.9                 | 115.0                | 15      | 1262                 | 320   | 290     | M27 | 164                    | 336                    | 2.72                                | 2.75                                |
| W 360 x 410 x 1086 1086                               | 569                       | 454     | 78.0                 | 125.0                | 15      | 1386                 | 319   | 289     | M27 | 170                    | 342                    | 2.77                                | 2.55                                |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 410 x 140 x 38.8+ 38.8                              | 399                       | 140     | 6.4                  | 8.8                  | 10      | 49.7                 | 381.4   | 361.4   | M12 | 68                     | 82                     | 1.33                                | 34.03                               |
| W 410 x 140 x 46.1+ 46.1                              | 403                       | 140     | 7.0                  | 11.2                 | 10      | 58.8                 | 380.6   | 360.6   | M12 | 68                     | 82                     | 1.33                                | 28.91                               |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 410 x 180 x 53+ 53.0                                | 403                       | 177     | 7.5                  | 10.9                 | 10      | 68.0                 | 381.2   | 361.2   | M22 | 86                     | 90                     | 1.48                                | 27.76                               |
| W 410 x 180 x 60+ 60.0                                | 407                       | 178     | 7.7                  | 12.8                 | 10      | 75.8                 | 381.4   | 361.4   | M22 | 86                     | 90                     | 1.49                                | 25.10                               |
| W 410 x 180 x 67+ 67.0                                | 410                       | 179     | 8.8                  | 14.4                 | 10      | 85.8                 | 381.2   | 361.2   | M22 | 86                     | 92                     | 1.50                                | 22.29                               |
| W 410 x 180 x 75+ 75.0                                | 413                       | 180     | 9.7                  | 16.0                 | 10      | 95.2                 | 381   | 361     | M22 | 88                     | 92                     | 1.51                                | 20.19                               |
| W 410 x 180 x 85+ 85.0                                | 417                       | 181     | 10.9                 | 18.2                 | 10      | 108.3                | 380.6   | 360.6   | M22 | 90                     | 94                     | 1.52                                | 17.87                               |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 460 x 150 x 52+ 52.0                                | 450                       | 152     | 7.6                  | 10.8                 | 10      | 66.2                 | 428.4   | 408.4   | M16 | 76                     | 82                     | 1.48                                | 28.37                               |
| W 460 x 150 x 60+ 60.0                                | 455                       | 153     | 8.0                  | 13.3                 | 10      | 75.8                 | 428.4   | 408.4   | M16 | 76                     | 84                     | 1.49                                | 25.01                               |
| W 460 x 150 x 68+ 68.0                                | 459                       | 154     | 9.1                  | 15.4                 | 10      | 87.3                 | 428.2   | 408.2   | M16 | 78                     | 84                     | 1.50                                | 21.88                               |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

+ Minimum order: 40t per section and grade or upon agreement.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung<br>(imperial) | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   | Classification<br>ENV 1993-1-1                       |                     |      |      |                     |      | HISTAR |      |
|---|--|-----------------------------------|--------------------------------------|--|----------------------|------------------------------------|---|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|---------------------|------|------|---------------------|------|--------|------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                   |                                      |  |                      |                                    | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                      |  |                      |                      |                                   |  | pure<br>bending y-y |      |      | pure<br>compression |      |        |      |
|   | G<br>lbs/ft  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup>                     | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235                | S355 | S460 | S235                | S355 |        | S460 |
| W 14 x 14.5 x 90 90                                     | 41510  | 2332                              | 2562                                 | 15.60                                  | 45.19                | 15080                              | 817.3   | 1237                                 | 9.40                                   | 64.77                | 168.8                | 4305                              | 2 3 3  | 2 3 3               | HI   |      |                     |      |        |      |
| W 14 x 14.5 x 99 99                                     | 46290  | 2572                              | 2838                                 | 15.70                                  | 49.72                | 16720                              | 903.9   | 1369                                 | 9.43                                   | 69.47                | 223.7                | 4836                              | 1 3 3  | 1 3 3               | HI   |      |                     |      |        |      |
| W 14 x 14.5 x 109 109                                   | 51540  | 2832                              | 3139                                 | 15.81                                  | 53.98                | 18560                              | 1001  | 1516                                 | 9.49                                   | 74.47                | 295.5                | 5432                              | 1 2 3  | 1 2 3               | HI   |      |                     |      |        |      |
| W 14 x 14.5 x 120 120                                   | 57440  | 3122                              | 3482                                 | 15.86                                  | 60.72                | 20680                              | 1109  | 1683                                 | 9.52                                   | 80.37                | 393.8                | 6119                              | 1 1 2  | 1 1 2               | HI   |      |                     |      |        |      |
| W 14 x 14.5 x 132 132                                   | 63630  | 3421                              | 3837                                 | 15.94                                  | 66.50                | 22860                              | 1222  | 1856                                 | 9.56                                   | 86.37                | 517.1                | 6829                              | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
|   |  |                                   |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   |  |                     |      |      |                     |      |        |      |
| W 14 x 16 x 145 145                                     | 71140  | 3794                              | 4262                                 | 16.07                                  | 70.32                | 28250                              | 1434  | 2176                                 | 10.13                                  | 90.27                | 637.3                | 8515                              | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 159 159                                     | 78780  | 4146                              | 4686                                 | 16.18                                  | 77.10                | 31040                              | 1572  | 2387                                 | 10.16                                  | 96.87                | 825.5                | 9489                              | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 176 176                                     | 89410  | 4620                              | 5260                                 | 16.35                                  | 86.55                | 35020                              | 1760  | 2676                                 | 10.23                                  | 105.3                | 1116                 | 10940                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 193 193                                     | 99710  | 5074                              | 5813                                 | 16.50                                  | 93.46                | 38780                              | 1944  | 2957                                 | 10.29                                  | 113.4                | 1464                 | 12300                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 211 211                                     | 110200   | 5525                              | 6374                                 | 16.62                                  | 103.3                | 42600                              | 2125  | 3236                                 | 10.33                                  | 121.7                | 1870                 | 13740                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 233 233                                     | 124900   | 6140                              | 7139                                 | 16.81                                  | 113.9                | 48090                              | 2380  | 3629                                 | 10.43                                  | 132.2                | 2510                 | 15850                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 257 257                                     | 141300   | 6794                              | 7965                                 | 17.03                                  | 126.0                | 53620                              | 2641  | 4031                                 | 10.49                                  | 143.4                | 3326                 | 18130                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 283 283                                     | 159600   | 7510                              | 8880                                 | 17.24                                  | 139.9                | 60080                              | 2938  | 4489                                 | 10.58                                  | 155.6                | 4398                 | 20800                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 311 311                                     | 180200   | 8283                              | 9878                                 | 17.48                                  | 154.3                | 67040                              | 3254  | 4978                                 | 10.66                                  | 168.2                | 5735                 | 23850                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 342 342                                     | 204500   | 9172                              | 11030                                | 17.75                                  | 170.6                | 75400                              | 3625  | 5552                                 | 10.78                                  | 182.1                | 7513                 | 27630                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 370 370                                     | 226100   | 9939                              | 12050                                | 17.95                                  | 184.9                | 82490                              | 3947  | 6051                                 | 10.85                                  | 194.8                | 9410                 | 30870                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 398 398                                     | 250200   | 10760                             | 13140                                | 18.20                                  | 200.3                | 90170                              | 4284  | 6574                                 | 10.93                                  | 207.2                | 11560                | 34670                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 426 426                                     | 274200   | 11570                             | 14220                                | 18.42                                  | 214.0                | 98250                              | 4634  | 7117                                 | 11.03                                  | 219.4                | 14020                | 38570                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 455 455                                     | 299500   | 12400                             | 15350                                | 18.62                                  | 231.9                | 106900                             | 4994  | 7680                                 | 11.13                                  | 231.8                | 16790                | 42920                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 500 500                                     | 342100   | 13740                             | 17170                                | 19.00                                  | 256.1                | 119900                             | 5552  | 8549                                 | 11.25                                  | 251.0                | 21840                | 49980                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 550 550                                     | 392200   | 15260                             | 19260                                | 19.39                                  | 283.3                | 135500                             | 6203  | 9561                                 | 11.40                                  | 272.1                | 28510                | 58650                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 605 605                                     | 450200   | 16960                             | 21620                                | 19.79                                  | 313.8                | 153300                             | 6938  | 10710                                | 11.55                                  | 295.5                | 37350                | 68890                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 665 665                                     | 518900   | 18870                             | 24280                                | 20.27                                  | 349.2                | 173400                             | 7739  | 11960                                | 11.72                                  | 319.5                | 48210                | 81530                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
| W 14 x 16 x 730 730                                     | 595700   | 20940                             | 27210                                | 20.73                                  | 385.8                | 196200                             | 8645  | 13380                                | 11.90                                  | 345.6                | 62290                | 96080                             | 1 1 1  | 1 1 1               | HI   |      |                     |      |        |      |
|   |  |                                   |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   |  |                     |      |      |                     |      |        |      |
| W 16 x 5.5 x 26 26                                      | 12620  | 632.6                             | 727.8                                | 15.93                                  | 27.40                | 403.5                              | 57.65   | 90.55                                | 2.85                                   | 35.67                | 11.17                | 153.2                             | 1 1 -  | 4 4 -               |      |      |                     |      |        |      |
| W 16 x 5.5 x 31 31                                      | 15550  | 771.9                             | 883.6                                | 16.26                                  | 30.49                | 513.6                              | 73.37   | 114.9                                | 2.95                                   | 41.11                | 19.25                | 196.6                             | 1 1 -  | 4 4 -               |      |      |                     |      |        |      |
|   |  |                                   |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   |  |                     |      |      |                     |      |        |      |
| W 16 x 7 x 36 36  | 18600  | 922.9                             | 1045                                 | 16.54                                  | 32.41                | 1009                               | 114.0   | 176.6                                | 3.85                                   | 41.01                | 22.75                | 387.2                             | 1 1 -  | 4 4 -               |      |      |                     |      |        |      |
| W 16 x 7 x 40 40  | 21570  | 1060                              | 1194                                 | 16.87                                  | 33.77                | 1205                               | 135.4   | 209.0                                | 3.99                                   | 45.02                | 32.81                | 467.4                             | 1 1 -  | 4 4 -               |      |      |                     |      |        |      |
| W 16 x 7 x 45 45  | 24530  | 1196                              | 1354                                 | 16.91                                  | 38.39                | 1379                               | 154.1   | 238.6                                | 4.01                                   | 49.28                | 46.90                | 538.5                             | 1 1 -  | 3 4 -               |      |      |                     |      |        |      |
| W 16 x 7 x 50 50  | 27460  | 1330                              | 1510                                 | 16.98                                  | 42.37                | 1559                               | 173.2   | 268.7                                | 4.05                                   | 53.37                | 63.79                | 612.8                             | 1 1 -  | 2 4 -               |      |      |                     |      |        |      |
| W 16 x 7 x 57 57  | 31530  | 1512                              | 1725                                 | 17.06                                  | 48.05                | 1803                               | 199.3   | 310.1                                | 4.08                                   | 59.04                | 93.24                | 715.2                             | 1 1 -  | 2 3 -               |      |      |                     |      |        |      |
|   |  |                                   |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   |  |                     |      |      |                     |      |        |      |
| W 18 x 6 x 35 35  | 21200  | 942                               | 1088                                 | 17.89                                  | 36.40                | 634.0                              | 83.43   | 131.5                                | 3.09                                   | 40.92                | 21.24                | 304.8                             | 1 1 -  | 4 4 -               |      |      |                     |      |        |      |
| W 18 x 6 x 40 40  | 25480  | 1120                              | 1284                                 | 18.33                                  | 38.85                | 796.1                              | 104.1   | 163.1                                | 3.24                                   | 46.32                | 33.58                | 387.2                             | 1 1 -  | 4 4 -               |      |      |                     |      |        |      |
| W 18 x 6 x 46 46  | 29680  | 1293                              | 1487                                 | 18.44                                  | 44.31                | 940.5                              | 122.1   | 192.1                                | 3.28                                   | 51.62                | 51.07                | 461.2                             | 1 1 -  | 4 4 -               |      |      |                     |      |        |      |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.





# Poutrelles américaines à larges ailes

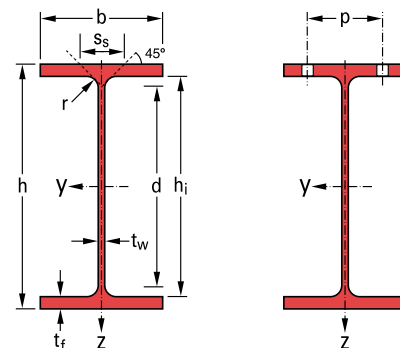
conformes à ASTM A6 / A6M - 98

## American wide flange beams

in accordance with ASTM A6 / A6M - 98

## Amerikanische Breitflanschträger

gemäß ASTM A6 / A6M - 98



| Désignation<br>Designation<br>Bezeichnung<br>(metric) |      | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m   |      | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| W 460 x 190 x 61 <sup>+</sup>                         | 61.0 | 450                       | 189     | 8.1                  | 10.8                 | 10      | 76.4                 | 428.4   | 408.4   | M24 | 92                     | 96                     | 1.62                                | 27.06                               |
| W 460 x 190 x 67 <sup>+</sup>                         | 67.0 | 454                       | 190     | 8.5                  | 12.7                 | 10      | 85.5                 | 428.6   | 408.6   | M24 | 92                     | 96                     | 1.63                                | 24.33                               |
| W 460 x 190 x 74 <sup>+</sup>                         | 74.0 | 457                       | 190     | 9.0                  | 14.5                 | 10      | 94.6                 | 428   | 408     | M24 | 92                     | 96                     | 1.64                                | 22.08                               |
| W 460 x 190 x 82 <sup>+</sup>                         | 82.0 | 460                       | 191     | 9.9                  | 16.0                 | 10      | 104.4                | 428   | 408     | M24 | 92                     | 98                     | 1.65                                | 20.10                               |
| W 460 x 190 x 89 <sup>+</sup>                         | 89.0 | 463                       | 192     | 10.5                 | 17.7                 | 10      | 113.9                | 427.6   | 407.6   | M24 | 94                     | 98                     | 1.66                                | 18.52                               |
| W 460 x 190 x 97 <sup>+</sup>                         | 97.0 | 466                       | 193     | 11.4                 | 19.0                 | 10      | 123.5                | 427.8   | 407.8   | M24 | 94                     | 100                    | 1.66                                | 17.17                               |
| W 460 x 190 x 106 <sup>+</sup>                        | 106  | 469                       | 194     | 12.6                 | 20.6                 | 10      | 134.6                | 427.8   | 407.8   | M24 | 96                     | 100                    | 1.67                                | 15.83                               |
|   |      |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 460 x 280 x 113 <sup>+</sup>                        | 113  | 463                       | 280     | 10.8                 | 17.3                 | 10      | 144.0                | 428.4   | 408.4   | M27 | 90                     | 174                    | 2.01                                | 17.76                               |
| W 460 x 280 x 128 <sup>+</sup>                        | 128  | 467                       | 282     | 12.2                 | 19.6                 | 10      | 163.6                | 427.8   | 407.8   | M27 | 90                     | 176                    | 2.02                                | 15.74                               |
| W 460 x 280 x 144 <sup>+</sup>                        | 144  | 472                       | 283     | 13.6                 | 22.1                 | 10      | 184.1                | 427.8   | 407.8   | M27 | 92                     | 178                    | 2.03                                | 14.06                               |
| W 460 x 280 x 158 <sup>+</sup>                        | 158  | 476                       | 284     | 15.0                 | 23.9                 | 10      | 200.8                | 428.2   | 408.2   | M27 | 94                     | 178                    | 2.04                                | 12.95                               |
| W 460 x 280 x 177 <sup>+</sup>                        | 177  | 482                       | 286     | 16.6                 | 26.9                 | 10      | 226.0                | 428.2   | 408.2   | M27 | 94                     | 180                    | 2.06                                | 11.60                               |
|   |      |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 530 x 210 x 92 <sup>+</sup>                         | 92.0 | 533                       | 209     | 10.2                 | 15.6                 | 13      | 117.6                | 501.8   | 475.8   | M27 | 94                     | 104                    | 1.86                                | 20.13                               |
| W 530 x 210 x 101 <sup>+</sup>                        | 101  | 537                       | 210     | 10.9                 | 17.4                 | 13      | 129.4                | 502.2   | 476.2   | M27 | 94                     | 104                    | 1.87                                | 18.41                               |
| W 530 x 210 x 109 <sup>+</sup>                        | 109  | 539                       | 211     | 11.6                 | 18.8                 | 13      | 138.7                | 501.4   | 475.4   | M27 | 96                     | 106                    | 1.88                                | 17.23                               |
| W 530 x 210 x 123 <sup>+</sup>                        | 123  | 544                       | 212     | 13.1                 | 21.2                 | 13      | 156.9                | 501.6   | 475.6   | M27 | 96                     | 106                    | 1.89                                | 15.32                               |
| W 530 x 210 x 138 <sup>+</sup>                        | 138  | 549                       | 214     | 14.7                 | 23.6                 | 13      | 176.4                | 501.8   | 475.8   | M27 | 98                     | 108                    | 1.90                                | 13.74                               |
|   |      |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 610 x 230 x 101 <sup>+</sup>                        | 101  | 603                       | 228     | 10.5                 | 14.9                 | 13      | 129.8                | 573.2   | 547.2   | M27 | 94                     | 122                    | 2.07                                | 20.36                               |
| W 610 x 230 x 113 <sup>+</sup>                        | 113  | 608                       | 228     | 11.2                 | 17.3                 | 13      | 144.4                | 573.4   | 547.4   | M27 | 94                     | 122                    | 2.08                                | 18.37                               |
| W 610 x 230 x 125 <sup>+</sup>                        | 125  | 612                       | 229     | 11.9                 | 19.6                 | 13      | 159.6                | 572.8   | 546.8   | M27 | 96                     | 124                    | 2.09                                | 16.71                               |
| W 610 x 230 x 140 <sup>+</sup>                        | 140  | 617                       | 230     | 13.1                 | 22.2                 | 13      | 178.5                | 572.6   | 546.6   | M27 | 96                     | 124                    | 2.11                                | 15.03                               |
|   |      |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 610 x 325 x 155 <sup>+</sup>                        | 155  | 611                       | 324     | 12.7                 | 19.0                 | 13      | 197.3                | 573   | 547     | M27 | 96                     | 218                    | 2.47                                | 15.95                               |
| W 610 x 325 x 174 <sup>+</sup>                        | 174  | 616                       | 325     | 14.0                 | 21.6                 | 13      | 222.0                | 572.8   | 546.8   | M27 | 98                     | 220                    | 2.48                                | 14.24                               |
| W 610 x 325 x 195 <sup>+</sup>                        | 195  | 622                       | 327     | 15.4                 | 24.4                 | 13      | 249.3                | 573.2   | 547.2   | M27 | 98                     | 222                    | 2.50                                | 12.77                               |
| W 610 x 325 x 217 <sup>+</sup>                        | 217  | 628                       | 328     | 16.5                 | 27.7                 | 13      | 277.6                | 572.6   | 546.6   | M27 | 100                    | 222                    | 2.51                                | 11.53                               |
| W 610 x 325 x 241 <sup>+</sup>                        | 241  | 635                       | 329     | 17.1                 | 31.0                 | 13      | 303.4                | 573   | 547     | M27 | 100                    | 224                    | 2.53                                | 10.62                               |
| W 610 x 325 x 262 <sup>+</sup>                        | 262  | 641                       | 327     | 19.0                 | 34.0                 | 13      | 332.7                | 573   | 547     | M27 | 102                    | 222                    | 2.53                                | 9.69                                |
| W 610 x 325 x 285 <sup>+</sup>                        | 285  | 647                       | 329     | 20.6                 | 37.1                 | 13      | 363.6                | 572.8   | 546.8   | M27 | 104                    | 224                    | 2.55                                | 8.92                                |
| W 610 x 325 x 341 <sup>+</sup>                        | 341  | 661                       | 333     | 24.4                 | 43.9                 | 13      | 433.7                | 573.2   | 547.2   | M27 | 108                    | 228                    | 2.58                                | 7.59                                |
| W 610 x 325 x 415 <sup>+</sup>                        | 415  | 679                       | 338     | 29.5                 | 53.1                 | 13      | 529.4                | 572.8   | 546.8   | M27 | 114                    | 232                    | 2.63                                | 6.33                                |
| W 610 x 325 x 455 <sup>+</sup>                        | 455  | 689                       | 340     | 32.0                 | 57.9                 | 13      | 578.6                | 573.2   | 547.2   | M27 | 116                    | 234                    | 2.65                                | 5.84                                |
| W 610 x 325 x 498 <sup>+</sup>                        | 498  | 699                       | 343     | 35.1                 | 63.0                 | 13      | 634.8                | 573   | 547     | M27 | 120                    | 238                    | 2.68                                | 5.37                                |
| W 610 x 325 x 551                                     | 551  | 711                       | 347     | 38.6                 | 69.1                 | 13      | 702.1                | 572.8   | 546.8   | M27 | 122                    | 242                    | 2.71                                | 4.92                                |
|   |      |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 690 x 250 x 125 <sup>+</sup>                        | 125  | 678                       | 253     | 11.7                 | 16.3                 | 15      | 159.9                | 645.4   | 615.4   | M27 | 100                    | 148                    | 2.32                                | 18.47                               |
| W 690 x 250 x 140 <sup>+</sup>                        | 140  | 684                       | 254     | 12.4                 | 18.9                 | 15      | 178.1                | 646.2   | 616.2   | M27 | 100                    | 148                    | 2.33                                | 16.69                               |
| W 690 x 250 x 152 <sup>+</sup>                        | 152  | 688                       | 254     | 13.1                 | 21.1                 | 15      | 193.7                | 645.8   | 615.8   | M27 | 102                    | 148                    | 2.34                                | 15.39                               |
| W 690 x 250 x 170 <sup>+</sup>                        | 170  | 693                       | 256     | 14.5                 | 23.6                 | 15      | 216.4                | 645.8   | 615.8   | M27 | 102                    | 150                    | 2.36                                | 13.86                               |
| W 690 x 250 x 192 <sup>+</sup>                        | 192  | 702                       | 254     | 15.5                 | 27.9                 | 15      | 243.8                | 646.2   | 616.2   | M27 | 104                    | 148                    | 2.36                                | 12.35                               |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

\* Profilé canadien

+ Minimum order: 40t per section and grade or upon agreement.

\* Canadian section

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.

\* Kanadisches Walzprofil



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung<br>(imperial) |     | Valeurs statiques / Section properties / Statische Kennwerte |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   | Classification<br>ENV 1993-1-1                       |                     |       |       |                     |       | HISTAR |       |
|---|-----|--|--------------------------------------|--|----------------------|------------------------------------|---|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|---------------------|-------|-------|---------------------|-------|--------|-------|
|   |     | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                      |  |                      |                                    | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                      |  |                      |                      |                                   |  | pure<br>bending y-y |       |       | pure<br>compression |       |        |       |
|   |     | I <sub>y</sub><br>cm <sup>4</sup>                            | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ♦<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup>                     | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ♦<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S 235               | S 355 | S 460 | S 235               | S 355 |        | S 460 |
| G<br>lbs/ft   |     |  |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   |  |                     |       |       |                     |       |        |       |
| W 18 x 7.5 x 41   | 41  | 25380  | 1128                                 | 1286                                   | 18.23                | 38.59                              | 1217.5  | 128.8                                | 200.5                                  | 3.99                 | 41.42                | 26.02                             | 586  | 1                   | 2     | -     | 4                   | 4     | -      |       |
| W 18 x 7.5 x 45   | 45  | 29470  | 1298                                 | 1473                                   | 18.56                | 40.91                              | 1454.4  | 153.1                                | 237.5                                  | 4.12                 | 45.62                | 37.46                             | 706.8  | 1                   | 1     | -     | 4                   | 4     | -      |       |
| W 18 x 7.5 x 50   | 50  | 33260  | 1456                                 | 1650                                   | 18.75                | 43.67                              | 1661  | 174.8                                | 271.0                                  | 4.19                 | 49.74                | 52.03                             | 811.4  | 1                   | 1     | -     | 4                   | 4     | -      |       |
| W 18 x 7.5 x 55   | 55  | 37000  | 1608                                 | 1829                                   | 18.83                | 48.06                              | 1862  | 195.0                                | 303.0                                  | 4.22                 | 53.63                | 69.55                             | 915.7  | 1                   | 1     | -     | 3                   | 4     | -      |       |
| W 18 x 7.5 x 60   | 60  | 40960  | 1769                                 | 2013                                   | 18.96                | 51.33                              | 2093  | 218.0                                | 338.8                                  | 4.29                 | 57.66                | 91.36                             | 1035   | 1                   | 1     | -     | 3                   | 4     | -      |       |
| W 18 x 7.5 x 65   | 65  | 44680  | 1917                                 | 2189                                   | 19.02                | 55.76                              | 2282  | 237.8                                | 370.4                                  | 4.31                 | 61.35                | 113.9                             | 1137   | 1                   | 1     | -     | 2                   | 4     | -      |       |
| W 18 x 7.5 x 71   | 71  | 48790  | 2081                                 | 2385                                   | 19.04                | 61.34                              | 2515  | 259.2                                | 405.3                                  | 4.32                 | 65.49                | 146.6                             | 1260   | 1                   | 1     | -     | 1                   | 3     | -      |       |
| W 18 x 11 x 76  | 76  | 55600  | 2402                                 | 2673                                   | 19.65                | 52.45                              | 6335  | 452.5                                | 691.3                                  | 6.63                 | 57.12                | 118.8                             | 3143   | 1                   | 1     | -     | 2                   | 4     | -      |       |
| W 18 x 11 x 86  | 86  | 63690  | 2728                                 | 3049                                   | 19.73                | 59.32                              | 7333  | 520.1                                | 795.9                                  | 6.70                 | 63.11                | 172.6                             | 3666   | 1                   | 1     | -     | 2                   | 3     | -      |       |
| W 18 x 11 x 97  | 97  | 72600  | 3076                                 | 3454                                   | 19.86                | 66.42                              | 8358  | 590.7                                | 905.5                                  | 6.74                 | 69.51                | 245.5                             | 4224   | 1                   | 1     | -     | 1                   | 2     | -      |       |
| W 18 x 11 x 106   | 106 | 79620  | 3346                                 | 3774                                   | 19.91                | 73.41                              | 9137  | 643.5                                | 988.7                                  | 6.75                 | 74.51                | 314.1                             | 4662   | 1                   | 1     | -     | 1                   | 2     | -      |       |
| W 18 x 11 x 119   | 119 | 91040  | 3777                                 | 4282                                   | 20.07                | 81.97                              | 10510   | 734.7                                | 1131                                   | 6.82                 | 82.16                | 445.2                             | 5431   | 1                   | 1     | -     | 1                   | 1     | -      |       |
| W 21 x 8.25 x 62  | 62  | 55240  | 2073                                 | 2362                                   | 21.67                | 58.07                              | 2379  | 227.7                                | 354.8                                  | 4.50                 | 56.59                | 76.96                             | 1589   | 1                   | 1     | -     | 4                   | 4     | -      |       |
| W 21 x 8.25 x 68  | 68  | 61760  | 2300                                 | 2623                                   | 21.85                | 62.72                              | 2692  | 256.4                                | 399.9                                  | 4.56                 | 60.95                | 102.9                             | 1813   | 1                   | 1     | -     | 4                   | 4     | -      |       |
| W 21 x 8.25 x 73  | 73  | 66730  | 2476                                 | 2826                                   | 21.93                | 66.47                              | 2951  | 279.7                                | 436.5                                  | 4.61                 | 64.39                | 127.4                             | 1991   | 1                   | 1     | -     | 3                   | 4     | -      |       |
| W 21 x 8.25 x 83  | 83  | 76100  | 2798                                 | 3208                                   | 22.02                | 75.34                              | 3377  | 318.6                                | 499.2                                  | 4.64                 | 70.71                | 182.3                             | 2300   | 1                   | 1     | -     | 2                   | 4     | -      |       |
| W 21 x 8.25 x 93  | 93  | 86160  | 3139                                 | 3617                                   | 22.10                | 84.98                              | 3870  | 361.7                                | 569.1                                  | 4.68                 | 77.16                | 254                               | 2660   | 1                   | 1     | -     | 1                   | 3     | -      |       |
| W 24 x 9 x 68   | 68  | 76470  | 2536                                 | 2905                                   | 24.27                | 67.31                              | 2950  | 258.8                                | 404.4                                  | 4.77                 | 55.57                | 79.88                             | 2545   | 1                   | 1     | -     | 4                   | 4     | -      |       |
| W 24 x 9 x 76   | 76  | 87570  | 2881                                 | 3290                                   | 24.62                | 71.99                              | 3425  | 300.5                                | 468.8                                  | 4.87                 | 61.01                | 113.3                             | 2981   | 1                   | 1     | -     | 4                   | 4     | -      |       |
| W 24 x 9 x 84   | 84  | 98650  | 3224                                 | 3679                                   | 24.86                | 77.28                              | 3932  | 343.4                                | 535.6                                  | 4.96                 | 66.37                | 156                               | 3442   | 1                   | 1     | 1     | 4                   | 4     | 4      | HI    |
| W 24 x 9 x 94   | 94  | 111990   | 3630                                 | 4150                                   | 25.05                | 85.02                              | 4514  | 392.5                                | 613.1                                  | 5.03                 | 72.71                | 220                               | 3982   | 1                   | 1     | 1     | 3                   | 4     | 4      | HI    |
| W 24 x 12.75 x 104                                      | 104 | 129000   | 4222                                 | 4728                                   | 25.57                | 81.57                              | 10780   | 666                                  | 1022                                   | 7.39                 | 65.93                | 197.7                             | 9437   | 1                   | 2     | 3     | 4                   | 4     | 4      | HI    |
| W 24 x 12.75 x 117                                      | 117 | 147200   | 4778                                 | 5362                                   | 25.74                | 90.28                              | 12370   | 761                                  | 1170                                   | 7.46                 | 72.43                | 283.2                             | 10920  | 1                   | 1     | 2     | 3                   | 4     | 4      | HI    |
| W 24 x 12.75 x 131                                      | 131 | 167900   | 5398                                 | 6074                                   | 25.95                | 99.83                              | 14240   | 871                                  | 1340                                   | 7.56                 | 79.43                | 400.9                             | 12700  | 1                   | 1     | 1     | 2                   | 4     | 4      | HI    |
| W 24 x 12.75 x 146                                      | 146 | 190800   | 6076                                 | 6848                                   | 26.21                | 107.7                              | 16310   | 995                                  | 1531                                   | 7.67                 | 87.13                | 564.6                             | 14680  | 1                   | 1     | 1     | 2                   | 3     | 4      | HI    |
| W 24 x 12.75 x 162                                      | 162 | 214200   | 6746                                 | 7605                                   | 26.57                | 112.8                              | 18430   | 1120                                 | 1721                                   | 7.79                 | 94.33                | 758.6                             | 16780  | 1                   | 1     | 1     | 1                   | 3     | 4      | HI    |
| W 24 x 12.75 x 176                                      | 176 | 235990   | 7363                                 | 8349                                   | 26.63                | 125.6                              | 19850   | 1214                                 | 1871                                   | 7.72                 | 102.2                | 998.1                             | 18250  | 1                   | 1     | 1     | 1                   | 2     | 3      | HI    |
| W 24 x 12.75 x 192                                      | 192 | 260700   | 8059                                 | 9175                                   | 26.78                | 136.7                              | 22060   | 1341                                 | 2071                                   | 7.79                 | 110.0                | 1295                              | 20480  | 1                   | 1     | 1     | 1                   | 1     | 2      | HI    |
| W 24 x 12.75 x 229                                      | 229 | 318300   | 9630                                 | 11070                                  | 27.09                | 163.4                              | 27090   | 1627                                 | 2522                                   | 7.90                 | 127.4                | 2153                              | 25720  | 1                   | 1     | 1     | 1                   | 1     | 1      | HI    |
| W 24 x 12.75 x 279                                      | 279 | 399800   | 11780                                | 13690                                  | 27.48                | 199.9                              | 34300   | 2030                                 | 3160                                   | 8.05                 | 150.9                | 3824                              | 33470  | 1                   | 1     | 1     | 1                   | 1     | 1      | HI    |
| W 24 x 12.75 x 306                                      | 306 | 444520   | 12903                                | 15093                                  | 27.72                | 218.5                              | 38090   | 2241                                 | 3496                                   | 8.11                 | 163.0                | 4948                              | 37770  | 1                   | 1     | 1     | 1                   | 1     | 1      | HI    |
| W 24 x 12.75 x 335                                      | 335 | 494700   | 14150                                | 16670                                  | 27.92                | 241.1                              | 42580   | 2483                                 | 3885                                   | 8.19                 | 176.3                | 6420                              | 42850  | 1                   | 1     | 1     | 1                   | 1     | 1      | HI    |
| W 24 x 12.75 x 370                                      | 370 | 557510   | 15682                                | 18599                                  | 28.18                | 267.2                              | 48400   | 2790                                 | 4377                                   | 8.30                 | 192.0                | 8525                              | 49570  | 1                   | 1     | 1     | 1                   | 1     | 1      | HI    |
| W 27 x 10 x 84  | 84  | 118480   | 3495                                 | 4009                                   | 27.22                | 84.24                              | 4410  | 348.6                                | 545.5                                  | 5.25                 | 61.87                | 119.4                             | 4816   | 1                   | 1     | -     | 4                   | 4     | -      |       |
| W 27 x 10 x 94  | 94  | 136070   | 3979                                 | 4549                                   | 27.64                | 90.07                              | 5174  | 407.4                                | 636.4                                  | 5.39                 | 67.77                | 168.4                             | 5709   | 1                   | 1     | -     | 4                   | 4     | -      |       |
| W 27 x 10 x 102   | 102 | 150600   | 4378                                 | 5002                                   | 27.88                | 95.63                              | 5777  | 454.9                                | 710.3                                  | 5.46                 | 72.87                | 221.4                             | 6408   | 1                   | 1     | 1     | 4                   | 4     | 4      | HI    |
| W 27 x 10 x 114   | 114 | 169930   | 4904                                 | 5618                                   | 28.02                | 106.1                              | 6618  | 517.0                                | 809.3                                  | 5.53                 | 79.27                | 306.7                             | 7393   | 1                   | 1     | 1     | 4                   | 4     | 4      | HI    |
| W 27 x 10 x 129   | 129 | 197900   | 5639                                 | 6457                                   | 28.49                | 114.8                              | 7643  | 601.8                                | 941.0                                  | 5.60                 | 88.87                | 463.2                             | 8657   | 1                   | 1     | 1     | 3                   | 4     | 4      | HI    |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



# Poutrelles américaines à larges ailes

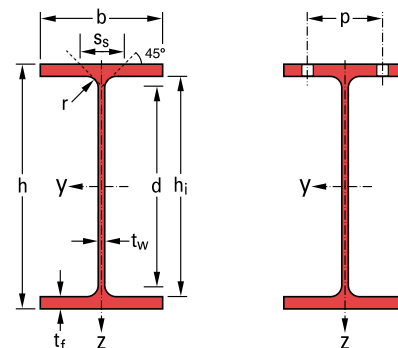
conformes à ASTM A6 / A6M - 98

## American wide flange beams

in accordance with ASTM A6 / A6M - 98

## Amerikanische Breitflanschträger

gemäß ASTM A6 / A6M - 98



| Désignation<br>Designation<br>Bezeichnung<br>(metric) |     | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|-----|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m   |     | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| W 760 x 265 x 147 <sup>+</sup>                        | 147 | 753                       | 265     | 13.2                 | 17.0                 | 17      | 187.5                | 719   | 685     | M27 | 106                    | 160                    | 2.51                                | 17.06                               |
| W 760 x 265 x 161 <sup>+</sup>                        | 161 | 758                       | 266     | 13.8                 | 19.3                 | 17      | 204.4                | 719.4   | 685.4   | M27 | 106                    | 160                    | 2.52                                | 15.72                               |
| W 760 x 265 x 173 <sup>+</sup>                        | 173 | 762                       | 267     | 14.4                 | 21.6                 | 17      | 221.3                | 718.8   | 684.8   | M27 | 106                    | 162                    | 2.53                                | 14.58                               |
| W 760 x 265 x 185 <sup>+</sup>                        | 185 | 766                       | 267     | 14.9                 | 23.6                 | 17      | 235.6                | 718.8   | 684.8   | M27 | 106                    | 162                    | 2.54                                | 13.74                               |
| W 760 x 265 x 196 <sup>+</sup>                        | 196 | 770                       | 268     | 15.6                 | 25.4                 | 17      | 250.8                | 719.2   | 685.2   | M27 | 108                    | 162                    | 2.55                                | 12.96                               |
| W 760 x 265 x 220 <sup>+</sup>                        | 220 | 779                       | 266     | 16.5                 | 30.0                 | 17      | 280.7                | 719   | 685     | M27 | 108                    | 160                    | 2.56                                | 11.62                               |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 840 x 295 x 176 <sup>+</sup>                        | 176 | 835                       | 292     | 14.0                 | 18.8                 | 18      | 224.2                | 797.4   | 761.4   | M27 | 108                    | 186                    | 2.78                                | 15.79                               |
| W 840 x 295 x 193 <sup>+</sup>                        | 193 | 840                       | 292     | 14.7                 | 21.7                 | 18      | 246.6                | 796.6   | 760.6   | M27 | 108                    | 186                    | 2.79                                | 14.40                               |
| W 840 x 295 x 210 <sup>+</sup>                        | 210 | 846                       | 293     | 15.4                 | 24.4                 | 18      | 268.5                | 797.2   | 761.2   | M27 | 110                    | 188                    | 2.80                                | 13.29                               |
| W 840 x 295 x 226 <sup>+</sup>                        | 226 | 851                       | 294     | 16.1                 | 26.8                 | 18      | 288.7                | 797.4   | 761.4   | M27 | 110                    | 188                    | 2.81                                | 12.42                               |
| W 840 x 295 x 251 <sup>+</sup>                        | 251 | 859                       | 292     | 17.0                 | 31.0                 | 18      | 319.3                | 797   | 761     | M27 | 112                    | 186                    | 2.82                                | 11.25                               |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 920 x 310 x 201 <sup>+</sup>                        | 201 | 903                       | 304     | 15.2                 | 20.1                 | 19      | 256.5                | 862.8   | 824.8   | M27 | 112                    | 198                    | 2.96                                | 14.70                               |
| W 920 x 310 x 223 <sup>+</sup>                        | 223 | 911                       | 304     | 15.9                 | 23.9                 | 19      | 285.7                | 863.2   | 825.2   | M27 | 112                    | 198                    | 2.97                                | 13.26                               |
| W 920 x 310 x 238 <sup>+</sup>                        | 238 | 915                       | 305     | 16.5                 | 25.9                 | 19      | 303.5                | 863.2   | 825.2   | M27 | 112                    | 200                    | 2.98                                | 12.53                               |
| W 920 x 310 x 253 <sup>+</sup>                        | 253 | 919                       | 306     | 17.3                 | 27.9                 | 19      | 323.2                | 863.2   | 825.2   | M27 | 114                    | 200                    | 2.99                                | 11.80                               |
| W 920 x 310 x 271 <sup>+</sup>                        | 271 | 923                       | 307     | 18.4                 | 30.0                 | 19      | 346.1                | 863   | 825     | M27 | 114                    | 202                    | 3.00                                | 11.06                               |
| W 920 x 310 x 289 <sup>+</sup>                        | 289 | 927                       | 308     | 19.4                 | 32.0                 | 19      | 367.6                | 863   | 825     | M27 | 116                    | 202                    | 3.01                                | 10.45                               |
| W 920 x 310 x 313 <sup>+</sup>                        | 313 | 932                       | 309     | 21.1                 | 34.5                 | 19      | 398.4                | 863   | 825     | M27 | 118                    | 204                    | 3.03                                | 9.67                                |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 920 x 420 x 342 <sup>+</sup>                        | 342 | 912                       | 418     | 19.3                 | 32.0                 | 24      | 436.1                | 848   | 800     | M27 | 126                    | 312                    | 3.42                                | 9.98                                |
| W 920 x 420 x 365 <sup>+</sup>                        | 365 | 916                       | 419     | 20.3                 | 34.3                 | 24      | 464.4                | 847.4   | 799.4   | M27 | 128                    | 314                    | 3.43                                | 9.40                                |
| W 920 x 420 x 387 <sup>+</sup>                        | 387 | 921                       | 420     | 21.3                 | 36.6                 | 24      | 493.0                | 847.8   | 799.8   | M27 | 128                    | 314                    | 3.44                                | 8.88                                |
| W 920 x 420 x 417 <sup>+</sup>                        | 417 | 928                       | 422     | 22.5                 | 39.9                 | 24      | 532.5                | 848.2   | 800.2   | M27 | 130                    | 316                    | 3.46                                | 8.27                                |
| W 920 x 420 x 446 <sup>+</sup>                        | 446 | 933                       | 423     | 24.0                 | 42.7                 | 24      | 569.6                | 847.6   | 799.6   | M27 | 130                    | 318                    | 3.47                                | 7.76                                |
| W 920 x 420 x 488 <sup>+</sup>                        | 488 | 942                       | 422     | 25.9                 | 47.0                 | 24      | 621.3                | 848   | 800     | M27 | 132                    | 316                    | 3.48                                | 7.13                                |
| W 920 x 420 x 534 <sup>+</sup>                        | 534 | 950                       | 425     | 28.4                 | 51.1                 | 24      | 680.1                | 847.8   | 799.8   | M27 | 136                    | 320                    | 3.50                                | 6.56                                |
| W 920 x 420 x 585 <sup>+</sup>                        | 585 | 960                       | 427     | 31.0                 | 55.9                 | 24      | 745.3                | 848.2   | 800.2   | M27 | 138                    | 322                    | 3.52                                | 6.02                                |
| W 920 x 420 x 653 <sup>+</sup>                        | 653 | 972                       | 431     | 34.5                 | 62.0                 | 24      | 831.9                | 848   | 800     | M27 | 144                    | 320                    | 3.56                                | 5.45                                |
| W 920 x 420 x 784 <sup>+</sup>                        | 784 | 996                       | 437     | 40.9                 | 73.9                 | 24      | 997.7                | 848.2   | 800.2   | M27 | 152                    | 326                    | 3.62                                | 4.62                                |
| W 920 x 420 x 967 <sup>+</sup>                        | 967 | 1028                      | 446     | 50.0                 | 89.9                 | 24      | 1231                 | 848.2   | 800.2   | M27 | 160                    | 334                    | 3.70                                | 3.83                                |
|   |     |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |
| W 1000 x 300 x 222 <sup>+</sup>                       | 222 | 970                       | 300     | 16.0                 | 21.1                 | 30      | 282.8                | 928   | 868     | M27 | 134                    | 194                    | 3.06                                | 13.77                               |
| W 1000 x 300 x 249 <sup>+</sup>                       | 249 | 980                       | 300     | 16.5                 | 26.0                 | 30      | 316.8                | 928   | 868     | M27 | 134                    | 194                    | 3.08                                | 12.37                               |
| W 1000 x 300 x 272 <sup>+</sup>                       | 272 | 990                       | 300     | 16.5                 | 31.0                 | 30      | 346.8                | 928   | 868     | M27 | 134                    | 194                    | 3.10                                | 11.37                               |
| W 1000 x 300 x 314 <sup>+</sup>                       | 314 | 1000                      | 300     | 19.1                 | 35.9                 | 30      | 400.4                | 928   | 868     | M27 | 136                    | 194                    | 3.11                                | 9.90                                |
| W 1000 x 300 x 350 <sup>+</sup>                       | 350 | 1008                      | 302     | 21.1                 | 40.0                 | 30      | 445.1                | 928   | 868     | M27 | 140                    | 196                    | 3.13                                | 8.96                                |
| W 1000 x 300 x 393 <sup>+</sup>                       | 393 | 1016                      | 303     | 24.4                 | 43.9                 | 30      | 500.2                | 928   | 868     | M27 | 142                    | 198                    | 3.14                                | 8.01                                |
| W 1000 x 300 x 415 <sup>+</sup>                       | 415 | 1020                      | 304     | 26.0                 | 46.0                 | 30      | 528.7                | 928   | 868     | M27 | 144                    | 198                    | 3.15                                | 7.60                                |
| W 1000 x 300 x 494 <sup>+</sup>                       | 494 | 1036                      | 309     | 31.0                 | 54.0                 | 30      | 629.1                | 928   | 868     | M27 | 148                    | 204                    | 3.19                                | 6.47                                |
| W 1000 x 300 x 584 <sup>+</sup>                       | 584 | 1056                      | 314     | 36.0                 | 64.0                 | 30      | 743.7                | 928   | 868     | M27 | 154                    | 208                    | 3.24                                | 5.56                                |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

+ Minimum order: 40t per section and grade or upon agreement.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung<br>(imperial) | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   | Classification<br>ENV 1993-1-1                       |                     |      |      |                     |      | HISTAR |      |
|---|--|-----------------------------------|--------------------------------------|--|----------------------|------------------------------------|---|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|---------------------|------|------|---------------------|------|--------|------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                   |                                      |  |                      |                                    | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                      |  |                      |                      |                                   |  | pure<br>bending y-y |      |      | pure<br>compression |      |        |      |
|   | G<br>lbs/ft  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup>                     | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235                | S355 | S460 | S235                | S355 |        | S460 |
| W 30 x 10.5 x 99 99                                     | 166100   | 4411                              | 5110                                 | 29.76                                  | 105.4                | 5289                               | 399.2   | 630.8                                | 5.31                                   | 67.12                | 161.5                | 7141                              | 1  | 1                   | -    | 4    | 4                   | -    |        |      |
| W 30 x 10.5 x 108 108                                   | 186060   | 4909                              | 5666                                 | 30.17                                  | 111.0                | 6070                               | 456.6   | 719.7                                | 5.45                                   | 72.32                | 211.7                | 8259                              | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 30 x 10.5 x 116 116                                   | 205800   | 5402                              | 6218                                 | 30.49                                  | 116.4                | 6873                               | 514.9   | 809.9                                | 5.57                                   | 77.52                | 273.6                | 9391                              | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 30 x 10.5 x 124 124                                   | 223000   | 5821                              | 6691                                 | 30.76                                  | 121.1                | 7510                               | 562.5   | 883.9                                | 5.65                                   | 82.02                | 336.7                | 10320                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 30 x 10.5 x 132 132                                   | 240300   | 6241                              | 7174                                 | 30.95                                  | 127.3                | 8175                               | 610.1   | 958.8                                | 5.71                                   | 86.32                | 408.9                | 11290                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 30 x 10.5 x 148 148                                   | 278200   | 7143                              | 8198                                 | 31.48                                  | 136.3                | 9440                               | 709.9   | 1113                                 | 5.80                                   | 96.42                | 609                  | 13200                             | 1  | 1                   | 1    | 3    | 4                   | 4    | HI     |      |
| W 33 x 11.5 x 118 118                                   | 246400   | 5901                              | 6816                                 | 33.15                                  | 123.8                | 7823                               | 535.8   | 843.6                                | 5.91                                   | 72.69                | 226.9                | 12990                             | 1  | 1                   | -    | 4    | 4                   | -    |        |      |
| W 33 x 11.5 x 130 130                                   | 278400   | 6630                              | 7627                                 | 33.60                                  | 130.9                | 9029                               | 618.5   | 971.3                                | 6.05                                   | 79.19                | 309.9                | 15070                             | 1  | 1                   | 2    | 4    | 4                   | 4    | HI     |      |
| W 33 x 11.5 x 141 141                                   | 310700   | 7346                              | 8430                                 | 34.02                                  | 138.1                | 10260                              | 700.2   | 1098                                 | 6.18                                   | 85.29                | 409                  | 17260                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 33 x 11.5 x 152 152                                   | 340100   | 7992                              | 9163                                 | 34.32                                  | 145.1                | 11380                              | 774.3   | 1213                                 | 6.28                                   | 90.79                | 517.5                | 19280                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 33 x 11.5 x 169 169                                   | 386500   | 8999                              | 10304                                | 34.79                                  | 154.7                | 12900                              | 883.6   | 1383                                 | 6.36                                   | 100.1                | 737.6                | 22050                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 36 x 12 x 135 135                                     | 325200   | 7203                              | 8356                                 | 35.61                                  | 144.9                | 9442                               | 621.2   | 982.3                                | 6.07                                   | 77.66                | 298                  | 18340                             | 1  | 1                   | -    | 4    | 4                   | -    |        |      |
| W 36 x 12 x 150 150                                     | 376800   | 8273                              | 9540                                 | 36.32                                  | 153.2                | 11220                              | 738.5   | 1163                                 | 6.27                                   | 85.96                | 426.8                | 22020                             | 1  | 1                   | 2    | 4    | 4                   | 4    | HI     |      |
| W 36 x 12 x 160 160                                     | 406400   | 8883                              | 10229                                | 36.59                                  | 159.6                | 12290                              | 805.6   | 1267                                 | 6.36                                   | 90.56                | 518.8                | 24200                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 36 x 12 x 170 170                                     | 437500   | 9520                              | 10963                                | 36.79                                  | 167.9                | 13370                              | 873.6   | 1375                                 | 6.43                                   | 95.36                | 630.9                | 26450                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 36 x 12 x 182 182                                     | 471600   | 10218                             | 11783                                | 36.91                                  | 178.8                | 14520                              | 945.8   | 1491                                 | 6.48                                   | 100.7                | 775                  | 28840                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 36 x 12 x 194 194                                     | 504500   | 10884                             | 12566                                | 37.04                                  | 188.9                | 15640                              | 1016  | 1603                                 | 6.52                                   | 105.7                | 929.8                | 31210                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 36 x 12 x 210 210                                     | 548200   | 11765                             | 13629                                | 37.10                                  | 205.6                | 17040                              | 1103  | 1748                                 | 6.54                                   | 112.4                | 1171                 | 34160                             | 1  | 1                   | 1    | 3    | 4                   | 4    | HI     |      |
| W 36 x 16.5 x 230 230                                   | 624900   | 13700                             | 15450                                | 37.85                                  | 190.1                | 39010                              | 1867  | 2882                                 | 9.46                                   | 111.4                | 1193                 | 75410                             | 1  | 1                   | 1    | 3    | 4                   | 4    | HI     |      |
| W 36 x 16.5 x 245 245                                   | 670500   | 14640                             | 16520                                | 38.00                                  | 200.4                | 42120                              | 2011  | 3106                                 | 9.52                                   | 117.0                | 1446                 | 81730                             | 1  | 1                   | 1    | 3    | 4                   | 4    | HI     |      |
| W 36 x 16.5 x 260 260                                   | 718300   | 15600                             | 17630                                | 38.17                                  | 210.9                | 45280                              | 2156  | 3332                                 | 9.58                                   | 122.6                | 1734                 | 88370                             | 1  | 1                   | 1    | 2    | 4                   | 4    | HI     |      |
| W 36 x 16.5 x 280 280                                   | 787600   | 16970                             | 19210                                | 38.46                                  | 223.9                | 50070                              | 2373  | 3668                                 | 9.70                                   | 130.4                | 2200                 | 98540                             | 1  | 1                   | 1    | 2    | 4                   | 4    | HI     |      |
| W 36 x 16.5 x 300 300                                   | 846800   | 18150                             | 20600                                | 38.56                                  | 239.1                | 53980                              | 2552  | 3951                                 | 9.73                                   | 137.5                | 2685                 | 106740                            | 1  | 1                   | 1    | 2    | 3                   | 4    | HI     |      |
| W 36 x 16.5 x 328 328                                   | 935390   | 19860                             | 22615                                | 38.80                                  | 259.3                | 59010                              | 2797  | 4336                                 | 9.75                                   | 148.0                | 3514                 | 117890                            | 1  | 1                   | 1    | 1    | 2                   | 4    | HI     |      |
| W 36 x 16.5 x 359 359                                   | 1031000  | 21710                             | 24830                                | 38.94                                  | 284.8                | 65560                              | 3085  | 4796                                 | 9.82                                   | 158.7                | 4542                 | 132070                            | 1  | 1                   | 1    | 1    | 2                   | 3    | HI     |      |
| W 36 x 16.5 x 393 393                                   | 1143090  | 23814                             | 27363                                | 39.16                                  | 312.0                | 72770                              | 3408  | 5310                                 | 9.88                                   | 170.9                | 5932                 | 148220                            | 1  | 1                   | 1    | 1    | 1                   | 2    | HI     |      |
| W 36 x 16.5 x 439 439                                   | 1292000  | 26590                             | 30730                                | 39.41                                  | 348.7                | 83050                              | 3854  | 6022                                 | 9.99                                   | 186.6                | 8124                 | 171280                            | 1  | 1                   | 1    | 1    | 1                   | 1    | HI     |      |
| W 36 x 16.5 x 527 527                                   | 1593000  | 31980                             | 37340                                | 39.95                                  | 417.6                | 103300                             | 4728  | 7424                                 | 10.18                                  | 216.8                | 13730                | 218490                            | 1  | 1                   | -    | 1    | 1                   | -    |        |      |
| W 36 x 16.5 x 650 650                                   | 2033000  | 39540                             | 46810                                | 40.64                                  | 517.1                | 133900                             | 6003  | 9486                                 | 10.43                                  | 257.9                | 24930                | 292450                            | 1  | 1                   | -    | 1    | 1                   | -    |        |      |
| W 40 x 12 x 149 149                                     | 407700   | 8405                              | 9803                                 | 37.97                                  | 172.2                | 9546                               | 636   | 1020                                 | 5.81                                   | 93.35                | 406                  | 21370                             | 1  | 1                   | -    | 4    | 4                   | -    |        |      |
| W 40 x 12 x 167 167                                     | 481100   | 9818                              | 11350                                | 38.97                                  | 180.7                | 11750                              | 784   | 1245                                 | 6.09                                   | 103.6                | 584.4                | 26620                             | 1  | 1                   | 2    | 4    | 4                   | 4    | HI     |      |
| W 40 x 12 x 183 183                                     | 553800   | 11190                             | 12820                                | 39.96                                  | 184.6                | 14000                              | 934   | 1470                                 | 6.35                                   | 113.6                | 822.4                | 32070                             | 1  | 1                   | 2    | 4    | 4                   | 4    | HI     |      |
| W 40 x 12 x 211 211                                     | 644200   | 12880                             | 14850                                | 40.11                                  | 213.4                | 16230                              | 1082  | 1713                                 | 6.37                                   | 126.0                | 1252                 | 37540                             | 1  | 1                   | 1    | 4    | 4                   | 4    | HI     |      |
| W 40 x 12 x 235 235                                     | 723000   | 14350                             | 16590                                | 40.30                                  | 236.0                | 18460                              | 1223  | 1941                                 | 6.44                                   | 136.2                | 1707                 | 43020                             | 1  | 1                   | 1    | 3    | 4                   | 4    | HI     |      |
| W 40 x 12 x 264 264                                     | 807700   | 15900                             | 18540                                | 40.18                                  | 271.3                | 20500                              | 1353  | 2168                                 | 6.40                                   | 147.3                | 2332                 | 48080                             | 1  | 1                   | 1    | 2    | 4                   | 4    | HI     |      |
| W 40 x 12 x 278 278                                     | 853100   | 16728                             | 19571                                | 40.17                                  | 288.6                | 21710                              | 1428  | 2298                                 | 6.41                                   | 153.1                | 2713                 | 51080                             | 1  | 1                   | 1    | 2    | 3                   | 4    | HI     |      |
| W 40 x 12 x 331 331                                     | 1028000  | 19845                             | 23413                                | 40.42                                  | 344.5                | 26820                              | 1736  | 2818                                 | 6.53                                   | 174.1                | 4433                 | 64010                             | 1  | 1                   | 1    | 1    | 2                   | 3    | HI     |      |
| W 40 x 12 x 392 392                                     | 1246100  | 23600                             | 28039                                | 40.93                                  | 403.2                | 33430                              | 2130  | 3475                                 | 6.70                                   | 199.1                | 7230                 | 81240                             | 1  | 1                   | 1    | 1    | 1                   | 2    | HI     |      |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Poutrelles américaines à larges ailes

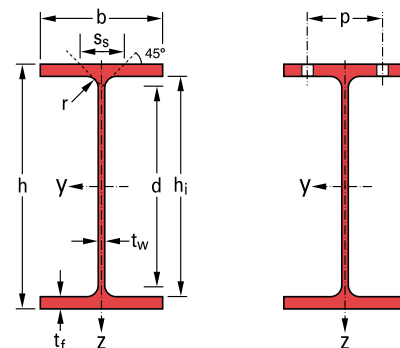
conformes à ASTM A6 / A6M - 98

## American wide flange beams

in accordance with ASTM A6 / A6M - 98

## Amerikanische Breitflanschträger

gemäß ASTM A6 / A6M - 98



| Désignation<br>Designation<br>Bezeichnung<br>(metric) | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m   | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| W 1000 x 400 x 296 <sup>+</sup> 296                   | 982                       | 400     | 16.5                 | 27.1                 | 30      | 376.8                | 928   | 868     | M27 | 134                    | 294                    | 3.48                                | 11.76                               |
| W 1000 x 400 x 321 <sup>+</sup> 321                   | 990                       | 400     | 16.5                 | 31.0                 | 30      | 408.8                | 928   | 868     | M27 | 134                    | 294                    | 3.50                                | 10.89                               |
| W 1000 x 400 x 371 <sup>+</sup> 371                   | 1000                      | 400     | 19.0                 | 36.1                 | 30      | 472.0                | 928   | 868     | M27 | 136                    | 294                    | 3.51                                | 9.47                                |
| W 1000 x 400 x 412 <sup>+</sup> 412                   | 1008                      | 402     | 21.1                 | 40.0                 | 30      | 524.2                | 928   | 868     | M27 | 140                    | 296                    | 3.53                                | 8.58                                |
| W 1000 x 400 x 443 <sup>+</sup> 443                   | 1012                      | 402     | 23.6                 | 41.9                 | 30      | 563.7                | 928.2   | 868.2   | M27 | 142                    | 296                    | 3.53                                | 7.99                                |
| W 1000 x 400 x 483 <sup>+</sup> 483                   | 1020                      | 404     | 25.4                 | 46.0                 | 30      | 615.1                | 928   | 868     | M27 | 144                    | 298                    | 3.55                                | 7.36                                |
| W 1000 x 400 x 539 <sup>+</sup> 539                   | 1030                      | 407     | 28.4                 | 51.1                 | 30      | 687.2                | 927.8   | 867.8   | M27 | 146                    | 302                    | 3.58                                | 6.64                                |
| W 1000 x 400 x 591 <sup>+</sup> 591                   | 1040                      | 409     | 31.0                 | 55.9                 | 30      | 752.7                | 928.2   | 868.2   | M27 | 148                    | 304                    | 3.60                                | 6.10                                |
| W 1000 x 400 x 642 <sup>+</sup> 642                   | 1048                      | 412     | 34.0                 | 60.0                 | 30      | 817.6                | 928   | 868     | M27 | 154                    | 300                    | 3.62                                | 5.65                                |
| W 1000 x 400 x 748 <sup>+</sup> 748                   | 1068                      | 417     | 39.0                 | 70.0                 | 30      | 953.4                | 928   | 868     | M27 | 160                    | 306                    | 3.67                                | 4.91                                |
| W 1000 x 400 x 883 <sup>+</sup> 883                   | 1092                      | 424     | 45.5                 | 82.0                 | 30      | 1125.3               | 928   | 868     | M27 | 166                    | 312                    | 3.74                                | 4.23                                |
| W 1100 x 400 x 343 <sup>+</sup> 343                   | 1090                      | 400     | 18.0                 | 31.0                 | 20      | 436.5                | 1028  | 988     | M27 | 116                    | 294                    | 3.71                                | 10.83                               |
| W 1100 x 400 x 390 <sup>+</sup> 390                   | 1100                      | 400     | 20.0                 | 36.0                 | 20      | 497.0                | 1028  | 988     | M27 | 118                    | 294                    | 3.73                                | 9.55                                |
| W 1100 x 400 x 433 <sup>+</sup> 433                   | 1108                      | 402     | 22.0                 | 40.0                 | 20      | 551.2                | 1028  | 988     | M27 | 120                    | 296                    | 3.75                                | 8.66                                |
| W 1100 x 400 x 499 <sup>+</sup> 499                   | 1118                      | 405     | 26.0                 | 45.0                 | 20      | 635.2                | 1028  | 988     | M27 | 124                    | 300                    | 3.77                                | 7.56                                |



+ Commande minimale: 40t par profilé et qualité ou suivant accord.

+ Minimum order: 40t per section and grade or upon agreement.

+ Mindestbestellmenge: 40t pro Profil und Güte oder nach Vereinbarung.



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung<br>(imperial) | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |  |                      |   |                                   |                                      |  |                      |                      |                                   | Classification<br>ENV 1993-1-1                       |       |       |                     |       |       | HISTAR |       |
|---|--|-----------------------------------|--------------------------------------|--|----------------------|---|-----------------------------------|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|-------|-------|---------------------|-------|-------|--------|-------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                   |                                      |  |                      | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                   |                                      |  |                      |                      |                                   | pure<br>bending y-y                                  |       |       | pure<br>compression |       |       |        |       |
|   | G<br>lbs/ft  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup>                    | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | S <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S 235 | S 355 | S 460               | S 235 | S 355 |        | S 460 |
| W 40 x 16 x 199   | 199  | 618700                            | 12600                                | 14220                                  | 40.52                | 181.5   | 28850                             | 1443                                 | 2235                                   | 8.75                 | 105.6                | 762.6                             | 65900  | 1     | 1     | 2                   | 4     | 4     | 4      | HI    |
| W 40 x 16 x 215   | 215  | 696400                            | 14070                                | 15800                                  | 41.27                | 184.6   | 33120                             | 1656                                 | 2555                                   | 9.00                 | 113.6                | 1021                              | 76030  | 1     | 1     | 2                   | 4     | 4     | 4      | HI    |
| W 40 x 16 x 249   | 249  | 812100                            | 16240                                | 18330                                  | 41.48                | 212.5   | 38480                             | 1924                                 | 2976                                   | 9.03                 | 126.1                | 1575                              | 89440  | 1     | 1     | 1                   | 4     | 4     | 4      | HI    |
| W 40 x 16 x 277   | 277  | 909800                            | 18050                                | 20440                                  | 41.66                | 235.0   | 43410                             | 2160                                 | 3348                                   | 9.10                 | 136.1                | 2134                              | 101460   | 1     | 1     | 1                   | 3     | 4     | 4      | HI    |
| W 40 x 16 x 297   | 297  | 966510                            | 19101                                | 21777                                  | 41.41                | 261.8   | 45500                             | 2264                                 | 3529                                   | 8.98                 | 142.5                | 2545                              | 106740   | 1     | 1     | 1                   | 2     | 4     | 4      | HI    |
| W 40 x 16 x 324   | 324  | 1067480                           | 20931                                | 23923                                  | 41.66                | 282.7   | 50710                             | 2510                                 | 3919                                   | 9.08                 | 152.5                | 3311                              | 119900   | 1     | 1     | 1                   | 2     | 4     | 4      | HI    |
| W 40 x 16 x 362   | 362  | 1202540                           | 23350                                | 26824                                  | 41.83                | 316.4   | 57630                             | 2832                                 | 4436                                   | 9.16                 | 165.7                | 4546                              | 137550   | 1     | 1     | 1                   | 1     | 2     | 4      | HI    |
| W 40 x 16 x 397   | 397  | 1331040                           | 25597                                | 29530                                  | 42.05                | 346.3   | 64010                             | 3130                                 | 4916                                   | 9.22                 | 177.9                | 5927                              | 154330   | 1     | 1     | 1                   | 1     | 2     | 3      | HI    |
| W 40 x 16 x 431   | 431  | 1450590                           | 27683                                | 32097                                  | 42.12                | 379.6   | 70280                             | 3412                                 | 5379                                   | 9.27                 | 189.1                | 7440                              | 170670   | 1     | 1     | 1                   | 1     | 1     | 2      | HI    |
| W 40 x 16 x 503   | 503  | 1731940                           | 32433                                | 37881                                  | 42.62                | 438.9   | 85110                             | 4082                                 | 6459                                   | 9.45                 | 214.1                | 11670                             | 210650   | 1     | 1     | 1                   | 1     | 1     | 1      | HI    |
| W 40 x 16 x 593   | 593  | 2096420                           | 38396                                | 45265                                  | 43.16                | 516.5   | 104970                            | 4952                                 | 7874                                   | 9.66                 | 244.6                | 18750                             | 265670   | 1     | 1     | -                   | 1     | 1     | -      |       |
| W 44 x 16 x 230   | 230  | 867400                            | 15920                                | 18060                                  | 44.58                | 206.5   | 33120                             | 1656                                 | 2568                                   | 8.71                 | 103.4                | 1037                              | 92710  | 1     | 1     | 2                   | 4     | 4     | 4      | HI    |
| W 44 x 16 x 262   | 262  | 1005000                           | 18280                                | 20780                                  | 44.98                | 230.6   | 38480                             | 1924                                 | 2988                                   | 8.80                 | 115.4                | 1564                              | 108680   | 1     | 1     | 1                   | 4     | 4     | 4      | HI    |
| W 44 x 16 x 290   | 290  | 1126000                           | 20320                                | 23160                                  | 45.19                | 254.4   | 43410                             | 2160                                 | 3362                                   | 8.87                 | 125.4                | 2130                              | 123500   | 1     | 1     | 1                   | 4     | 4     | 4      | HI    |
| W 44 x 16 x 335   | 335  | 1294000                           | 23150                                | 26600                                  | 45.14                | 300.4   | 49980                             | 2468                                 | 3870                                   | 8.87                 | 139.4                | 3135                              | 143410   | 1     | 1     | 1                   | 2     | 4     | 4      | HI    |

◆  $W_{pl}$ : Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

◆  $W_{pl}$ : For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

◆  $W_{pl}$ : Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.





## Poutrelles-pieux américaines à larges ailes\*

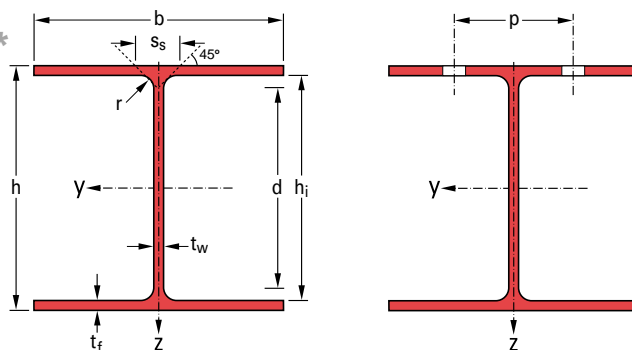
conformes à ASTM A6 / A6M - 98

## American wide flange bearing piles\*

in accordance with ASTM A6 / A6M - 98

## Amerikanische Breitflanshpfähle\*

gemäß ASTM A6 / A6M - 98



| Désignation<br>Designation<br>Bezeichnung<br>(metric) | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |       |
|---|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|-------|
| G<br>kg/m   | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | P <sub>min</sub><br>mm | P <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |       |
| HP 200 x 43 <sup>*</sup>                              | 42.5                      | 200     | 205                  | 9                    | 9       | 10                   | 54.14   | 182     | 162 | M24                    | 96                     | 112                                 | 1.18                                | 27.88 |
| HP 200 x 53   | 53.5                      | 204     | 207                  | 11.3                 | 11.3    | 10                   | 68.14   | 181     | 161 | M24                    | 98                     | 114                                 | 1.20                                | 22.36 |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |       |
| HP 250 x 62   | 62.7                      | 246     | 256                  | 10.5                 | 10.7    | 13                   | 79.82   | 225     | 199 | M27                    | 104                    | 150                                 | 1.47                                | 23.50 |
| HP 250 x 85   | 85.4                      | 254     | 260                  | 14.4                 | 14.4    | 13                   | 108.8   | 225     | 199 | M27                    | 108                    | 154                                 | 1.50                                | 17.53 |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |       |
| HP 310 x 79   | 78.3                      | 299     | 306                  | 11                   | 11      | 15                   | 99.72   | 277     | 247 | M27                    | 104                    | 200                                 | 1.77                                | 22.67 |
| HP 310 x 93   | 93.3                      | 303     | 308                  | 13.1                 | 13.1    | 15                   | 118.9   | 277     | 247 | M27                    | 106                    | 202                                 | 1.79                                | 19.14 |
| HP 310 x 110  | 110                       | 308     | 310                  | 15.4                 | 15.5    | 15                   | 140.7   | 277     | 247 | M27                    | 108                    | 204                                 | 1.80                                | 16.29 |
| HP 310 x 125  | 125                       | 312     | 312                  | 17.4                 | 17.4    | 15                   | 158.7   | 277     | 247 | M27                    | 110                    | 206                                 | 1.81                                | 14.54 |
| HP 310 x 132 <sup>*</sup>                             | 132                       | 314     | 313                  | 18.3                 | 18.3    | 15                   | 167.3   | 277     | 247 | M27                    | 112                    | 208                                 | 1.82                                | 13.84 |
|   |                           |         |                      |                      |         |                      |   |         |     |                        |                        |                                     |                                     |       |
| HP 360 x 108  | 108                       | 346     | 370                  | 12.8                 | 12.8    | 15                   | 137.7   | 320     | 290 | M27                    | 102                    | 264                                 | 2.12                                | 19.62 |
| HP 360 x 132  | 132                       | 351     | 373                  | 15.6                 | 15.6    | 15                   | 168.2   | 320     | 290 | M27                    | 104                    | 268                                 | 2.14                                | 16.19 |
| HP 360 x 152  | 152                       | 356     | 376                  | 17.9                 | 17.9    | 15                   | 193.9   | 320     | 290 | M27                    | 106                    | 270                                 | 2.15                                | 14.16 |
| HP 360 x 174  | 174                       | 361     | 378                  | 20.4                 | 20.4    | 15                   | 221.5   | 320     | 290 | M27                    | 110                    | 272                                 | 2.17                                | 12.47 |



\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

\* Profilé antérieur

\* Profilé canadien

\* Minimum tonnage and delivery conditions upon agreement.

\* Previous section

\* Canadian section

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.

\* Früheres Walzprofil

\* Kanadisches Walzprofil

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung<br>(imperial) |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | Classification<br>ENV 1993-1-1 |       |       |                     |       |       | HISTAR |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|-----------------------------------|--|-------|--------------------------------|-------|-------|---------------------|-------|-------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      |                                   |  |       | pure<br>bending y-y            |       |       | pure<br>compression |       |       |        |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | S 235                          | S 355 | S 460 | S 235               | S 355 | S 460 |        |
| G<br>lbs/ft   | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S 235 | S 355                          | S 460 | S 235 | S 355               | S 460 |       |        |
| HP 8 x 29   | 29                                | 3888   | 388.8                                  | 434.5                | 8.47                               | 19.85                             | 1294  | 126.2                                  | 193.4                | 4.89                 | 38.72                             | 17.68  | 117.9 | 3                              | 3     | -     | 3                   | 3     | -     |        |
| HP 8 x 36   | 36                                | 4977   | 488.0                                  | 551.3                | 8.55                               | 24.89                             | 1673  | 161.7                                  | 248.6                | 4.96                 | 45.62                             | 34.20  | 155.1 | 1                              | 3     | -     | 1                   | 3     | -     |        |
| HP 10 x 42  | 42                                | 8753   | 711.6                                  | 792.8                | 10.47                              | 28.94                             | 2995  | 234.0                                  | 358.0                | 6.13                 | 47.13                             | 37.02  | 414.1 | 3                              | 3     | -     | 3                   | 3     | -     |        |
| HP 10 x 57  | 57                                | 12305  | 968.9                                  | 1096                 | 10.64                              | 39.70                             | 4225  | 325.0                                  | 499.9                | 6.23                 | 58.43                             | 89.32  | 605.4 | 1                              | 3     | -     | 1                   | 3     | -     |        |
| HP 12 x 53  | 53                                | 16270  | 1088                                   | 1207                 | 12.77                              | 36.91                             | 5258  | 343.6                                  | 525.1                | 7.26                 | 50.57                             | 50.30  | 1089  | 3                              | 4     | -     | 3                   | 4     | -     |        |
| HP 12 x 63  | 63                                | 19630  | 1296                                   | 1447                 | 12.85                              | 43.84                             | 6387  | 414.7                                  | 635.1                | 7.33                 | 56.87                             | 82.53  | 1340  | 3                              | 3     | -     | 3                   | 3     | -     |        |
| HP 12 x 74  | 74                                | 23660  | 1536                                   | 1727                 | 12.97                              | 51.63                             | 7707  | 497.2                                  | 763.3                | 7.40                 | 63.97                             | 133.1  | 1646  | 1                              | 3     | 3     | 1                   | 3     | 3     |        |
| HP 12 x 84  | 84                                | 27030  | 1733                                   | 1960                 | 13.05                              | 58.41                             | 8823  | 565.6                                  | 870.2                | 7.46                 | 69.77                             | 188.2  | 1911  | 1                              | 3     | 3     | 1                   | 3     | 3     |        |
| HP 12 x 89  | 89                                | 28680  | 1827                                   | 2072                 | 13.10                              | 61.53                             | 9370  | 598.7                                  | 922.1                | 7.48                 | 72.47                             | 218.5  | 2044  | 1                              | 2     | 3     | 1                   | 2     | 3     |        |
| HP 14 x 73  | 73                                | 30290  | 1751                                   | 1937                 | 14.83                              | 48.42                             | 10810   | 584.5                                  | 891.2                | 8.86                 | 55.97                             | 88.99  | 2999  | 3                              | 4     | -     | 3                   | 4     | -     |        |
| HP 14 x 89  | 89                                | 37480  | 2135                                   | 2381                 | 14.93                              | 58.93                             | 13510   | 724.2                                  | 1107                 | 8.96                 | 64.37                             | 158  | 3795  | 3                              | 3     | 4     | 3                   | 3     | 4     |        |
| HP 14 x 102   | 102                               | 43880  | 2465                                   | 2765                 | 15.04                              | 67.82                             | 15880   | 844.5                                  | 1293                 | 9.05                 | 71.27                             | 237.1  | 4532  | 2                              | 3     | 3     | 2                   | 3     | 3     |        |
| HP 14 x 117   | 117                               | 50840  | 2816                                   | 3180                 | 15.15                              | 77.53                             | 18390   | 973.0                                  | 1493                 | 9.11                 | 78.77                             | 349.1  | 5326  | 1                              | 3     | 3     | 1                   | 3     | 3     |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.

## Fers U normaux américains\*

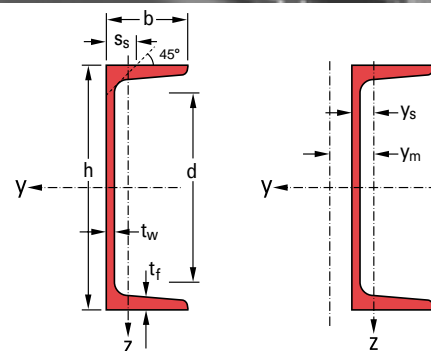
conformes à ASTM A6 / A6M - 98 – inclinaison des ailes: environ 16 2/3 %

## American standard channels\*

in accordance with ASTM A6 / A6M - 98 – flange slope: approx. 16 2/3 %

## Amerikanische U-Stahl-Normalprofile\*

gemäß ASTM A6 / A6M - 98 – Flanschneigung: ca. 16 2/3 %



| Désignation<br>Designation<br>Bezeichnung<br>(metric) |      | Dimensions<br>Abmessungen |         |                      |                      |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße | Surface<br>Oberfläche               |                                     |
|---|------|---------------------------|---------|----------------------|----------------------|----------------------|---|-------------------------------------|-------------------------------------|
| G<br>kg/m   |      | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | A<br>cm <sup>2</sup> | d<br>mm   | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| C 200 x 17.1  | 17.1 | 203                       | 57      | 5.6                  | 9.9                  | 21.7                 | 156   | 0.564                               | 33.22                               |
| C 200 x 20.5  | 20.5 | 203                       | 59      | 7.7                  | 9.9                  | 26.0                 | 156   | 0.577                               | 28.82                               |
| C 200 x 27.9  | 27.9 | 203                       | 64      | 12.4                 | 9.9                  | 35.6                 | 156   | 0.584                               | 21.41                               |
|   |      |                           |         |                      |                      |                      |   |                                     |                                     |
| C 250 x 22.8  | 22.8 | 254                       | 65      | 6.1                  | 11.1                 | 28.8                 | 203   | 0.692                               | 30.85                               |
| C 250 x 30  | 30.0 | 254                       | 69      | 9.6                  | 11.1                 | 37.8                 | 203   | 0.701                               | 23.98                               |
| C 250 x 37  | 37.0 | 254                       | 73      | 13.4                 | 11.1                 | 45.5                 | 203   | 0.713                               | 19.52                               |
| C 250 x 45  | 45.0 | 254                       | 76      | 17.1                 | 11.1                 | 56.7                 | 203   | 0.721                               | 16.58                               |
|   |      |                           |         |                      |                      |                      |   |                                     |                                     |
| C 310 x 30.8  | 30.8 | 305                       | 74      | 7.2                  | 12.7                 | 39.2                 | 248   | 0.825                               | 26.60                               |
| C 310 x 37  | 37.0 | 305                       | 77      | 9.8                  | 12.7                 | 47.2                 | 248   | 0.841                               | 22.71                               |
| C 310 x 45  | 45.0 | 305                       | 80      | 13                   | 12.7                 | 56.9                 | 248   | 0.824                               | 18.27                               |
|   |      |                           |         |                      |                      |                      |   |                                     |                                     |
| C 380 x 50.4  | 50.4 | 381                       | 86      | 10.2                 | 16.5                 | 64.3                 | 308   | 1.048                               | 20.96                               |
| C 380 x 60  | 60.0 | 381                       | 89      | 13.2                 | 16.5                 | 75.7                 | 308   | 1.037                               | 17.55                               |
| C 380 x 74  | 74.0 | 381                       | 94      | 18.2                 | 16.5                 | 94.8                 | 308   | 1.040                               | 14.05                               |



\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

\* Minimum tonnage and delivery conditions upon agreement.

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.



Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung<br>(imperial) | Valeurs statiques / Section properties / Statische Kennwerte |                                   |                                      |  |                      |                                    |   |                                      |  |                      |                      |                                   |  |                      |                      | Classification<br>ENV 1993-1-1 |        |                     |        |
|---|--|-----------------------------------|--------------------------------------|--|----------------------|------------------------------------|---|--------------------------------------|--|----------------------|----------------------|-----------------------------------|--|----------------------|----------------------|--------------------------------|--------|---------------------|--------|
|   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |                                   |                                      |  |                      |                                    | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                                      |  |                      |                      |                                   |  |                      |                      | pure<br>bending y-y            |        | pure<br>compression |        |
|   | G<br>lbs/ft  | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup> | W <sub>pl,y</sub> ■<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup>                     | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> '<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | y <sub>s</sub><br>cm | y <sub>m</sub><br>cm | \$ 235                         | \$ 355 | \$ 235              | \$ 355 |
| C 8 x 11.5  | 11.50  | 1340                              | 132                                  | 156                                    | 7.86                 | 13.23                              | 53.8  | 12.6                                 | 27.6                                   | 1.57                 | 29.3                 | 5.86                              | 3.79   | 1.44                 | 3.19                 | 1                              | 1      | 1                   | 2      |
| C 8 x 13.75   | 13.75  | 1490                              | 147                                  | 177                                    | 7.57                 | 16.66                              | 62  | 13.7                                 | 30                                     | 1.54                 | 27.5                 | 7.60                              | 4.50   | 1.39                 | 2.90                 | 1                              | 1      | 1                   | 1      |
| C 8 x 18.75   | 18.75  | 1820                              | 179                                  | 226                                    | 7.15                 | 26.00                              | 81.7  | 16.4                                 | 35.9                                   | 1.51                 | 30.6                 | 17.87                             | 6.00   | 1.43                 | 2.51                 | 1                              | 1      | 1                   | 1      |
| C 10 x 15.3   | 15.30  | 2770                              | 218                                  | 257                                    | 9.81                 | 17.62                              | 91.2  | 18.5                                 | 40.3                                   | 1.78                 | 32.0                 | 9.15                              | 10.40  | 1.58                 | 3.55                 | 1                              | 1      | 2                   | 3      |
| C 10 x 20   | 20.00  | 3260                              | 257                                  | 315                                    | 9.29                 | 26.13                              | 114   | 21.2                                 | 46.5                                   | 1.74                 | 33.6                 | 15.69                             | 13.09  | 1.53                 | 3.13                 | 1                              | 1      | 1                   | 1      |
| C 10 x 25   | 25.00  | 3790                              | 298                                  | 377                                    | 8.93                 | 35.17                              | 138   | 24                                   | 52.6                                   | 1.7                  | 34.4                 | 28.58                             | 16.17  | 1.56                 | 2.80                 | 1                              | 1      | 1                   | 1      |
| C 10 x 30   | 30.00  | 4270                              | 336                                  | 434                                    | 8.68                 | 44.02                              | 158   | 26.5                                 | 57.4                                   | 1.67                 | 35.2                 | 48.84                             | 19.53  | 1.63                 | 2.53                 | 1                              | 1      | 1                   | 1      |
| C 12 x 20.7   | 20.70  | 5340                              | 350                                  | 415                                    | 11.7                 | 24.46                              | 157   | 27.7                                 | 60.2                                   | 2                    | 35.1                 | 16.03                             | 24.81  | 1.74                 | 3.91                 | 1                              | 1      | 2                   | 4      |
| C 12 x 25   | 25.00  | 5970                              | 391                                  | 477                                    | 11.2                 | 31.26                              | 183   | 30.5                                 | 66                                     | 1.97                 | 33.5                 | 21.91                             | 29.49  | 1.70                 | 3.58                 | 1                              | 1      | 1                   | 1      |
| C 12 x 30   | 30.00  | 6720                              | 441                                  | 551                                    | 10.9                 | 42.54                              | 209   | 33.2                                 | 72.1                                   | 1.92                 | 41.8                 | 39.19                             | 34.40  | 1.70                 | 3.24                 | 1                              | 1      | 1                   | 1      |
| C 15 x 33.9   | 33.90  | 13100                             | 688                                  | 825                                    | 14.3                 | 38.72                              | 334   | 50.5                                 | 107                                    | 2.28                 | 32.1                 | 38.26                             | 83.39  | 1.99                 | 4.24                 | 1                              | 1      | 1                   | 2      |
| C 15 x 40   | 40.00  | 14400                             | 756                                  | 934                                    | 13.8                 | 50.93                              | 379   | 54.7                                 | 115                                    | 2.24                 | 38.3                 | 57.31                             | 96.44  | 1.97                 | 3.90                 | 1                              | 1      | 1                   | 1      |
| C 15 x 50   | 50.00  | 16700                             | 877                                  | 1120                                   | 13.3                 | 69.70                              | 454   | 61.5                                 | 130                                    | 2.19                 | 42.7                 | 107.7                             | 118.2  | 2.02                 | 3.48                 | 1                              | 1      | 1                   | 1      |

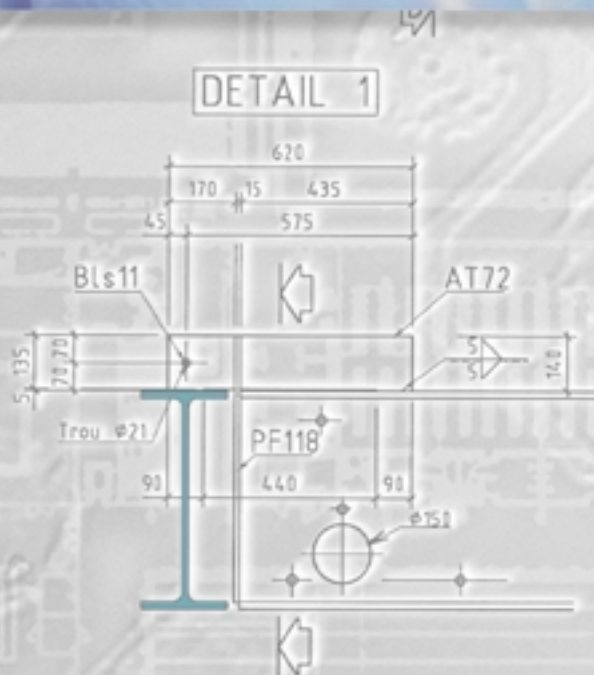
■  $W_{pl,y}$  est calculé selon l'hypothèse d'un diagramme de contraintes bi-rectangulaire et n'est applicable que si deux ou plusieurs fers U sont associés de façon à constituer une section doublement symétrique pour laquelle un moment de flexion agissant dans le plan du centre de gravité n'engendre pas de torsion.

■  $W_{pl,y}$  is determined assuming a bi-rectangular stress block distribution. Thus, the given value applies only if two or more U shapes are combined in such a way to form a doubly symmetric cross-section so that the bending moment acting in the plane of the gravity centre will not lead to torsion.

■ Für die Berechnung von  $W_{pl,y}$  wurde eine doppel-rechteckige Spannungsverteilung angenommen. Der angegebene Wert ist daher nur anwendbar, wenn zwei oder mehr U-Profile so miteinander kombiniert sind, dass sie einen doppelsymmetrischen Querschnitt bilden, womit ein Biegemoment, das in der Schwerpunktebene angreift, keine Torsion hervorruft.



# A customer-oriented strategy



**ISO 9001**





## Une stratégie orientée vers le client

Le service **Assistance Technique d'EUROPROFIL**, en étroite collaboration avec ProfilARBED Recherches, les universités et les centres techniques de recherches européens, **est à votre entière disposition** pour vous aider à **optimiser vos projets** et vous apporter des solutions innovantes. Attentif à vos besoins, **il met à votre disposition** des **logiciels**, des **documentations appropriées** et **l'expérience d'une équipe** internationale d'ingénieurs et de commerçants.

A l'avant-garde **du e-business**, ProfilARBED développe une stratégie axée sur **la satisfaction des besoins de ses clients** en terme de saisie de commande, de délais de livraison, de traçabilité et de prix.

**Des plates-formes communes** entre plusieurs producteurs sont en phase de développement dans le domaine des achats, de la vente et de la logistique.

## A customer-oriented strategy

The **EUROPROFIL Technical Assistance team**, working closely with ProfilARBED Research and European research centres and universities, **is entirely at your service** to help you in any way with **projects** and provide you with innovative solutions. Always attentive to your needs, our **experienced international team** of engineers and sales professionals will ensure that you will be provided with the relevant **software** and **documents required**.

At the forefront of **e-business**, ProfilARBED is developing a strategy based on **meeting our customers' requirements** in terms of order-taking, delivery schedules, traceability and price.

**Joint web sites** incorporating different producers are currently in the development phase in the area of purchasing, sales and logistics.

## Eine kundenorientierte Strategie

Die Ingenieure der Technischen Beratung von **EUROPROFIL** arbeiten eng mit der Forschungsabteilung der ProfilARBED sowie den europäischen Forschungszentren und Universitäten zusammen und **stehen jederzeit zu Ihrer Verfügung**, um bei der **Optimierung Ihrer Projekte** behilflich zu sein und um innovative Lösungen vorzuschlagen. Ganz auf Ihren Bedarf ausgerichtet, **stellen sie Ihnen Ihre Fachkompetenz, Softwareprogramme** und die passenden **Unterlagen bereit**. Dadurch ist Ihnen die Möglichkeit gegeben, die **Erfahrung eines internationalen Teams** von Ingenieuren und Kaufleuten zu nutzen.

Im Hinblick auf zukünftige **E-Business**-Aktivitäten entwickelt ProfilARBED derzeit eine Strategie, die **den Bedürfnissen der Kunden** hinsichtlich Bestellaufnahme, Lieferfristen, Rückverfolgbarkeit und Preisgestaltung noch besser nachkommt.

Für die Bereiche Einkauf, Verkauf und Logistik sind **gemeinsame Websites** mehrerer Hersteller im Aufbau.



## Sections H japonaises\*

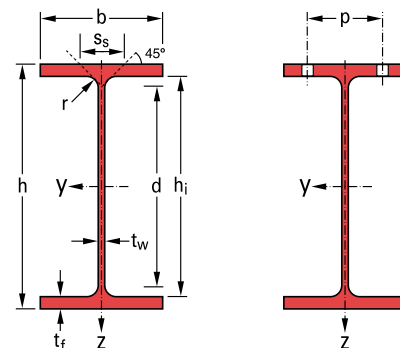
conformes à JIS G 3192 (1994)

## Japanese H sections\*

in accordance with JIS G 3192 (1994)

## Japanische H-Profil\*

gemäß JIS G 3192 (1994)



| Désignation<br>Designation<br>Bezeichnung | Dimensions<br>Abmessungen |         |                      |                      |         |          | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche  |                        |
|---|---------------------------|---------|----------------------|----------------------|---------|----------|---|---------|-----|------------------------|------------------------|------------------------|------------------------|
| G<br>kg/m                                 | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm² | h <sub>i</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m²/m | A <sub>G</sub><br>m²/t |
| H 100 x 100 x 6 x 8 16.9                  | 100                       | 100     | 6                    | 8                    | 8       | 21.59    | 84  | 68      | M10 | 52                     | 56                     | 0.574                  | 33.88                  |
| H 125 x 125 x 6.5 x 9 23.6                | 125                       | 125     | 6.5                  | 9                    | 8       | 30.00    | 107   | 91      | M16 | 56                     | 62                     | 0.723                  | 30.71                  |
| H 150 x 75 x 5 x 7 14.0                   | 150                       | 75      | 5                    | 7                    | 8       | 17.85    | 136   | 120     | -   | -                      | -                      | 0.576                  | 41.13                  |
| H 150 x 150 x 7 x 10 31.1                 | 150                       | 150     | 7                    | 10                   | 8       | 39.65    | 130   | 114     | M20 | 72                     | 76                     | 0.872                  | 28.02                  |
| H 175 x 175 x 7.5 x 11 40.4               | 175                       | 175     | 7.5                  | 11                   | 13      | 51.43    | 153   | 127     | M24 | 82                     | 88                     | 1.013                  | 25.09                  |
| H 200 x 100 x 4.5 x 7 17.8                | 198                       | 99      | 4.5                  | 7                    | 8       | 22.69    | 184   | 168     | M10 | 54                     | 56                     | 0.769                  | 43.19                  |
| H 200 x 100 x 5.5 x 8 20.9                | 200                       | 100     | 5.5                  | 8                    | 8       | 26.67    | 184   | 168     | M10 | 54                     | 56                     | 0.775                  | 37.03                  |
| H 200 x 200 x 8 x 12 49.9                 | 200                       | 200     | 8                    | 12                   | 13      | 63.53    | 176   | 150     | M27 | 92                     | 102                    | 1.162                  | 23.29                  |
| H 200 x 200 x 12 x 12▯ 56.2               | 200                       | 204     | 12                   | 12                   | 13      | 71.53    | 176   | 150     | M27 | 98                     | 104                    | 1.170                  | 20.83                  |
| H 250 x 125 x 5 x 8 25.1                  | 248                       | 124     | 5                    | 8                    | 8       | 31.99    | 232   | 216     | M12 | 58                     | 74                     | 0.968                  | 38.56                  |
| H 250 x 125 x 6 x 9 29.0                  | 250                       | 125     | 6                    | 9                    | 8       | 36.97    | 232   | 216     | M12 | 58                     | 74                     | 0.974                  | 33.57                  |
| H 250 x 250 x 11 x 11▯ 63.8               | 244                       | 252     | 11                   | 11                   | 13      | 81.31    | 222   | 196     | M27 | 102                    | 152                    | 1.452                  | 22.74                  |
| H 250 x 250 x 9 x 14 71.8                 | 250                       | 250     | 9                    | 14                   | 13      | 91.43    | 222   | 196     | M27 | 100                    | 150                    | 1.460                  | 20.34                  |
| H 250 x 250 x 14 x 14▯ 81.6               | 250                       | 255     | 14                   | 14                   | 13      | 103.9    | 222   | 196     | M27 | 106                    | 154                    | 1.470                  | 18.01                  |
| H 300 x 150 x 5.5 x 8 32.0                | 298                       | 149     | 5.5                  | 8                    | 13      | 40.80    | 282   | 256     | M16 | 76                     | 86                     | 1.159                  | 36.18                  |
| H 300 x 150 x 6.5 x 9 36.7                | 300                       | 150     | 6.5                  | 9                    | 13      | 46.78    | 282   | 256     | M16 | 76                     | 88                     | 1.165                  | 31.72                  |
| H 300 x 300 x 12 x 12▯ 83.5               | 294                       | 302     | 12                   | 12                   | 13      | 106.3    | 270   | 244     | M27 | 104                    | 202                    | 1.750                  | 20.96                  |
| H 300 x 300 x 10 x 15▯ 93.0               | 300                       | 300     | 10                   | 15                   | 13      | 118.4    | 270   | 244     | M27 | 102                    | 200                    | 1.758                  | 18.90                  |
| H 300 x 300 x 15 x 15▯ 104.8              | 300                       | 305     | 15                   | 15                   | 13      | 133.4    | 270   | 244     | M27 | 106                    | 204                    | 1.768                  | 16.87                  |
| H 350 x 175 x 6 x 9 41.2                  | 346                       | 174     | 6                    | 9                    | 13      | 52.5     | 328   | 302     | M22 | 90                     | 92                     | 1.354                  | 32.88                  |
| H 350 x 175 x 7 x 11 49.4                 | 350                       | 175     | 7                    | 11                   | 13      | 62.9     | 328   | 302     | M22 | 92                     | 92                     | 1.364                  | 27.61                  |
| H 350 x 350 x 13 x 13▯ 104.6              | 338                       | 351     | 13                   | 13                   | 13      | 133.3    | 312   | 286     | M27 | 110                    | 248                    | 2.032                  | 19.42                  |
| H 350 x 350 x 10 x 16 113.0               | 344                       | 348     | 10                   | 16                   | 13      | 144.0    | 312   | 286     | M27 | 106                    | 248                    | 2.038                  | 18.02                  |
| H 350 x 350 x 16 x 16▯ 129.3              | 344                       | 354     | 16                   | 16                   | 13      | 164.6    | 312   | 286     | M27 | 112                    | 252                    | 2.050                  | 15.86                  |
| H 350 x 350 x 12 x 19▯ 134.9              | 350                       | 350     | 12                   | 19                   | 13      | 171.9    | 312   | 286     | M27 | 108                    | 248                    | 2.054                  | 15.22                  |
| H 350 x 350 x 19 x 19▯ 154.2              | 350                       | 357     | 19                   | 19                   | 13      | 196.4    | 312   | 286     | M27 | 116                    | 254                    | 2.068                  | 13.41                  |



□ Profilé conforme à JIS A 5526 (1994)

\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

□ Section in accordance with JIS A 5526 (1994)

\* Minimum tonnage and delivery conditions upon agreement.

□ Profil gemäß JIS A 5526 (1994)

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.



# HJ

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |                                      |   |                      |                      |                                   |  |       | Classification<br>ENV 1993-1-1 |                  |      |      |      |   | HISTAR |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|--------------------------------------|---|----------------------|----------------------|-----------------------------------|--|-------|--------------------------------|------------------|------|------|------|---|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   |                                      | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |                      |                      |                                   |  |       |                                |                  |      |      |      |   |        |
|   |                                   |  |  |                      |                                    |                                   |                                      |   |                      |                      |                                   | pure bending y-y                                     |       |                                | pure compression |      |      |      |   |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup> | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup>                | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235  | S355                           | S460             | S235 | S355 | S460 |   |        |
| H 100 x 100 x 6 x 8                       | 16.9                              | 377.9  | 75.59                                  | 86.39                | 4.18                               | 7.35                              | 133.6                                | 26.72   | 41.02                | 2.49                 | 31.37                             | 4.91   | 2.82  | 1                              | 1                | -    | 1    | 1    | - |        |
| H 125 x 125 x 6.5 x 9                     | 23.6                              | 839.5  | 134.3                                  | 151.9                | 5.29                               | 9.53                              | 293.4                                | 46.94   | 71.72                | 3.13                 | 33.87                             | 8.1  | 9.86  | 1                              | 1                | -    | 1    | 1    | - |        |
| H 150 x 75 x 5 x 7                        | 14.0                              | 666.1  | 88.8                                   | 101.8                | 6.11                               | 8.82                              | 49.47                                | 13.19   | 20.77                | 1.66                 | 28.37                             | 2.9  | 2.52  | 1                              | 1                | -    | 1    | 1    | - |        |
| H 150 x 150 x 7 x 10                      | 31.1                              | 1623   | 216.3                                  | 243.0                | 6.40                               | 11.95                             | 563.0                                | 75.07   | 114.4                | 3.77                 | 36.37                             | 12.7   | 27.56 | 1                              | 1                | -    | 1    | 1    | - |        |
| H 175 x 175 x 7.5 x 11                    | 40.4                              | 2895   | 330.9                                  | 370.3                | 7.50                               | 16.61                             | 983.8                                | 112.4   | 171.6                | 4.37                 | 44.73                             | 21.34  | 66.07 | 1                              | 1                | -    | 1    | 1    | - |        |
| H 200 x 100 x 4.5 x 7                     | 17.8                              | 1543   | 155.9                                  | 175.4                | 8.25                               | 10.26                             | 113.4                                | 22.92   | 35.46                | 2.24                 | 27.87                             | 3.32   | 10.32 | 1                              | 1                | -    | 2    | 4    | - |        |
| H 200 x 100 x 5.5 x 8                     | 20.9                              | 1806   | 180.6                                  | 205.1                | 8.23                               | 12.39                             | 133.7                                | 26.74   | 41.64                | 2.24                 | 30.87                             | 5.17   | 12.29 | 1                              | 1                | -    | 1    | 2    | - |        |
| H 200 x 200 x 8 x 12                      | 49.9                              | 4716   | 471.6                                  | 525.5                | 8.62                               | 19.61                             | 1602                                 | 160.2   | 243.8                | 5.02                 | 47.23                             | 30.16  | 141.4 | 1                              | 2                | -    | 1    | 2    | - |        |
| H 200 x 200 x 12 x 12                     | 56.2                              | 4982   | 498.2                                  | 565.5                | 8.35                               | 27.13                             | 1702                                 | 166.8   | 257.3                | 4.88                 | 51.23                             | 43.59  | 150   | 1                              | 2                | -    | 1    | 2    | - |        |
| H 250 x 125 x 5 x 8                       | 25.1                              | 3450   | 278.2                                  | 311.6                | 10.38                              | 13.83                             | 254.6                                | 41.06   | 63.19                | 2.82                 | 30.37                             | 5.8  | 36.61 | 1                              | 1                | -    | 4    | 4    | - |        |
| H 250 x 125 x 6 x 9                       | 29.0                              | 3965   | 317.2                                  | 358.1                | 10.36                              | 16.45                             | 293.5                                | 46.96   | 72.66                | 2.82                 | 33.37                             | 8.61   | 42.54 | 1                              | 1                | -    | 2    | 4    | - |        |
| H 250 x 250 x 11 x 11                     | 63.8                              | 8703   | 713.3                                  | 797.1                | 10.35                              | 29.94                             | 2937                                 | 233.1   | 357.2                | 6.01                 | 48.23                             | 40.45  | 398.2 | 3                              | 3                | -    | 3    | 3    | - |        |
| H 250 x 250 x 9 x 14                      | 71.8                              | 10750  | 859.9                                  | 952.6                | 10.84                              | 26.33                             | 3648                                 | 291.8   | 443.1                | 6.32                 | 52.23                             | 56.24  | 507.6 | 1                              | 2                | -    | 1    | 2    | - |        |
| H 250 x 250 x 14 x 14                     | 81.6                              | 11400  | 912.0                                  | 1031                 | 10.47                              | 38.13                             | 3876                                 | 304.0   | 467.5                | 6.11                 | 57.23                             | 81.12  | 538.7 | 1                              | 3                | -    | 1    | 3    | - |        |
| H 300 x 150 x 5.5 x 8                     | 32.0                              | 6318   | 424.0                                  | 475.1                | 12.44                              | 19.48                             | 442.0                                | 59.33   | 91.76                | 3.29                 | 36.73                             | 8.79   | 92.73 | 1                              | 3                | -    | 4    | 4    | - |        |
| H 300 x 150 x 6.5 x 9                     | 36.7                              | 7209   | 480.6                                  | 542.1                | 12.41                              | 22.71                             | 507.5                                | 67.67   | 105.1                | 3.29                 | 39.73                             | 12.73  | 107.2 | 1                              | 2                | -    | 3    | 4    | - |        |
| H 300 x 300 x 12 x 12                     | 83.5                              | 16640  | 1132                                   | 1260                 | 12.51                              | 38.41                             | 5514                                 | 365.2   | 558.2                | 7.20                 | 51.23                             | 60.3   | 1095  | 3                              | 4                | -    | 3    | 4    | - |        |
| H 300 x 300 x 10 x 15                     | 93.0                              | 20190  | 1346                                   | 1484                 | 13.05                              | 33.85                             | 6753                                 | 450.2   | 682.9                | 7.55                 | 55.23                             | 82.87  | 1371  | 1                              | 3                | -    | 1    | 3    | - |        |
| H 300 x 300 x 15 x 15                     | 104.8                             | 21310  | 1421                                   | 1596                 | 12.64                              | 48.10                             | 7102                                 | 465.7   | 714.4                | 7.30                 | 60.23                             | 115.7  | 1440  | 2                              | 3                | -    | 2    | 3    | - |        |
| H 350 x 175 x 6 x 9                       | 41.2                              | 11040  | 638                                    | 712                  | 14.51                              | 24.01                             | 791                                  | 91.0  | 140.1                | 3.88                 | 39.23                             | 13.28  | 224.4 | 1                              | 3                | -    | 4    | 4    | - |        |
| H 350 x 175 x 7 x 11                      | 49.4                              | 13500  | 771                                    | 864                  | 14.65                              | 28.04                             | 984                                  | 112.5   | 173.4                | 3.96                 | 44.23                             | 22.47  | 282.3 | 1                              | 1                | -    | 4    | 4    | - |        |
| H 350 x 350 x 13 x 13                     | 104.6                             | 27740  | 1642                                   | 1822                 | 14.43                              | 47.08                             | 9377                                 | 534.3   | 815.4                | 8.39                 | 54.23                             | 86.18  | 2474  | 3                              | 4                | -    | 3    | 4    | - |        |
| H 350 x 350 x 10 x 16                     | 113.0                             | 32850  | 1910                                   | 2092                 | 15.10                              | 38.41                             | 11240                                | 646.1   | 977.8                | 8.84                 | 57.23                             | 111.6  | 3023  | 2                              | 3                | -    | 2    | 3    | - |        |
| H 350 x 350 x 16 x 16                     | 129.3                             | 34880  | 2028                                   | 2269                 | 14.56                              | 58.09                             | 11840                                | 669.1   | 1024                 | 8.48                 | 63.23                             | 158.8  | 3182  | 3                              | 3                | -    | 3    | 3    | - |        |
| H 350 x 350 x 12 x 19                     | 134.9                             | 39850  | 2277                                   | 2515                 | 15.23                              | 46.11                             | 13580                                | 776.2   | 1176                 | 8.89                 | 65.23                             | 186.9  | 3719  | 1                              | 3                | -    | 1    | 3    | - |        |
| H 350 x 350 x 19 x 19                     | 154.2                             | 42350  | 2420                                   | 2730                 | 14.68                              | 69.28                             | 14430                                | 808.3   | 1241                 | 8.57                 | 72.23                             | 264.8  | 3946  | 1                              | 3                | -    | 1    | 3    | - |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



## Sections H japonaises\*

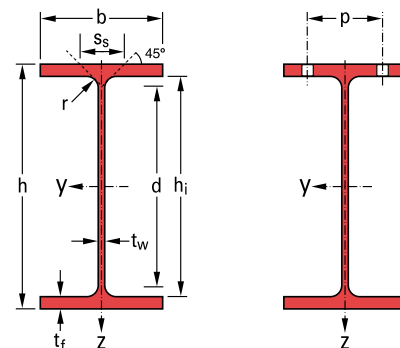
conformes à JIS G 3192 (1994)

## Japanese H sections\*

in accordance with JIS G 3192 (1994)

## Japanische H-Profil\*

gemäß JIS G 3192 (1994)



| Désignation<br>Designation<br>Bezeichnung |       | Dimensions<br>Abmessungen |         |                      |                      |         |                      | Dimensions de construction<br>Dimensions for detailing<br>Konstruktionsmaße |         |     |                        |                        | Surface<br>Oberfläche               |                                     |
|---|-------|---------------------------|---------|----------------------|----------------------|---------|----------------------|---|---------|-----|------------------------|------------------------|-------------------------------------|-------------------------------------|
| G<br>kg/m                                 |       | h<br>mm                   | b<br>mm | t <sub>w</sub><br>mm | t <sub>f</sub><br>mm | r<br>mm | A<br>cm <sup>2</sup> | h <sub>i</sub><br>mm  | d<br>mm | Ø   | p <sub>min</sub><br>mm | p <sub>max</sub><br>mm | A <sub>L</sub><br>m <sup>2</sup> /m | A <sub>G</sub><br>m <sup>2</sup> /t |
| H 400 x 300 x 10 x 16                     | 104.6 | 390                       | 300     | 10                   | 16                   | 13      | 133.2                | 358   | 332     | M27 | 110                    | 200                    | 1.938                               | 18.52                               |
| H 400 x 400 x 15 x 15 <sup>□</sup>        | 140.1 | 388                       | 402     | 15                   | 15                   | 22      | 178.4                | 358   | 314     | M27 | 116                    | 300                    | 2.316                               | 16.53                               |
| H 400 x 400 x 11 x 18                     | 146.6 | 394                       | 398     | 11                   | 18                   | 22      | 186.8                | 358   | 314     | M27 | 110                    | 298                    | 2.320                               | 15.82                               |
| H 400 x 400 x 18 x 18 <sup>□</sup>        | 168.3 | 394                       | 405     | 18                   | 18                   | 22      | 214.4                | 358   | 314     | M27 | 118                    | 302                    | 2.334                               | 13.87                               |
| H 400 x 400 x 13 x 21 <sup>□</sup>        | 171.7 | 400                       | 400     | 13                   | 21                   | 22      | 218.7                | 358   | 314     | M27 | 114                    | 298                    | 2.336                               | 13.61                               |
| H 400 x 400 x 21 x 21 <sup>□</sup>        | 196.8 | 400                       | 408     | 21                   | 21                   | 22      | 250.7                | 358   | 314     | M27 | 122                    | 306                    | 2.352                               | 11.95                               |
| H 400 x 400 x 18 x 28 <sup>□</sup>        | 231.9 | 414                       | 405     | 18                   | 28                   | 22      | 295.4                | 358   | 314     | M27 | 118                    | 302                    | 2.374                               | 10.24                               |
| H 400 x 400 x 20 x 35 <sup>□</sup>        | 283.1 | 428                       | 407     | 20                   | 35                   | 22      | 360.6                | 358   | 314     | M27 | 120                    | 304                    | 2.406                               | 8.50                                |
| H 400 x 400 x 30 x 50                     | 414.9 | 458                       | 417     | 30                   | 50                   | 22      | 528.5                | 358   | 314     | M27 | 130                    | 316                    | 2.486                               | 5.99                                |
| H 500 x 200 x 9 x 14                      | 77.9  | 496                       | 199     | 9                    | 14                   | 13      | 99.29                | 468   | 442     | M24 | 100                    | 110                    | 1.748                               | 22.42                               |
| H 500 x 200 x 10 x 16                     | 88.1  | 500                       | 200     | 10                   | 16                   | 13      | 112.2                | 468   | 442     | M24 | 102                    | 112                    | 1.758                               | 19.95                               |
| H 500 x 200 x 11 x 19                     | 101.5 | 506                       | 201     | 11                   | 19                   | 13      | 129.3                | 468   | 442     | M24 | 102                    | 112                    | 1.772                               | 17.45                               |
| H 500 x 300 x 11 x 15                     | 110.8 | 482                       | 300     | 11                   | 15                   | 13      | 141.2                | 452   | 426     | M27 | 118                    | 200                    | 2.120                               | 19.13                               |
| H 500 x 300 x 11 x 18                     | 124.9 | 488                       | 300     | 11                   | 18                   | 13      | 159.2                | 452   | 426     | M27 | 118                    | 200                    | 2.132                               | 17.06                               |
| H 600 x 300 x 12 x 17                     | 132.8 | 582                       | 300     | 12                   | 17                   | 13      | 169.2                | 548   | 522     | M27 | 124                    | 200                    | 2.318                               | 17.45                               |
| H 600 x 300 x 12 x 20                     | 147.0 | 588                       | 300     | 12                   | 20                   | 13      | 187.2                | 548   | 522     | M27 | 124                    | 200                    | 2.330                               | 15.85                               |
| H 600 x 300 x 14 x 23                     | 170.4 | 594                       | 302     | 14                   | 23                   | 13      | 217.1                | 548   | 522     | M27 | 126                    | 202                    | 2.346                               | 13.76                               |
| H 700 x 300 x 13 x 20                     | 162.9 | 692                       | 300     | 13                   | 20                   | 18      | 207.5                | 652   | 616     | M27 | 124                    | 200                    | 2.527                               | 15.51                               |
| H 700 x 300 x 13 x 24                     | 181.8 | 700                       | 300     | 13                   | 24                   | 18      | 231.5                | 652   | 616     | M27 | 124                    | 200                    | 2.543                               | 13.99                               |
| H 800 x 300 x 14 x 22                     | 188.0 | 792                       | 300     | 14                   | 22                   | 18      | 239.5                | 748   | 712     | M27 | 126                    | 200                    | 2.725                               | 14.49                               |
| H 800 x 300 x 14 x 26                     | 206.8 | 800                       | 300     | 14                   | 26                   | 18      | 263.5                | 748   | 712     | M27 | 126                    | 200                    | 2.741                               | 13.25                               |
| H 900 x 300 x 15 x 23                     | 209.5 | 890                       | 299     | 15                   | 23                   | 18      | 266.9                | 844   | 808     | M27 | 126                    | 198                    | 2.915                               | 13.91                               |
| H 900 x 300 x 16 x 28                     | 240.1 | 900                       | 300     | 16                   | 28                   | 18      | 305.8                | 844   | 808     | M27 | 128                    | 200                    | 2.937                               | 12.23                               |
| H 900 x 300 x 18 x 34                     | 282.6 | 912                       | 302     | 18                   | 34                   | 18      | 360.1                | 844   | 808     | M27 | 130                    | 202                    | 2.965                               | 10.49                               |



□ Profilé conforme à JIS A 5526 (1994)

\* Tonnage minimum et conditions de livraison nécessitent un accord préalable.

□ Section in accordance with JIS A 5526 (1994)

\* Minimum tonnage and delivery conditions upon agreement.

□ Profil gemäß JIS A 5526 (1994)

\* Die Mindestmengen pro Bestellung sowie die Lieferbedingungen sind im Voraus zu vereinbaren.



# HJ

Notations pages 104-108 / Bezeichnungen Seiten 104-108

| Désignation<br>Designation<br>Bezeichnung |                                   | Valeurs statiques / Section properties / Statische Kennwerte |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | Classification<br>ENV 1993-1-1 |      |      |                     |      |      | HISTAR |
|---|-----------------------------------|--|--|----------------------|------------------------------------|-----------------------------------|---|--|----------------------|----------------------|-----------------------------------|--|-------|--------------------------------|------|------|---------------------|------|------|--------|
|   |                                   | axe fort y-y<br>strong axis y-y<br>starke Achse y-y          |  |                      |                                    |                                   | axe faible z-z<br>weak axis z-z<br>schwache Achse z-z |  |                      |                      |                                   |  |       | pure<br>bending y-y            |      |      | pure<br>compression |      |      |        |
|   |                                   |  |  |                      |                                    |                                   |   |  |                      |                      |                                   |  |       | S235                           | S355 | S460 | S235                | S355 | S460 |        |
| G<br>kg/m                                 | I <sub>y</sub><br>cm <sup>4</sup> | W <sub>el,y</sub><br>cm <sup>3</sup>                         | W <sub>pl,y</sub> ⬆<br>cm <sup>3</sup> | i <sub>y</sub><br>cm | A <sub>Vz</sub><br>cm <sup>2</sup> | I <sub>z</sub><br>cm <sup>4</sup> | W <sub>el,z</sub><br>cm <sup>3</sup>                  | W <sub>pl,z</sub> ⬆<br>cm <sup>3</sup> | i <sub>z</sub><br>cm | s <sub>s</sub><br>mm | I <sub>t</sub><br>cm <sup>4</sup> | I <sub>w</sub> x 10 <sup>-3</sup><br>cm <sup>6</sup> | S235  | S355                           | S460 | S235 | S355                | S460 |      |        |
| H 400 x 300 x 10 x 16                     | 104.6                             | 37860  | 1942                                   | 2141                 | 16.86                              | 43.01                             | 7204  | 480.3                                  | 730.1                | 7.35                 | 57.23                             | 100  | 2518  | 1                              | 3    | -    | 2                   | 3    | -    |        |
| H 400 x 400 x 15 x 15                     | 140.1                             | 48970  | 2524                                   | 2802                 | 16.56                              | 66.70                             | 16260   | 808.9                                  | 1237                 | 9.54                 | 70.77                             | 174.3  | 5649  | 3                              | 4    | -    | 3                   | 4    | -    |        |
| H 400 x 400 x 11 x 18                     | 146.6                             | 56150  | 2850                                   | 3118                 | 17.34                              | 53.43                             | 18920   | 950.9                                  | 1441                 | 10.06                | 72.77                             | 193.4  | 6685  | 3                              | 3    | -    | 3                   | 3    | -    |        |
| H 400 x 400 x 18 x 18                     | 168.3                             | 59710  | 3031                                   | 3390                 | 16.69                              | 79.75                             | 19960   | 985.4                                  | 1511                 | 9.65                 | 79.77                             | 290  | 7044  | 3                              | 3    | -    | 3                   | 3    | -    |        |
| H 400 x 400 x 13 x 21                     | 171.7                             | 66620  | 3331                                   | 3672                 | 17.45                              | 62.66                             | 22410   | 1121                                   | 1700                 | 10.12                | 80.77                             | 303.9  | 8044  | 1                              | 3    | -    | 1                   | 3    | -    |        |
| H 400 x 400 x 21 x 21                     | 196.8                             | 70890  | 3544                                   | 3992                 | 16.82                              | 92.98                             | 23810   | 1167                                   | 1794                 | 9.75                 | 88.77                             | 450.4  | 8536  | 1                              | 3    | -    | 1                   | 3    | -    |        |
| H 400 x 400 x 18 x 28                     | 231.9                             | 92770  | 4482                                   | 5026                 | 17.72                              | 85.95                             | 31030   | 1532                                   | 2331                 | 10.25                | 99.77                             | 720.5  | 11550 | 1                              | 1    | -    | 1                   | 1    | -    |        |
| H 400 x 400 x 20 x 35                     | 283.1                             | 119200   | 5570                                   | 6311                 | 18.18                              | 98.15                             | 39360   | 1934                                   | 2941                 | 10.45                | 115.8                             | 1321   | 15190 | 1                              | 1    | -    | 1                   | 1    | -    |        |
| H 400 x 400 x 30 x 50                     | 414.9                             | 187100   | 8172                                   | 9540                 | 18.82                              | 148.6                             | 60520   | 2903                                   | 4436                 | 10.70                | 155.8                             | 3929   | 25150 | 1                              | 1    | -    | 1                   | 1    | -    |        |
| H 500 x 200 x 9 x 14                      | 77.9                              | 40830  | 1647                                   | 1869                 | 20.28                              | 48.47                             | 1843  | 185.2                                  | 287.8                | 4.31                 | 52.23                             | 52.89  | 1068  | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 500 x 200 x 10 x 16                     | 88.1                              | 46810  | 1872                                   | 2130                 | 20.42                              | 54.01                             | 2138  | 213.8                                  | 332.8                | 4.36                 | 57.23                             | 76.4   | 1249  | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 500 x 200 x 11 x 19                     | 101.5                             | 55480  | 2193                                   | 2496                 | 20.71                              | 59.96                             | 2578  | 256.5                                  | 399.2                | 4.46                 | 64.23                             | 119.6  | 1525  | 1                              | 1    | -    | 3                   | 4    | -    |        |
| H 500 x 300 x 11 x 15                     | 110.8                             | 58270  | 2418                                   | 2696                 | 20.32                              | 56.72                             | 6756  | 450.4                                  | 689.9                | 6.92                 | 56.23                             | 95.52  | 3680  | 1                              | 3    | -    | 3                   | 4    | -    |        |
| H 500 x 300 x 11 x 18                     | 124.9                             | 68860  | 2822                                   | 3132                 | 20.80                              | 57.83                             | 8106  | 540.4                                  | 824.9                | 7.14                 | 62.23                             | 144  | 4473  | 1                              | 2    | -    | 3                   | 4    | -    |        |
| H 600 x 300 x 12 x 17                     | 132.8                             | 98950  | 3400                                   | 3822                 | 24.18                              | 73.67                             | 7659  | 510.6                                  | 786.0                | 6.73                 | 61.23                             | 139.3  | 6105  | 1                              | 2    | -    | 4                   | 4    | -    |        |
| H 600 x 300 x 12 x 20                     | 147.0                             | 114400   | 3889                                   | 4348                 | 24.71                              | 74.81                             | 9009  | 600.6                                  | 921.0                | 6.94                 | 67.23                             | 200  | 7259  | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 600 x 300 x 14 x 23                     | 170.4                             | 133600   | 4497                                   | 5057                 | 24.80                              | 87.37                             | 10570   | 700.2                                  | 1077                 | 6.98                 | 75.23                             | 306.5  | 8606  | 1                              | 1    | -    | 2                   | 4    | -    |        |
| H 700 x 300 x 13 x 20                     | 162.9                             | 168400   | 4868                                   | 5503                 | 28.49                              | 97.34                             | 9015  | 601.0                                  | 930.5                | 6.59                 | 74.09                             | 228.2  | 10160 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 700 x 300 x 13 x 24                     | 181.8                             | 197500   | 5643                                   | 6338                 | 29.21                              | 99.30                             | 10820   | 721.0                                  | 1110                 | 6.83                 | 82.09                             | 342.2  | 12340 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 800 x 300 x 14 x 22                     | 188.0                             | 248300   | 6271                                   | 7143                 | 32.20                              | 118.5                             | 9921  | 661.4                                  | 1030                 | 6.44                 | 79.09                             | 304.9  | 14670 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 800 x 300 x 14 x 26                     | 206.8                             | 286400   | 7159                                   | 8098                 | 32.97                              | 120.5                             | 11720   | 781.4                                  | 1210                 | 6.67                 | 87.09                             | 439.8  | 17520 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 900 x 300 x 15 x 23                     | 209.5                             | 338500   | 7608                                   | 8750                 | 35.61                              | 141.1                             | 10280   | 687.3                                  | 1079                 | 6.20                 | 82.09                             | 364.7  | 19260 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 900 x 300 x 16 x 28                     | 240.1                             | 404500   | 8989                                   | 10290                | 36.37                              | 152.4                             | 12630   | 842.2                                  | 1317                 | 6.43                 | 93.09                             | 581.4  | 23950 | 1                              | 1    | -    | 4                   | 4    | -    |        |
| H 900 x 300 x 18 x 34                     | 282.6                             | 491000   | 10770                                  | 12340                | 36.93                              | 173.1                             | 15650   | 1037                                   | 1622                 | 6.59                 | 107.1                             | 980.8  | 30080 | 1                              | 1    | -    | 4                   | 4    | -    |        |

♦ W<sub>pl</sub>: Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 suivant la capacité de rotation requise.  
Voir page 108.

♦ W<sub>pl</sub>: For plastic design, the shape must belong to class 1 or 2 according to the required rotation capacity.  
See page 108.

♦ W<sub>pl</sub>: Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, entsprechend der erforderlichen Rotationskapazität, angehören.  
Siehe Seite 108.



# De réelles avancées technologiques et économiques



## De réelles avancées technologiques et économiques

- Les qualités à **haute limite d'élasticité** permettent d'obtenir **des allègements conséquents pouvant aller jusqu'à 50 % du poids d'une structure.**
- **Les poutrelles IFB/SFB et les solutions mixtes acier/béton s'associent parfaitement à d'autres matériaux.**
- Les poutrelles peuvent se présenter sous d'autres formes: **alvéolaires ou cintrées.**
- **Le Fire Safety Engineering** basé sur le résultat des recherches européennes permet de construire à **moindre coût** des bâtiments répondant aux exigences de sécurité incendie.





### Technologischer und wirtschaftlicher Fortschritt

- **Hochfeste** Baustähle **reduzieren das Gewicht einer Struktur um bis zu 50 %**.
- **Die IFB-/SFB-Träger** und die **Verbundkonstruktionen aus Stahl/Beton lassen sich hervorragend mit anderen Materialien kombinieren**.
- Die Walzträger sind auch in anderer **Form** erhältlich: **gebogen** oder **als Lochstegträger**.
- Das auf europäischen Forschungsergebnissen beruhende **Fire Safety Engineering** ermöglicht **kostengünstige** Stahlgebäude, die den Brandschutz voll berücksichtigen.

### Significant technological and economic advances

- **High strength steel** properties means the weight of a structure can be considerably reduced – **by up to 50 %**.
- **IFB/SFB beams** and **composite steel/concrete solutions** **can be combined** perfectly **with other materials** in structures.
- Beams can come in other forms: **castellated or curved**.
- Based on results from European research, **Fire Safety Engineering** makes it possible to construct buildings that comply with fire safety regulations, at a **lower cost**.



## Facteurs de massiv  t   $A_m/V$ et $A_p/V$ [m<sup>-1</sup>]

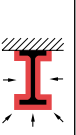



Facteurs utilis  s en calcul de r  sistance au feu suivant ENV 1993-1-2.

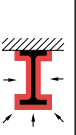
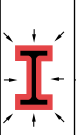


## Section factors $A_m/V$ and $A_p/V$ [m<sup>-1</sup>]


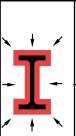
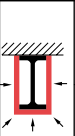
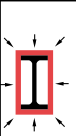
Factors used in fire design in accordance with ENV 1993-1-2.

## Profilfaktoren $A_m/V$ und $A_p/V$ [m<sup>-1</sup>]

Profilfaktoren f  r die Berechnung des Feuerwiderstandes gem    ENV 1993-1-2.

| IPE           |  |  |  |  |
|---------------|---|---|---|---|
| IPE A 100     | 389   | 452   | 286   | 349   |
| IPE 100       | 334   | 387   | 247   | 300   |
| IPE A 120     | 370   | 428   | 271   | 329   |
| IPE 120       | 311   | 360   | 230   | 279   |
| IPE A 140     | 354   | 409   | 260   | 314   |
| IPE 140       | 291   | 335   | 215   | 259   |
| IPE A 160     | 332   | 382   | 245   | 295   |
| IPE 160       | 269   | 310   | 200   | 241   |
| IPE A 180     | 308   | 354   | 227   | 274   |
| IPE 180       | 253   | 291   | 188   | 226   |
| IPE O 180     | 226   | 260   | 168   | 202   |
| IPE A 200     | 283   | 326   | 210   | 253   |
| IPE 200       | 235   | 270   | 176   | 211   |
| IPE O 200     | 212   | 244   | 158   | 190   |
| IPE A 220     | 260   | 298   | 193   | 231   |
| IPE 220       | 221   | 254   | 165   | 198   |
| IPE O 220     | 200   | 230   | 149   | 179   |
| IPE A 240     | 240   | 276   | 178   | 214   |
| IPE 240       | 205   | 236   | 153   | 184   |
| IPE O 240     | 185   | 213   | 139   | 167   |
| IPE A 270     | 230   | 265   | 171   | 205   |
| IPE 270       | 197   | 227   | 147   | 176   |
| IPE O 270     | 170   | 195   | 127   | 152   |
| IPE A 300     | 216   | 248   | 160   | 192   |
| IPE 300       | 188   | 216   | 139   | 167   |
| IPE O 300     | 163   | 187   | 121   | 145   |
| IPE A 330     | 199   | 228   | 149   | 178   |
| IPE 330       | 175   | 200   | 131   | 157   |
| IPE O 330     | 152   | 175   | 114   | 137   |
| IPE A 360     | 185   | 211   | 138   | 165   |
| IPE 360       | 163   | 186   | 122   | 146   |
| IPE O 360     | 142   | 162   | 107   | 127   |
| IPE A 400     | 176   | 200   | 133   | 158   |
| IPE 400       | 152   | 174   | 116   | 137   |
| IPE O 400     | 135   | 154   | 103   | 122   |
| IPE A 450     | 165   | 187   | 127   | 149   |
| IPE 450       | 143   | 162   | 110   | 130   |
| IPE O 450     | 122   | 138   | 94  | 110   |
| IPE A 500     | 152   | 172   | 118   | 138   |
| IPE 500       | 134   | 151   | 104   | 121   |
| IPE O 500     | 114   | 129   | 89  | 104   |
| IPE A 550     | 142   | 160   | 111   | 129   |
| IPE 550       | 124   | 140   | 97  | 113   |
| IPE O 550     | 108   | 121   | 85  | 98  |
| IPE A 600     | 131   | 147   | 103   | 119   |
| IPE 600       | 115   | 129   | 91  | 105   |
| IPE O 600     | 93  | 104   | 73  | 85  |
| IPE 750 x 147 | 120   | 134   | 94  | 109   |
| IPE 750 x 173 | 102   | 114   | 81  | 93  |
| IPE 750 x 196 | 91  | 102   | 72  | 83  |

| IPN     |  |  |  |  |
|---------|---|---|---|--|
| IPN 120 | 268   | 309   | 210   | 251  |
| IPN 140 | 238   | 274   | 189   | 225  |
| IPN 160 | 220   | 252   | 173   | 205  |
| IPN 180 | 200   | 229   | 158   | 188  |
| IPN 200 | 185   | 212   | 147   | 174  |
| IPN 220 | 171   | 196   | 136   | 161  |
| IPN 240 | 160   | 183   | 127   | 150  |
| IPN 260 | 149   | 170   | 119   | 140  |
| IPN 280 | 139   | 158   | 111   | 131  |
| IPN 300 | 131   | 149   | 105   | 123  |
| IPN 320 | 123   | 140   | 99  | 116  |
| IPN 340 | 117   | 133   | 94  | 110  |
| IPN 360 | 110   | 125   | 89  | 104  |
| IPN 380 | 105   | 119   | 85  | 99   |
| IPN 400 | 100   | 113   | 81  | 94   |
| IPN 450 | 89  | 101   | 73  | 84   |
| IPN 500 | 81  | 91  | 66  | 77   |
| IPN 550 | 75  | 85  | 61  | 71   |

| HE        |  |  |  |  |
|-----------|---|---|---|--|
| HE 100 AA | 290   | 355   | 181   | 245  |
| HE 100 A  | 217   | 264   | 138   | 185  |
| HE 100 B  | 180   | 218   | 115   | 154  |
| HE 100 M  | 96  | 116   | 65  | 85   |
| HE 120 AA | 296   | 361   | 182   | 247  |
| HE 120 A  | 220   | 267   | 137   | 185  |
| HE 120 B  | 167   | 202   | 106   | 141  |
| HE 120 M  | 92  | 111   | 61  | 80   |
| HE 140 AA | 281   | 342   | 172   | 233  |
| HE 140 A  | 208   | 253   | 129   | 174  |
| HE 140 B  | 155   | 187   | 98  | 130  |
| HE 140 M  | 88  | 106   | 58  | 76   |
| HE 160 AA | 244   | 297   | 150   | 203  |
| HE 160 A  | 192   | 234   | 120   | 161  |
| HE 160 B  | 140   | 169   | 88  | 118  |
| HE 160 M  | 83  | 100   | 54  | 71   |
| HE 180 AA | 229   | 279   | 141   | 190  |
| HE 180 A  | 187   | 226   | 115   | 155  |
| HE 180 B  | 131   | 159   | 83  | 110  |
| HE 180 M  | 80  | 96  | 52  | 68   |
| HE 200 AA | 211   | 256   | 130   | 175  |
| HE 200 A  | 174   | 211   | 108   | 145  |
| HE 200 B  | 122   | 147   | 77  | 102  |
| HE 200 M  | 76  | 92  | 49  | 65   |
| HE 220 AA | 200   | 242   | 122   | 165  |
| HE 220 A  | 161   | 195   | 99  | 134  |
| HE 220 B  | 115   | 140   | 72  | 97   |
| HE 220 M  | 73  | 88  | 47  | 62   |

| HE 240 AA    | 185 | 225 | 114 | 154 |
|--------------|-----|-----|-----|-----|
| HE 240 A     | 147 | 178 | 91  | 122 |
| HE 240 B     | 108 | 131 | 68  | 91  |
| HE 240 M     | 61  | 73  | 39  | 52  |
| HE 260 AA    | 176 | 214 | 108 | 146 |
| HE 260 A     | 141 | 171 | 88  | 117 |
| HE 260 B     | 105 | 127 | 66  | 88  |
| HE 260 M     | 59  | 72  | 39  | 51  |
| HE 280 AA    | 168 | 204 | 104 | 139 |
| HE 280 A     | 136 | 165 | 84  | 113 |
| HE 280 B     | 102 | 123 | 64  | 85  |
| HE 280 M     | 59  | 71  | 38  | 50  |
| HE 300 AA    | 158 | 192 | 97  | 131 |
| HE 300 A     | 126 | 153 | 78  | 105 |
| HE 300 B     | 96  | 116 | 60  | 80  |
| HE 300 M     | 50  | 60  | 33  | 43  |
| HE 320 AA    | 152 | 184 | 95  | 127 |
| HE 320 A     | 117 | 141 | 74  | 98  |
| HE 320 B     | 91  | 110 | 58  | 77  |
| HE 320 M     | 50  | 60  | 33  | 43  |
| HE 340 AA    | 147 | 177 | 94  | 123 |
| HE 340 A     | 112 | 134 | 72  | 94  |
| HE 340 B     | 88  | 106 | 57  | 75  |
| HE 340 M     | 50  | 60  | 34  | 43  |
| HE 360 AA    | 142 | 170 | 92  | 120 |
| HE 360 A     | 107 | 128 | 70  | 91  |
| HE 360 B     | 86  | 102 | 56  | 73  |
| HE 360 M     | 51  | 61  | 34  | 44  |
| HE 400 AA    | 135 | 161 | 90  | 115 |
| HE 400 A     | 101 | 120 | 68  | 87  |
| HE 400 B     | 82  | 97  | 56  | 71  |
| HE 400 M     | 52  | 62  | 36  | 45  |
| HE 450 AA    | 133 | 156 | 91  | 114 |
| HE 450 A     | 96  | 113 | 66  | 83  |
| HE 450 B     | 79  | 93  | 55  | 69  |
| HE 450 M     | 53  | 62  | 38  | 47  |
| HE 500 AA    | 130 | 152 | 91  | 113 |
| HE 500 A     | 92  | 107 | 65  | 80  |
| HE 500 B     | 76  | 89  | 54  | 67  |
| HE 500 M     | 55  | 63  | 39  | 48  |
| HE 550 AA    | 123 | 142 | 88  | 108 |
| HE 550 A     | 90  | 104 | 65  | 79  |
| HE 550 B     | 76  | 88  | 55  | 67  |
| HE 550 M     | 56  | 64  | 41  | 50  |
| HE 600 AA    | 120 | 138 | 88  | 106 |
| HE 600 A     | 89  | 102 | 65  | 79  |
| HE 600 B     | 75  | 86  | 56  | 67  |
| HE 600 M     | 57  | 65  | 42  | 51  |
| HE 600 x 337 | 49  | 56  | 37  | 44  |
| HE 600 x 399 | 42  | 48  | 32  | 38  |
| HE 650 AA    | 118 | 135 | 88  | 105 |
| HE 650 A     | 87  | 100 | 65  | 78  |
| HE 650 B     | 74  | 85  | 56  | 66  |
| HE 650 M     | 58  | 66  | 44  | 52  |

# Facteurs de massiv  t   $A_m/V$ et $A_p/V$ [m<sup>-1</sup>]





Facteurs utilis  s en calcul de r  sistance au feu suivant ENV 1993-1-2.

## Section factors $A_m/V$ and $A_p/V$ [m<sup>-1</sup>]





Factors used in fire design in accordance with ENV 1993-1-2.

## Profilfaktoren $A_m/V$ und $A_p/V$ [m<sup>-1</sup>]





Profilfaktoren f  r die Berechnung des Feuerwiderstandes gem    ENV 1993-1-2.

|  |  |  |  |  |
|--|---|---|---|---|
|--|---|---|---|---|





|               |     |     |    |     |
|---------------|-----|-----|----|-----|
| HE 650 x 343  | 50  | 57  | 38 | 45  |
| HE 650 x 407  | 43  | 49  | 33 | 39  |
| HE 700 AA     | 114 | 129 | 86 | 102 |
| HE 700 A      | 85  | 96  | 64 | 76  |
| HE 700 B      | 72  | 82  | 55 | 65  |
| HE 700 M      | 59  | 67  | 45 | 53  |
| HE 700 x 352  | 51  | 58  | 39 | 46  |
| HE 700 x 418  | 44  | 50  | 34 | 40  |
| HE 800 AA     | 108 | 122 | 84 | 98  |
| HE 800 A      | 84  | 94  | 66 | 76  |
| HE 800 B      | 72  | 81  | 57 | 66  |
| HE 800 M      | 60  | 68  | 48 | 55  |
| HE 800 x 373  | 52  | 59  | 41 | 48  |
| HE 800 x 444  | 44  | 50  | 35 | 41  |
| HE 900 AA     | 101 | 113 | 81 | 93  |
| HE 900 A      | 81  | 90  | 65 | 74  |
| HE 900 B      | 70  | 78  | 57 | 65  |
| HE 900 M      | 62  | 69  | 50 | 57  |
| HE 900 x 391  | 54  | 60  | 43 | 49  |
| HE 900 x 466  | 45  | 51  | 37 | 42  |
| HE 1000 AA    | 98  | 108 | 79 | 90  |
| HE 1000 A     | 81  | 89  | 66 | 74  |
| HE 1000 B     | 70  | 78  | 57 | 65  |
| HE 1000 M     | 64  | 70  | 52 | 59  |
| HE 1000 x 393 | 57  | 63  | 47 | 53  |
| HE 1000 x 409 | 55  | 61  | 45 | 51  |
| HE 1000 x 488 | 47  | 52  | 38 | 43  |
| HE 1000 x 579 | 40  | 44  | 33 | 37  |
| HL 920 x 342  | 69  | 78  | 51 | 61  |
| HL 920 x 365  | 65  | 74  | 48 | 57  |
| HL 920 x 387  | 61  | 70  | 46 | 54  |
| HL 920 x 417  | 57  | 65  | 43 | 51  |
| HL 920 x 446  | 53  | 61  | 40 | 48  |
| HL 920 x 488  | 49  | 56  | 37 | 44  |
| HL 920 x 534  | 45  | 51  | 34 | 40  |
| HL 920 x 585  | 42  | 47  | 31 | 37  |
| HL 920 x 653  | 38  | 43  | 29 | 34  |
| HL 920 x 784  | 32  | 36  | 24 | 29  |
| HL 920 x 967  | 26  | 30  | 20 | 24  |
| HL 1000 x 296 | 82  | 92  | 63 | 73  |
| HL 1000 A     | 76  | 85  | 58 | 68  |
| HL 1000 B     | 66  | 74  | 51 | 59  |
| HL 1000 M     | 60  | 67  | 46 | 54  |
| HL 1000 x 477 | 52  | 58  | 40 | 47  |
| HL 1000 x 554 | 45  | 51  | 35 | 41  |
| HL 1000 x 642 | 39  | 44  | 31 | 36  |
| HL 1000 x 748 | 34  | 39  | 27 | 31  |
| HL 1000 x 883 | 29  | 33  | 23 | 27  |
| HL 1100 A     | 76  | 85  | 59 | 68  |
| HL 1100 B     | 67  | 75  | 52 | 60  |
| HL 1100 M     | 61  | 68  | 47 | 55  |
| HL 1100 R     | 53  | 59  | 42 | 48  |

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|--|---|---|---|--|





|               |     |     |     |     |
|---------------|-----|-----|-----|-----|
| HD 260 x 54,1 | 176 | 214 | 108 | 146 |
| HD 260 x 68,2 | 141 | 171 | 88  | 117 |
| HD 260 x 93   | 105 | 127 | 66  | 88  |
| HD 260 x 114  | 86  | 104 | 55  | 73  |
| HD 260 x 142  | 71  | 86  | 46  | 60  |
| HD 260 x 172  | 59  | 72  | 39  | 51  |
| HD 320 x 74,2 | 152 | 184 | 95  | 127 |
| HD 320 x 97,6 | 117 | 141 | 74  | 98  |
| HD 320 x 127  | 91  | 110 | 58  | 77  |
| HD 320 x 158  | 74  | 89  | 48  | 63  |
| HD 320 x 198  | 60  | 72  | 39  | 51  |
| HD 320 x 245  | 50  | 60  | 33  | 43  |
| HD 320 x 300  | 42  | 50  | 28  | 36  |
| HD 360 x 134  | 104 | 125 | 63  | 85  |
| HD 360 x 147  | 95  | 114 | 58  | 78  |
| HD 360 x 162  | 87  | 105 | 53  | 71  |
| HD 360 x 179  | 79  | 95  | 49  | 65  |
| HD 360 x 196  | 72  | 87  | 45  | 60  |
| HD 400 x 187  | 78  | 94  | 47  | 64  |
| HD 400 x 216  | 68  | 82  | 42  | 56  |
| HD 400 x 237  | 63  | 76  | 38  | 52  |
| HD 400 x 262  | 57  | 69  | 35  | 47  |
| HD 400 x 287  | 52  | 63  | 32  | 43  |
| HD 400 x 314  | 48  | 58  | 30  | 40  |
| HD 400 x 347  | 44  | 53  | 28  | 37  |
| HD 400 x 382  | 40  | 49  | 25  | 34  |
| HD 400 x 421  | 37  | 45  | 23  | 31  |
| HD 400 x 463  | 34  | 41  | 22  | 29  |
| HD 400 x 509  | 31  | 38  | 20  | 27  |
| HD 400 x 551  | 29  | 35  | 19  | 25  |
| HD 400 x 592  | 28  | 33  | 18  | 23  |
| HD 400 x 634  | 26  | 31  | 17  | 22  |
| HD 400 x 677  | 25  | 30  | 16  | 21  |
| HD 400 x 744  | 23  | 27  | 15  | 20  |
| HD 400 x 818  | 21  | 25  | 14  | 18  |
| HD 400 x 900  | 19  | 23  | 13  | 17  |
| HD 400 x 990  | 18  | 22  | 12  | 16  |
| HD 400 x 1086 | 17  | 20  | 11  | 15  |

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|               |     |     |     |     |
|---------------|-----|-----|-----|-----|
| HP 200 x 43   | 181 | 219 | 112 | 150 |
| HP 200 x 53   | 145 | 176 | 90  | 121 |
| HP 220 x 57,2 | 143 | 174 | 88  | 119 |
| HP 260 x 75   | 129 | 156 | 80  | 108 |
| HP 260 x 87,3 | 111 | 135 | 70  | 94  |
| HP 305 x 79   | 147 | 178 | 91  | 121 |
| HP 305 x 88   | 132 | 159 | 81  | 109 |
| HP 305 x 95   | 122 | 148 | 76  | 101 |
| HP 305 x 110  | 106 | 129 | 66  | 88  |
| HP 305 x 126  | 94  | 113 | 58  | 78  |
| HP 305 x 149  | 80  | 97  | 50  | 67  |

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|               |     |     |    |     |
|---------------|-----|-----|----|-----|
| HP 305 x 180  | 67  | 81  | 42 | 56  |
| HP 305 x 186  | 65  | 79  | 41 | 55  |
| HP 305 x 223  | 55  | 67  | 35 | 47  |
| HP 320 x 88,5 | 128 | 155 | 81 | 108 |
| HP 320 x 103  | 111 | 135 | 70 | 94  |
| HP 320 x 117  | 98  | 119 | 62 | 83  |
| HP 320 x 147  | 80  | 96  | 51 | 68  |
| HP 320 x 184  | 65  | 78  | 42 | 55  |
| HP 360 x 84,3 | 162 | 196 | 98 | 132 |
| HP 360 x 109  | 126 | 153 | 77 | 103 |
| HP 360 x 133  | 104 | 126 | 64 | 86  |
| HP 360 x 152  | 92  | 111 | 56 | 76  |
| HP 360 x 174  | 81  | 98  | 50 | 67  |
| HP 360 x 180  | 78  | 95  | 48 | 65  |
| HP 400 x 122  | 116 | 141 | 70 | 95  |
| HP 400 x 140  | 102 | 124 | 61 | 83  |
| HP 400 x 158  | 91  | 111 | 55 | 74  |
| HP 400 x 176  | 82  | 100 | 50 | 67  |
| HP 400 x 194  | 75  | 91  | 46 | 62  |
| HP 400 x 213  | 69  | 84  | 42 | 57  |
| HP 400 x 231  | 64  | 77  | 39 | 53  |

|  |  |  |  |  |
|--|---|---|---|---|
|--|---|---|---|---|

|         |     |     |     |     |
|---------|-----|-----|-----|-----|
| UAP 80  | 261 | 303 | 192 | 234 |
| UAP 100 | 248 | 285 | 187 | 224 |
| UAP 130 | 231 | 263 | 180 | 211 |
| UAP 150 | 207 | 235 | 160 | 188 |
| UAP 175 | 198 | 224 | 155 | 181 |
| UAP 200 | 187 | 211 | 149 | 172 |
| UAP 220 | 180 | 202 | 143 | 165 |
| UAP 250 | 166 | 185 | 134 | 153 |
| UAP 300 | 148 | 165 | 120 | 137 |

|         |     |     |     |     |
|---------|-----|-----|-----|-----|
| UPN     |     |     |     |     |
| UPN 100 | 239 | 276 | 185 | 222 |
| UPN 120 | 223 | 255 | 174 | 206 |
| UPN 140 | 210 | 240 | 167 | 196 |
| UPN 160 | 200 | 228 | 160 | 188 |
| UPN 180 | 193 | 218 | 154 | 179 |
| UPN 200 | 182 | 205 | 148 | 171 |
| UPN 220 | 171 | 192 | 139 | 160 |
| UPN 240 | 163 | 183 | 134 | 154 |
| UPN 260 | 154 | 173 | 126 | 145 |
| UPN 280 | 149 | 167 | 123 | 141 |
| UPN 300 | 145 | 162 | 119 | 136 |
| UPN 320 | 116 | 130 | 98  | 111 |
| UPN 350 | 123 | 135 | 103 | 116 |
| UPN 380 | 125 | 138 | 107 | 120 |
| UPN 400 | 117 | 129 | 99  | 111 |

## Facteurs de massivité $A_m/V$ et $A_p/V$ [m<sup>-1</sup>]





Facteurs utilisés en calcul de résistance au feu suivant ENV 1993-1-2.

## Section factors $A_m/V$ and $A_p/V$ [m<sup>-1</sup>]





Factors used in fire design in accordance with ENV 1993-1-2.

## Profilfaktoren $A_m/V$ und $A_p/V$ [m<sup>-1</sup>]





Profilfaktoren für die Berechnung des Feuerwiderstandes gemäß ENV 1993-1-2.

| UB |  |  |  |  |
|----|---|---|---|---|
|----|---|---|---|---|





|                    |     |     |     |     |
|--------------------|-----|-----|-----|-----|
| UB 152 x 89 x 16   | 270 | 314 | 194 | 237 |
| UB 178 x 102 x 19  | 262 | 304 | 188 | 230 |
| UB 203 x 102 x 23  | 234 | 269 | 173 | 207 |
| UB 203 x 133 x 25  | 244 | 286 | 169 | 210 |
| UB 203 x 133 x 30  | 207 | 242 | 143 | 178 |
| UB 254 x 102 x 22  | 281 | 318 | 218 | 254 |
| UB 254 x 102 x 25  | 248 | 280 | 192 | 224 |
| UB 254 x 102 x 28  | 222 | 251 | 173 | 201 |
| UB 254 x 146 x 31  | 231 | 268 | 164 | 200 |
| UB 254 x 146 x 37  | 196 | 227 | 140 | 171 |
| UB 254 x 146 x 43  | 170 | 197 | 122 | 149 |
| UB 305 x 102 x 25  | 282 | 314 | 225 | 257 |
| UB 305 x 102 x 28  | 250 | 279 | 200 | 229 |
| UB 305 x 102 x 33  | 217 | 241 | 174 | 198 |
| UB 305 x 165 x 40  | 209 | 242 | 150 | 183 |
| UB 305 x 165 x 46  | 184 | 212 | 133 | 161 |
| UB 305 x 165 x 54  | 159 | 183 | 115 | 139 |
| UB 356 x 127 x 33  | 248 | 278 | 195 | 225 |
| UB 356 x 127 x 39  | 212 | 237 | 167 | 193 |
| UB 356 x 171 x 45  | 207 | 236 | 152 | 182 |
| UB 356 x 171 x 51  | 184 | 210 | 136 | 162 |
| UB 356 x 171 x 57  | 165 | 189 | 122 | 146 |
| UB 356 x 171 x 67  | 142 | 162 | 105 | 126 |
| UB 406 x 140 x 39  | 240 | 268 | 189 | 217 |
| UB 406 x 140 x 46  | 205 | 229 | 162 | 186 |
| UB 406 x 178 x 54  | 189 | 215 | 143 | 168 |
| UB 406 x 178 x 60  | 172 | 195 | 129 | 153 |
| UB 406 x 178 x 67  | 154 | 175 | 117 | 138 |
| UB 406 x 178 x 74  | 140 | 159 | 106 | 125 |
| UB 457 x 152 x 52  | 199 | 222 | 158 | 181 |
| UB 457 x 152 x 60  | 175 | 195 | 139 | 159 |
| UB 457 x 152 x 67  | 157 | 175 | 125 | 143 |
| UB 457 x 152 x 74  | 143 | 159 | 114 | 130 |
| UB 457 x 152 x 82  | 130 | 145 | 104 | 119 |
| UB 457 x 191 x 67  | 169 | 191 | 128 | 150 |
| UB 457 x 191 x 74  | 153 | 173 | 117 | 137 |
| UB 457 x 191 x 82  | 139 | 158 | 106 | 125 |
| UB 457 x 191 x 89  | 129 | 146 | 98  | 115 |
| UB 457 x 191 x 98  | 118 | 133 | 90  | 105 |
| UB 533 x 210 x 82  | 157 | 177 | 121 | 141 |
| UB 533 x 210 x 92  | 141 | 159 | 109 | 126 |
| UB 533 x 210 x 101 | 129 | 145 | 100 | 116 |
| UB 533 x 210 x 109 | 120 | 135 | 93  | 108 |
| UB 533 x 210 x 122 | 108 | 122 | 84  | 97  |
| UB 610 x 229 x 101 | 143 | 161 | 111 | 129 |
| UB 610 x 229 x 113 | 129 | 145 | 100 | 116 |
| UB 610 x 229 x 125 | 117 | 131 | 91  | 106 |
| UB 610 x 229 x 140 | 105 | 118 | 82  | 95  |
| UB 610 x 305 x 149 | 110 | 126 | 80  | 97  |
| UB 610 x 305 x 179 | 92  | 106 | 68  | 81  |
| UB 610 x 305 x 238 | 71  | 81  | 52  | 62  |
| UB 686 x 254 x 125 | 130 | 145 | 101 | 117 |
| UB 686 x 254 x 140 | 116 | 131 | 91  | 105 |
| UB 686 x 254 x 152 | 107 | 121 | 84  | 97  |
| UB 686 x 254 x 170 | 97  | 109 | 76  | 88  |

|  |  |  |  |  |
|--|---|---|---|--|
|--|---|---|---|--|

|                    |     |     |    |     |
|--------------------|-----|-----|----|-----|
| UB 762 x 267 x 147 | 120 | 134 | 95 | 109 |
| UB 762 x 267 x 173 | 103 | 115 | 81 | 93  |
| UB 762 x 267 x 197 | 91  | 102 | 72 | 83  |
| UB 838 x 292 x 176 | 111 | 124 | 88 | 101 |
| UB 838 x 292 x 194 | 101 | 113 | 80 | 92  |
| UB 838 x 292 x 226 | 87  | 98  | 69 | 79  |
| UB 914 x 305 x 201 | 104 | 116 | 82 | 94  |
| UB 914 x 305 x 224 | 93  | 104 | 74 | 85  |
| UB 914 x 305 x 253 | 83  | 93  | 66 | 76  |
| UB 914 x 305 x 289 | 73  | 82  | 59 | 67  |
| UB 914 x 419 x 343 | 69  | 78  | 51 | 61  |
| UB 914 x 419 x 388 | 61  | 70  | 46 | 54  |

| UC |  |  |  |  |
|----|---|---|---|--|
|----|---|---|---|--|

|                    |     |     |     |     |
|--------------------|-----|-----|-----|-----|
| UC 152 x 152 x 23  | 252 | 304 | 156 | 208 |
| UC 152 x 152 x 30  | 195 | 235 | 122 | 162 |
| UC 152 x 152 x 37  | 161 | 194 | 101 | 134 |
| UC 203 x 203 x 46  | 168 | 202 | 104 | 139 |
| UC 203 x 203 x 52  | 150 | 180 | 93  | 124 |
| UC 203 x 203 x 60  | 131 | 158 | 82  | 109 |
| UC 203 x 203 x 71  | 112 | 135 | 71  | 93  |
| UC 203 x 203 x 86  | 94  | 113 | 60  | 79  |
| UC 254 x 254 x 73  | 132 | 160 | 82  | 109 |
| UC 254 x 254 x 89  | 110 | 133 | 69  | 91  |
| UC 254 x 254 x 107 | 93  | 112 | 58  | 77  |
| UC 254 x 254 x 132 | 76  | 92  | 48  | 64  |
| UC 254 x 254 x 167 | 62  | 74  | 40  | 52  |
| UC 305 x 305 x 97  | 120 | 145 | 75  | 99  |
| UC 305 x 305 x 118 | 100 | 120 | 62  | 83  |
| UC 305 x 305 x 137 | 87  | 105 | 54  | 72  |
| UC 305 x 305 x 158 | 76  | 91  | 48  | 63  |
| UC 305 x 305 x 198 | 62  | 74  | 39  | 52  |
| UC 305 x 305 x 240 | 52  | 62  | 33  | 44  |
| UC 305 x 305 x 283 | 45  | 54  | 29  | 38  |
| UC 356 x 368 x 129 | 108 | 130 | 66  | 88  |
| UC 356 x 368 x 153 | 92  | 111 | 56  | 75  |
| UC 356 x 368 x 177 | 80  | 96  | 49  | 66  |
| UC 356 x 368 x 202 | 71  | 85  | 44  | 58  |
| UC 356 x 406 x 235 | 63  | 76  | 39  | 52  |
| UC 356 x 406 x 287 | 52  | 63  | 32  | 43  |
| UC 356 x 406 x 340 | 45  | 54  | 28  | 37  |
| UC 356 x 406 x 393 | 39  | 48  | 25  | 33  |
| UC 356 x 406 x 467 | 34  | 41  | 22  | 29  |
| UC 356 x 406 x 551 | 29  | 35  | 19  | 25  |
| UC 356 x 406 x 634 | 26  | 31  | 17  | 22  |

| UBP |  |  |  |  |
|-----|---|---|---|---|
|-----|---|---|---|---|

|                     |     |     |     |     |
|---------------------|-----|-----|-----|-----|
| UBP 203 x 203 x 45  | 172 | 208 | 106 | 142 |
| UBP 203 x 203 x 54  | 144 | 174 | 90  | 120 |
| UBP 254 x 254 x 63  | 152 | 184 | 94  | 126 |
| UBP 254 x 254 x 71  | 136 | 164 | 84  | 112 |
| UBP 254 x 254 x 85  | 114 | 138 | 71  | 95  |
| UBP 305 x 305 x 79  | 146 | 177 | 90  | 121 |
| UBP 305 x 305 x 88  | 132 | 159 | 81  | 109 |
| UBP 305 x 305 x 95  | 122 | 148 | 76  | 101 |
| UBP 305 x 305 x 110 | 106 | 129 | 66  | 88  |
| UBP 305 x 305 x 126 | 94  | 113 | 58  | 78  |
| UBP 305 x 305 x 149 | 80  | 97  | 50  | 67  |
| UBP 305 x 305 x 186 | 65  | 79  | 41  | 55  |
| UBP 305 x 305 x 223 | 55  | 67  | 35  | 47  |
| UBP 356 x 368 x 109 | 126 | 153 | 77  | 103 |
| UBP 356 x 368 x 133 | 104 | 126 | 64  | 86  |
| UBP 356 x 368 x 152 | 92  | 111 | 56  | 76  |
| UBP 356 x 368 x 174 | 81  | 98  | 50  | 67  |

# Facteurs de massivité $A_m/V$ et $A_p/V$ [m<sup>-1</sup>]





Facteurs utilisés en calcul de résistance au feu suivant ENV 1993-1-2.

## Section factors $A_m/V$ and $A_p/V$ [m<sup>-1</sup>]

Factors used in fire design in accordance with ENV 1993-1-2.

## Profilfaktoren $A_m/V$ und $A_p/V$ [m<sup>-1</sup>]

Profilfaktoren für die Berechnung des Feuerwiderstandes gemäß ENV 1993-1-2.

| W                  |  |  |  |  |
|--------------------|---|---|---|---|
| W 100 x 100 x 19.3 | 201   | 243   | 127   | 169   |
| W 130 x 130 x 23.8 | 201   | 243   | 126   | 168   |
| W 130 x 130 x 28.1 | 172   | 208   | 109   | 144   |
| W 150 x 100 x 13.5 | 336   | 393   | 231   | 289   |
| W 150 x 100 x 18.0 | 253   | 297   | 175   | 219   |
| W 150 x 100 x 24.0 | 197   | 231   | 138   | 172   |
| W 150 x 150 x 22.5 | 259   | 313   | 160   | 213   |
| W 150 x 150 x 29.8 | 198   | 238   | 123   | 164   |
| W 150 x 150 x 37.1 | 160   | 193   | 101   | 134   |
| W 200 x 100 x 15.0 | 354   | 406   | 261   | 313   |
| W 200 x 100 x 19.3 | 276   | 317   | 204   | 245   |
| W 200 x 100 x 22.5 | 241   | 277   | 179   | 215   |
| W 200 x 135 x 26.6 | 232   | 271   | 161   | 200   |
| W 200 x 135 x 31.3 | 199   | 233   | 139   | 172   |
| W 200 x 165 x 35.9 | 190   | 226   | 124   | 160   |
| W 200 x 165 x 41.7 | 165   | 196   | 108   | 140   |
| W 200 x 200 x 46.1 | 168   | 202   | 104   | 139   |
| W 200 x 200 x 52   | 149   | 180   | 93  | 123   |
| W 200 x 200 x 59   | 132   | 159   | 83  | 110   |
| W 200 x 200 x 71   | 111   | 134   | 70  | 93  |
| W 200 x 200 x 86   | 93  | 112   | 59  | 78  |
| W 200 x 200 x 100  | 82  | 99  | 53  | 69  |
| W 250 x 100 x 17.9 | 342   | 386   | 264   | 308   |
| W 250 x 100 x 22.3 | 275   | 311   | 213   | 248   |
| W 250 x 100 x 25.3 | 246   | 277   | 190   | 222   |
| W 250 x 100 x 28.4 | 221   | 249   | 172   | 200   |
| W 250 x 145 x 32.7 | 222   | 257   | 159   | 194   |
| W 250 x 145 x 38.5 | 190   | 220   | 136   | 166   |
| W 250 x 145 x 44.8 | 165   | 191   | 119   | 144   |
| W 250 x 250 x 73   | 132   | 159   | 82  | 109   |
| W 250 x 250 x 80   | 121   | 146   | 75  | 100   |
| W 250 x 250 x 89   | 109   | 132   | 68  | 90  |
| W 250 x 250 x 101  | 97  | 117   | 61  | 81  |
| W 250 x 250 x 115  | 87  | 104   | 55  | 72  |
| W 250 x 250 x 131  | 77  | 92  | 49  | 64  |
| W 250 x 250 x 149  | 68  | 82  | 44  | 57  |
| W 250 x 250 x 167  | 62  | 74  | 40  | 52  |
| W 310 x 100 x 21.0 | 329   | 367   | 263   | 301   |
| W 310 x 100 x 23.8 | 292   | 326   | 234   | 267   |
| W 310 x 100 x 28.3 | 249   | 277   | 200   | 228   |
| W 310 x 100 x 32.7 | 216   | 241   | 174   | 198   |
| W 310 x 165 x 38.7 | 220   | 253   | 158   | 192   |
| W 310 x 165 x 44.5 | 193   | 222   | 139   | 168   |
| W 310 x 165 x 52   | 166   | 191   | 120   | 145   |
| W 310 x 310 x 97   | 120   | 145   | 75  | 99  |
| W 310 x 310 x 107  | 110   | 132   | 68  | 91  |
| W 310 x 310 x 117  | 100   | 121   | 62  | 83  |
| W 310 x 310 x 129  | 91  | 110   | 57  | 76  |
| W 310 x 310 x 143  | 83  | 100   | 52  | 69  |
| W 310 x 310 x 158  | 76  | 92  | 48  | 64  |
| W 310 x 310 x 179  | 68  | 82  | 43  | 57  |
| W 310 x 310 x 202  | 60  | 73  | 39  | 51  |
| W 310 x 310 x 226  | 55  | 66  | 35  | 46  |
| W 310 x 310 x 253  | 49  | 59  | 32  | 42  |
| W 310 x 310 x 283  | 45  | 54  | 29  | 38  |
| W 310 x 310 x 313  | 41  | 49  | 27  | 35  |
| W 310 x 310 x 342  | 38  | 45  | 25  | 32  |
| W 360 x 130 x 32.9 | 252   | 282   | 198   | 228   |
| W 360 x 130 x 39.0 | 213   | 238   | 167   | 193   |
| W 360 x 170 x 44   | 207   | 237   | 153   | 183   |
| W 360 x 170 x 51   | 185   | 211   | 136   | 163   |
| W 360 x 170 x 57.8 | 166   | 190   | 123   | 147   |
| W 360 x 370 x 134  | 104   | 125   | 63  | 85  |
| W 360 x 370 x 147  | 95  | 114   | 58  | 78  |
| W 360 x 370 x 162  | 87  | 105   | 53  | 71  |
| W 360 x 370 x 179  | 79  | 95  | 49  | 65  |
| W 360 x 370 x 196  | 72  | 87  | 45  | 60  |
| W 360 x 410 x 216  | 68  | 82  | 42  | 56  |
| W 360 x 410 x 237  | 63  | 76  | 38  | 52  |
| W 360 x 410 x 262  | 57  | 69  | 35  | 47  |
| W 360 x 410 x 287  | 52  | 63  | 32  | 43  |
| W 360 x 410 x 314  | 48  | 58  | 30  | 40  |
| W 360 x 410 x 347  | 44  | 53  | 28  | 37  |
| W 360 x 410 x 382  | 40  | 49  | 25  | 34  |
| W 360 x 410 x 421  | 37  | 45  | 23  | 31  |
| W 360 x 410 x 463  | 34  | 41  | 22  | 29  |
| W 360 x 410 x 509  | 31  | 38  | 20  | 27  |
| W 360 x 410 x 551  | 29  | 35  | 19  | 25  |
| W 360 x 410 x 592  | 28  | 33  | 18  | 23  |
| W 360 x 410 x 634  | 26  | 31  | 17  | 22  |
| W 360 x 410 x 677  | 25  | 30  | 16  | 21  |
| W 360 x 410 x 744  | 23  | 27  | 15  | 20  |
| W 360 x 410 x 818  | 21  | 25  | 14  | 18  |
| W 360 x 410 x 900  | 19  | 23  | 13  | 17  |
| W 360 x 410 x 990  | 18  | 22  | 12  | 16  |
| W 360 x 410 x 1086 | 17  | 20  | 11  | 15  |
| W 410 x 140 x 38.8 | 239   | 267   | 189   | 217   |
| W 410 x 140 x 46.1 | 203   | 227   | 161   | 185   |
| W 410 x 180 x 53   | 192   | 218   | 145   | 171   |
| W 410 x 180 x 60   | 174   | 197   | 131   | 154   |
| W 410 x 180 x 67   | 154   | 175   | 116   | 137   |
| W 410 x 180 x 75   | 140   | 159   | 106   | 125   |
| W 410 x 180 x 85   | 124   | 140   | 94  | 110   |
| W 460 x 150 x 52   | 200   | 223   | 159   | 182   |
| W 460 x 150 x 60   | 176   | 196   | 140   | 160   |
| W 460 x 150 x 68   | 154   | 172   | 123   | 141   |
| W 460 x 190 x 74   | 153   | 173   | 117   | 137   |
| W 460 x 190 x 82   | 139   | 158   | 106   | 125   |
| W 460 x 190 x 89   | 129   | 145   | 98  | 115   |
| W 460 x 190 x 97   | 119   | 135   | 91  | 107   |
| W 460 x 190 x 106  | 110   | 124   | 84  | 99  |
| W 460 x 280 x 113  | 120   | 139   | 84  | 103   |
| W 460 x 280 x 128  | 106   | 124   | 74  | 92  |
| W 460 x 280 x 144  | 95  | 110   | 67  | 82  |
| W 460 x 280 x 158  | 87  | 102   | 62  | 76  |
| W 460 x 280 x 177  | 78  | 91  | 55  | 68  |
| W 530 x 210 x 92   | 140   | 158   | 108   | 126   |
| W 530 x 210 x 101  | 128   | 145   | 99  | 115   |
| W 530 x 210 x 109  | 120   | 135   | 93  | 108   |
| W 530 x 210 x 123  | 107   | 120   | 83  | 96  |
| W 530 x 210 x 138  | 96  | 108   | 74  | 87  |
| W 610 x 230 x 101  | 142   | 160   | 110   | 128   |
| W 610 x 230 x 113  | 128   | 144   | 100   | 116   |
| W 610 x 230 x 125  | 117   | 131   | 91  | 105   |
| W 610 x 230 x 140  | 105   | 118   | 82  | 95  |
| W 610 x 325 x 155  | 109   | 125   | 78  | 95  |
| W 610 x 325 x 174  | 97  | 112   | 70  | 85  |
| W 610 x 325 x 195  | 87  | 100   | 63  | 76  |
| W 610 x 325 x 217  | 79  | 91  | 57  | 69  |
| W 610 x 325 x 241  | 73  | 83  | 53  | 64  |
| W 610 x 325 x 262  | 66  | 76  | 48  | 58  |
| W 610 x 325 x 285  | 61  | 70  | 45  | 54  |
| W 610 x 325 x 341  | 52  | 60  | 38  | 46  |
| W 610 x 325 x 415  | 43  | 50  | 32  | 38  |
| W 610 x 325 x 455  | 40  | 46  | 30  | 36  |
| W 610 x 325 x 498  | 37  | 42  | 27  | 33  |
| W 610 x 325 x 551  | 34  | 39  | 25  | 30  |
| W 690 x 250 x 125  | 129   | 145   | 101   | 116   |
| W 690 x 250 x 140  | 117   | 131   | 91  | 105   |
| W 690 x 250 x 152  | 108   | 121   | 84  | 97  |
| W 690 x 250 x 170  | 97  | 109   | 76  | 88  |
| W 690 x 250 x 192  | 87  | 97  | 68  | 78  |
| W 760 x 265 x 147  | 120   | 134   | 94  | 109   |
| W 760 x 265 x 161  | 110   | 123   | 87  | 100   |
| W 760 x 265 x 173  | 102   | 114   | 81  | 93  |
| W 760 x 265 x 185  | 97  | 108   | 76  | 88  |
| W 760 x 265 x 196  | 91  | 102   | 72  | 83  |
| W 760 x 265 x 220  | 82  | 91  | 65  | 74  |
| W 840 x 295 x 176  | 111   | 124   | 88  | 101   |
| W 840 x 295 x 193  | 101   | 113   | 80  | 92  |
| W 840 x 295 x 210  | 93  | 104   | 74  | 85  |
| W 840 x 295 x 226  | 87  | 97  | 69  | 79  |
| W 840 x 295 x 251  | 79  | 88  | 63  | 72  |
| W 920 x 310 x 201  | 104   | 115   | 82  | 94  |
| W 920 x 310 x 223  | 93  | 104   | 74  | 85  |
| W 920 x 310 x 238  | 88  | 98  | 70  | 80  |
| W 920 x 310 x 253  | 83  | 93  | 66  | 76  |
| W 920 x 310 x 271  | 78  | 87  | 62  | 71  |
| W 920 x 310 x 289  | 74  | 82  | 59  | 67  |
| W 920 x 310 x 313  | 68  | 76  | 55  | 62  |
| W 920 x 420 x 342  | 69  | 78  | 51  | 61  |
| W 920 x 420 x 365  | 65  | 74  | 48  | 57  |
| W 920 x 420 x 387  | 61  | 70  | 46  | 54  |
| W 920 x 420 x 417  | 57  | 65  | 43  | 51  |
| W 920 x 420 x 446  | 53  | 61  | 40  | 48  |
| W 920 x 420 x 488  | 49  | 56  | 37  | 44  |
| W 920 x 420 x 534  | 45  | 51  | 34  | 40  |
| W 920 x 420 x 585  | 42  | 47  | 31  | 37  |
| W 920 x 420 x 653  | 38  | 43  | 29  | 34  |
| W 920 x 420 x 784  | 32  | 36  | 24  | 29  |
| W 920 x 420 x 967  | 26  | 30  | 20  | 24  |
| W 1000 x 300 x 222 | 97  | 108   | 79  | 90  |
| W 1000 x 300 x 249 | 88  | 97  | 71  | 81  |
| W 1000 x 300 x 272 | 81  | 89  | 66  | 74  |
| W 1000 x 300 x 314 | 70  | 78  | 57  | 65  |
| W 1000 x 300 x 350 | 64  | 70  | 52  | 59  |
| W 1000 x 300 x 393 | 57  | 63  | 47  | 53  |
| W 1000 x 300 x 415 | 54  | 60  | 44  | 50  |
| W 1000 x 300 x 494 | 46  | 51  | 38  | 43  |
| W 1000 x 300 x 584 | 39  | 44  | 33  | 37  |



## Facteurs de massivité $A_m/V$ et $A_p/V$ [ $m^{-1}$ ]

Facteurs utilisés en calcul de résistance au feu suivant ENV 1993-1-2.

## Section factors $A_m/V$ and $A_p/V$ [ $m^{-1}$ ]

Factors used in fire design in accordance with ENV 1993-1-2.

## Profilfaktoren $A_m/V$ und $A_p/V$ [ $m^{-1}$ ]

Profilfaktoren für die Berechnung des Feuerwiderstandes gemäß ENV 1993-1-2.

| W                  |     |     |     |     |                        |     |     |     |     |                       |     |     |    |     |
|--------------------|-----|-----|-----|-----|------------------------|-----|-----|-----|-----|-----------------------|-----|-----|----|-----|
|                    |     |     |     |     |                        |     |     |     |     |                       |     |     |    |     |
| W 1000 x 400 x 296 | 82  | 92  | 63  | 73  | C 380 x 50.4           | 150 | 163 | 132 | 145 | H 600 x 300 x 12 x 17 | 119 | 137 | 87 | 104 |
| W 1000 x 400 x 321 | 76  | 85  | 58  | 68  | C 380 x 60             | 125 | 137 | 112 | 124 | H 600 x 300 x 12 x 20 | 108 | 124 | 79 | 95  |
| W 1000 x 400 x 371 | 66  | 74  | 51  | 59  | C 380 x 74             | 100 | 110 | 90  | 100 | H 600 x 300 x 14 x 23 | 94  | 108 | 69 | 83  |
| W 1000 x 400 x 412 | 60  | 67  | 46  | 54  | HJ                     |     |     |     |     | H 700 x 300 x 13 x 20 | 107 | 122 | 81 | 96  |
| W 1000 x 400 x 443 | 56  | 63  | 43  | 50  |                        |     |     |     |     | H 700 x 300 x 13 x 24 | 97  | 110 | 73 | 86  |
| W 1000 x 400 x 483 | 51  | 58  | 40  | 46  |                        |     |     |     |     | H 800 x 300 x 14 x 22 | 101 | 114 | 79 | 91  |
| W 1000 x 400 x 539 | 46  | 52  | 36  | 42  |                        |     |     |     |     | H 800 x 300 x 14 x 26 | 93  | 104 | 72 | 83  |
| W 1000 x 400 x 591 | 42  | 48  | 33  | 38  | H                      |     |     |     |     | H 900 x 300 x 15 x 23 | 98  | 109 | 78 | 89  |
| W 1000 x 400 x 642 | 39  | 44  | 31  | 36  |                        |     |     |     |     | H 900 x 300 x 16 x 28 | 86  | 96  | 69 | 78  |
| W 1000 x 400 x 748 | 34  | 39  | 27  | 31  |                        |     |     |     |     | H 900 x 300 x 18 x 34 | 74  | 82  | 59 | 67  |
| W 1000 x 400 x 883 | 29  | 33  | 23  | 27  |                        |     |     |     |     |                       |     |     |    |     |
| W 1100 x 400 x 343 | 76  | 85  | 59  | 68  | H 100 x 100 x 6 x 8    | 219 | 265 | 139 | 185 |                       |     |     |    |     |
| W 1100 x 400 x 390 | 67  | 75  | 52  | 60  | H 125 x 125 x 6.5 x 9  | 199 | 241 | 125 | 167 |                       |     |     |    |     |
| W 1100 x 400 x 433 | 61  | 68  | 47  | 55  | H 150 x 75 x 5 x 7     | 281 | 323 | 210 | 252 |                       |     |     |    |     |
| W 1100 x 400 x 499 | 53  | 59  | 42  | 48  | H 150 x 150 x 7 x 10   | 182 | 220 | 113 | 151 |                       |     |     |    |     |
| HP                 |     |     |     |     | H 175 x 175 x 7.5 x 11 | 163 | 197 | 102 | 136 |                       |     |     |    |     |
|                    |     |     |     |     | H 200 x 100 x 4.5 x 7  | 295 | 339 | 218 | 262 |                       |     |     |    |     |
|                    |     |     |     |     | H 200 x 100 x 5.5 x 8  | 253 | 291 | 187 | 225 |                       |     |     |    |     |
|                    |     |     |     |     | H 200 x 200 x 8 x 12   | 151 | 183 | 94  | 126 |                       |     |     |    |     |
| HP 200 x 43        | 181 | 219 | 112 | 150 | H 200 x 200 x 12 x 12  | 135 | 164 | 84  | 113 |                       |     |     |    |     |
| HP 200 x 53        | 145 | 176 | 90  | 121 | H 250 x 125 x 5 x 8    | 264 | 303 | 194 | 233 |                       |     |     |    |     |
| HP 250 x 62        | 152 | 185 | 94  | 126 | H 250 x 125 x 6 x 9    | 230 | 264 | 169 | 203 |                       |     |     |    |     |
| HP 250 x 85        | 114 | 138 | 71  | 95  | H 250 x 250 x 11 x 11  | 148 | 179 | 91  | 122 |                       |     |     |    |     |
| HP 310 x 79        | 147 | 178 | 91  | 121 | H 250 x 250 x 9 x 14   | 132 | 160 | 82  | 109 |                       |     |     |    |     |
| HP 310 x 93        | 124 | 150 | 77  | 103 | H 250 x 250 x 14 x 14  | 117 | 141 | 73  | 97  |                       |     |     |    |     |
| HP 310 x 110       | 106 | 128 | 66  | 88  | H 300 x 150 x 5.5 x 8  | 247 | 284 | 183 | 219 |                       |     |     |    |     |
| HP 310 x 125       | 94  | 114 | 59  | 79  | H 300 x 150 x 6.5 x 9  | 217 | 249 | 160 | 192 |                       |     |     |    |     |
| HP 310 x 132       | 90  | 109 | 56  | 75  | H 300 x 300 x 12 x 12  | 136 | 165 | 84  | 112 |                       |     |     |    |     |
| HP 360 x 108       | 127 | 154 | 77  | 104 | H 300 x 300 x 10 x 15  | 123 | 148 | 76  | 101 |                       |     |     |    |     |
| HP 360 x 132       | 105 | 127 | 64  | 86  | H 300 x 300 x 15 x 15  | 110 | 132 | 68  | 91  |                       |     |     |    |     |
| HP 360 x 152       | 92  | 111 | 56  | 76  | H 350 x 175 x 6 x 9    | 225 | 258 | 165 | 198 |                       |     |     |    |     |
| HP 360 x 174       | 81  | 98  | 50  | 67  | H 350 x 175 x 7 x 11   | 189 | 217 | 139 | 167 |                       |     |     |    |     |
| U                  |     |     |     |     | H 350 x 350 x 13 x 13  | 126 | 152 | 77  | 103 |                       |     |     |    |     |
|                    |     |     |     |     | H 350 x 350 x 10 x 16  | 117 | 141 | 72  | 96  |                       |     |     |    |     |
|                    |     |     |     |     | H 350 x 350 x 16 x 16  | 103 | 124 | 63  | 85  |                       |     |     |    |     |
|                    |     |     |     |     | H 350 x 350 x 12 x 19  | 99  | 119 | 61  | 81  |                       |     |     |    |     |
| C 200 x 17.1       | 234 | 260 | 213 | 240 | H 350 x 350 x 19 x 19  | 87  | 105 | 54  | 72  |                       |     |     |    |     |
| C 200 x 20.5       | 199 | 222 | 179 | 202 | H 400 x 300 x 10 x 16  | 123 | 145 | 81  | 104 |                       |     |     |    |     |
| C 200 x 27.9       | 146 | 164 | 132 | 150 | H 400 x 400 x 15 x 15  | 107 | 130 | 66  | 89  |                       |     |     |    |     |
| C 250 x 22.8       | 218 | 240 | 199 | 222 | H 400 x 400 x 11 x 18  | 103 | 124 | 63  | 85  |                       |     |     |    |     |
| C 250 x 30         | 167 | 186 | 153 | 171 | H 400 x 400 x 18 x 18  | 90  | 109 | 56  | 75  |                       |     |     |    |     |
| C 250 x 37         | 141 | 157 | 128 | 144 | H 400 x 400 x 13 x 21  | 89  | 107 | 55  | 73  |                       |     |     |    |     |
| C 250 x 45         | 114 | 127 | 103 | 116 | H 400 x 400 x 21 x 21  | 78  | 94  | 48  | 64  |                       |     |     |    |     |
| C 310 x 30.8       | 191 | 210 | 174 | 193 | H 400 x 400 x 18 x 28  | 67  | 80  | 42  | 55  |                       |     |     |    |     |
| C 310 x 37         | 162 | 178 | 146 | 162 | H 400 x 400 x 20 x 35  | 55  | 67  | 35  | 46  |                       |     |     |    |     |
| C 310 x 45         | 131 | 145 | 121 | 135 | H 400 x 400 x 30 x 50  | 39  | 47  | 25  | 33  |                       |     |     |    |     |
|                    |     |     |     |     | H 500 x 200 x 9 x 14   | 156 | 176 | 120 | 140 |                       |     |     |    |     |
|                    |     |     |     |     | H 500 x 200 x 10 x 16  | 139 | 157 | 107 | 125 |                       |     |     |    |     |
|                    |     |     |     |     | H 500 x 200 x 11 x 19  | 121 | 137 | 94  | 109 |                       |     |     |    |     |
|                    |     |     |     |     | H 500 x 300 x 11 x 15  | 129 | 150 | 90  | 111 |                       |     |     |    |     |
|                    |     |     |     |     | H 500 x 300 x 11 x 18  | 115 | 134 | 80  | 99  |                       |     |     |    |     |



# Le respect de l'environnement est l'affaire de tous



## Le respect de l'environnement est l'affaire de tous

La totalité de la production de ProfilARBED est réalisée à partir de **ferrailles indéfiniment recyclables**.

Le "**développement durable**" associe tous les acteurs décisionnaires dans la **démarche environnementale** du groupe pour **respecter l'environnement** autant que la **sécurité des hommes**.

La construction en acier **limite les effets de nuisances des chantiers** tels que le bruit, la poussière, l'encombrement avec un **bilan énergétique favorable**.

Nous nous donnons les moyens nécessaires pour mesurer l'impact environnemental d'un bâtiment depuis la fabrication jusqu'à sa déconstruction. L'ensemble des sites de ProfilARBED est engagé dans une démarche d'implémentation d'un Système de **Management Environnemental conforme à la norme ISO 14001**.

## Protecting the environment is everyone's concern

ProfilARBED's **entire production** is made from **indefinitely recyclable scrap**. Our concept of "**sustainable development**" involves all the decision-making players in the group's environmental policy, which ensures that as much attention is paid to **environmental concerns** as to **safety issues**.

Use of steel in construction **limits the nuisance caused by building sites**; **factors** such as noise, dust and the large surface areas involved, thus helping to restore a **favourable energy balance**.

We are using the resources necessary to measure the environmental impact of a building from initial construction until demolition. All the production sites of ProfilARBED are in the process of implementing an **Environmental Management System which is in accordance with the ISO 14001 standard**.

## Umweltschutz geht jeden an

Der Werkstoff Stahl ist nahezu **unbegrenzt recyclebar**, und die gesamte ProfilARBED-Produktion wird aus wieder verwendbarem Schrott bzw. Rohstoff hergestellt.

Das Konzept der „**nachhaltigen Entwicklung**“ vereint alle Entscheidungsträger in den **Bemühungen** der Gruppe **um Umweltschutz und Sicherheit am Arbeitsplatz**. Stahl hilft, die **baustellentypischen Umweltbeeinträchtigungen** wie Lärm, Staub und Beanspruchung großer Flächen zu **vermindern**. Darüber hinaus ist die **Energiebilanz äußerst günstig**.

Wir verfügen über die erforderlichen Mittel, die Umweltauswirkungen eines Gebäudes – von dessen Erstellung bis zum Abriss – zu bemessen. Zudem: Sämtliche Produktionsstandorte von ProfilARBED sind dabei, das **Umweltmanagement nach der Norm ISO 14001** einzuführen.



**PROFIL ARBED**

[www.europrofil.lu](http://www.europrofil.lu)



## Notations et formules

Dans la mesure du possible, les designations sont celles de l'Eurocode.

Les formules imprimées sur fond couleur se rapportent uniquement aux poutrelles I et H à ailes parallèles.

**A** aire de section

## Notations and formulas

The designations correspond as far as possible to those of the Eurocode.

The formulas printed on a colour background are only valid for I and H sections with parallel flanges.

**A** area of section

## Bezeichnungen und Formeln

Die verwendeten Formeln stimmen so weit wie möglich mit denjenigen des Eurocode überein.

Die Formeln auf farbiger Unterlage beziehen sich auf parallelförmige I- und H-Träger.

**A** Querschnittsfläche

$$A = 2 t_f b + (h - 2 t_f) t_w + (4 - \pi) r^2$$

**A<sub>G</sub>** surface à peindre par unité de masse

**A<sub>G</sub>** painting surface per unit mass

**A<sub>G</sub>** Anstrichfläche pro Masseneinheit

$$A_G = \frac{A_L}{A \cdot \rho_a}$$

**A<sub>L</sub>** surface à peindre par unité de longueur

**A<sub>L</sub>** painting surface per unit length

**A<sub>L</sub>** Anstrichfläche pro Längeneinheit

$$A_L = [4 (b - 2 r) + 2 (h - t_w) + 2 \pi r] \frac{L}{L}$$

**A<sub>m</sub>** surface de l'élément métallique exposée au feu par unité de longueur

**A<sub>m</sub>** surface area of the steel section exposed to fire per unit length

**A<sub>m</sub>** dem Feuer ausgesetzte Fläche des Stahlträgers pro Längeneinheit

**A<sub>net</sub>** aire nette de la section après déduction d'un trou de boulon

**A<sub>net</sub>** net area of section after deduction of a single bolt hole

**A<sub>net</sub>** Netto-Querschnittsfläche nach Abzug eines einzelnen Schraubenlochs

**A<sub>p</sub>** surface interne de la protection contre le feu par unité de longueur

**A<sub>p</sub>** area of the inner surface of the fire protection material per unit length

**A<sub>p</sub>** innere Abwicklungsfläche der Feuerverkleidung pro Längeneinheit

**A<sub>vz</sub>** aire de cisaillement effort parallèle à l'âme

**A<sub>vz</sub>** shear area load parallel to web

**A<sub>vz</sub>** wirksame Schubfläche Lastichtung in Stegebene

$$A_{vz} = A - 2 b t_f + (t_w + 2 r) t_f$$

**α** inclinaison des axes principaux d'inertie

**α** inclination of main axes of inertia

**α** Neigung der Hauptträgheitsachsen

**b** largeur du profilé

**b** width of section

**b** Profilbreite

**d** hauteur de la portion droite de l'âme

**d** depth of straight portion of web

**d** Höhe des geraden Stegteils

$$d = h - 2 t_f - 2 r$$

**$e_{min}, e_{max}$  pinces admissibles**  
pour assemblages par boulons,  
calculées pour assurer une surface  
d'assise en dehors du rayon de congé  
et pour respecter les distances mini-  
male et maximale des bords conformé-  
ment à ENV 1993-1-1: 1992 § 6.5.1.  
Ces conditions sont également res-  
pectées pour des boulons d'un  
diamètre inférieur à  $\emptyset$ . Les valeurs  
sont calculées en prenant en  
compte des trous à jeu nominal de  
2 mm pour les boulons M10 à M24,  
et de 3 mm pour les boulons M27.

Il y a lieu de vérifier au cas par cas  
la stabilité au voilement local et, si  
besoin est, les critères de résistance  
à la corrosion.

**G masse par unité de longueur**

**$e_{min}, e_{max}$  allowable edge distances**  
for bolted connections, determined  
for an arrangement of the contact  
area outside of the radius of the  
root fillet and to satisfy the  
requirements of ENV 1993-1-1 : 1992  
§ 6.5.1 for minimum and maximum  
edge distances. These conditions  
are also fulfilled for bolt diameters  
smaller than  $\emptyset$ . The values are  
calculated considering a nominal  
clearance in holes of 2mm for M10  
to M24 bolts and of 3mm for M27  
bolts.

Local buckling requirements and,  
if applicable, the resistance to  
corrosion have to be checked.

**G mass per unit length**

**$e_{min}, e_{max}$  zulässiger Randabstand**  
für geschraubte Verbindungen zur  
Positionierung der Auflagerfläche  
außerhalb der Ausrundungen sowie  
zur Einhaltung der minimalen und  
maximalen Randabstände nach ENV  
1993-1-1 : 1992 § 6.5.1. Diese  
Bedingungen sind ebenfalls für  
Schraubendurchmesser kleiner als  $\emptyset$   
erfüllt. Die Werte sind für ein  
Nennlochspiel von 2mm für  
Schraubengrößen M10 bis M24 und  
von 3mm für Schraubengröße  
M27 berechnet.

Von Fall zu Fall müssen die örtliche  
Beulsicherheit und gegebenenfalls  
der Korrosionswiderstand geprüft  
werden.

**G Masse pro Längeneinheit**

$$G = A \rho_a$$

**h hauteur du profilé**

**h depth of section**

**h Profilhöhe**

**$h_i$  hauteur intérieure entre les ailes**

**$h_i$  inner depth between flanges**

**$h_i$  innere Höhe zwischen Flanschen**

$$h_i = h - 2 t_f$$

**I moment d'inertie de flexion**

**I second moment of area**

**I Flächenmoment 2. Grades**

$$I_y = \frac{1}{12} [b h^3 - (b - t_w) (h - 2 t_f)^3] + 0.03 r^4 + 0.2146 r^2 (h - 2 t_f - 0.4468 r)^2$$

$$I_z = \frac{1}{12} [2 t_f b^3 + (h - 2 t_f) t_w^3] + 0.03 r^4 + 0.2146 r^2 (t_w + 0.4468 r)^2$$

**i rayon de giration**

**i radius of gyration**

**i Trägheitshalbmesser**

$$i_y = \sqrt{\frac{I_y}{A}}$$

$$i_z = \sqrt{\frac{I_z}{A}}$$

$$i_u = \sqrt{\frac{I_u}{A}}$$

$$i_v = \sqrt{\frac{I_v}{A}}$$

**$I_t$  moment d'inertie de torsion**

**$I_t$  torsion constant**

**$I_t$  Torsionsflächenmoment  
2. Grades**

$$I_t = \frac{2}{3} (b - 0.63 t_f) t_f^3 + \frac{1}{3} (h - 2 t_f) t_w^3 + 2 \left( \frac{t_w}{t_f} \right) \left( 0.145 + 0.1 \frac{r}{t_f} \right) \left[ \frac{(r + t_w/2)^2 + (r + t_f)^2 - r^2}{2 r + t_f} \right]^4$$

**$I_w$**  moment d'inertie de gauchissement  
par rapport au centre de cisaillement

**$I_w$**  warping constant  
referred to the shear centre

**$I_w$**  Wölblflächenmoment  
2. Grades  
bezogen auf den Schubmittelpunkt

$$I_w = \frac{t_f b^3}{24} (h - t_f)^2$$

**$I_{yz}$**  moment d'inertie composé  
(moment centrifuge)

**$I_{yz}$**  centrifugal moment

**$I_{yz}$**  Flächenzentrifugalmoment  
2. Grades

**$p_{min}$ ·  $p_{max}$**  pincés admissibles pour assemblages par boulons, calculées pour assurer une surface d'assise en dehors du rayon de congé et pour respecter les distances minimale et maximale des bords et la distance minimale des files situées de part et d'autre de l'âme conformément à ENV 1993-1-1 : 1992 § 6.5.1. Ces conditions sont également respectées pour des boulons d'un diamètre inférieur à Ø. Les valeurs sont calculées en prenant en compte des trous à jeu nominal de 2 mm pour les boulons M10 à M24, et de 3 mm pour les boulons M27.

Il est supposé que l'axe de référence pour le forage des trous est l'axe passant par l'âme à mi-épaisseur. Si tel n'est pas le cas, la valeur de  $p_{min}$  à appliquer peut différer légèrement en fonction des tolérances de laminage.

Il y a lieu de vérifier au cas par cas la stabilité au voilement local et, si besoin est, les critères de résistance à la corrosion.

**$p_{min}$ ·  $p_{max}$**  allowable edge distances for bolted connections, determined for an arrangement of the contact area outside the radius of the root fillet and to satisfy the requirements of ENV 1993-1-1: 1992 § 6.5.1 for minimum and maximum edge distances. These conditions are also fulfilled for bolt diameters smaller than Ø. The values are calculated considering a nominal clearance in holes of 2mm for M10 to M24 bolts and of 3mm for M27 bolts. It is assumed that the reference axis for the drilling of the holes is the centre-line of the web. If not, the applicable  $p_{min}$  value may differ slightly depending on the rolling tolerances.

Local buckling requirements and, if applicable, the resistance to corrosion have to be checked.

**$p_{min}$ ·  $p_{max}$**  zulässiger Randabstand für geschraubte Verbindungen zur Positionierung der Auflagerfläche außerhalb der Ausrundungen sowie zur Einhaltung der minimalen und maximalen Randabstände nach ENV 1993-1-1 : 1992 § 6.5.1. Diese Bedingungen sind ebenfalls für Schraubendurchmesser kleiner als Ø erfüllt. Die Werte sind für ein Nennlochspiel von 2mm für Schraubengrößen M10 bis M24 und von 3mm für Schraubengröße M27 berechnet.

Es wird angenommen, dass die Stegachse die Bezugsachse zur Bohrung der Löcher ist. Sollte dies nicht der Fall sein, kann sich der  $p_{min}$ -Wert in Abhängigkeit der Walztoleranzen leicht verändern.

Von Fall zu Fall müssen die örtliche Beulsicherheit und gegebenenfalls der Korrosionswiderstand geprüft werden.

**Ø** diamètre de boulon maximal

**Ø** maximum bolt diameter

**Ø** maximaler Schraubendurchmesser

**$r, r_1$**  rayon de congé

**$r, r_1$**  radius of root fillet

**$r, r_1$**  Ausrundungsradius

**$r_2$**  rayon de congé extérieur

**$r_2$**  toe radius

**$r_2$**  Abrundungsradius

**$\rho_a$**  masse volumique de l'acier

**$\rho_a$**  unit mass of steel

**$\rho_a$**  Dichte des Stahls

**$s_s$**  longueur d'appui rigide  
suivant ENV 1993-1-1 § 5.7.2

**$s_s$**  length of stiff bearing  
according to ENV 1993-1-1 § 5.7.2

**$s_s$**  Lastverteilungsbreite  
gemäß ENV 1993-1-1 § 5.7.2

$$s_s = t_w + 2 t_f + (4 - 2 \sqrt{2}) r$$

La longueur d'appui rigide de l'aile est la distance sur laquelle une charge est effectivement distribuée; elle influence la résistance de l'âme sans raidisseur d'un profilé adjacent aux efforts transversaux.

The length of stiff bearing on the flange is the distance over which an applied force is effectively distributed. It influences the resistance of the unstiffened web of an adjacent section to transverse forces.

Die Lastverteilungsbreite an den Flanschen ist die Breite, die für die Annahme einer tatsächlichen Lastverteilung zugrundegelegt werden darf. Sie beeinflusst den Widerstand des nicht ausgesteiften Stegs eines angrenzenden Profils gegenüber eingeleiteten Querlasten.



|                       |   |                       |   |                       |   |
|-----------------------|---|-----------------------|---|-----------------------|---|
| <b>t</b>              | <b>épaisseur</b>  | <b>t</b>              | <b>thickness</b>                                  | <b>t</b>              | <b>Stärke</b>                                     |
| <b>t<sub>f</sub></b>  | <b>épaisseur d'aile</b>                                       | <b>t<sub>f</sub></b>  | <b>flange thickness</b>                           | <b>t<sub>f</sub></b>  | <b>Flanschdicke</b>                               |
| <b>t<sub>w</sub></b>  | <b>épaisseur d'âme</b>  | <b>t<sub>w</sub></b>  | <b>web thickness</b>                              | <b>t<sub>w</sub></b>  | <b>Stegdicke</b>                                  |
| <b>u</b>              | <b>distance de la fibre extrême à l'axe principal v/major</b> | <b>u</b>              | <b>distance of extreme fibre to minor v-axis</b>  | <b>u</b>              | <b>Abstand der äußeren Faser zur v-Hauptachse</b> |
| <b>v</b>              | <b>distance de la fibre extrême à l'axe principal u</b>       | <b>v</b>              | <b>distance of extreme fibre to major u-axis</b>  | <b>v</b>              | <b>Abstand der äußeren Faser zur u-Hauptachse</b> |
| <b>V</b>              | <b>volume de l'élément métallique par unité de longueur</b>   | <b>V</b>              | <b>volume of the steel member per unit length</b> | <b>V</b>              | <b>Volumen des Stahlprofils pro Längeneinheit</b> |
| <b>W<sub>el</sub></b> | <b>module de flexion élastique</b>                            | <b>W<sub>el</sub></b> | <b>elastic section modulus</b>                    | <b>W<sub>el</sub></b> | <b>elastisches Widerstandsmoment</b>              |

$$W_y = \frac{2 \cdot I_y}{h} \quad W_z = \frac{2 \cdot I_z}{b}$$

|                       |   |                       |  |                       |  |
|-----------------------|---|-----------------------|--|-----------------------|--|
| <b>W<sub>pl</sub></b> | <b>module de flexion plastique</b>  | <b>W<sub>pl</sub></b> | <b>plastic section modulus</b>   | <b>W<sub>pl</sub></b> | <b>plastisches Widerstandsmoment</b>   |
|                       | Pour un dimensionnement plastique, la section doit appartenir à la classe 1 ou 2 selon la capacité de rotation requise. |                       | For plastic design, the cross section must belong to class 1 or 2 according to the required rotation capacity. |                       | Bei einer plastischen Bemessung muss das Profil der Klasse 1 oder 2, gemäß der erforderlichen Rotationskapazität, angehören. |

$$W_{pl,y} = \frac{t_w h^2}{4} + (b - t_w) (h - t_f) t_f + \frac{4 - \pi}{2} r^2 (h - 2 t_f) + \frac{3 \pi - 10}{3} r^3$$

$$W_{pl,z} = \frac{b^2 t_f}{2} + \frac{h - 2 t_f}{4} t_w^2 + r^3 \left( \frac{10}{3} - \pi \right) + \left( 2 - \frac{\pi}{2} \right) t_w r^2$$

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  | Pour les fers U:<br>W <sub>pl,z'</sub> module de flexion plastique par rapport à l'axe neutre plastique z', parallèle à l'axe z. |  | For channels:<br>W <sub>pl,z'</sub> plastic section modulus referred to plastic neutral z' axis which is parallel to z axis. |  | Für U-Profile:<br>W <sub>pl,z'</sub> plastisches Widerstandsmoment bezogen auf die plastische neutrale z'-Achse, die parallel zur z-Achse ist. |
| <b>y<sub>m</sub></b>                               | <b>distance du centre de cisaillement</b>  | <b>y<sub>m</sub></b>                               | <b>distance of shear centre</b>  | <b>y<sub>m</sub></b>                               | <b>Abstand des Schubmittelpunktes</b>  |
| <b>y<sub>s</sub></b>                               | <b>distance du centre de gravité suivant l'axe y</b>   | <b>y<sub>s</sub></b>                               | <b>distance of centre of gravity along y-axis</b>  | <b>y<sub>s</sub></b>                               | <b>Schwerpunktsabstand in Richtung y-Achse</b>   |
| <b>z<sub>s</sub>, z<sub>1</sub>, z<sub>2</sub></b> | <b>distance du centre de gravité suivant l'axe z</b>   | <b>z<sub>s</sub>, z<sub>1</sub>, z<sub>2</sub></b> | <b>distance of centre of gravity along z-axis</b>  | <b>z<sub>s</sub>, z<sub>1</sub>, z<sub>2</sub></b> | <b>Schwerpunktsabstand in Richtung z-Achse</b>   |

## Classification des sections transversales

selon ENV 1993-1-1 § 5.3 et Annexe D

**Classe 1** – Sections transversales pouvant former une rotule plastique avec la capacité de rotation requise pour une analyse plastique.

**Classe 2** – Sections transversales pouvant développer leur moment de résistance plastique, mais avec une capacité de rotation limitée.

**Classe 3** – Sections transversales dont la contrainte calculée dans la fibre extrême comprimée de l'élément en acier peut atteindre la limite d'élasticité, mais dont le voilement local est susceptible d'empêcher le développement du moment de résistance plastique.

**Classe 4** – Sections transversales dont la résistance au moment fléchissant ou à la compression doit être déterminée avec prise en compte explicite des effets de voilement local.

Dans les tables des profilés, la classification des sections est indiquée pour les deux cas "flexion pure" autour de l'axe fort y-y (âme en flexion, aile en compression) et "compression pure" (âme et aile en compression).

## Classification of cross-sections

according to ENV 1993-1-1 § 5.3 and Appendix D

**Class 1** – These cross-sections can form a plastic hinge with the rotation capacity required for plastic analysis.

**Class 2** – These cross-sections can develop their plastic moment resistance, but have limited rotation capacity.

**Class 3** – Cross-sections of class 3 are those in which the calculated stress in the extreme compression fibre of the steel member can reach its yield strength, but local buckling is liable to prevent development of the plastic moment resistance.

**Class 4** – Cross-sections of class 4 are those in which it is necessary to make explicit allowances for the effects of local buckling when determining their moment resistance or compression resistance.

In the structural shapes tables, the classification of the sections is indicated for both cases "pure bending" about strong axis y-y (web in bending, flange in compression) and "pure compression" (web and flange in compression).

## Einstufung in Querschnittsklassen

gemäß ENV 1993-1-1 § 5.3 und Anlage D

**Klasse 1** – Diese Querschnitte können plastische Gelenke mit ausreichendem Rotationsvermögen für plastische Berechnungen bilden.

**Klasse 2** – Diese Querschnitte weisen plastische Widerstände, aber mit begrenztem Rotationsvermögen auf.

**Klasse 3** – Diese Querschnitte erreichen die Streckgrenze in der ungünstigsten Querschnittsfaser, können aber wegen örtlichen Ausbeulens die plastischen Reserven nicht ausnutzen.

**Klasse 4** – Querschnitte der Klasse 4 sind solche, bei denen die Widerstände gegen Momenten- oder Druckbeanspruchung unter Berücksichtigung des örtlichen Ausbeulens bestimmt werden müssen.

In den Profiltabellen ist die Querschnittsklassifizierung für die beiden Fälle "reine Biegung" über die starke Achse y-y (Steg unter Biegung, Flansch unter Druck) und "reine Druckbeanspruchung" (Steg und Flansch unter Druck) angegeben.

## Conditions techniques de livraison

### Tolérances de laminage

Les tolérances de laminage usuelles sur dimensions, forme, poids et longueur sont données au tableau 9.

Certaines tolérances réduites sont possibles après accord.

### Longueur maximale

Les longueurs maximales réalisables varient entre 18.1m et 33m suivant le profilé. Des longueurs supérieures sont uniquement livrables sur demande.

### Tonnage minimal

Sauf spécification contraire dans les tableaux des profilés, le tonnage minimal de chaque commande s'élève à 5 tonnes par profilé, qualité, longueur et destination.

### Etat de surface

L'état de surface normal des sections est conforme à EN 10163-3 : 1991, classe C, sous-classe 1.

### Contrôle par ultrasons

Le contrôle par ultrasons est exécuté suivant accord et moyennant un supplément de prix. La procédure du contrôle est déterminée d'un commun accord entre le client et le producteur.

### Certification

Le type de certification doit être spécifié au moment de la commande.

### Délais de livraison

Les délais de livraison sont à convenir avec notre représentation locale.

## Technical delivery conditions

### Rolling tolerances

The usual rolling tolerances on dimensions, shape, weight and length are given in table 9.

Specific tolerances can be reduced after agreement.

### Maximum length available

The maximum length varies between 18.1 and 33m depending on the shape. Greater lengths are available upon request.

### Minimum tonnage

Unless otherwise indicated in the section tables, the minimum tonnage for any order is 5 tonnes per section, quality, length and destination.

### Surface conditioning

Material is delivered in standard ex-mill condition with surface quality in acc. with EN 10163-3 : 1991, class c, subclass 1.

### Ultrasonic testing

Ultrasonic testing is carried out upon agreement at an extra. The procedure for this test must be agreed between the purchaser and the manufacturer.

### Certification

The type of certification shall be specified at the time of order.

### Terms of delivery

Please contact our local representative.

## Technische Lieferbedingungen

### Walztoleranzen

Die üblichen Walztoleranzen auf Abmessungen, Form, Gewicht und Länge sind in der Tabelle 9 aufgezeigt.

Spezifische Toleranzen können nach Absprache reduziert werden.

### Maximale Herstelllänge

Die maximale Länge beträgt 18.1m bis 33m je nach Profil. Größere Längen können nach Absprache geliefert werden.

### Mindestbestellmenge

Falls nicht anders in den Profiltabellen angegeben, beträgt die Mindestbestellmenge 5 Tonnen pro Profil, Stahlgüte, Länge und Bestimmungsort.

### Oberflächenbeschaffenheit

Im Normalfall wird das Material hinsichtlich seiner Oberflächenbeschaffenheit in der Grundanforderung gemäß EN 10163-3 : 1991 Teil 3, Klasse C, Untergruppe 1 geliefert.

### Ultraschallprüfungen

Gesonderte Ultraschallprüfungen können gegen Aufpreis auf Anfrage vereinbart werden. Die Verfahrensweise für die Untersuchung muss zwischen dem Besteller und dem Hersteller vereinbart werden.

### Zertifizierung

Der Typ der Zertifizierung muss bei der Bestellung vereinbart werden.

### Lieferfristen

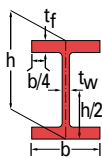
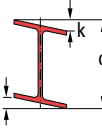
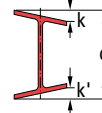
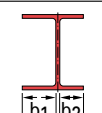
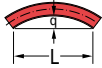
Bitte erkundigen Sie sich bei unserer örtlichen Niederlassung.



## Tableau 9: Tolérances de laminage

## Table 9: Rolling tolerances

## Tabelle 9: Walztoleranzen

| Profils<br>Sections<br>Profile                               |   | IPE, IPE A, IPE O<br>HE AA, HE A, HE B, HE M<br>HL A, B, M, R<br>HD 260, HD 320, HP,<br>UB, UC, UBP |   | IPN  |  | W<br>HD 360, HD 400<br>HL 920<br>HP (ASTM) |   | HL 1000 avec/with/mit G ≥777 kg/m<br>HE avec/with/mit G <sub>HE</sub> >G <sub>HE M</sub><br>Poutrelles laminées sur mesure<br>Tailor-made sections<br>Nach Maß gewalzte Träger |   |  |
|--|---|---|---|--|--|--|---|--|---|--|
| Norme / Standard / Norm                                      |   | EN 10 034: 1993   |   | EN 10 024: 1995  |  | ASTM A6 - 98                               |   | ProfilARBED <sup>4)</sup>  |   |  |
| Hauteur<br>Depth<br>Höhe                                     | h<br>(mm)                                 |                    | h≤180<br>180<h≤400<br>400<h≤700<br>h>700  | +3/-2<br>+4/-2<br>+5/-3<br>+5/-5                               | h≤200<br>200<h≤400<br>h>400  | ±2<br>±3<br>±4                             | +4/-3<br><br><br><br>c≤h+6  | h≤180<br>180<h≤400<br>400<h≤700<br>h>700   | +4/-3<br>+5/-3<br>+6/-4<br>+6/-6  |  |
| Largeur d'aile<br>Flange width<br>Flanschbreite              | b<br>(mm)                                 |   | b≤110<br>110<b≤210<br>210<b≤325<br>b>325  | +4/-1<br>+4/-2<br>+4/-4<br>+6/-5                               | b≤75<br>75<b≤100<br>100<b≤125<br>b>125   | ±1.5<br>±2<br>±2.5<br>±3                   | +6/-5<br><br><br><br>   | b≤110<br>110<b≤210<br>210<b≤325<br>b>325   | +5/-2<br>+5/-3<br>+5/-5<br>+7/-6  |  |
| Epaisseur d'âme<br>Web thickness<br>Stegdicke                | t <sub>w</sub><br>(mm)                    |   | t <sub>w</sub> <7<br>7≤t <sub>w</sub> <10<br>10≤t <sub>w</sub> <20<br>20≤t <sub>w</sub> <40<br>40≤t <sub>w</sub> <60<br>t <sub>w</sub> ≥60                              | ±0.7<br>±1<br>±1.5<br>±2<br>±2.5<br>±3                         | t <sub>w</sub> ≤7<br>7<t <sub>w</sub> ≤10<br>t <sub>w</sub> >10                          | +0.5/-1<br>+0.7/-1.5<br>+1/-2              | limitée par la tolérance sur la masse<br>limited by mass tolerance<br>durch die Massentoleranz begrenzt | t <sub>w</sub> <7<br>7≤t <sub>w</sub> <10<br>10≤t <sub>w</sub> <20<br>20≤t <sub>w</sub> <40<br>40≤t <sub>w</sub> <60<br>t <sub>w</sub> ≥60                                     | ±0.7<br>±1<br>±1.5<br>±2<br>±2.5<br>±3  |  |
| Epaisseur d'aile<br>Flange thickness<br>Flanschdicke         | t <sub>f</sub><br>(mm)                    |                  | t <sub>f</sub> <6.5<br>6.5≤t <sub>f</sub> <10<br>10≤t <sub>f</sub> <20<br>20≤t <sub>f</sub> <30<br>30≤t <sub>f</sub> <40<br>40≤t <sub>f</sub> <60<br>t <sub>f</sub> ≥60 | +1.5/-0.5<br>+2/-1<br>+2.5/-1.5<br>+2.5/-2<br>±2.5<br>±3<br>±4 | t <sub>f</sub> ≤7<br>7<t <sub>f</sub> ≤10<br>10<t <sub>f</sub> ≤20<br>t <sub>f</sub> >20 | +1.5/-0.5<br>+2/-1<br>+2.5/-1.5<br>+2.5/-2 |   | limitée par la tolérance sur la masse<br>limited by mass tolerance<br>durch die Massentoleranz begrenzt  | t <sub>f</sub> <6.5<br>6.5≤t <sub>f</sub> <10<br>10≤t <sub>f</sub> <20<br>20≤t <sub>f</sub> <30<br>30≤t <sub>f</sub> <40<br>40≤t <sub>f</sub> <60<br>t <sub>f</sub> ≥60 | +1.5/-0.5<br>+2/-1<br>+2.5/-1.5<br>+2.5/-2<br>±2.5<br>±3<br>±4 |
| Défaut d'équerrage<br>Out-of-square<br>Flanschunparallelität | k+k'<br>(mm)                              |                  | b≤110<br>b>110  | 1.5<br>0.02 b<br>(max. 6.5)                                    | b≤100<br>b>100   | 2<br>0.02 b                                | h≤310<br>h>310  | 6<br>8   | b≤110<br>b>110  | 1.5<br>0.03 b<br>(max. 8.0)                                    |
| Défaut de symétrie<br>Web off-centre<br>Stegaubermittigkeit  | e<br>(mm)                                 |                  | t <sub>f</sub> <40<br>b≤110<br>110<b≤325<br>b>325<br><br>t <sub>f</sub> ≥40 :<br>110<b≤325<br>b>325   | 2.5<br>3.5<br>5<br><br>5<br>8                                  | b≤100<br>b>100   | 2<br>3                                     | G≤634 kg/m<br>G>634 kg/m  | 5<br>8   | t <sub>f</sub> <40 :<br>b≤110<br>110<b≤325<br>b>325<br><br>t <sub>f</sub> ≥40 :<br>110<b≤325<br>b>325   | 3.5<br>4.5<br>6<br><br>6<br>8                                  |
| e=(b1-b2)/2  |   |   |   |  |  |  |   |  |   |  |
| Rectitude<br>Straightness<br>Geradheit                       | q <sub>yy</sub> , q <sub>zz</sub><br>(mm) |                  | 80<h≤180<br>180<h≤360<br>h>360  | 0.003 L<br>0.0015 L<br>0.001 L                                 | h≤180<br>180<h≤360<br>h>360  | 0.003 L<br>0.0015 L<br>0.001 L             | 0.001 L <sup>2)</sup>   |  | 80<h≤180<br>180<h≤360<br>h>360  | 0.003 L<br>0.0015 L<br>0.001 L                                 |
| Longueur<br>Length<br>Länge                                  | L<br>(mm)                                 |   | -0/+100 <sup>1) 3)</sup><br>±50   |  | -0/+100 <sup>1) 3)</sup><br>±50  |  | -0/+100 <sup>1) 3)</sup>  |  | -0/+100 <sup>3)</sup>   |  |
| Masse / Mass / Masse   | G (%)                                     |   | ±4  |  | ±4   |  | ±2.5  |  | ±4  |  |

<sup>1)</sup> Si une longueur minimale est spécifiée

<sup>2)</sup>  $b < 150$  :  $q_{zz} \leq 0.002 L$   
W200x200, W250x250, W310x310, W360x370, W360x410  
spécifiés comme poteaux à la commande:  
 $L \leq 14m$ : 0.001 L (max. 10mm)  
 $L > 14m$ : 10+0.001 (L-14000)

<sup>3)</sup> Tolérances usuelles

<sup>4)</sup> Tolérances réduites après accord

<sup>1)</sup> If a minimum length is specified

<sup>2)</sup>  $b < 150$  :  $q_{zz} \leq 0.002 L$   
W200x200, W250x250, W310x310, W360x370, W360x410  
if specified on order as columns:  
 $L \leq 14m$ : 0.001 L (max. 10mm)  
 $L > 14m$ : 10+0.001 (L-14000)

<sup>3)</sup> Usual tolerances

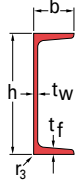
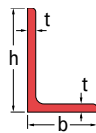
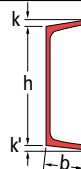
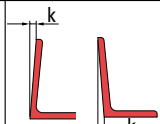

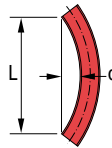
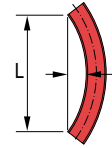
<sup>4)</sup> Reduced tolerances after agreement

<sup>1)</sup> Wenn eine Mindestlänge gefordert wird

<sup>2)</sup>  $b < 150$  :  $q_{zz} \leq 0.002 L$   
W200x200, W250x250, W310x310, W360x370, W360x410  
als Stützen bestellt:  
 $L \leq 14m$ : 0.001 L (max. 10mm)  
 $L > 14m$ : 10+0.001 (L-14000)

<sup>3)</sup> Übliche Toleranzen

<sup>4)</sup> Reduzierte Toleranzen nach Absprache

| Profils<br>Sections<br>Profile                             |   |   | UPN<br>UAP  |   | C                               |                               | L  |  |  | L  |         |                                  |                             |
|--|---|---|---|---|---------------------------------|-------------------------------|--|--|--|--|---------|----------------------------------|-----------------------------|
| Norme / Standard / Norm                                    |   |   | EN 10279: 2000  |   | ASTM A6 - 98                    |                               | EN 10 056-2: 1994  |  |  | ASTM A6 - 98   |         |                                  |                             |
| Hauteur<br>Depth<br>Höhe                                   | h<br>(mm)                                 |    | 80≤h≤200<br>200<h≤400<br>h>400                                    | ±2<br>±3<br>±4  | 75 ≤h≤180<br>180<h≤360<br>h>360 | -2 / +3<br>-3 / +3<br>-4 / +5 |    | h≤50<br>50<h≤100<br>100<h≤150<br>150<h≤200   | ±1<br>±2<br>±3<br>±4                   | h>150  | -3 / +5 |                                  |                             |
| Largeur d'aile<br>Flange width<br>Flanschbreite            | b<br>(mm)                                 |   | b≤50<br>50<b≤100<br>100<b≤125<br>b>125                            | ±1.5<br>±2<br>±2.5<br>±3  | 75≤h≤180<br>180<h≤360<br>h>360  | -3 / +3<br>-4 / +3<br>-5 / +3 |  |  |  |  |         |                                  |                             |
| Epaisseur d'âme<br>Web thickness<br>Stegdicke              | t <sub>w</sub><br>(mm)                    |   | t <sub>w</sub> ≤10<br>t <sub>w</sub> >10                          | ±0.5<br>±0.7  |                                 |                               |  |  |  |  |         | t≤5<br>5<t≤10<br>10<t≤15<br>t>15 | ±0.5<br>±0.75<br>±1<br>±1.2 |
| Epaisseur d'aile<br>Flange thickness<br>Flanschdicke       | t <sub>f</sub><br>(mm)                    |   | t <sub>f</sub> ≤10<br>10<t <sub>f</sub> ≤15<br>t <sub>f</sub> >15 | -0.5 <sup>(2)</sup><br>-1 <sup>(2)</sup><br>-1.5 <sup>(3)</sup>   |                                 |                               |  |  |  |  |         |                                  |                             |
| Rayon d'arrondi<br>Heel radius<br>Kantenradius             | r <sub>3</sub><br>(mm)                    |   | 80≤h≤400  | ≤0.3t <sub>f</sub>  |                                 |                               |  |  |  |  |         |                                  |                             |
| Défaut d'équerrage<br>Out-of-square<br>Flanschparallelität | k (k')<br>(mm)                            |  | b≤100<br>b>100  | k+k'≤2<br>k+k'≤0.025 b  | k+k'≤0.03 b                     |                               |  | h≤100<br>100<h≤150<br>150<h≤200              | 1<br>1.5<br>2                          |  | 0.026 h |                                  |                             |
| Incurvation de l'âme<br>Web deformation<br>Stegausbiegung  | f<br>(mm)                                 |  | h≤100<br>100<h≤200<br>200<h≤400                                   | ±0.5<br>±1<br>±1.5  |                                 |                               |  |  |  |  |         |                                  |                             |
| Rectitude<br>Straightness<br>Geradheit                     | q <sub>yy</sub> , q <sub>zz</sub><br>(mm) |  | h≤100<br>150<h≤300<br>h>300                                       | q <sub>yy</sub> ≤0.003 L<br>q <sub>zz</sub> ≤0.005 L<br>q <sub>yy</sub> ≤0.002 L<br>q <sub>zz</sub> ≤0.003 L<br>q <sub>yy</sub> ≤0.0015 L<br>q <sub>zz</sub> ≤0.002 L | q <sub>yy</sub> ≤0.002 L        |                               |  | h≤150<br>150<h≤200<br><br>h≤150<br>150<h≤200 | 0.004 L<br>0.002 L<br><br>1500<br>2000 | L <sup>(2)</sup><br>q <sub>yy</sub> /q <sub>zz</sub><br><br>6<br>3 | h≥75    | q <sub>yy</sub> ≤0.002 L         |                             |
| Longueur<br>Length<br>Länge                                | L<br>(mm)                                 |   | -0/+100 <sup>(1,4)</sup><br>±50                                   |   | -0/+100 <sup>(1,4)</sup>        |                               |  | -0/+100 <sup>(1,4)</sup><br>±50              |  | -0/+100 <sup>(1,4)</sup>   |         |                                  |                             |
| Masse / Mass / Masse                                       | G<br>(%)                                  |   | h≤125<br>h>125  | ±6<br>±4  | ±2.5                            |                               |  | t≤4<br>t>4                                   | ±6<br>±4                               | h≥75   | ±2.5    |                                  |                             |

<sup>1)</sup> Si une longueur minimale est spécifiée  
<sup>2)</sup> Ecart en plus limité par la tolérance de masse  
<sup>3)</sup>  $L''$  = longueur considérée d'une partie quelconque  
<sup>4)</sup> Tolérances usuelles

<sup>1)</sup> If a minimum length is specified  
<sup>2)</sup> Plus deviation limited by mass tolerance  
<sup>3)</sup>  $L''$  = length considered over any part  
<sup>4)</sup> Usual tolerances

<sup>1)</sup> Wenn eine Mindestlänge gefordert wird  
<sup>2)</sup> Plusabweichung durch die Massentoleranz begrenzt  
<sup>3)</sup>  $L''$  = Messlänge jeder Teillänge  
<sup>4)</sup> Übliche Toleranzen

## Conditions générales de livraison

Sauf spécifications contraires, les conditions générales de livraison sont conformes à EN 10021: 1993. Un exemplaire du document est disponible sur demande ou sur le site internet d'Europrofil [www.europrofil.lu](http://www.europrofil.lu)

## Assurance Qualité

Le système d'Assurance Qualité de ProfilARBED est certifié ISO 9001.

De plus, des agréments nationaux et des sigles de qualité (par exemple sigle 'Ü' en Allemagne, marque 'NF' en France, marque 'B' en Pologne, etc.) attestent la conformité aux normes des produits ProfilARBED, le contrôle de qualité de fabrication selon des critères précis et leur identification d'origine.

## Parachèvement

Nos possibilités de parachèvement comprennent:

- Le perçage
- L'oxycoupage
- Le découpage en T
- Le grugeage
- Le contrefléchage
- Le redressage
- Le sciage à froid
- Le cintrage
- Le soudage et la pose de goujons
- Le traitement de surface

## General delivery conditions

If not otherwise specified, general delivery conditions are in accordance with EN 10021: 1993. The document is available upon request and can be found on the Internet site of Europrofil [www.europrofil.lu](http://www.europrofil.lu)

## Quality Assurance

ProfilARBED's Quality Assurance System is ISO 9001 certified.

In addition, national approvals and quality marks (for example 'Ü' mark in Germany, 'NF' mark in France, 'B' mark in Poland, etc.) certify that the products from ProfilARBED fulfil the requirements of the applicable standards, that the control of the fabrication process satisfies certain criteria and that the origin of the products can be clearly identified.

## Fabrication

Our beam processing includes:

- Drilling
- Flame cutting
- T cutting
- Coping
- Cambering
- Straightening
- Cold sawing
- Beam bending
- Welding of stud shear connectors
- Surface coating

## Allgemeine Lieferbedingungen

Sofern keine gesonderte Vereinbarung vorliegt, gelten für die allgemeinen Lieferbedingungen die Angaben der EN 10021: 1993. Ein Exemplar des Dokumentes ist auf Anfrage verfügbar und kann auf der Internetseite von Europrofil [www.europrofil.lu](http://www.europrofil.lu) eingesehen werden.

## Qualitätssicherung

Das Qualitätssicherungssystem der ProfilARBED ist nach ISO 9001 zertifiziert.

Zusätzlich werden die Produkte der ProfilARBED durch nationale Zulassungen und Gütesiegel (zum Beispiel 'Ü'-Zeichen in Deutschland, 'NF'-Zeichen in Frankreich, 'B'-Zeichen in Polen, usw.) gekennzeichnet, die die Übereinstimmung mit den Normen, die Kontrolle des Fabrikationsprozesses nach festgelegten Kriterien sowie den Ursprung des Materials bestätigen.

## Anarbeitung

Unser Servicekatalog umfasst:

- Bohren
- Brennschneiden
- T-Eisen coupieren
- Ausklinken
- Überhöhen
- Richten
- Kaltsägen
- Biegen
- Anschweißen von Kopfbolzendübeln
- Oberflächenbehandeln

# ProfilARBED à la pointe des exigences qualitatives



## ProfilARBED à la pointe des exigences qualitatives

EUROPROFIL, société commerciale de ProfilARBED, ainsi que l'ensemble des usines de ProfilARBED vous **garantissent une qualité totale** répondant aux besoins des utilisateurs.

Leader dans le secteur de la construction métallique et mécanique ainsi que dans l'offshore, ProfilARBED est à même **d'assurer la traçabilité** de ses produits et de **satisfaire aux strictes exigences de la norme internationale ISO 9001.**

## ProfilARBED at the cutting edge of quality requirements

EUROPROFIL, ProfilARBED's sales organization, together with all ProfilARBED's production plants, guarantees **total quality** to meet users' requirements.

As a leader in the metallic construction, mechanical engineering and offshore sectors, ProfilARBED is able to **ensure the traceability of all products** and to **meet the stringent requirements of the international standard ISO 9001.**

## ProfilARBED – der Name bürgt für höchste Qualität

EUROPROFIL, die Verkaufsgesellschaft von ProfilARBED, **garantiert** im Verbund mit sämtlichen ProfilARBED-Werken **hervorragende Qualität** und eine optimale Ausrichtung auf die wachsenden Kundenanforderungen.

Als Marktführer in den Bereichen Stahlbau, Maschinenbau und Offshore **gewährleistet** ProfilARBED nicht nur die **Rückverfolgbarkeit** der Produkte, sondern auch die **Erfüllung der strengen Vorgaben der internationalen Norm ISO 9001.**

# ISO 9001

**PROFILARBED**  
www.europrofil.lu

## Poutrelles sur mesure

A partir de certaines séries de poutrelles standardisées, une gamme de profilés dérivés, les poutrelles laminées sur mesure, sont à la disposition des constructeurs.

L'utilisateur a la possibilité de déterminer lui-même son profilé désiré et de le faire laminé sur mesure. Grâce à la technique de laminage universelle, la fabrication de poutrelles sur mesure devient rationnelle et économique.

Le laminage de poutrelles sur mesure est sujet à un tonnage minimal de 100 tonnes par profilé et nuance.

## Assistance technique

ProfilARBED offre une assistance technique personnalisée et gratuite. Nos clients peuvent ainsi tirer le meilleur parti des résultats engendrés par les activités de notre propre centre de recherches et de notre coopération avec les universités, les instituts d'Etat, les bureaux d'études ou les entreprises.

Notre équipe d'ingénieurs conseille les utilisateurs pour toutes les questions qui se posent lors de l'utilisation de nos sections. Dans la pratique, l'assistance technique couvre le prédimensionnement de structures, les conseils sur les traitements de surface ou les protections contre le feu, le dimensionnement de poutrelles sur mesure, la métallurgie ou le soudage. Elle inclut également une présence sur chantier en cas de besoin.

## Support informatique

Toutes les informations contenues dans ce catalogue ainsi qu'une série de logiciels spécifiques pour le dimensionnement sont disponibles sur Internet ([www.europrofil.lu](http://www.europrofil.lu))

## Tailor-made beams

Working from the basis of specific standard beam ranges, we can offer the constructor a whole range of derived sections: tailor-made beams.

The user himself can establish the steel section that is needed and have it rolled to measure. With our universal rolling technique, manufacture is both efficient and economic.

The minimum order per tailor-made section and grade is 100 tonnes.

## Technical assistance

ProfilARBED provides product and project related consultancy services free of charge. The expert knowledge is acquired from our in-house research department as well as from the co-operation with universities and consulting engineers and from subsequent development work on techniques and systems.

Our engineers advise users on any question that might arise from the specification and application of our sections. In practice, this technical assistance covers structural predesign, detailing, as well as advice on surface treatment, fire protection, the design of tailor-made sections, metallurgy and welding. It also includes worldwide support for the use of our products at job site.

## Data libraries

All the technical data contained in this booklet as well as specific design programs are available at the Internet address [www.europrofil.lu](http://www.europrofil.lu)

## Träger nach Maß

Ausgehend von bestimmten genormten Profilreihen kann eine ganze Serie von abgeleiteten Profilen angeboten werden: Träger nach Maß.

Dem Verbraucher ist somit die Möglichkeit gegeben, selbst ein Profil zu entwerfen und es nach Maß walzen zu lassen. Durch das angewandte Universalverfahren bleibt der Vorteil der rationellen Herstellung und der Wirtschaftlichkeit dabei erhalten.

Die Mindestbestellmenge beträgt 100 Tonnen pro Träger nach Maß und Güte.

## Technische Beratung

ProfilARBED bietet seinen Kunden eine kostenlose produkt- und projektbezogene technische Beratung. Die zur Verfügung stehenden Kenntnisse resultieren aus den Arbeiten der hausinternen Forschungsabteilung sowie der Kooperation mit Hochschulen und Ingenieurbüros und den daraufhin entwickelten Techniken und Systemen.

Für die Beantwortung aller Fragen, die den Einsatz unserer Profile betreffen, stehen die Ingenieure unseres Beratungsteams zur Verfügung. Diese technische Beratung umfasst Konzeption tragender Bauteile, Entwurf von Trägern nach Maß, konstruktive Details, Oberflächen- und Feuerschutz sowie Metallurgie und Schweißen. Auf Wunsch stehen unsere Fachleute auch weltweit auf der Baustelle zur Verfügung.

## EDV-Unterlagen

Alle in diesem Katalog enthaltenen Daten sowie spezifisch entwickelte Bemessungsprogramme sind im Internet unter der Adresse [www.europrofil.lu](http://www.europrofil.lu) zu finden.



# Interactive sales programme



## Programme de vente interactif

Les données techniques contenues dans ce catalogue sont disponibles sur le site [www.europrofil.lu](http://www.europrofil.lu) ou peuvent être obtenues, dans plusieurs formats, sur **CD-ROM** à l'adresse suivante :

### EUROPROFIL S.A.

Société commerciale de

**PROFILARBED**

66, rue de Luxembourg

L-4221 Esch-sur-Alzette

Tél. : + 352-5313 3007

Fax : + 352-5313 3095

E-mail : [europrofil.sales@profilarbed.lu](mailto:europrofil.sales@profilarbed.lu)

## Interactive sales programme

The technical data contained in this catalogue is available on [www.europrofil.lu](http://www.europrofil.lu) and can also be obtained in several formats on **CD-ROM** by contacting :

### EUROPROFIL S.A.

Sales organization of

**PROFILARBED**

66, rue de Luxembourg

L-4221 Esch-sur-Alzette

Tél. : + 352-5313 3007

Fax : + 352-5313 3095

E-mail : [europrofil.sales@profilarbed.lu](mailto:europrofil.sales@profilarbed.lu)

## Interaktives Verkaufsprogramm

Die in diesem Katalog enthaltenen Daten sind unter [www.europrofil.lu](http://www.europrofil.lu) abrufbar; unter folgender Adresse sind sie in mehreren Formaten auch auf **CD-ROM** erhältlich :

### EUROPROFIL S.A.

Verkaufsgesellschaft der

**PROFILARBED**

66, rue de Luxembourg

L-4221 Esch-sur-Alzette

Tél. : + 352-5313 3007

Fax : + 352-5313 3095

E-mail : [europrofil.sales@profilarbed.lu](mailto:europrofil.sales@profilarbed.lu)



# Une présence mondiale pour être toujours plus proche du client



## Une présence mondiale pour être toujours plus proche du client

Présent dans plus de **65 pays** sur tous les continents et marchés émergents, ProfilARBED est **proche de ses clients** à travers EUROPROFIL sur les marchés Core et TradeARBED ou ses représentants sur les autres marchés.

**Nos sociétés de vente optimisent la relation de partenariat avec leurs clients.**

## Our global network brings us ever-closer to customers

Operating in more than **65 countries** on all five continents and in emerging markets, ProfilARBED stays in **close contact with customers** thanks to EUROPROFIL in Core markets, and TradeARBED or our representatives in other markets.

**Our sales companies maintain a good relationship with their customers.**

## Weltweite Präsenz mit dem Ziel der Kundennähe

In über **65 Ländern** auf allen Kontinenten und in allen aufstrebenden Märkten vertreten, praktiziert ProfilARBED **permanente Kundennähe** – in den Kernmärkten über EUROPROFIL und in den übrigen Märkten über TradeARBED und deren Vertretungen.

**Unsere Verkaufsgesellschaften streben ständig danach, die partnerschaftlichen Beziehungen zu den Kunden zu verbessern.**



**PROFIL ARBED**

[www.europrofil.lu](http://www.europrofil.lu)

## Siège social

## Headquarters

## Hauptsitz

### **Europrofil S.A.**

Sales Organization of ProfilARBED  
66, rue de Luxembourg  
L-4221 Esch-sur-Alzette  
Postal address: L-4009 Esch-sur-Alzette  
Tel.: + 352-5313 3007  
Fax: + 352-5313 3095  
E-mail: [europrofil.sales@profilarbed.lu](mailto:europrofil.sales@profilarbed.lu)  
Internet: [www.europrofil.lu](http://www.europrofil.lu)

## Filiales et agences

## Subsidiaries and agencies

## Filialen und Vertretungen

### **I. EUROPE**

#### **LUXEMBOURG**

Europrofil S.A.  
66, rue de Luxembourg  
L-4221 Esch-sur-Alzette  
Postal address: L-4009 Esch-sur-Alzette  
Tel.: + 352-5313 3007  
Fax: + 352-5313 3095  
E-mail: [europrofil.sales@profilarbed.lu](mailto:europrofil.sales@profilarbed.lu)  
Internet: [www.europrofil.lu](http://www.europrofil.lu)

#### **GERMANY**

Europrofil Deutschland GmbH  
Subbelrather Straße 13  
D-50672 Köln  
P.O.B. 10 12 04, D-50452 Köln  
Tel.: + 49-221-572 90  
Fax: + 49-221-572 92 65  
E-mail: [info@epd.profilarbed.lu](mailto:info@epd.profilarbed.lu)  
Internet: [www.europrofil.de](http://www.europrofil.de)

#### **Branch office:**

Stuttgart  
Rotebühlstraße 85  
D-70178 Stuttgart  
P.O.B. 10 13 21, D-70012 Stuttgart  
Tel.: + 49-711-667 40  
Fax: + 49-711-667 42 40

#### **FRANCE**

Europrofil France S.A.  
91, rue du Faubourg Saint-Honoré  
F-75008 Paris  
Tel.: + 33-1-44 71 12 80  
Fax: + 33-1-44 71 12 96  
E-mail: [europrofil.france@profilarbed.lu](mailto:europrofil.france@profilarbed.lu)  
Internet: [www.europrofil.fr](http://www.europrofil.fr)

#### **BELGIUM, THE NETHERLANDS**

Europrofil Benelux - Nederland B.V.  
Boompjes 40  
NL-3011 XB Rotterdam  
Postbus 2606 NL-3000 CP Rotterdam  
Tel.: + 31-10-20 60 555  
Fax: + 31-10-20 60 559  
E-mail: [europrofil.rotterdam@profilarbed.lu](mailto:europrofil.rotterdam@profilarbed.lu)  
Internet: [www.europrofil.nl](http://www.europrofil.nl)

#### **SWITZERLAND**

TradeARBED (Schweiz) AG  
51, Steinenring CH-4051 Basel  
P.O.B. CH-4002 Basel  
Tel.: + 41-61-227 77 77  
Fax: + 41-61-227 77 66  
E-mail: [ta-switzerland@tradedarbed.com](mailto:ta-switzerland@tradedarbed.com)

#### **AUSTRIA**

TradeARBED Austria GmbH  
Neuschönauer Hauptstraße 32  
A-4400 Steyr  
Tel.: + 43-7252-461 31  
Fax: + 43-7252-485 79  
E-mail: [ta-austria@tradedarbed.com](mailto:ta-austria@tradedarbed.com)

#### **Branch offices:**

Vogelweiderstraße 66  
A-5020 Salzburg  
Tel.: + 43-662-88 67 44  
Fax: + 43-662-88 67 44 10  
E-mail: [manfred.aufleger@tradedarbed.com](mailto:manfred.aufleger@tradedarbed.com)

Bösendorferstraße 4/12  
A-1010 Wien  
Tel.: + 43-1-503 85 85  
Fax: + 43-1-503 93 53  
E-mail: [walter.sautner@tradedarbed.com](mailto:walter.sautner@tradedarbed.com)

#### **GREAT BRITAIN AND IRELAND**

TradeARBED U.K. Limited  
Monaco House, Bristol Street  
Birmingham B5 7AS  
Tel.: + 44-121-622 45 01  
Fax: + 44-121-622 59 28  
E-mail: [ta-uk@tradedarbed.com](mailto:ta-uk@tradedarbed.com)

## SPAIN

TradeARBED España S.A.  
Goya 127 6°  
E-28009 Madrid  
Tel.: + 34-91-309 69 00  
Fax: + 34-91-402 31 41  
E-mail: ta-spain@tradedearbed.com

## ITALY

TradeARBED Italia s.r.l.  
Via Borgogna, 2  
I-20122 Milano  
Tel.: + 39-02-777 29 61  
Fax: + 39-02-76 00 49 79  
E-mail: ta-italy@tradedearbed.com

## SWEDEN

TradeARBED AB  
6, Birger Jarlsgatan  
S-114 34 Stockholm  
Postal address: Box 7334  
S-103 90 Stockholm  
Tel.: + 46-8-679 99 40  
Fax: + 46-8-611 61 55  
E-mail: staffan.ekstrand@tradedearbed.com

## NORWAY

TradeARBED Norge A/S  
Arbinsgate 2  
N-0253 Oslo  
Postboks 2667 Solli N-0203 Oslo  
Tel.: + 47-22-83 78 20  
Fax: + 47-22-83 78 21  
E-mail: klaus.eicke@tradedearbed.com

## DENMARK

TradeARBED Danmark A/S  
Dronningens Tvaergade 6,3.  
P.O.B. 9040  
DK-1022 København K  
Tel.: + 45-33 32 84 00  
Fax: + 45-33 13 10 93  
E-mail: ta-denmark@tradedearbed.com

## FINLAND

TradeARBED Finland OY  
Yrjönkatu 9A3  
FIN-00120 Helsinki  
Tel.: + 358-9-74 22 24 00  
Fax: + 358-9-74 22 24 50  
E-mail: martti.kalliala@tradedearbed.com

## ICELAND

Gudmundur Arason EHF  
Skutuvog 4  
P.O.B. 385  
121 Reykjavik  
Tel.: + 354-568 68 44  
Fax: + 354-568 05 85  
E-mail: garason@itn.is

## GREECE and CYPRUS

Angelos A. Perrakis  
16, rue Drossini,  
GR-Kifissia - 14562  
Tel.: + 30-1-808 56 63  
Fax: + 30-1-808 59 18

## II. EASTERN EUROPE, THE MIDDLE EAST, THE NEAR EAST, SOUTH ASIA, AFRICA

### Regional Headquarters:

TradeARBED Export (Luxembourg) S.A.  
Avenue de la Liberté  
L-2930 Luxembourg  
Tel.: + 352-4792 1  
Fax: + 352-4792 2029  
E-mail: ta-export@tradedearbed.com  
Internet: www.tradedearbedexport.com

### Sales agencies:

#### Community of Independent States

TradeARBED Moscow Rep. Office  
"Stoleshniki" Business Center  
14, Stoleshnikov Per.,  
Ent 1, Floor 3  
Moscow 103031, Russia  
Tel.: + 7-095-721 15 51  
Fax: + 7-095-721 15 55  
E-mail: inazarenko@arbedamericas.com

TradeARBED Kiev Rep. Office  
20, Pushkinska St., Suite # 45  
Kiev, 252004 Ukraine  
Tel.: + 380-44-235 87 35  
Fax: + 380-44-235 87 31  
E-mail: atrade@arbedro.kiev.ua

#### THE CZECH REPUBLIC

TradeARBED Praha s.r.o.  
Evropská 178  
160 67 Praha 6  
Tel.: + 420-2-35 36 30 46  
Fax: + 420-2-35 35 45 43  
E-mail: ta-praha@tradedearbed.com

## SLOVENIA

Krisper d.o.o.  
1117 Ljubljana  
Litostrojska 40  
Slovenia  
Tel./fax: + 386-61-515 38 82  
Tel./fax: + 386-61-515 38 83

## HUNGARY

TradeARBED, Hungarian Rep. Office  
Izsaki ut. 2-6  
H-6000 Kecskemet  
Tel.: + 36-76-48 50 90  
Fax: + 36-76-48 12 78

## POLAND

TradeARBED Polska sp.zo.o. (Ltd)  
ul. Warszawska 65  
PL-40-010 Katowice  
Tel.: + 48-32-203 69 75  
Fax: + 48-32-203 65 00  
E-mail: tradedearbed-polska@tradedearbed-polska.pl

## ESTONIA

Saga AS  
Peterburi 90  
EE-014 Tallinn  
Tel.: + 372-2-635 22 91  
Fax: + 372-2-638 03 31  
E-mail: saga@trenet.ee

## LITHUANIA

UAB "REMINGA"  
Maisiagalos 21 – LT-2042 Vilnius  
Tel.: + 370-2-37 02 70 08 58  
Fax: + 370-2-37 08 54 46 20  
E-mail: wansav@post.omnitel.net

## LATVIA

BSM Trade Ltd  
Gertrudesstr. 20-2a  
LV-1011 Riga  
Tel.: + 371-731 33 51  
Fax: + 371-731 33 51

### Regional offices for the Near East:

#### TURKEY

TradeARBED Celik Dis Ticaret A.S.  
Nispetiye Cad., No. 14  
Ozden Is Merkezi, Kat: 4  
Levent 80260 Istanbul  
Turkey  
Tel.: + 90-212-274 95 75  
Fax: + 90-212-275 49 19  
E-mail: ta-tr@tradedearbed.com



## **JORDAN**

Ayoub Trading Company  
Mutanabbi Street  
P.O.B. 17, Amman 11118  
Tel.: + 962-6-462 34 73  
Fax: + 962-6-465 44 01  
E-mail: ayoub-co@go.com.jo

## **EGYPT**

Sigma for International Supplies  
33, Hassan Sadek Str., Apt. 7 - 3rd floor  
Heliopolis (11341), Cairo - Egypt  
Tel.: + 20-2-417 80 74  
Fax: + 20-2-417 76 92  
E-mail: sigma@mailier.datum.com.eg

## **Regional offices for Maroc, Algeria, Lybia:**

Lapandry Acier S.A.  
67, Avenue des Forces Armées Royales  
Casablanca - Maroc  
Tel.: + 212-2-31 20 37  
Fax: + 212-2-31 90 02  
E-mail: slapandry@casanet.net.ma

## **Regional offices for the Middle East and South Asia:**

### **UNITED ARAB EMIRATES**

TradeARBED Dubai  
Holiday Centre Dubai # 1401  
Sk. Zayed Road, P.O.B. 53608 Duba  
U.A.E.  
Tel.: + 971-4-331 04 35  
Fax: + 971-4-331 45 20  
E-mail: ta-dubai@tradedarbed.com

## **PAKISTAN**

Steel Agencies Corporation  
404 Haji Adam Chamber  
Altaf Hussain Road  
Karachi 74000  
Tel.: + 92-21-241 79 18  
Fax: + 92-21-241 93 24  
E-mail: zahid.dada@attglobal.net

## **INDIA**

TradeARBED India-Liaison offices  
World Trade Center, flat No. 429, 4th floor  
Babar Road  
New Dehli 110001  
Tel.: +91-11-341 46 63  
Fax: +91-11-341 46 70  
E-mail: arbed@del3.vsnl.net.in

## **Regional office for South Africa:**

### **SOUTH AFRICA**

TradeARBED Export (Luxembourg) S.A.  
Avenue de la Liberté  
L-2930 Luxembourg  
Tel.: + 352-4792 1  
Fax: + 352-4792 2029  
E-mail: ta-export@tradedarbed.com  
Internet: www.tradedarbedexport.com

## **III. AMERICA**

### **Regional Headquarters:**

#### **UNITED STATES OF AMERICA**

TradeARBED Inc.  
825 Third Avenue (at 50th Street)  
New York, N.Y. 10022  
Tel.: + 1-212-940 80 00  
Fax: + 1-212-355 21 59  
E-mail: tradedarbed@arbedamericas.com

### **Sales agencies:**

(West Coast Branch Office)  
80 E. Sir Francis Drake Blvd.  
Larkspur, California 94 939-1709  
Tel.: + 1-415-925 01 00  
Fax: + 1-415-461 16 24

## **CANADA**

TradeARBED Canada Inc.  
390 Brant Street, Suite 601  
Burlington, Ontario L7R 4J4  
Tel.: + 1-905-634 14 00  
Fax: + 1-905-634 35 36  
E-mail: mbortolotto@arbedamericas.com

(West Coast Branch Office)  
Suite 211, 3030 Lincoln Avenue  
Coquitlam, British Columbia V3B 6B4  
Tel.: + 1-604-464 67 14  
Fax: + 1-604-464 69 17  
E-mail: Gforshaw@tradedarbed.ca

## **MEXICO**

ARBED Comercial de Mexico, S.A. de C.V.  
Av. 5 de Febrero 305, Oficina 215  
Fracc. La Capilla, C.P. 76170  
Queretaro, Qro.  
Tel.: + 52-42-16 89 95  
Fax: + 52-42-15 25 40  
E-mail: Rviniegra@arbedamericas.com

## **DOMINICAN REPUBLIC**

Casa Alfa C. Por A.  
Calle Primera No. 3 Ensanche Bella Vista  
Santo Domingo  
Tel.: + 1809-80 95 32 25 91  
Fax: + 1809-80 95 35 39 39  
E-mail: sales@casaalfa.com

## **BRAZIL**

ARBED Commercial do Brasil Ltda.  
Avenida Carandai, 1115-23 andar  
30130-915 Belo Horizonte / MG  
Tel.: + 55-31-274 40 10  
Fax: + 55-31-274 40 11  
E-mail: Mcotta@arbedamericas.com

## **CHILE**

ARBED Comercial de Chile  
Avda. Providencia 2330  
Of. 33, Santiago  
Tel.: + 56-2-334 59 43  
Fax: + 56-2-231 97 94  
E-mail: Jfuentes@arbedamericas.com

## **ECUADOR**

Comercial Eurotex Cia. Ltda.  
Av. 10 de Agosto 6011 y Av. America  
Quito, Ecuador  
Tel.: + 593-2-45 21 22  
Fax: + 593-2-44 18 63  
E-mail: eurotex@uio.satnet.net

Comercial Eurotex Cia. Ltda.  
Padre Aguirre 104 y Malecon  
Edificio "El Fortin"  
3er Piso Oficina No. 3  
Guayaquil, Ecuador  
Tel.: + 593-4-56 12 97  
Fax: + 593-4-56 14 77

## **COLOMBIA**

ARBED Comercial de Colombia  
Carrera 19 No. 84-30, Piso 4  
Santa Fe de Bogotá  
Tel.: + 57-1-531 07 07  
Fax: + 57-1-616 62 02  
E-mail: ferro-rr@colomsat.net.co

## **VENEZUELA**

Infranca Trade Inc.  
Av. Romulo Gallegos  
Centro Gerencial Los Andes  
Piso 06  
Oficina 6-F, Caracas  
Tel.: + 58-2-234 90 40  
Fax: + 58-2-234 63 95  
E-mail: Murova@cantv.net



## **PERU**

Metalma S.A.  
Av. Naciones Unidas 1820  
Lima 1  
Tel.: + 51-1-336 53 88  
Fax: + 51-1-336 51 29

## **ARGENTINA**

Henry Hirshen + Cia S.A.  
Av. L. N. Alem 1110 - 09th  
1001 Buenos Aires, Argentina  
Tel.: + 54-11-43 12 15 00  
Fax: + 54-11-43 13 45 12  
E-mail: steel@hirschen.com.ar

## **IV. CHINA, SOUTH EAST ASIA, NORTH EAST ASIA, AUSTRALIA**

### **Regional Headquarters:**

#### **SINGAPORE**

TradeARBED Private Limited  
9 Scotts Road, # 09-01 Pacific Plaza  
Singapore 228 210  
Tel.: + 65-733 90 33  
Fax: + 65-732 59 18  
E-mail: ta-singapore@tradeared.com

#### **PEOPLE'S REPUBLIC OF CHINA**

TradeARBED Beijing  
Representative Office  
Henderson Center,  
Office Tower 3, Room 814  
No. 18 Jianguomennei Avenue  
Beijing 100005  
Tel.: + 86-10-65 18 27 01  
Fax: + 86-10-65 18 27 06  
E-mail: arbed@bj.col.com.cn

TradeARBED Shanghai Representative  
Office  
Room 1910A, Westgate Mall  
1038 Nanjing Road (W)  
Shanghai 200041  
Tel.: + 86-21-62 18 68 04  
Fax: + 86-21-62 18 68 02  
E-mail: arbedshm@public2.sta.net.cn

TradeARBED Hong Kong  
Representative Office  
1605, no9 Queen's Road  
Central Hong Kong  
P.R. of China  
Tel.: + 852-25 26 79 33  
Fax: + 852-25 21 79 05  
E-mail: edmundkc@asiaonline.net

Luxembourg Steel Trading (Shanghai)  
Co. Ltd.  
Westgate Mall 1910A  
1038 Nanjing West Road  
Shanghai 200041  
China  
Tel.: + 86-21-62 67 86 62 / 62 18 68 06  
Fax: + 86-21-62 71 24 08  
E-mail: lugangsh@sh163b.sta.net.cn

#### **SOUTH KOREA**

TradeARBED Korea Representative Office  
Suite 1308, Hwanghwa Bldg.,  
# 832-7 Yocksamdong  
Kangnam-Ku, Seoul  
Tel.: +82-2-569 71 21  
Fax: +82-2-557 81 41  
E-mail: takorea@netgo.com

#### **THAILAND**

TradeARBED Thailand Representative Office  
1126/1 Vanit Building, Room 1607  
New Petchburi Road, Rajtheve,  
Bangkok 10400  
Tel.: + 66-2-255 87 08 10  
Fax: + 66-2-255 87 11  
E-mail: tathail@samart.co.th

#### **TAIWAN**

TradeARBED Taiwan Representative Office  
8F-A3, No. 502, Jiou Ru 1st Rd.,  
Kaohsiung, Taiwan R.O.C.  
Tel.: + 886-7-390 04 25  
Fax: + 886-7-390 04 27  
E-mail: a5814653@ms22.hinet.net

#### **JAPAN**

TradeARBED Japan Representative Office  
8-5 Nihonbashi Honcho 3-Chome  
Yamachu, Nihonbashi Honcho Building  
(4th floor) Chuo-Ku, Tokyo  
Tel.: + 81-3-36 65 07 07  
Fax: + 81-3-36 65 07 10  
E-mail: bza01116@nifty.ne.jp

## **THE PHILIPPINES**

TradeARBED Manila Representative Office  
3rd floor, Prince Building,  
117 Rada St., Legaspi Village  
Makati, Metro Manila  
Tel.: + 63-2-816 38 57  
Fax: + 63-2-816 48 45  
E-mail: taprils@snap.portalinc.com

## **MALAYSIA**

TradeARBED Malaysia Sdn. Bhd.  
Suite 11-5, 11th floor, Menara Aik Hua  
Changkat Raja Chulan  
50200 Kuala Lumpur  
Tel.: + 60-3-238 65 07  
Fax: + 60-3-238 65 16  
E-mail: tarbed@mol.net.my

## **MYANMAR**

Connell Bros. Co. (Myanmar) Ltd  
19/20 Bahosi Ward,  
Bogyoke Aung San Street  
Lanmadaw Township, Yangon  
Tel.: + 95-1-23 70 15  
Fax: + 95-1-277 33

## **INDONESIA**

TradeARBED Indonesia Representative  
Office  
Midplaza Building, 9th floor  
Jalan Jendral Sudirman Kav. 10-11  
Jakarta Pusat 10220  
Tel.: +62-21-570 61 63  
Fax: +62-21-570 62 05  
E-mail: taindo@indosat.ned.id

## **VIETNAM**

TradeARBED  
Vietnam Representative Office  
Unit 1706, 17th floor,  
Saigon Trade Centre,  
37 Ton Duc Thang, Dist. 1  
Hochiminh City  
Tel.: +84-8-910 01 22  
Fax: +84-8-910 01 00  
E-mail: tradearedvn@fmail.vnn.vn

## **AUSTRALIA AND NEW ZEALAND**

Tomen Australia Limited  
Level 26, Chifley Tower  
2 Chifley Square  
Sydney NSW 2000  
Tel.: + 61-2-92 35 64 00  
Fax: + 61-2-92 35 64 99  
E-mail: garano@syd.tomen.com.sg



## Photos

## Photos

## Fotos

1. Rembrandt Tower – Amsterdam • ZZ+P Architekten | 2. Ecole Nationale des Ponts et Chaussées – Paris • Atelier d'Architecture Chaix & Associés – Paris | 3. Times Square – New York • Fox and Fowle Architects – New York | 4. Laboratoire de Recherche Renault – Guyancourt • J.-P. Hamonic | 5. Fischrestaurant Ewald – Husum • Prof. Winking Archit. BDA Hamburg | 6. Office Building Infra+ – Kelpen | 7. Main Tower • HH Schwerger & Commerzbank • Foster & Partners – Frankfurt am Main | 8. Espace Léopold – Bruxelles • Atelier Espace Léopold | 9. Parkhaus P1/P4 Flughafen Stuttgart • Arat Siegel & Partners – Stuttgart | 10. Sony Center Berlin • Murphy & Jahn – Chicago | 11. Pont de la ligne TGV sur l'autoroute A23 à Fretin • France | 12. Kesselgerüst HKW – Cottbus | 13. Erweiterung Nord-Südtribüne Westfalenstadion – Dortmund | 14. Petronas Twin Towers – Kuala Lumpur • Cesar Pelli | 15. Guggenheim Museum – Bilbao • Frank O Gehry & Associates – Santa Monica | 16. Velodrom – Berlin • Dominique Perrault – Paris, Berlin | 17. Parking Helmond • Van den Pauwert Architekten Bureau – Eindhoven | 18. Hall d'exposition – Villepinte • Architecture Studio | 19. Centre administratif du Laminoir de Dudelange et de Sidstahl – Dudelange • M. Scharll | 20. ARBED Office Building – Esch-sur-Alzette • Architekturbüro Böhm – Köln



## Table de conversion

### Longueur / Surface / Volume

## Conversion table

### Length / Area / Volume

## Umrechnungstabelle

### Länge / Fläche / Volumen

|                   |                           |                   |                          |
|-------------------|---------------------------|-------------------|--------------------------|
| 1 mm              | = 0.03937 in              | 1 in (inch)       | = 25.4 mm                |
| 1 cm              | = 0.393701 in             | 1 in (inch)       | = 2.54 cm                |
| 1 m               | = 3.281 ft                | 1 ft (foot)       | = 0.3048 m               |
| 1 cm <sup>2</sup> | = 0.1550 in <sup>2</sup>  | 1 in <sup>2</sup> | = 6.452 cm <sup>2</sup>  |
| 1 m <sup>2</sup>  | = 10.76 ft <sup>2</sup>   | 1 ft <sup>2</sup> | = 0.0929 m <sup>2</sup>  |
| 1 cm <sup>3</sup> | = 0.06102 in <sup>3</sup> | 1 in <sup>3</sup> | = 16.390 cm <sup>3</sup> |
| 1 m <sup>3</sup>  | = 35.31 ft <sup>3</sup>   | 1 ft <sup>3</sup> | = 0.02832 m <sup>3</sup> |
| 1 cm <sup>4</sup> | = 0.02403 in <sup>4</sup> | 1 in <sup>4</sup> | = 41.62 cm <sup>4</sup>  |

### Force / Contrainte

### Force / Stress

### Kraft / Spannung

|                               |                              |                               |                                |
|-------------------------------|------------------------------|-------------------------------|--------------------------------|
| 1 N                           | = 0.2248 lbf                 | 1 lbf (pound-force)           | = 4.448 N                      |
| 1 N / m                       | = 0.06852 lbf / ft           | 1 lbf / ft                    | = 14.59 N / m                  |
| 1 N / mm <sup>2</sup> = 1 MPa | = 145 lbf / in <sup>2</sup>  | 1 lbf / in <sup>2</sup> (psi) | = 0.006895 N / mm <sup>2</sup> |
| 1 N / mm <sup>2</sup> = 1 MPa | = 0.145 ksi                  | 1 ksi                         | = 6.895 N / mm <sup>2</sup>    |
| 1 N / cm <sup>2</sup>         | = 1.45 lbf / in <sup>2</sup> | 1 lbf / in <sup>2</sup>       | = 0.6895 N / cm <sup>2</sup>   |

### Moment

### Moment

### Moment

|       |                   |            |             |
|-------|-------------------|------------|-------------|
| 1 N m | = 8.851 lbf – in  | 1 lbf – in | = 0.113 N m |
| 1 N m | = 0.7376 lbf – ft | 1 lbf – ft | = 1.356 N m |

### Masse

### Mass

### Masse

|                  |                              |                   |                         |
|------------------|------------------------------|-------------------|-------------------------|
| 1 kg             | = 2.205 lb                   | 1 lb (pound-mass) | = 0.4536 kg             |
| 1 tonne (metric) | = 1.102 short ton (2000 lb.) | 1 short ton       | = 0.9072 tonne (metric) |
| 1 tonne (metric) | = 0.9842 long ton (2240 lb.) | 1 long ton        | = 1.016 tonne (metric)  |
| 1 kg / m         | = 0.672 lb / ft              | 1 lb / ft         | = 1.4882 kg / m         |

### Température

### Temperature

### Temperatur

|              |                   |                 |                 |
|--------------|-------------------|-----------------|-----------------|
| °C (Celsius) | = (°F – 32) / 1.8 | °F (Fahrenheit) | = (1.8 °C) + 32 |
|--------------|-------------------|-----------------|-----------------|

### Energie

### Energy

### Energie

|             |                   |          |              |
|-------------|-------------------|----------|--------------|
| 1 J (Joule) | = 0.737562 ft-lbf | 1 ft-lbf | = 1.355818 J |
|-------------|-------------------|----------|--------------|

## Propriétés de l'acier de construction

$\alpha_a$  coefficient de dilatation thermique

## Material coefficients of structural steel

$\alpha_a$  coefficient of linear thermal expansion

## Werkstoffkennwerte von Baustahl

$\alpha_a$  Temperaturdehnzahl

$$\alpha_a = 12 \cdot 10^{-6} \text{ 1/}^\circ\text{C}$$

$E_a$  module d'élasticité

$E_a$  modulus of elasticity

$E_a$  Elastizitätsmodul

$$E_a = 210000 \text{ N/mm}^2 = 210000 \text{ MPa} = 210 \text{ kN/mm}^2 = 21000 \text{ kN/cm}^2 = 210000 \text{ MN/m}^2$$

$G_a$  module de cisaillement

$G_a$  shear modulus

$G_a$  Schubmodul

$$G_a = \frac{E_a}{2(1+\nu_a)}$$

$$G_a \cong 81000 \text{ N/mm}^2 = 81000 \text{ MPa} = 81 \text{ kN/mm}^2 = 8100 \text{ kN/cm}^2 = 81000 \text{ MN/m}^2$$

$\nu_a$  coefficient de Poisson

$\nu_a$  Poisson's ratio

$\nu_a$  Poisson'sche Zahl

$$\nu_a = 0.3$$

$\rho_a$  masse volumique

$\rho_a$  unit mass

$\rho_a$  Dichte

$$\rho_a = 7850 \text{ kg/m}^3$$



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