

Materials Services  
Materials Poland

# Carbon steel

Materials and services



thyssenkrupp



## Carbon steel Materials and services

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## About the company

thyssenkrupp Materials Poland, as one of the leading distributors of metals and plastics in Poland since 1994, offers a wide range of products from carbon steel, stainless steel, aluminium and plastics. Our offer is extended to special application products, building systems and welding materials. A wide range of our materials and services is available directly from warehouses throughout the country. On a customer's request, we supply materials in special formats or with additional surface treatments.

Our effective quality management is proven by quality certificates awarded by DNV GL Business Assurance Zertifizierung und Umweltgutachter GmbH – a recognised global certification body.



### Why cooperate with thyssenkrupp Materials Poland?

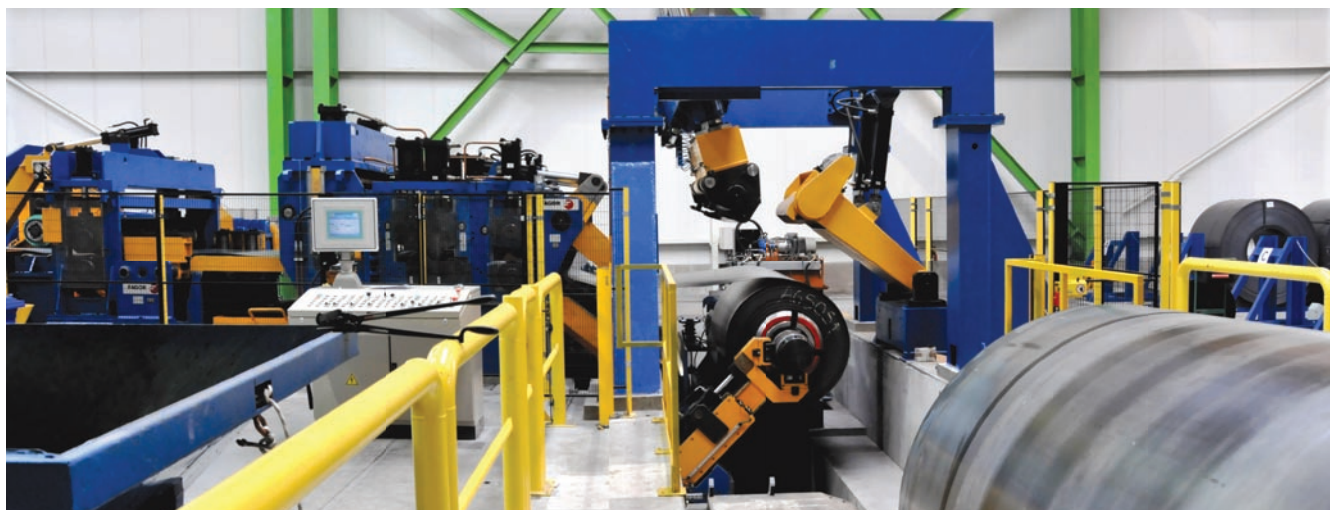
- Wide assortment that is made of carbon steel, stainless steel, aluminum, welding materials and plastics
- Short delivery times directly from stock
- Over 120,000 tons of products in stock
- Cooperation with recognised manufacturers
- Services aligned with customer requirements
- Locations close to the customer

Check out our current offer at:  
[www.thyssenkrupp-materials.pl](http://www.thyssenkrupp-materials.pl)

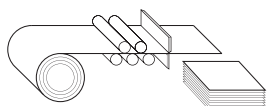
Become our partner.



Warehouse and service centers in Dąbrowa Górnicza

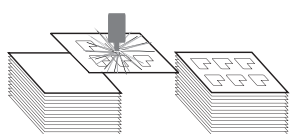


## Services – carbon steel



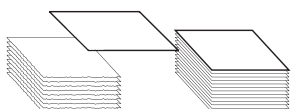
### Cut-to-length (CTL)

- thickness range: 1.5 mm – 8 mm
- width range: 500 mm – 2,100 mm
- length range: 600 mm – 12,000 mm
- length tolerance: 3 mm



### Laser cutting

- thickness range: up to 25 mm
- max. sheet dimensions: 6,000 mm x 2,000 mm
- cutting tolerance: EN ISO 9013
- Trumpf lasers, output: 6kW, 4kW, 3kW



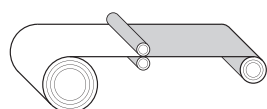
### Oxy-cutting

- thickness range: up to 300 mm
- four- and two-burner machines



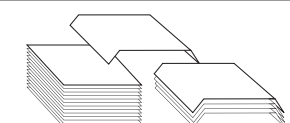
### Plasma cutting

- Hypertherm 260XD
- thickness range up to 64 mm



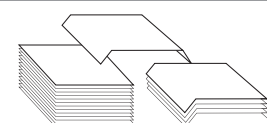
### Grating and edge rounding

- thickness range: 1 mm – 120 mm
- max. item width: 1,350 mm



### Saw cutting

- long items: 1,000 mm x 300 mm
- welded tubes: Ø 320 mm, seamless tubes: Ø 406 mm
- 45° cutting as an option



### Shot blasting and anticorrosive protection

- max. profile dimensions: 1,000 mm x 300 mm
- max. sheet width: 2,000 mm
- min. length of shot-blasted details: 3,000 mm
- 20 µm of water-soluble primer protection
- blast cleaning standard: SA 2.5

### CNC bending

- max. length 4,200 mm
- up to 20 mm sheet cutting
- CNC control

### Other services

- item straightening after bending
- drilling
- coil slitting
- threading
- beveling
- CNC grinding

## Carbon steel. Sheets and plates



### Services

- Cut-to-length (CTL)
- Laser cutting
- Oxy-cutting
- Plasma cutting
- Grinding
- Grating
- Shot blasting
- Anticorrosive protection
- Bending
- Item straightening
- Drilling
- Coil slitting
- Beveling
- Ultrasonic testing

### Structural sheets

| Grade            | Standard   | Thickness<br>mm | Format<br>mm                                                                                                         |
|------------------|------------|-----------------|----------------------------------------------------------------------------------------------------------------------|
| S235JR (+AR, +N) | EN 10025-2 | 1,5-250         | 1000 x 2000<br>1250 x 2500<br>1500 x 3000/ 6000<br>2000 x 6000/ 12000<br>2500 x 12000<br>3000 x 12000                |
| S355J2+N         |            |                 | in addition, strict dimensional conformity<br>On prior agreement, widths over 3,000 mm<br>and lengths over 12,000 mm |

### Floor plates

| Grade    | Format<br>mm                                         |
|----------|------------------------------------------------------|
| S235JR   | Width: 1,000-2,500 mm                                |
| S355J2+N | Up to 8 mm cut from coils, also to strict dimensions |

On request we also supply the following sheets:

- bending-tested (e.g. S235JRC, S355J2C+N),
- for laser cutting,
- ultrasound-tested,
- Z-tested (lamellar tearing),
- surface-treated (cleaning scale, galvanizing, shot blasting and painting),
- heat treated (stress relief, normalizing treatment),
- surface-prepared for welding.

**Inspection by classification entities as per your instructions made with the order.**

### Hot-rolled pickled and oiled sheets

| Grade  | Standard                            | Thickness<br>mm | Format<br>mm                                                                     |
|--------|-------------------------------------|-----------------|----------------------------------------------------------------------------------|
| DD11   | EN 10111, EN 10025-2 /<br>EN10149-2 | 2,0-12          | Width: 1,000-1,500 mm<br>Up to 8 mm cut from coils,<br>also to strict dimensions |
| DD12   |                                     |                 |                                                                                  |
| DD13   |                                     |                 |                                                                                  |
| S235JR |                                     |                 |                                                                                  |
| S355MC |                                     |                 |                                                                                  |

Hot-rolled pickled and oiled sheets surface is clean and scale-free. It is suitable for laser cutting and welding. Example applications: machines (e.g. agricultural), construction industry, bent profiles, automotive industry, white goods (refrigerator and freezer compressor housing).

### Sheets with copper addition

| Grade       | Standard   | Thickness<br>mm |
|-------------|------------|-----------------|
| S235JRCu    | EN 10025-2 | 3,0-20          |
| S235JRCuC   |            |                 |
| S355J2Cu+N  |            |                 |
| S355J2CuC+N |            |                 |

## Carbon steel. Sheets and plates

### Boiler plates for pressure vessels

| Grade          | Standard   | Thickness<br>mm |
|----------------|------------|-----------------|
| P265GH         | EN 10028-2 | 3,0–150         |
| P295GH         |            |                 |
| P355GH         |            |                 |
| 16Mo3          |            |                 |
| 13CrMo4-5      |            |                 |
| 10CrMo9-10     | EN 10028-3 |                 |
| P355 NH/NL/NL2 |            |                 |
| P460 NH/NL/NL2 |            |                 |



#### Services

- Cut-to-length (CTL)
- Laser cutting
- Oxy-cutting
- Plasma cutting
- Grinding
- Grating
- Shot blasting
- Anticorrosive protection
- Bending
- Item straightening
- Drilling
- Coil slitting
- Beveling
- Ultrasonic testing

### Weathering steel

| Grade               | Standard   | Thickness<br>mm |
|---------------------|------------|-----------------|
| CORTEN A/B          | EN 10025-5 | 1,5–60          |
| S355J0WP/ S355J2W+N |            |                 |

Corten sheet grades demonstrate improved resistance to weather factors.

Example applications: stacks, bridges, pipe bridges, frontages, containers, vessels, external wall cladding.

### Thermo-mechanically rolled steel for cold forming

| Grade              | Standard                | Thickness<br>mm |
|--------------------|-------------------------|-----------------|
| S355MC – S700MC    | EN 10149-2              | 2,0–20          |
| perform 380 – 700* | TKSE Werkstoffblatt 660 |                 |

\* Manufacturer's own designation

Example applications: housings, high dimensional precision components, containers, trailer sideboards.

### High-strength, quenched and tempered structural steel

| Grade                            | Standard | Thickness<br>mm |
|----------------------------------|----------|-----------------|
| S690 Q / QL / QL1, N-A-XTRA 700* | EN 10137 | 3,0–200         |
| S960QL, XABO 960*                |          | 3,0–100         |
| S1100 QL / XABO 1100             |          | 4,0–40          |

\* Manufacturer's own designation

Example applications: machine, crane construction, framed steel structures, vehicles and transport equipment, mining.

## Carbon steel. Sheets and plates



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### Wear-resistant plates

| Grade                      | Thickness<br>mm |
|----------------------------|-----------------|
| XAR 300/400/450/500/600/HT | 3,0–100         |
| X120Mn12 (1.3401)          | 1,5–50          |

Wear-resistant plates are used whenever steel members are particularly exposed to wear under high loads.

XAR: wear parts of mining machinery, feeders, plows, crushers, plowshares, containers, chutes.

X120Mn12: tractor tracks, railway switches and crossings, excavator buckets, prison bars.

### Marine plates

| Grade         | Thickness<br>mm |
|---------------|-----------------|
| A, AH32, AH36 | 5,0–70          |
| B             |                 |
| D, DH32, DH36 |                 |
| E, EH32, EH36 |                 |

Marine steel plates approved by the following classification societies:

DNV GL Group AS (DNV-GL)

Bureau Veritas (BV)

American Bureau of Shipping (ABS)

Lloyds Register of Shipping (LRS)

### Improved-strength welded steel

| Grade | Standard   | Thickness<br>mm | Format<br>mm                                                           |
|-------|------------|-----------------|------------------------------------------------------------------------|
| S355N | EN 10025-3 | 5–80            | 1500 x 6000;<br>2000 x 6000 / 12000,<br>2500 x 12000, 3000 x 12000.    |
| S420N |            |                 | in addition, strict dimensional conformity                             |
| S460N |            |                 | On prior agreement, widths over 3,000<br>mm and lengths over 12,000 mm |

Designed for large industrial structures, such as bridges, tanks, pipelines, projects where welding is the primary fabrication process.

### Boron steel for toughening

| Grade                        | Thickness<br>mm |
|------------------------------|-----------------|
| TBL Werkstoff 1.5529         | 3–100           |
| TBL PLUS Werkstoffblatt 2060 | 3–12            |
| 30MnB5 Werkstoff 1.5531      | 3–12            |

Designed for fabrication of toughened machine parts subject to high mechanical loads in operation, such as shafts, gears, pins.

## Carbon steel. Sheets and plates

| Cold-rolled sheets, oiled and non-oiled |          |                 |
|-----------------------------------------|----------|-----------------|
| Grade                                   | Standard | Thickness<br>mm |
| DC01                                    | EN 10130 | 0,4–4,0         |
| DC03                                    |          |                 |
| DC04                                    |          |                 |
| DC05                                    |          |                 |
| DC06                                    |          |                 |

Example applications: automotive industry, heating and plumbing technology, construction industry, lighting fittings, packaging, household appliances, tanks, profiles, furniture production.

| Steel sheets for enamel coating |          |                 |
|---------------------------------|----------|-----------------|
| Grade                           | Standard | Thickness<br>mm |
| DC01EK                          | EN 10209 | 0,4–3,0         |
| DC04EK                          |          |                 |
| DC06EK                          |          |                 |

| Hot-dip galvanized sheets** |          |                 |
|-----------------------------|----------|-----------------|
| Grade                       | Standard | Thickness<br>mm |
| DX51D+Z do DX54D+Z          | EN 10346 | 0,4–4,0         |

\*\* Standard zinc coating thickness is 275 g/m<sup>2</sup>, surface grade A

| Electrogalvanized sheets** |          |                 |
|----------------------------|----------|-----------------|
| Grade                      | Standard | Thickness<br>mm |
| DC01+ZE do DC04+ZE         | EN 10152 | 0,50–3,0        |

\*\* Standard zinc coat thickness is ZE 25/25

We also supply other types of coated surfaces.

### Symbol Coated

- + ZF hot (galvanized) zinc-iron alloy
- + AZ aluminum-zinc alloy - Aluzinc
- + AS aluminum-silicon coating - Alusi

We also supply organic-coating sheets.



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# Carbon steel. Tubes

Dimensions and theoretical weight per unit of length as per EN 10220

| Outer diameter<br>D<br>mm<br>Range |       |   | T wall thickness, mm    |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |      |
|------------------------------------|-------|---|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|------|------|------|
|                                    |       |   | 0,5                     | 0,6   | 0,8   | 1     | 1,2   | 1,4   | 1,6   | 1,8   | 2     | 2,3   | 2,6   | 2,9   | 3,2   | 3,6   | 4    | 4,5  | 5     | 5,4  | 5,6  | 6,3  |
| 1                                  | 2     | 3 | Theoretical weight kg/m |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |      |      |
| 10,2                               |       |   | 0,120                   | 0,142 | 0,185 | 0,227 | 0,266 | 0,304 | 0,339 | 0,373 | 0,404 | 0,448 | 0,487 |       |       |       |      |      |       |      |      |      |
|                                    | 12    |   | 0,142                   | 0,169 | 0,221 | 0,271 | 0,320 | 0,366 | 0,410 | 0,453 | 0,493 | 0,550 | 0,603 | 0,651 | 0,694 |       |      |      |       |      |      |      |
|                                    | 12,7  |   | 0,150                   | 0,179 | 0,235 | 0,289 | 0,340 | 0,390 | 0,438 | 0,484 | 0,528 | 0,590 | 0,648 | 0,701 | 0,750 |       |      |      |       |      |      |      |
| 13,5                               |       |   | 0,160                   | 0,191 | 0,251 | 0,308 | 0,364 | 0,418 | 0,470 | 0,519 | 0,567 | 0,636 | 0,699 | 0,758 | 0,813 | 0,879 |      |      |       |      |      |      |
|                                    | 14    |   | 0,166                   | 0,198 | 0,260 | 0,321 | 0,379 | 0,435 | 0,489 | 0,542 | 0,592 | 0,664 | 0,731 | 0,794 | 0,852 | 0,923 |      |      |       |      |      |      |
|                                    | 16    |   | 0,191                   | 0,228 | 0,300 | 0,370 | 0,438 | 0,504 | 0,568 | 0,630 | 0,691 | 0,777 | 0,859 | 0,973 | 1,01  | 1,10  | 1,18 |      |       |      |      |      |
| 17,2                               |       |   | 0,206                   | 0,246 | 0,324 | 0,400 | 0,474 | 0,546 | 0,616 | 0,684 | 0,750 | 0,845 | 0,936 | 1,02  | 1,10  | 1,21  | 1,3  | 1,41 |       |      |      |      |
|                                    | 18    |   | 0,216                   | 0,257 | 0,339 | 0,419 | 0,479 | 0,573 | 0,647 | 0,719 | 0,789 | 0,891 | 0,987 | 1,08  | 1,17  | 1,28  | 1,38 | 1,50 |       |      |      |      |
|                                    | 19    |   | 0,229                   | 0,272 | 0,359 | 0,444 | 0,527 | 0,608 | 0,687 | 0,764 | 0,838 | 0,947 | 1,05  | 1,15  | 1,25  | 1,37  | 1,48 | 1,61 | 1,73  |      |      |      |
|                                    | 20    |   | 0,240                   | 0,287 | 0,379 | 0,469 | 0,556 | 0,642 | 0,726 | 0,808 | 0,888 | 1,00  | 1,12  | 1,22  | 1,33  | 1,46  | 1,58 | 1,72 | 1,85  |      |      |      |
| 21,3                               |       |   | 0,256                   | 0,306 | 0,404 | 0,501 | 0,595 | 0,687 | 0,777 | 0,866 | 0,952 | 1,08  | 1,20  | 1,32  | 1,43  | 1,57  | 1,71 | 1,86 | 2,01  | 2,12 |      |      |
|                                    | 22    |   | 0,265                   | 0,317 | 0,418 | 0,518 | 0,616 | 0,711 | 0,805 | 0,897 | 0,996 | 1,12  | 1,24  | 1,37  | 1,48  | 1,63  | 1,78 | 1,94 | 2,10  | 2,21 |      |      |
|                                    | 25    |   | 0,302                   | 0,361 | 0,477 | 0,592 | 0,704 | 0,815 | 0,923 | 1,03  | 1,13  | 1,29  | 1,44  | 1,58  | 1,72  | 1,90  | 2,07 | 2,28 | 2,47  | 2,61 | 2,68 | 2,91 |
|                                    | 25,4  |   | 0,307                   | 0,367 | 0,458 | 0,602 | 0,716 | 0,829 | 0,939 | 1,05  | 1,15  | 1,31  | 1,46  | 1,61  | 1,75  | 1,94  | 2,11 | 2,32 | 2,52  | 2,66 | 2,73 | 2,97 |
| 26,9                               |       |   | 0,326                   | 0,389 | 0,515 | 0,639 | 0,761 | 0,880 | 0,998 | 1,11  | 1,23  | 1,40  | 1,56  | 1,72  | 1,87  | 2,07  | 2,26 | 2,49 | 2,70  | 2,86 | 2,94 | 3,20 |
|                                    | 30    |   | 0,364                   | 0,435 | 0,576 | 0,715 | 0,852 | 0,987 | 1,12  | 1,25  | 1,38  | 1,57  | 1,76  | 1,94  | 2,11  | 2,34  | 2,56 | 2,83 | 3,08  | 3,28 | 3,27 | 3,68 |
| 31,8                               |       |   | 0,386                   | 0,462 | 0,612 | 0,760 | 0,906 | 1,05  | 1,19  | 1,33  | 1,47  | 1,67  | 1,87  | 2,07  | 2,26  | 2,50  | 2,74 | 3,03 | 3,30  | 3,52 | 3,62 | 3,96 |
| 32                                 |       |   | 0,388                   | 0,465 | 0,616 | 0,765 | 0,911 | 1,06  | 1,20  | 1,34  | 1,48  | 1,68  | 1,89  | 2,08  | 2,27  | 2,52  | 2,76 | 3,05 | 3,33  | 3,54 | 3,65 | 3,99 |
| 33,7                               |       |   | 0,409                   | 0,490 | 0,649 | 0,805 | 0,962 | 1,12  | 1,27  | 1,42  | 1,56  | 1,78  | 1,99  | 2,20  | 2,41  | 2,67  | 2,93 | 3,24 | 3,54  | 3,77 | 3,88 | 4,26 |
|                                    | 35    |   | 0,425                   | 0,509 | 0,675 | 0,838 | 1,00  | 1,16  | 1,32  | 1,47  | 1,63  | 1,85  | 2,08  | 2,30  | 2,51  | 2,79  | 3,06 | 3,38 | 3,70  | 3,94 | 4,06 | 4,46 |
|                                    | 38    |   | 0,462                   | 0,553 | 0,734 | 0,912 | 1,09  | 1,26  | 1,44  | 1,61  | 1,78  | 2,02  | 2,27  | 2,51  | 2,75  | 3,05  | 3,35 | 3,72 | 4,07  | 4,34 | 4,47 | 4,93 |
|                                    | 40    |   | 0,487                   | 0,583 | 0,773 | 0,962 | 1,15  | 1,33  | 1,52  | 1,70  | 1,87  | 2,14  | 2,40  | 2,65  | 2,90  | 3,23  | 3,55 | 3,94 | 4,32  | 4,61 | 4,75 | 5,24 |
| 42,4                               |       |   | 0,517                   | 0,619 | 0,821 | 1,02  | 1,22  | 1,42  | 1,61  | 1,80  | 1,99  | 2,27  | 2,55  | 2,82  | 3,09  | 3,44  | 3,79 | 4,21 | 4,61  | 4,93 | 5,08 | 5,61 |
|                                    | 44,5  |   | 0,543                   | 0,650 | 0,862 | 1,07  | 1,28  | 1,49  | 1,69  | 1,90  | 2,10  | 2,39  | 2,69  | 2,98  | 3,26  | 3,63  | 4,00 | 4,44 | 4,87  | 5,21 | 5,37 | 5,94 |
| 48,3                               |       |   | 0,706                   | 0,937 | 1,17  | 1,39  | 1,62  | 1,84  | 2,06  | 2,28  | 2,61  | 2,93  | 3,25  | 3,56  | 3,97  | 4,37  | 4,86 | 5,34 | 5,71  | 5,90 | 6,53 |      |
|                                    | 51    |   | 0,746                   | 0,990 | 1,23  | 1,47  | 1,71  | 1,95  | 2,18  | 2,42  | 2,76  | 3,10  | 3,44  | 3,77  | 4,21  | 4,64  | 5,16 | 5,67 | 6,07  | 6,27 | 6,94 |      |
|                                    | 54    |   | 0,790                   | 1,05  | 1,31  | 1,56  | 1,82  | 2,07  | 2,32  | 2,56  | 2,93  | 3,30  | 3,65  | 4,01  | 4,47  | 4,93  | 5,49 | 6,04 | 6,47  | 6,68 | 7,41 |      |
|                                    | 57    |   | 0,835                   | 1,11  | 1,38  | 1,65  | 1,92  | 2,19  | 2,45  | 2,71  | 3,10  | 3,49  | 3,87  | 4,25  | 4,74  | 5,23  | 5,83 | 6,41 | 6,87  | 7,10 | 7,88 |      |
| 60,3                               |       |   | 0,883                   | 1,17  | 1,48  | 1,75  | 2,03  | 2,32  | 2,60  | 2,88  | 3,29  | 3,70  | 4,11  | 4,51  | 5,03  | 5,55  | 6,19 | 6,82 | 7,31  | 7,55 | 8,39 |      |
|                                    | 63,5  |   | 0,931                   | 1,24  | 1,54  | 1,84  | 2,14  | 2,44  | 2,74  | 3,03  | 3,47  | 3,90  | 4,33  | 4,76  | 5,32  | 5,87  | 6,55 | 7,21 | 7,74  | 8,00 | 8,89 |      |
|                                    | 70,0  |   |                         | 1,37  | 1,70  | 2,04  | 2,37  | 2,70  | 3,03  | 3,35  | 3,84  | 4,32  | 4,80  | 5,27  | 5,90  | 6,51  | 7,27 | 8,01 | 8,60  | 8,89 | 9,90 |      |
|                                    | 73    |   |                         | 1,42  | 1,78  | 2,12  | 2,47  | 2,82  | 3,16  | 3,50  | 4,01  | 4,51  | 5,01  | 5,51  | 6,16  | 6,71  | 7,60 | 8,38 | 9,00  | 9,31 | 10,4 |      |
| 76,1                               |       |   |                         | 1,49  | 1,85  | 2,22  | 2,58  | 2,94  | 3,30  | 3,65  | 4,19  | 4,71  | 5,24  | 5,75  | 6,44  | 7,11  | 7,95 | 8,77 | 9,42  | 9,74 | 10,8 |      |
|                                    | 82,5  |   |                         | 1,61  | 2,01  | 2,41  | 2,80  | 3,19  | 3,58  | 3,97  | 4,55  | 5,12  | 5,69  | 6,26  | 7,00  | 7,74  | 8,66 | 9,56 | 10,3  | 10,8 | 11,8 |      |
| 88,9                               |       |   |                         | 1,74  | 2,17  | 2,60  | 3,02  | 3,44  | 3,87  | 4,29  | 4,91  | 5,53  | 6,15  | 6,76  | 7,57  | 8,38  | 9,37 | 10,3 | 11,1  | 11,5 | 12,8 |      |
|                                    | 101,6 |   |                         |       |       | 2,97  | 3,46  | 3,95  | 4,43  | 4,91  | 5,63  | 6,35  | 7,06  | 7,77  | 8,70  | 9,63  | 10,8 | 11,9 | 12,8  | 13,3 | 14,8 |      |
|                                    | 108   |   |                         |       |       | 3,16  | 3,68  | 4,20  | 4,71  | 5,23  | 6,00  | 6,76  | 7,52  | 8,27  | 9,27  | 10,3  | 11,5 | 12,7 | 13,7  | 14,1 | 15,8 |      |
| 114,3                              |       |   |                         |       |       | 3,35  | 3,90  | 4,45  | 4,99  | 5,54  | 6,35  | 7,16  | 7,97  | 8,77  | 9,83  | 10,9  | 12,2 | 13,5 | 14,5  | 15,0 | 16,8 |      |
|                                    | 127   |   |                         |       |       |       |       | 4,95  | 5,56  | 6,17  | 7,07  | 7,98  | 8,88  | 9,77  | 11,0  | 12,1  | 13,6 | 15,0 | 16,2  | 16,8 | 18,8 |      |
|                                    | 133   |   |                         |       |       |       |       | 5,18  | 5,82  | 6,46  | 7,41  | 8,36  | 9,30  | 10,2  | 11,5  | 12,7  | 14,3 | 15,8 | 17,0  | 17,6 | 19,7 |      |
| 139,7                              |       |   |                         |       |       |       |       | 5,45  | 6,12  | 6,79  | 7,79  | 8,79  | 9,78  | 10,8  | 12,1  | 13,4  | 15,0 | 16,6 | 17,9  | 18,5 | 20,7 |      |
|                                    | 141,3 |   |                         |       |       |       |       | 5,51  | 6,19  | 6,87  | 7,88  | 8,89  | 9,90  | 10,9  | 12,2  | 13,5  | 15,2 | 16,8 | 18,1  | 18,7 | 21,0 |      |
|                                    | 152,4 |   |                         |       |       |       |       | 5,95  | 6,69  | 7,42  | 8,51  | 9,61  | 10,7  | 11,8  | 13,2  | 14,6  | 16,4 | 18,2 | 19,6  | 20,3 | 22,7 |      |
|                                    | 159   |   |                         |       |       |       |       | 6,21  | 6,98  | 7,74  | 8,89  | 10,0  | 11,2  | 12,3  | 13,8  | 15,3  | 17,1 | 19,0 | 20,5  | 21,2 | 23,7 |      |
| 168,3                              |       |   |                         |       |       |       |       | 6,58  | 7,39  | 8,20  | 9,42  | 10,6  | 11,8  | 13,0  | 14,6  | 16,2  | 18,2 | 20,1 | 21,7  | 22,5 | 25,2 |      |
|                                    | 177,8 |   |                         |       |       |       |       |       | 7,81  | 8,67  | 9,95  | 11,2  | 12,5  | 13,8  | 15,5  | 17,1  | 19,2 | 21,3 | 23,0  | 23,8 | 26,6 |      |
|                                    | 193,7 |   |                         |       |       |       |       |       | 8,52  | 9,46  | 10,9  | 12,3  | 13,6  | 15,0  | 16,9  | 18,7  | 21,0 | 23,3 | 25,1  | 26,0 | 29,1 |      |
| 219,1                              |       |   |                         |       |       |       |       |       | 9,65  | 10,7  | 12,3  | 13,9  | 15,5  | 17,0  | 19,1  | 21,2  | 23,8 | 26,4 | 28,5  | 29,5 | 33,1 |      |
|                                    | 244,5 |   |                         |       |       |       |       |       |       | 12,0  | 13,7  | 15,5  | 17,3  | 19,0  | 21,4  | 23,7  | 26,6 | 29,5 | 31,8  | 33,0 | 37,0 |      |
| 273                                |       |   |                         |       |       |       |       |       |       | 13,4  | 15,4  | 17,3  | 19,3  | 21,3  | 23,9  | 26,5  | 29,8 | 33,0 | 35,6  | 36,9 | 41,4 |      |
| 323,9                              |       |   |                         |       |       |       |       |       |       |       | 20,6  | 23,0  | 25,3  | 28,4  | 31,6  | 35,4  | 39,3 | 42,4 | 44,0  | 49,3 |      |      |
| 355,6                              |       |   |                         |       |       |       |       |       |       |       | 22,6  | 25,2  | 27,8  | 31,3  | 34,7  | 39,0  | 43,2 | 46,6 | 48,3  | 54,3 |      |      |
| 406,4                              |       |   |                         |       |       |       |       |       |       |       |       | 25,9  | 28,9  | 31,8  | 35,8  | 39,7  | 44,6 | 49,5 | 53,49 |      |      |      |

[illegible]

## Carbon steel. Tubes

### Chemical contents and mechanical properties

| Standard     | Grade             | C (%)     | Mn (%)    | P max. (%) | S max. (%) | Si (%)    | Cr (%)    | Ni (%)   |
|--------------|-------------------|-----------|-----------|------------|------------|-----------|-----------|----------|
| EN 10216-1   | P195TR1           | 0,13      | 0,7       | 0,025      | 0,02       | 0,35      | 0,3       | 0,3      |
| EN 10216-1   | P195TR2           | 0,13      | 0,7       | 0,025      | 0,02       | 0,35      | 0,3       | 0,3      |
| EN 10216-1   | P235TR1           | 0,16      | 1,2       | 0,025      | 0,02       | 0,35      | 0,3       | 0,3      |
| EN 10216-1   | P235TR2           | 0,16      | 1,2       | 0,025      | 0,02       | 0,35      | 0,3       | 0,3      |
| EN 10216-1   | P265TR1           | 0,2       | 0,2       | 0,025      | 0,02       | 0,4       | 0,3       | 0,3      |
| EN 10216-1   | P265TR2           | 0,2       | 0,2       | 0,025      | 0,02       | 0,4       | 0,3       | 0,3      |
| DIN 1629     | St37.0            | max 0,17  |           | 0,040      | 0,040      |           |           |          |
| DIN 1629     | St44.0            | max 0,21  |           | 0,040      | 0,040      |           |           |          |
| DIN 1629     | St52.0            | max 0,22  | max 1,60  | 0,040      | 0,035      | max 0,55  |           |          |
| DIN 1630     | St37.4            | max 0,17  | min 0,35  | 0,040      | 0,040      | max 0,35  |           |          |
| DIN 1630     | St44.4            | max 0,20  | min 0,40  | 0,040      | 0,040      | max 0,35  |           |          |
| DIN 1630     | St52.4            | max 0,22  | max 1,60  | 0,040      | 0,035      | max 0,55  |           |          |
| EN 10210     | S235JRH           | max 0,17  | max 1,40  | 0,045      | 0,045      |           |           |          |
| EN 10210     | S275JOH           | max 0,20  | max 1,50  | 0,040      | 0,040      |           |           |          |
| EN 10210     | S275J2H           | max 0,20  | max 1,50  | 0,035      | 0,035      |           |           |          |
| EN 10210     | S355JOH           | max 0,22  | max 1,60  | 0,040      | 0,040      | max 0,55  |           |          |
| EN 10210     | S355J2H           | max 0,22  | max 1,60  | 0,035      | 0,035      | max 0,55  |           |          |
| EN 10216-2   | P235GH            | max 0,16  | max 1,20  | 0,025      | 0,02       | max 0,35  | max 0,30  | max 0,30 |
| EN 10216-2   | P265GH            | max 0,20  | max 1,40  | 0,025      | 0,02       | max 0,40  | max 0,30  | max 0,30 |
| EN 10216-2   | 16Mo3             | 0,12–0,20 | 0,40–0,90 | 0,025      | 0,02       | max 0,35  | max 0,30  | max 0,30 |
| EN 10216-2   | 14MoV63           | 0,10–0,15 | 0,40–0,70 | 0,025      | 0,02       | 0,15–0,35 | 0,30–0,60 | max 0,30 |
| EN 10216-2   | 13CrMo4-5         | 0,10–0,17 | 0,40–0,70 | 0,025      | 0,02       | max 0,35  | 0,70–1,15 | max 0,30 |
| EN 10216-2   | 10CrMo9-10        | 0,08–0,14 | 0,30–0,70 | 0,025      | 0,02       | max 0,50  | 2,00–2,50 | max 0,30 |
| DIN 17175    | St35.8            | max 0,17  | 0,40–0,80 | 0,040      | 0,040      | 0,10–0,35 |           |          |
| DIN 17175    | St45.8            | max 0,21  | 0,40–1,20 | 0,040      | 0,040      | 0,10–0,35 |           |          |
| DIN 17175    | 15Mo3             | 0,12–0,20 | 0,40–0,80 | 0,035      | 0,035      | 0,10–0,35 |           |          |
| DIN 17175    | 13CrMo44          | 0,10–0,18 | 0,40–0,70 | 0,035      | 0,035      | 0,10–0,35 | 0,70–1,10 |          |
| DIN 17175    | 14MoV63           | 0,10–0,18 | 0,40–0,70 | 0,035      | 0,035      | 0,10–0,35 | 0,30–0,60 |          |
| DIN 17175    | 10CrMo910         | 0,08–0,15 | 0,40–0,70 | 0,035      | 0,035      | max 0,50  | 2,00–2,50 |          |
| EN 10208     | L245NB (StE240.7) | max 0,16  | max 1,10  | 0,025      | 0,020      | max 0,40  | max 0,30  | max 0,30 |
| EN 10208     | L290NB (StE290.7) | max 0,17  | max 1,20  | 0,025      | 0,020      | max 0,40  | max 0,30  | max 0,30 |
| EN 10208     | L360NB (StE360.7) | max 0,20  | max 1,60  | 0,025      | 0,020      | max 0,45  | max 0,30  | max 0,30 |
| API Spec 5CT | H-40              |           |           | 0,030      | 0,030      |           |           |          |
| API Spec 5CT | J-55              |           |           | 0,030      | 0,030      |           |           |          |
| API Spec 5CT | K-55              |           |           | 0,030      | 0,030      |           |           |          |
| API Spec 5CT | N-80              |           |           | 0,030      | 0,030      |           |           |          |
| API Spec 5L  | A                 | max 0,22  | max 0,90  | 0,030      | 0,030      |           |           |          |
| API Spec 5L  | B                 | max 0,27  | max 1,15  | 0,030      | 0,030      |           |           |          |
| API Spec 5L  | X 42              | max 0,29  | max 1,25  | 0,030      | 0,030      |           |           |          |
| API Spec 5L  | X 45              | max 0,31  | max 1,35  | 0,030      | 0,030      |           |           |          |
| API Spec 5L  | X 52              | max 0,31  | max 1,35  | 0,030      | 0,030      |           |           |          |
| API Spec 5L  | X 56              | max 0,26  | max 1,35  | 0,030      | 0,030      |           |           |          |
| API Spec 5L  | X 60              | max 0,26  | max 1,35  | 0,030      | 0,030      |           |           |          |
| ASTM A 106   | Gr. A             | max 0,25  | 0,27–0,93 | 0,025      | 0,025      | min 0,10  | max 0,40  | max 0,40 |
| ASTM A 106   | Gr. B             | max 0,30  | 0,29–1,06 | 0,025      | 0,025      | min 0,10  | max 0,40  | max 0,40 |
| ASTM A 106   | Gr. C             | max 0,35  | 0,29–1,06 | 0,035      | 0,035      | min 1,00  | max 0,40  | max 0,40 |
| ASTM A 53    | Gr. A             | max 0,25  | max 0,95  | 0,050      | 0,060      |           | max 0,40  | max 0,40 |
| ASTM A 53    | Gr. B             | max 0,30  | max 1,20  | 0,050      | 0,060      |           | max 0,40  | max 0,40 |

| Cu max.<br>(%) | Al<br>(%)   | V<br>(%) | Nb<br>(%) | Mo<br>(%) | Working<br>temp. | Min. yield strength Re (Mpa) min |         |        | Tensile strength<br>Rm (MPa) | Elongation at<br>failure<br>A <sub>5</sub> min (%) |
|----------------|-------------|----------|-----------|-----------|------------------|----------------------------------|---------|--------|------------------------------|----------------------------------------------------|
|                |             |          |           |           |                  | < 16                             | 16/40   | >40-60 |                              |                                                    |
| 0,3            |             | 0,02     | 0,01      | 0,08      |                  | 195                              | 185     | 175    | 320-440                      | 27/25                                              |
| 0,3            | 0,02        | 0,02     | 0,01      | 0,08      |                  | 195                              | 185     | 175    | 320-440                      | 27/25                                              |
| 0,3            |             | 0,02     | 0,01      | 0,08      |                  | 235                              | 225     | 215    | 360-500                      | 25/23                                              |
| 0,3            | 0,02        | 0,02     | 0,01      | 0,08      |                  | 235                              | 225     | 215    | 360-500                      | 25/23                                              |
| 0,3            |             | 0,02     | 0,01      | 0,08      |                  | 265                              | 255     | 245    | 410-570                      | 21/19                                              |
| 0,3            | 0,02        | 0,02     | 0,01      | 0,08      |                  | 265                              | 255     | 245    | 410-570                      | 21/19                                              |
|                |             |          |           |           |                  | <16                              | 16/40   | >40-65 |                              |                                                    |
|                |             |          | max 0,009 |           |                  | 235                              | 225     | 215    | 350-480                      | 25/23                                              |
|                |             |          | max 0,009 |           |                  | 275                              | 265     | 255    | 420-550                      | 21/19                                              |
|                | min 0,020   |          |           |           |                  | 355                              | 345     | 335    | 500-650                      | 21/19                                              |
|                | min 0,020   |          |           |           |                  | 235                              | 225     | 215    | 350-480                      | 25/23                                              |
|                | min 0,020   |          |           |           |                  | 275                              | 265     | 255    | 420-550                      | 21/19                                              |
|                | min 0,020   |          |           |           |                  | 355                              | 345     | 335    | 500-650                      | 21/19                                              |
|                |             |          | max 0,009 |           |                  | 235                              | 225     | 215    | 340-470                      | 26/24                                              |
|                |             |          | max 0,009 |           |                  | 275                              | 265     | 255    | 410-560                      | 22/20                                              |
|                | min 0,020   |          |           |           |                  | 275                              | 265     | 255    | 410-560                      | 22/20                                              |
|                |             |          | max 0,009 |           |                  | 355                              | 345     | 335    | 490-630                      | 22/20                                              |
|                | min 0,020   |          |           |           |                  | 355                              | 345     | 335    | 490-630                      | 22/20                                              |
| 0,30           | min 0,02    | max 0,02 | max 0,01  | max 0,08  |                  | 235                              | 225     | 215    | 360-500                      | 25/23                                              |
| 0,30           | min 0,02    | max 0,02 | max 0,01  | max 0,08  |                  | 265                              | 255     | 245    | 410-570                      | 23/21                                              |
| 0,30           | max 0,04    |          |           | 0,25-0,35 |                  | 280                              | 270     | 260    | 450-600                      | 22/20                                              |
| 0,30           | max 0,04    |          |           | 0,50-0,70 |                  | 320                              | 320     | 310    | 460-610                      | 20/18                                              |
| 0,30           | max 0,04    |          |           | 0,40-0,60 |                  | 290                              | 290     | 280    | 440-590                      | 22/20                                              |
| 0,30           | max 0,04    |          |           | 0,90-1,10 |                  | 280                              | 280     | 270    | 480-630                      | 22/20                                              |
|                |             |          |           |           | 475 °C           | 235                              | 225     | 215    | 360-480                      | 25/23                                              |
|                |             |          |           |           | 475 °C           | 255                              | 245     | 235    | 410-530                      | 21/19                                              |
|                |             |          | 0,25-0,35 |           | 500 °C           | 270                              | 270     | 260    | 450-600                      | 22/20                                              |
|                |             |          | 0,45-0,65 |           | 560 °C           | 290                              | 290     | 280    | 440-590                      | 22/20                                              |
|                |             |          | 0,50-0,70 |           | 600 °C           | 320                              | 320     | 310    | 460-610                      | 20/18                                              |
|                | 0,22-0,32   |          | 0,90-1,20 |           | 600 °C           | 280                              | 280     | 270    | 450-600                      | 20/18                                              |
| 0,25           | 0,015-0,060 |          | max 0,10  |           |                  |                                  | 245-440 |        | min 415                      | 22                                                 |
| 0,25           | 0,015-0,060 | max 0,05 | max 0,10  |           |                  |                                  | 290-440 |        | min 415                      | 21                                                 |
| 0,25           | 0,015-0,060 | max 1,00 | max 0,10  |           |                  |                                  | 360-510 |        | min 460                      | 20                                                 |
|                |             |          |           |           |                  |                                  | 276-552 |        | min 414                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 379-552 |        | min 517                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 379-552 |        | min 655                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 552-758 |        | min 689                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 207     |        | min 331                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 241     |        | min 413                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 289     |        | min 413                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 317     |        | min 434                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 358     |        | min 455                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 386     |        | min 489                      | acc. to API                                        |
|                |             |          |           |           |                  |                                  | 413     |        | min 517                      | acc. to API                                        |
| 0,40           |             | max 0,08 | max 0,15  | 475 °C    |                  |                                  | 205     |        | min 330                      | acc. to standard                                   |
| 0,40           |             | max 0,08 | max 0,15  | 475 °C    |                  |                                  | 240     |        | min 415                      | acc. to standard                                   |
| 0,40           |             | max 0,08 | max 0,15  |           |                  |                                  | 275     |        | min 485                      | acc. to standard                                   |
| 0,40           |             | max 0,08 | max 0,15  |           |                  |                                  | 205     |        | min 330                      | acc. to standard                                   |
| 0,40           |             | max 0,08 | max 0,15  |           |                  |                                  | 240     |        | min 415                      | acc. to standard                                   |

## Carbon steel. Hot-rolled seamless tubes



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Threading
- Beveling
- Marking

### Tubes and pipes for pressure applications

Our offer comprises tubes as per the following standards:

EN 10216-1 in grades: P235TR2, P265TR2; other grades on prior agreement.

EN 10216-3 in grades: P355N, P355NHTC1 (for increased temperatures); other grades on prior agreement.

DIN 1629 in grades St37.0, St44.0, St52.0; other grades on prior agreement.

| Grade   | Werkstoff | Tensile strength<br>R <sub>m</sub> w N/mm <sup>2</sup><br>Wall thickness in mm | Min. yield strength R <sub>eH</sub> in N/mm <sup>2</sup><br>for wall thickness in mm |                  |                  | Elongation<br>at failure A <sub>5</sub> w % |            |
|---------|-----------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------|------------------|---------------------------------------------|------------|
| EN      |           |                                                                                | up to 16                                                                             | from 16<br>to 40 | from 40<br>to 60 | longitudinal                                | cross-wise |
| P235TR2 | 1.0255    | 360–500                                                                        | 235                                                                                  | 225              | 215              | 25                                          | 23         |

| Grade | Werkstoff | Tensile strength<br>R <sub>m</sub> w N/mm <sup>2</sup><br>Wall thickness in mm |                  |                   | Min. yield strength R <sub>eH</sub> in N/mm <sup>2</sup><br>for wall thickness in mm |                  |                  |                  |                  |                   | Elongation<br>at failure A <sub>5</sub> w % |            |
|-------|-----------|--------------------------------------------------------------------------------|------------------|-------------------|--------------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|-------------------|---------------------------------------------|------------|
| EN    |           | up to 20                                                                       | from 20<br>do 65 | from 65<br>to 100 | to 20                                                                                | from 20<br>to 40 | from 40<br>to 50 | from 50<br>to 65 | from 65<br>to 80 | from 80<br>to 100 | longitudinal                                | cross-wise |
| P355N | 1.0562    | 490–650                                                                        | 490–630          | 450–590           | 355                                                                                  | 345              | 335              | 325              | 315              | 305               | 22                                          | 20         |

### Outer diameters and wall thickness ranges

| Outer tube diameter<br>mm | Wall thickness range<br>mm | Outer tube diameter<br>mm | Wall thickness range<br>mm | Outer tube diameter<br>mm | Wall thickness range<br>mm | Outer tube diameter<br>mm | Wall thickness range<br>mm |
|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| 21,3                      | 2,0–4,0                    | 54                        | 2,6–12,5                   | 127                       | 4–32                       | 323,9                     | 7,1–40                     |
| 25                        | 2,0–4,5                    | 57                        | 2,9–12,5                   | 133                       | 4–32                       | 355,6                     | 8–45                       |
| 26,9                      | 2,0–5,0                    | 60,3                      | 2,9–14,2                   | 139,7                     | 4–32                       | 406,4                     | 8,8–50                     |
| 30                        | 2,0–6,3                    | 63,5                      | 2,9–14,2                   | 159                       | 4,5–32                     | 457                       | 10–50                      |
| 31,8                      | 2,0–7,1                    | 70                        | 2,9–20,0                   | 168,3                     | 4,5–32                     | 508                       | 11–60                      |
| 33,7                      | 2,0–7,1                    | 76,1                      | 2,9–20,0                   | 177,8                     | 5–32                       | -                         | -                          |
| 38                        | 2,6–8,0                    | 82,5                      | 3,2–22,2                   | 193,7                     | 5,6–36                     | -                         | -                          |
| 42,4                      | 2,6–8,0                    | 88,9                      | 3,2–25,0                   | 219,1                     | 6,3–40                     |                           |                            |
| 44,5                      | 2,6–12,5                   | 101,6                     | 3,6–25,0                   | 244,5                     | 6,3–40                     |                           |                            |
| 48,3                      | 2,6–12,5                   | 108                       | 3,6–30                     | 273                       | 6,3–50                     |                           |                            |
| 51                        | 2,6–12,5                   | 114,3                     | 3,6–32                     | 298,5                     | 7,1–40                     |                           |                            |

We also supply the tubes:

- in non-standard dimensions (e.g. 95; 368; 559; 660; etc.) – on prior agreement,
- with non-standard walls – on prior agreement,
- with straight or beveled ends – on prior agreement,
- insulated – on prior agreement,
- zinc-coated,
- in commercial lengths from 4 to 13 m, in multiples or fix lengths – on prior agreement.

## Carbon steel. Hot-rolled seamless tubes

### Tubes for constructions

Our offer comprises tubes as per the following standard:

EN 10210, grades S235JRH, S355J2H, S355J0H.

We also supply S275J0H, S275J2H and S355NH grades if the customer so wishes.

Other grades on prior agreement.

| Grade     | Werkstoff | Tensile strength R <sub>m</sub> in N/mm <sup>2</sup> |         | Min. yield strength R <sub>eH</sub> in N/mm <sup>2</sup> for wall thickness in mm |               |               |               |                |                 | Elongation at failure A <sub>5</sub> w % |            | Impact strength |    |
|-----------|-----------|------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------------|---------------|---------------|----------------|-----------------|------------------------------------------|------------|-----------------|----|
|           |           | Wall thickness in mm                                 |         |                                                                                   |               |               |               |                |                 |                                          |            |                 |    |
| DIN       | EN        | N/mm <sup>2</sup>                                    |         | up to 16                                                                          | from 16 to 40 | from 40 to 65 | from 65 to 80 | from 80 to 100 | from 100 to 120 | longitudinal                             | cross-wise | at temp         | J  |
| U St 37-2 | -         | 1.0036                                               | 340–470 | 235                                                                               | -             | -             | -             | -              | -               | 26                                       | 24         | 20              | 27 |
| R St 37-2 | S235JRH   | 1.0038                                               | 340–470 | 235                                                                               | 225           | 215           | 205           | 195            | 185             | 26                                       | 24         | 20              | 27 |
| St44-3    | S275J2H   | 1.0144                                               | 410–580 | 275                                                                               | 265           | 255           | 245           | 235            | 225             | 22                                       | 20         | -20             | 27 |
| St52-3N   | S355J2H   | 1.0570                                               | 490–680 | 355                                                                               | 345           | 335           | 315           | 295            | 285             | 22                                       | 20         | -20             | 27 |

We also supply hot-dip galvanized tubes.

### Boiler tubes (for pressure applications at higher temperatures)

Our offer comprises tubes as per the following standards:

EN 10216-2 in grades P235GH TC1 and TC2, P265GH TC1 and TC2, 16Mo3, 13CrMo4-5, 10CrMo9-10

DIN 17175 in grades St35.8 I° and III°, St45.8 I° and III°, 15Mo3, 13CrMo44, 10CrMo910

Other grades on prior agreement.

| Name      | Werkstoff  | Tensile strength  |         | Min. yield strength in N/mm <sup>2</sup> for wall thickness |                  |                  | Elongation at failure A <sub>5</sub> w % |            |
|-----------|------------|-------------------|---------|-------------------------------------------------------------|------------------|------------------|------------------------------------------|------------|
|           |            | N/mm <sup>2</sup> |         | up to 16 mm                                                 | from 16 to 40 mm | from 40 to 60 mm | longitudinal                             | cross-wise |
| St35.8    | P235GH     | 1.0345            | 360–500 | 235                                                         | 225              | 215              | 25                                       | 23         |
| St45.8    | P265GH     | 1.0425            | 410–570 | 255                                                         | 245              | 235              | 21                                       | 19         |
| 15Mo3     | 16Mo3      | 1.5415            | 450–600 | 280                                                         | 270              | 260              | 22                                       | 20         |
| 13CrMo44  | 13CrMo4-5  | 1.7335            | 440–590 | 290                                                         | 290              | 280              | 22                                       | 20         |
| 10CrMo910 | 10CrMo9-10 | 1.7383            | 460–630 | 280                                                         | 280              | 270              | 22                                       | 20         |
| 14MoV63   | 14MoV63    | 1.7715            | 460–610 | 320                                                         | 320              | 310              | 20                                       | 18         |

We also supply tubes as per ASTM and other standards per customer request.

### Special-purpose seamless tubes

Line pipes for gas and combustible fluids as per 10208-2 and EN ISO 3183.

Drilling and casing pipes as per API spec. 5CT.

Pipes for mechanical application as per EN 10297-1.

Pipes for hydraulic cylinders.

If you are interested in other types of seamless pipes, contact our sales department.



#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Threading
- Beveling
- Marking

## Carbon steel. Seamless tubes



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Threading
- Beveling
- Marking

### Primary grade substitutes for seamless pipes

|                                                                                      | PN ...          | DIN ...        | EN ...            |
|--------------------------------------------------------------------------------------|-----------------|----------------|-------------------|
| „Pressure”, „structural” grades,<br>for machine construction, general<br>application | R35             | St37.0         | P235TR1           |
|                                                                                      |                 |                | P235TR2           |
|                                                                                      |                 |                | S235JRH           |
|                                                                                      |                 |                | S235J0H           |
|                                                                                      |                 |                | E235 (+AR,+N)     |
|                                                                                      | R45             | St44.0         | P265TR2           |
|                                                                                      |                 |                | S275J2H           |
|                                                                                      |                 |                | S275J0H           |
|                                                                                      | 18G2A           | St52.0         | P355N             |
|                                                                                      |                 |                | P355NH (TC1, TC2) |
| S355J2H                                                                              |                 |                |                   |
| S355J0H                                                                              |                 |                |                   |
| E355 (+AR,+N)                                                                        |                 |                |                   |
| „Boiler” grades                                                                      | K 10 I          | St35.8 I       | P235GH TC1        |
|                                                                                      | K 18 I          | St45.8 I       | P265GH TC1        |
|                                                                                      | K 10 III        | St35.8 III     | P235GH TC2        |
|                                                                                      | K 18 III        | St45.8 III     | P265GH TC2        |
|                                                                                      | 16M             | 15Mo3          | 16Mo3             |
|                                                                                      | 15HM            | 13CrMo44       | 13CRM04-5         |
|                                                                                      | 10H2M           | 10CrMo910      | 10CrMo9-10        |
| „Precision” grades                                                                   | R35 (BK, NBK)   | St35 (BK, NBK) | E235 (+C,+N)      |
|                                                                                      | 18G2A (BK, NBK) | St52 (BK, NBK) | E355 (+C,+N)      |

## Carbon steel. Cold-drawn seamless tubes

### Pipes for pressure applications and for constructions

We supply tubes as per the following standards:

EN 10216-1 in grades P235TR1, P235TR2.

EN 10210 in grades S235JRH, S355J2H.

DIN 1629 in grades St37.0, St44.0, St52.0.

Other grades on prior agreement.



#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Threading
- Beveling
- Marking

| Outer tube diameter<br>mm | Wall thickness<br>range<br>mm | Outer tube diameter<br>mm | Wall thickness<br>range<br>mm | Outer tube diameter<br>mm | Wall thickness<br>range<br>mm | Outer tube diameter<br>mm | Wall thickness<br>range<br>mm |
|---------------------------|-------------------------------|---------------------------|-------------------------------|---------------------------|-------------------------------|---------------------------|-------------------------------|
| 10,2                      | 1,6–2,6                       | 21,3                      | 2,3–4,0                       | 38,0                      | 2,9–4,5                       | 57,0                      | 2,9–10,0                      |
| 12,0                      | 1,6–2,6                       | 25,0                      | 2,3–4,0                       | 42,4                      | 2,9–5,0                       | 60,3                      | 7,1–10,0                      |
| 13,5                      | 1,8–2,9                       | 26,9                      | 2,3–4,0                       | 44,5                      | 2,9–5,0                       | 63,5                      | 7,1–10,0                      |
| 16,0                      | 1,8–3,2                       | 30,0                      | 2,6–4,5                       | 48,3                      | 2,9–5,6                       | -                         | -                             |
| 17,2                      | 2,0–3,6                       | 31,8                      | 2,9–4,5                       | 51,0                      | 2,9–5,6                       | -                         | -                             |
| 20,0                      | 2,3–4,0                       | 33,7                      | 2,9–4,5                       | 54,0                      | 2,9–8,0                       | -                         | -                             |

We supply the tubes in the following lengths:

- fabrication – structural pipes from 1.5 to 8.0 m – carrier pipes from 4.0 to 8.0 m, not more than 20% pipes in lengths from 2.0 to 4.0 are permitted as part of a single order,
- strict-dimensions with allowable tolerance of +10 mm or +15 mm,
- multiples – for lengths order below 3 m with allowance of 5 mm for each cut and allowable deviation for the entire multiple length as for strict lengths.

### Precision tubes

We supply tubes as per the following standards:

EN 10305-1 and EN 10305-4 in grades E235, E355.

DIN 2391 in grades St35, St45, St52.

The following delivery statuses can be chosen for cold-drawn tubes:

**BK** – tubes without heat treatment after last drawing (white hard) – equivalent as per EN 10305-1 → +C

**BKW** – tubes drawn after last heat treatment with small reduction level (white soft) – equivalent as per EN 10305-1 → +LC

**GBK** – tubes after recrystallizing treatment in controlled atmosphere – equivalent as per EN 10305-1 → +A

**NBK** – tubes after normalizing treatment in controlled atmosphere – equivalent as per EN 10305-1 → +N

**BKS** – cold-drawn and stress relief-annealed tubes - equivalent as per EN 10305-1 → +SR

## Carbon steel. Cold-drawn seamless tubes

Dimensions and tolerances of precision tubes as per EN 10305-1

| Outer diameter<br>D<br>and tolerances |         | wall, T, mm                       |           |           |           |           |           |           |            |           |            |           |          |          |         |
|---------------------------------------|---------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|------------|-----------|----------|----------|---------|
|                                       |         | 0,5                               | 0,8       | 1         | 1,2       | 1,5       | 1,8       | 2         | 2,2        | 2,5       | 2,8        | 3         | 3,5      | 4        |         |
|                                       |         | inner diameter and tolerances, mm |           |           |           |           |           |           |            |           |            |           |          |          |         |
| 4                                     | ±0,08   | 3±0,15                            | 2,4±0,15  | 2±0,15    | 1,6±0,15  |           |           |           |            |           |            |           |          |          |         |
| 5                                     |         | 4±0,15                            | 3,4±0,15  | 3±0,15    | 2,6±0,15  |           |           |           |            |           |            |           |          |          |         |
| 6                                     |         | 5±0,15                            | 4,4±0,15  | 4±0,15    | 3,6±0,15  | 3±0,15    | 2,4±0,15  | 2±0,15    |            |           |            |           |          |          |         |
| 7                                     |         | 6±0,15                            | 5,4±0,15  | 5±0,15    | 4,6±0,15  | 4±0,15    | 3,4±0,15  | 3±0,15    |            |           |            |           |          |          |         |
| 8                                     |         | 7±0,15                            | 6,4±0,15  | 6±0,15    | 5,6±0,15  | 5±0,15    | 4,4±0,15  | 4±0,15    | 3,6±0,15   | 3±0,25    |            |           |          |          |         |
| 9                                     |         | 8±0,15                            | 7,4±0,15  | 7±0,15    | 6,6±0,15  | 6±0,15    | 5,4±0,15  | 5±0,15    | 4,6±0,15   | 4±0,25    | 3,4±0,25   |           |          |          |         |
| 10                                    |         | 9±0,15                            | 8,4±0,15  | 8±0,05    | 7,6±0,15  | 7±0,15    | 6,4±0,15  | 6±0,15    | 5,6±0,15   | 5±0,15    | 4,4±0,25   | 4±0,25    |          |          |         |
| 12                                    |         | 11±0,15                           | 10,4±0,15 | 10±0,15   | 9,6±0,15  | 9±0,15    | 8,4±0,15  | 8±0,15    | 7,6±0,15   | 7±0,15    | 6,4±0,15   | 6±0,25    | 5±0,25   | 4±0,25   |         |
| 14                                    |         | 13±0,08                           | 12,4±0,08 | 12±0,08   | 11,6±0,15 | 11±0,15   | 10,4±0,15 | 10±0,15   | 9,6±0,15   | 9±0,15    | 8,4±0,15   | 8±0,15    | 7±0,15   | 6±0,25   |         |
| 15                                    |         | 14±0,08                           | 13,4±0,08 | 13±0,08   | 12,6±0,08 | 12±0,15   | 11,4±0,15 | 11±0,15   | 10,6±0,15  | 10±0,15   | 9,4±0,15   | 9±0,15    | 8±0,15   | 7±0,15   |         |
| 16                                    |         | 15±0,08                           | 14,4±0,08 | 14±0,08   | 13,6±0,08 | 13±0,08   | 12,4±0,05 | 12±0,15   | 11,6±0,15  | 11±0,15   | 10,4±0,15  | 10±0,15   | 9±0,15   | 8±0,15   |         |
| 18                                    |         | 17±0,08                           | 16,4±0,08 | 16±0,08   | 15,6±0,08 | 15±0,08   | 14,4±0,08 | 14±0,08   | 13,6±0,15  | 13±0,15   | 12,4±0,15  | 12±0,15   | 11±0,15  | 10±0,15  |         |
| 20                                    |         | 19±0,08                           | 18,4±0,08 | 18±0,08   | 17,6±0,08 | 17±0,08   | 16,4±0,08 | 16±0,08   | 15,6±0,15  | 15±0,15   | 14,4±0,15  | 14±0,15   | 13±0,15  | 12±0,15  |         |
| 22                                    |         | 21±0,08                           | 20,4±0,08 | 20±0,08   | 19,6±0,08 | 19±0,08   | 18,4±0,08 | 18±0,08   | 17,6±0,08  | 17±0,15   | 16,4±0,15  | 16±0,15   | 15±0,15  | 14±0,15  |         |
| 25                                    |         | 24±0,08                           | 23,4±0,08 | 23±0,08   | 22,6±0,08 | 22±0,08   | 21,4±0,08 | 21±0,08   | 20,6±0,08  | 20±0,08   | 19,4±0,15  | 19±0,15   | 18±0,15  | 17±0,15  |         |
| 26                                    |         | 25±0,08                           | 24,4±0,08 | 24±0,08   | 23,6±0,08 | 23±0,08   | 22,4±0,08 | 22±0,08   | 21,6±0,08  | 21±0,08   | 20,4±0,15  | 20±0,15   | 19±0,15  | 18±0,15  |         |
| 28                                    |         | 27±0,08                           | 26,4±0,08 | 26±0,08   | 25,6±0,08 | 25±0,08   | 24,4±0,08 | 24±0,08   | 23,6±0,08  | 23±0,08   | 22,4±0,08  | 22±0,05   | 21±0,15  | 20±0,15  |         |
| 30                                    |         | 29±0,08                           | 28,4±0,08 | 28±0,08   | 27,6±0,08 | 27±0,08   | 26,4±0,08 | 26±0,08   | 25,6±0,08  | 25±0,08   | 24,4±0,08  | 24±0,15   | 23±0,15  | 22±0,15  |         |
| 32                                    |         | ±0,15                             | 31±0,15   | 30,4±0,15 | 30±0,15   | 29,6±0,15 | 29±0,15   | 28,4±0,15 | 28±0,15    | 27,6±0,15 | 27±0,15    | 26,4±0,15 | 26±0,15  | 25±0,15  | 24±0,15 |
| 35                                    |         |                                   | 34±0,15   | 33,4±0,15 | 33±0,15   | 32,6±0,15 | 32±0,15   | 31,4±0,15 | 31±0,15    | 30,6±0,15 | 30±0,15    | 29,4±0,15 | 29±0,15  | 28±0,15  | 27±0,15 |
| 38                                    | 37±0,15 |                                   | 36,4±0,15 | 36±0,15   | 35,6±0,15 | 35±0,15   | 34,4±0,15 | 34±0,15   | 33,6±0,15  | 33±0,15   | 32,4±0,15  | 32±0,15   | 31±0,15  | 30±0,15  |         |
| 40                                    | 39±0,15 |                                   | 38,4±0,15 | 38±0,15   | 37,6±0,15 | 37±0,15   | 36,4±0,15 | 36±0,15   | 35,6±0,15  | 35±0,15   | 34,4±0,15  | 34±0,15   | 33±0,15  | 32±0,15  |         |
| 42                                    |         |                                   |           | 40±0,20   | 39,6±0,20 | 39±0,20   | 38,4±0,20 | 38±0,20   | 37,6±0,20  | 37±0,20   | 36,4±0,20  | 36±0,20   | 35±0,20  | 34±0,20  |         |
| 45                                    |         |                                   |           | 43±0,20   | 42,6±0,20 | 42±0,20   | 41,4±0,20 | 41±0,20   | 40,6±0,20  | 40±0,20   | 39,4±0,20  | 39±0,20   | 38±0,20  | 37±0,20  |         |
| 48                                    |         |                                   |           | 46±0,20   | 45,6±0,20 | 45±0,20   | 44,4±0,20 | 44±0,20   | 43,6±0,20  | 43±0,20   | 42,4±0,20  | 42±0,20   | 41±0,20  | 40±0,20  |         |
| 50                                    |         |                                   |           | 48±0,20   | 47,6±0,20 | 47±0,20   | 46,4±0,20 | 46±0,20   | 45,6±0,20  | 45±0,20   | 44,4±0,20  | 44±0,20   | 43±0,20  | 42±0,20  |         |
| 55                                    | ±0,25   |                                   |           | 53±0,25   | 52,6±0,25 | 52±0,25   | 51,4±0,25 | 51±0,25   | 50,6±0,25  | 50±0,25   | 49,4±0,25  | 49±0,25   | 48±0,25  | 47±0,25  |         |
| 60                                    |         |                                   |           | 58±0,25   | 57,6±0,25 | 57±0,25   | 56,4±0,25 | 56±0,25   | 55,6±0,25  | 55±0,25   | 54,4±0,25  | 54±0,25   | 53±0,25  | 52±0,25  |         |
| 65                                    |         |                                   |           | 63±0,30   | 62,6±0,30 | 62±0,30   | 61,4±0,30 | 61±0,30   | 60,6±0,30  | 60±0,30   | 59,4±0,30  | 59±0,30   | 58±0,30  | 57±0,30  |         |
| 70                                    |         |                                   |           | 68±0,30   | 67,6±0,30 | 67±0,30   | 66,4±0,30 | 66±0,30   | 65,6±0,30  | 65±0,30   | 64,4±0,30  | 64±0,30   | 63±0,30  | 62±0,30  |         |
| 75                                    |         |                                   |           | 73±0,35   | 72,6±0,35 | 72±0,35   | 71,4±0,35 | 71±0,35   | 70,6±0,35  | 70±0,35   | 69,4±0,35  | 69±0,35   | 68±0,35  | 67±0,35  |         |
| 80                                    |         |                                   | 78±0,35   | 77,6±0,35 | 77±0,35   | 76,4±0,35 | 76±0,35   | 75,6±0,35 | 75±0,35    | 74,4±0,35 | 74±0,35    | 73±0,35   | 72±0,35  |          |         |
| 85                                    | ±0,40   |                                   |           |           |           | 82±0,40   | 81,4±0,40 | 81±0,40   | 80,6±0,40  | 80±0,40   | 79,4±0,40  | 79±0,40   | 78±0,40  | 77±0,40  |         |
| 90                                    |         |                                   |           |           |           | 87±0,40   | 86,4±0,40 | 86±0,40   | 85,6±0,40  | 85±0,40   | 84,4±0,40  | 84±0,40   | 83±0,40  | 82±0,40  |         |
| 95                                    |         |                                   |           |           |           |           |           | 91±0,45   | 90,6±0,45  | 90±0,45   | 89,4±0,45  | 89±0,45   | 88±0,45  | 87±0,45  |         |
| 100                                   |         |                                   |           |           |           |           |           | 96±0,45   | 95,6±0,45  | 95±0,45   | 94,4±0,45  | 94±0,45   | 93±0,45  | 92±0,45  |         |
| 110                                   | ±0,50   |                                   |           |           |           |           |           | 106±0,50  | 105,6±0,50 | 105±0,50  | 104,4±0,50 | 104±0,50  | 103±0,50 | 102±0,50 |         |
| 120                                   |         |                                   |           |           |           |           |           | 116±0,50  | 115,6±0,50 | 115±0,50  | 114,4±0,50 | 114±0,50  | 113±0,50 | 112±0,50 |         |
| 130                                   | ±0,70   |                                   |           |           |           |           |           |           |            | 125±0,70  | 124,4±0,70 | 124±0,70  | 123±0,70 | 122±0,70 |         |
| 140                                   |         |                                   |           |           |           |           |           |           |            | 135±0,70  | 134,4±0,70 | 134±0,70  | 133±0,70 | 132±0,70 |         |
| 150                                   | ±0,80   |                                   |           |           |           |           |           |           |            |           |            | 144±0,80  | 143±0,80 | 142±0,80 |         |
| 160                                   |         |                                   |           |           |           |           |           |           |            |           |            | 154±0,80  | 153±0,80 | 152±0,80 |         |
| 170                                   | ±0,90   |                                   |           |           |           |           |           |           |            |           |            | 164±0,90  | 163±0,90 | 162±0,90 |         |
| 180                                   |         |                                   |           |           |           |           |           |           |            |           |            |           | 173±0,90 | 172±0,90 |         |
| 190                                   | ±1,0    |                                   |           |           |           |           |           |           |            |           |            |           | 183±1,0  | 182±1,0  |         |
| 200                                   |         |                                   |           |           |           |           |           |           |            |           |            |           | 193±1,0  | 192±1,0  |         |
| 220                                   | ±1,20   |                                   |           |           |           |           |           |           |            |           |            |           |          |          |         |
| 240                                   |         |                                   |           |           |           |           |           |           |            |           |            |           |          |          |         |
| 260                                   | ±1,30   |                                   |           |           |           |           |           |           |            |           |            |           |          |          |         |

Seamless precision tubes are made of E235, E355 steel. We supply the tubes in commercial lengths of from 2 to 9 m or in strict lengths. Wall thickness tolerances are specified in the standards.

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[illegible]

## Carbon steel. Welded tubes



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Threading
- Beveling
- Marking

| Product                                                                                                | Standard               | Grade                                                                                     |
|--------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------|
| Structural tubes                                                                                       |                        |                                                                                           |
| Structural hollow sections made of low-alloy and fine-grain cold-formed structural steel               | EN 10219               | S235JRH<br>S275J0H / MH / MLH<br>S355J2H / K2H / MH / MLH<br>S420MH / MLH<br>S460MH / MLH |
| Structural hollow sections made of low-alloy and fine-grain hot-formed structural steel                | EN 10210               | S235JRH<br>S275J0H / NH / NLH<br>S355J2H / K2H / NH / NLH<br>S420NH / NLH<br>S460NH / NLH |
| Pipes for pressure application                                                                         |                        |                                                                                           |
| Non-alloy steel pipes and fittings for water and other aqueous fluid transport                         | EN 10224               | L235<br>L275<br>L355                                                                      |
| Non-alloy steel pipes for welding and threading                                                        | EN 10255               | S195T                                                                                     |
| Welded steel pipes for pressure applications                                                           | EN 10217               |                                                                                           |
| Non-alloy steel pipes having specific properties at room temperature                                   | EN 10217-1             | P195TR1 / TR2                                                                             |
|                                                                                                        |                        | P235TR1 / TR2                                                                             |
|                                                                                                        |                        | P265TR1 / TR2                                                                             |
| Electrically welded non-alloy and alloy steel pipes having specific properties at higher temperature   | EN 10217-2             | P195GH                                                                                    |
|                                                                                                        |                        | P235GH                                                                                    |
|                                                                                                        |                        | P265GH                                                                                    |
|                                                                                                        |                        | 16Mo3                                                                                     |
| Fine-grain alloy steel pipes                                                                           | EN 10217-3             | P275NL1 / NL2                                                                             |
|                                                                                                        |                        | P355N / NH / NL1 / NL2                                                                    |
|                                                                                                        |                        | P460N / NH / NL1 / NL2                                                                    |
| Electrically welded non-alloy steel pipes having specific properties at low temperature                | EN 10217-4             | P215NL<br>P265NL                                                                          |
| Electric-welded non-alloy and alloy steel pipes having specific properties at higher temperature       | EN 10217-5             | P235GH                                                                                    |
|                                                                                                        |                        | P265GH                                                                                    |
|                                                                                                        |                        | 16Mo3                                                                                     |
| Submerged arc-welded non-alloy and alloy steel pipes having specific properties at reduced temperature | EN 10217-6             | P215NL<br>P265NL                                                                          |
| Pipes for combustible fluids                                                                           |                        |                                                                                           |
| Line pipes for gas and combustible media                                                               | EN 10208-2<br>ISO 3183 | L245NB / MB                                                                               |
|                                                                                                        |                        | L290NB / MB                                                                               |
|                                                                                                        |                        | L360NB / MB                                                                               |
|                                                                                                        |                        | L415NB / MB                                                                               |
|                                                                                                        |                        | L450MB                                                                                    |
|                                                                                                        |                        | L485MB<br>L555MB                                                                          |
| Line pipes for use in pipeline transportation systems in the petroleum and gas industries              | API Spec 5L            | A25CL - I / II                                                                            |
|                                                                                                        |                        | A                                                                                         |
|                                                                                                        |                        | B                                                                                         |
|                                                                                                        |                        | X42                                                                                       |
|                                                                                                        |                        | X46 / X52<br>X56 / X60                                                                    |

## Carbon steel. Welded tubes and profiles

### Welded tubes

#### Welded tube rolling

- hot
- cold

#### Tube fabrication process

- electric resistance welding (ERW or HFI)
- submerged arc welding (SAW):  
with longitudinal weld (SAWL)  
with spiral weld (SAWH)

#### Type of tube surface

- black
- zinc-coated as per EN 10240 grade A1 - made of zinc-coated strips
- coated

Available stock sizes vary from Ø 17,2 to Ø 1420 mm (also with internal bleed removed)

- **structural tubes** (in grades S235JRH, S355J2H)
- **pressure pipes** (from 3/8" to 40" in light, medium and heavy range, lengths: 6,000, 7,000 and 12,000 mm)
- **pipes for threading**
- **welded precision tubes** as per EN 10305-2, EN 10305-3 in such grades as e.g. E220, E260, E320.

#### Application

Welded structural pipes – for various types of steel structures and equipment

Welded pressure pipes – for pipeline construction, transport of fluids, gases and their mixtures.

#### Surface protection

- zinc-coating  
Carefully selected chemical contents enable hot-dip galvanizing of the tubes.  
In effect, an even and shiny zinc layer is formed. The entire tube and profile portfolio can be zinc-coated
- coatings  
The most broadly used ones are three-layer polyethylene corrosion-resistant coating (3 LPE standard and enhanced), fabricated as per DIN 30670, extruded and applied hot, or as per DIN 30672 and multiple-layer strip internal insulation, hot or cold applied.
- paint coating

$$\text{Theoretical weight per 1 m of the tube} = \frac{(\text{diameter} - \text{wall}) \times \text{wall}}{40,5}$$



#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Threading
- Beveling
- Marking

### Structural hollow sections

#### Grades

- Non-alloy structural steel  
S235JRH, S275J0H, S275J2H, S355J0H, S355J2H, S355K2H,
- Fine-grain structural steel  
(required minimum order quantities)  
S275NH, S275NLH, S355NH, S355NLH, S460NH, S460NLH,

#### Lengths in stock

L=6 000 mm, L=12 000 mm

#### Application

- Civil structure members (columns, floor beams, pur-lins, external walls)
- Car and pipeline bridges
- Telecom poles, notice board and lighting poles
- Bridges, platforms, stairs, railings, barriers, banisters
- Greenhouse, container, tank frames
- Parts of cranes, lifts, conveyors and platforms
- Parts of agricultural machines and vehicles (body frames, trailers, semi-trailers, railway car and ship parts)
- Ducts, parts of A/C equipment and fire protection systems
- Scaffolding, warehouse racks



#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding
- Marking

### Cold-formed open sections as per EN 10162

- C-sections
- lipped C-sections
- angles

Broad range of dimensions.

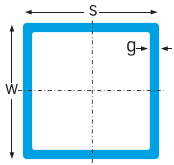
Short turnaround times for non-standard dimensions.



#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding
- Marking

## Carbon steel. Structural hollow sections



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding
- Marking

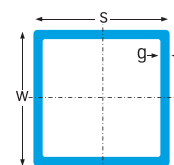
### Square sections

| Dimen-<br>sions<br>s x w<br>(mm) | Wall thickness g<br>in mm |      |             |              |              |              | Cold-formed as per EN 10219<br>Hot-finished as per EN 10210 |  |
|----------------------------------|---------------------------|------|-------------|--------------|--------------|--------------|-------------------------------------------------------------|--|
|                                  | 1,5                       | 2,0  | 3,0         | 4,0          | 5,0          | 6,0          | 6,3                                                         |  |
| Theoretical weight kg/m          |                           |      |             |              |              |              |                                                             |  |
| 15 x 15                          | 0,59                      | 0,74 |             |              |              |              |                                                             |  |
| 20 x 20                          | 0,83                      | 1,05 | 1,42        |              |              |              |                                                             |  |
| 25 x 25                          | 1,06                      | 1,36 | 1,89        |              |              |              |                                                             |  |
| 30 x 30                          | 1,30                      | 1,68 | 2,36        | 2,94         |              |              |                                                             |  |
| 40 x 40                          | 1,77                      | 2,31 | 3,30        | 4,20         | 4,99         |              |                                                             |  |
| <b>40 x 40</b>                   |                           |      | <b>3,41</b> | <b>4,39</b>  | <b>5,28</b>  | <b>6,10</b>  | <b>6,33</b>                                                 |  |
| 50 x 50                          | 2,24                      | 2,93 | 4,25        | 5,45         | 6,56         | 7,56         | 7,57                                                        |  |
| <b>50 x 50</b>                   |                           |      | <b>4,35</b> | <b>5,64</b>  | <b>6,85</b>  | <b>7,99</b>  | <b>8,31</b>                                                 |  |
| 60 x 60                          |                           | 3,56 | 5,19        | 6,71         | 8,13         | 9,45         | 9,55                                                        |  |
| <b>60 x 60</b>                   |                           |      | <b>5,29</b> | <b>6,90</b>  | <b>8,42</b>  | <b>9,87</b>  | <b>10,30</b>                                                |  |
| 70 x 70                          |                           | 4,19 | 6,13        | 7,97         | 9,70         | 11,33        | 11,53                                                       |  |
| <b>70 x 70</b>                   |                           |      | <b>6,24</b> | <b>8,15</b>  | <b>9,99</b>  | <b>11,75</b> | <b>12,27</b>                                                |  |
| 80 x 80                          |                           | 4,82 | 7,07        | 9,22         | 11,27        | 13,21        | 13,51                                                       |  |
| <b>80 x 80</b>                   |                           |      | <b>7,18</b> | <b>9,41</b>  | <b>11,56</b> | <b>13,64</b> | <b>14,25</b>                                                |  |
| 90 x 90                          |                           | 5,45 | 8,01        | 10,48        | 12,84        | 15,10        | 15,49                                                       |  |
| <b>90 x 90</b>                   |                           |      | <b>8,12</b> | <b>10,67</b> | <b>13,13</b> | <b>15,52</b> | <b>16,22</b>                                                |  |
| 100 x 100                        |                           | 6,07 | 8,96        | 11,73        | 14,41        | 16,98        | 17,47                                                       |  |
| <b>100 x 100</b>                 |                           |      |             | <b>11,92</b> | <b>14,70</b> | <b>17,41</b> | <b>18,20</b>                                                |  |
| 110 x 110                        |                           |      | 9,90        | 12,99        | 15,98        | 18,47        | 19,44                                                       |  |
| <b>110 x 110</b>                 |                           |      |             | <b>13,18</b> | <b>16,27</b> | <b>19,29</b> | <b>20,18</b>                                                |  |
| 120 x 120                        |                           |      | 10,84       | 14,25        | 17,55        | 20,75        | 21,42                                                       |  |
| <b>120 x 120</b>                 |                           |      |             | <b>14,43</b> | <b>17,84</b> | <b>21,17</b> | <b>22,16</b>                                                |  |
| 130 x 130                        |                           |      | 11,78       | 15,50        | 19,12        | 22,63        | 23,40                                                       |  |
| <b>130 x 130</b>                 |                           |      |             |              | <b>19,41</b> |              | <b>24,14</b>                                                |  |
| 140 x 140                        |                           |      | 12,72       | 16,76        | 20,69        | 24,52        | 25,38                                                       |  |
| <b>140 x 140</b>                 |                           |      |             | <b>16,95</b> | <b>21,98</b> | <b>24,94</b> | <b>26,11</b>                                                |  |
| 150 x 150                        |                           |      | 13,67       | 18,01        | 22,26        | 26,40        | 27,36                                                       |  |
| <b>150 x 150</b>                 |                           |      |             |              | <b>22,55</b> | <b>26,83</b> | <b>28,09</b>                                                |  |
| 160 x 160                        |                           |      | 14,61       | 19,27        | 23,83        | 28,29        | 29,34                                                       |  |
| <b>160 x 160</b>                 |                           |      |             |              | <b>24,12</b> | <b>28,71</b> | <b>30,07</b>                                                |  |
| 180 x 180                        |                           |      | 16,49       | 21,78        | 26,97        | 32,05        | 33,29                                                       |  |
| <b>180 x 180</b>                 |                           |      |             |              | <b>27,26</b> | <b>32,48</b> | <b>34,03</b>                                                |  |
| 200 x 200                        |                           |      | 18,38       | 24,29        | 30,11        | 35,82        | 37,25                                                       |  |
| <b>200 x 200</b>                 |                           |      |             |              | <b>30,40</b> | <b>36,25</b> | <b>37,98</b>                                                |  |
| 220 x 220                        |                           |      |             | 26,81        | 33,25        | 39,59        | 41,20                                                       |  |
| <b>220 x 220</b>                 |                           |      |             |              | <b>33,54</b> | <b>40,01</b> | <b>41,94</b>                                                |  |
| 250 x 250                        |                           |      |             | 30,57        | 37,96        | 45,24        | 47,14                                                       |  |
| <b>250 x 250</b>                 |                           |      |             |              | <b>38,25</b> | <b>45,67</b> | <b>47,87</b>                                                |  |
| 260 x 260                        |                           |      |             | 31,83        | 39,53        | 47,13        | 49,12                                                       |  |
| <b>260 x 260</b>                 |                           |      |             |              |              | <b>47,55</b> | <b>49,85</b>                                                |  |
| 300 x 300                        |                           |      |             |              | 45,81        | 54,66        | 57,03                                                       |  |
| <b>300 x 300</b>                 |                           |      |             |              |              | <b>55,09</b> | <b>57,77</b>                                                |  |
| 350 x 350                        |                           |      |             |              |              |              | 64,08                                                       |  |
| <b>350 x 350</b>                 |                           |      |             |              |              |              | <b>67,66</b>                                                |  |

The standard dimensional range was indicated. Warehouse stock covers certain dimensions only.

## Carbon steel. Structural hollow sections

| Square sections |                                  |                           |        |        |        |                                                             |        |        |
|-----------------|----------------------------------|---------------------------|--------|--------|--------|-------------------------------------------------------------|--------|--------|
| →               | Dimen-<br>sions<br>s x w<br>(mm) | Wall thickness g<br>in mm |        |        |        | Cold-formed as per EN 10219<br>Hot-finished as per EN 10210 |        |        |
|                 |                                  | 8,0                       | 8,8    | 10,0   | 12,5   | 14,2                                                        | 16,0   | 20,0   |
|                 |                                  | Theoretical weight kg/m   |        |        |        |                                                             |        |        |
|                 | 50 x 50                          | 8,83                      |        |        |        |                                                             |        |        |
|                 | 50 x 50                          | 10,01                     |        |        |        |                                                             |        |        |
|                 | 60 x 60                          | 11,34                     |        |        |        |                                                             |        |        |
|                 | 60 x 60                          | 12,52                     | 13,50  |        |        |                                                             |        |        |
|                 | 70 x 70                          | 13,85                     | 14,82  | 16,14  |        |                                                             |        |        |
|                 | 70 x 70                          | 15,04                     | 16,25  |        |        |                                                             |        |        |
|                 | 80 x 80                          | 16,36                     | 17,59  | 19,28  |        |                                                             |        |        |
|                 | 80 x 80                          | 17,55                     | 19,02  | 21,14  |        |                                                             |        |        |
|                 | 90 x 90                          | 18,87                     | 20,35  | 22,42  |        |                                                             |        |        |
|                 | 90 x 90                          | 20,06                     | 21,78  | 24,28  |        |                                                             |        |        |
|                 | 100 x 100                        | 21,39                     | 23,11  | 25,56  | 29,08  |                                                             |        |        |
|                 | 100 x 100                        | 22,57                     | 24,55  | 27,42  | 33,03  |                                                             |        |        |
|                 | 110 x 110                        | 23,90                     | 25,88  | 28,70  |        |                                                             |        |        |
|                 | 110 x 110                        | 25,08                     | 27,31  | 30,56  | 36,95  | 41,02                                                       |        |        |
|                 | 120 x 120                        | 26,41                     | 28,64  | 31,84  | 36,93  |                                                             |        |        |
|                 | 120 x 120                        | 27,60                     | 30,07  | 33,70  | 40,88  |                                                             |        |        |
|                 | 130 x 130                        | 28,92                     | 31,40  | 34,98  | 40,85  |                                                             |        |        |
|                 | 130 x 130                        | 30,11                     | 32,84  | 36,84  | 44,80  | 49,93                                                       | 55,12  |        |
|                 | 140 x 140                        | 31,43                     | 34,17  | 38,12  | 44,78  |                                                             |        |        |
|                 | 140 x 140                        | 32,62                     | 35,60  | 39,98  | 48,73  | 54,39                                                       | 60,13  |        |
|                 | 150 x 150                        | 33,95                     | 36,93  | 41,26  | 48,70  |                                                             | 58,70  |        |
|                 | 150 x 150                        | 35,13                     | 38,36  | 43,12  | 52,65  | 58,85                                                       | 65,17  |        |
|                 | 160 x 160                        | 36,46                     | 39,69  | 44,40  | 52,63  |                                                             | 63,70  |        |
|                 | 160 x 160                        | 37,64                     | 41,13  | 46,26  | 56,58  | 63,31                                                       | 70,19  |        |
|                 | 180 x 180                        | 41,48                     | 45,22  | 50,68  | 60,48  |                                                             | 73,80  |        |
|                 | 180 x 180                        | 42,67                     | 46,65  | 52,54  | 64,43  | 72,23                                                       | 80,24  |        |
|                 | 200 x 200                        | 46,51                     | 50,75  | 56,96  | 68,33  |                                                             | 83,80  |        |
|                 | 200 x 200                        | 47,69                     | 52,18  | 58,82  | 72,28  | 81,15                                                       | 90,28  |        |
|                 | 220 x 220                        | 51,53                     | 56,27  | 63,24  | 76,18  | 84,97                                                       | 93,90  |        |
|                 | 220 x 220                        | 52,72                     | 57,71  | 65,10  | 80,13  | 90,06                                                       | 100,33 |        |
|                 | 250 x 250                        | 59,07                     | 64,56  | 72,66  | 87,95  | 98,34                                                       | 109,00 |        |
|                 | 250 x 250                        | 60,25                     | 66,00  | 74,52  | 91,90  | 103,44                                                      | 115,41 |        |
|                 | 260 x 260                        | 61,58                     | 67,32  | 75,80  | 91,88  | 102,80                                                      | 114,00 |        |
|                 | 260 x 260                        | 62,76                     | 68,76  | 77,66  | 95,83  | 107,90                                                      | 120,43 |        |
|                 | 300 x 300                        | 71,63                     | 78,38  | 88,36  | 107,58 | 120,64                                                      | 134,06 |        |
|                 | 300 x 300                        | 72,81                     | 79,81  | 90,22  | 111,53 | 125,73                                                      | 140,53 |        |
|                 | 350 x 350                        | 84,19                     | 92,19  | 104,06 | 127,20 | 142,93                                                      | 159,18 |        |
|                 | 350 x 350                        | 85,37                     | 93,63  | 105,92 | 131,15 | 148,03                                                      | 165,65 |        |
|                 | 400 x 400                        | 96,75                     | 106,01 | 119,76 | 146,83 | 165,23                                                      | 184,30 | 225,16 |
|                 | 400 x 400                        | 97,93                     | 107,44 | 121,62 | 150,78 | 170,32                                                      | 190,77 | 235,27 |

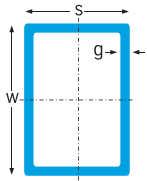


### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding
- Marking

The standard dimensional range was indicated. Warehouse stock covers certain dimensions only.

## Carbon steel. Structural hollow sections



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding
- Marking

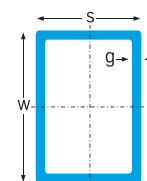
### Rectangular profiles

| Dimen-<br>sions<br>s x w<br>(mm) | Wall thickness g<br>in mm |      |      |       |       |       |       |       |       |       |
|----------------------------------|---------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                                  | 1,5                       | 2,0  | 3,0  | 4,0   | 5,0   | 6,0   | 6,3   | 8,0   | 8,8   | 10,0  |
| Theoretical weight kg/m          |                           |      |      |       |       |       |       |       |       |       |
| 30 x 10                          | 0,83                      | 1,05 |      |       |       |       |       |       |       |       |
| 30 x 15                          | 0,94                      | 1,21 | 1,65 |       |       |       |       |       |       |       |
| 30 x 18                          | 1,01                      | 1,30 | 1,80 |       |       |       |       |       |       |       |
| 30 x 20                          | 1,06                      | 1,36 | 1,89 |       |       |       |       |       |       |       |
| 40 x 20                          | 1,30                      | 1,68 | 2,36 |       |       |       |       |       |       |       |
| 40 x 25                          |                           | 1,83 | 2,60 |       |       |       |       |       |       |       |
| 40 x 27                          |                           | 1,90 | 2,69 |       |       |       |       |       |       |       |
| 45 x 20                          |                           | 1,83 | 2,60 |       |       |       |       |       |       |       |
| 50 x 30                          | 1,77                      | 2,31 | 3,30 | 4,20  |       |       |       |       |       |       |
| 60 x 30                          | 2,00                      | 2,62 | 3,77 | 4,83  |       |       |       |       |       |       |
| 60 x 40                          | 2,24                      | 2,93 | 4,25 | 5,45  | 6,56  | 7,56  |       |       |       |       |
| 60 x 40                          |                           |      |      | 5,64  | 6,85  | 7,99  | 8,31  |       |       |       |
| 70 x 40                          |                           | 3,25 | 4,72 | 6,08  | 7,34  | 8,50  |       |       |       |       |
| 70 x 40                          |                           |      |      | 6,27  | 7,64  | 8,93  |       |       |       |       |
| 70 x 50                          |                           | 3,56 | 5,19 | 6,71  | 8,13  | 9,45  |       |       |       |       |
| 70 x 50                          |                           |      |      | 6,90  | 8,42  | 9,87  | 10,29 |       |       |       |
| 80 x 20                          |                           | 2,93 | 4,25 | 5,45  | 6,56  | 7,56  |       |       |       |       |
| 80 x 30                          |                           | 3,25 | 4,72 | 6,08  | 7,34  | 8,50  |       |       |       |       |
| 80 x 40                          |                           | 3,56 | 5,19 | 6,71  | 8,13  | 9,45  |       |       |       |       |
| 80 x 40                          |                           |      |      | 6,90  | 8,42  | 9,87  | 10,29 |       |       |       |
| 80 x 50                          |                           | 3,88 | 5,66 | 7,34  | 8,91  | 10,39 |       |       |       |       |
| 80 x 50                          |                           |      |      | 7,53  | 9,21  | 10,81 | 11,28 |       |       |       |
| 80 x 60                          |                           | 4,19 | 6,13 | 7,97  | 9,70  | 11,33 |       |       |       |       |
| 80 x 60                          |                           |      |      | 8,15  | 9,99  | 11,75 | 12,27 | 15,04 |       |       |
| 90 x 50                          |                           | 4,19 | 6,13 | 7,97  | 9,70  | 11,33 |       |       |       |       |
| 90 x 50                          |                           |      |      | 8,15  | 9,99  | 11,75 | 12,27 | 15,04 |       |       |
| 100 x 40                         |                           | 4,19 | 6,13 | 7,97  | 9,70  | 11,33 |       |       |       |       |
| 100 x 40                         |                           |      |      | 8,15  | 9,99  | 11,75 | 12,27 | 15,04 |       |       |
| 100 x 50                         |                           | 4,50 | 6,60 | 8,59  | 10,48 | 12,27 | 12,52 | 15,11 |       |       |
| 100 x 50                         |                           |      |      | 8,78  | 10,78 | 12,70 | 13,26 | 16,29 | 17,64 |       |
| 100 x 60                         |                           | 4,82 | 7,07 | 9,22  | 11,27 | 13,21 | 13,51 | 16,36 | 17,59 | 19,28 |
| 100 x 60                         |                           |      |      | 9,41  | 11,56 | 13,64 | 14,25 | 17,55 | 19,02 | 21,14 |
| 100 x 80                         |                           | 5,45 | 8,01 | 10,48 | 12,84 | 15,10 | 15,49 | 18,87 | 20,35 | 22,42 |
| 100 x 80                         |                           |      |      | 10,67 | 13,13 | 15,52 | 16,22 | 20,06 | 21,78 | 24,28 |
| 120 x 40                         |                           | 4,82 | 7,07 | 9,22  | 11,27 | 13,21 |       |       |       |       |
| 120 x 40                         |                           |      |      | 9,41  | 11,56 | 13,64 | 14,25 | 17,55 |       |       |
| 120 x 60                         |                           | 5,45 | 8,01 | 10,48 | 12,84 | 15,10 | 15,49 | 18,87 | 20,35 | 22,42 |
| 120 x 60                         |                           |      |      | 10,67 | 13,13 | 15,52 | 16,22 | 20,06 | 21,78 | 24,28 |
| 120 x 80                         |                           | 6,07 | 8,96 | 11,73 | 14,41 | 16,98 | 17,47 | 21,39 | 23,11 | 25,56 |
| 120 x 80                         |                           |      |      | 11,92 | 14,70 | 17,41 | 18,20 | 22,57 | 24,55 | 27,42 |

The standard dimensional range was indicated. Warehouse stock covers certain dimensions only.

## Carbon steel. Structural hollow sections

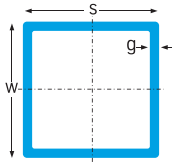
| Rectangular profiles        |                           |       |       |       |       |       |        |        |        |        |        |        |
|-----------------------------|---------------------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| Dimensions<br>s x w<br>(mm) | Wall thickness g<br>in mm |       |       |       |       |       |        |        |        |        |        |        |
|                             | 3,0                       | 4,0   | 5,0   | 6,0   | 6,3   | 8,0   | 8,8    | 10,0   | 12,5   | 14,2   | 16,0   | 20,0   |
| Theoretical weight kg/m     |                           |       |       |       |       |       |        |        |        |        |        |        |
| 140 x 70                    | 9,43                      | 12,36 | 15,19 | 17,92 | 18,46 | 22,64 |        |        |        |        |        |        |
| 140 x 70                    |                           | 12,55 | 15,49 | 18,35 | 19,19 | 23,83 | 25,93  | 28,99  |        |        |        |        |
| 140 x 80                    | 9,90                      | 12,99 | 15,98 | 18,87 | 19,44 | 23,90 | 25,88  | 28,70  |        |        |        |        |
| 140 x 80                    |                           | 13,18 | 16,27 | 19,29 | 20,18 | 25,08 | 27,31  | 30,56  |        |        |        |        |
| 150 x 50                    |                           | 11,73 | 14,41 | 16,98 | 17,47 | 21,39 |        |        |        |        |        |        |
| 150 x 50                    |                           | 11,92 | 14,70 | 17,41 | 18,20 | 22,57 | 24,55  | 27,42  |        |        |        |        |
| 150 x 100                   | 11,31                     | 14,87 | 18,33 | 21,69 | 22,41 | 27,67 | 30,02  | 33,41  |        |        |        |        |
| 150 x 100                   |                           | 15,06 | 18,63 | 22,12 | 23,15 | 28,85 | 31,46  | 35,27  | 42,84  |        |        |        |
| 160 x 80                    | 10,84                     | 14,25 | 17,55 | 20,75 | 21,42 | 26,41 | 28,64  | 31,84  |        |        |        |        |
| 160 x 80                    |                           | 14,43 | 17,84 | 21,17 | 22,16 | 27,60 | 30,07  | 33,70  | 40,88  |        |        |        |
| 160 x 90                    |                           | 14,87 | 18,33 | 21,69 | 22,41 | 27,67 | 30,02  | 33,41  |        |        |        |        |
| 160 x 90                    |                           | 15,06 | 18,63 | 22,12 | 23,15 | 28,85 | 31,46  | 35,27  | 42,84  |        |        |        |
| 180 x 60                    | 10,84                     | 14,25 | 17,55 | 20,75 | 21,42 | 26,41 | 28,64  | 31,84  |        |        |        |        |
| 180 x 60                    |                           |       | 17,84 | 21,17 | 22,16 | 27,60 | 30,07  | 33,70  | 40,88  |        |        |        |
| 180 x 80                    | 11,78                     | 15,50 | 19,12 | 22,63 | 23,40 | 28,92 | 31,40  | 34,98  |        |        |        |        |
| 180 x 80                    |                           |       | 19,41 | 23,06 | 24,14 | 30,11 | 32,84  | 36,84  | 44,80  |        |        |        |
| 180 x 100                   | 12,72                     | 16,76 | 20,69 | 24,52 | 25,38 | 31,43 | 34,17  | 38,12  |        |        |        |        |
| 180 x 100                   |                           |       | 20,98 | 24,94 | 26,11 | 32,62 | 35,60  | 39,98  | 48,73  |        |        |        |
| 200 x 100                   | 13,67                     | 18,01 | 22,26 | 26,40 | 27,36 | 33,95 | 36,93  | 41,26  | 48,70  |        |        |        |
| 200 x 100                   |                           |       | 22,55 | 26,83 | 28,09 | 35,13 | 38,36  | 43,12  | 52,65  | 58,85  | 65,17  |        |
| 200 x 120                   |                           |       | 23,83 | 28,29 | 29,34 | 36,46 | 39,69  | 44,40  | 52,63  |        |        |        |
| 200 x 120                   |                           |       | 24,12 | 28,71 | 30,07 | 37,64 | 41,13  | 46,26  | 56,58  | 63,31  | 70,19  |        |
| 200 x 150                   | 16,02                     | 21,15 | 26,18 | 31,11 | 32,30 | 40,23 | 43,84  | 49,11  | 58,52  |        |        |        |
| 200 x 150                   |                           |       | 26,48 | 31,54 | 33,04 | 41,41 | 45,27  | 50,97  | 62,47  | 70,00  | 77,73  |        |
| 220 x 120                   |                           | 20,53 | 25,40 | 30,17 | 31,31 | 38,97 | 42,46  | 47,54  | 56,55  |        |        |        |
| 220 x 120                   |                           |       | 25,69 | 30,59 | 32,05 | 40,16 | 43,89  | 49,40  | 60,50  | 67,77  | 75,21  |        |
| 250 x 100                   | 16,02                     | 21,15 | 26,18 | 31,11 | 32,30 | 40,23 | 43,84  | 49,11  | 58,52  |        |        |        |
| 250 x 100                   |                           |       | 26,48 | 31,54 | 33,04 | 41,41 | 45,27  | 50,97  | 62,47  | 70,00  | 77,73  |        |
| 250 x 150                   |                           | 24,29 | 30,11 | 35,82 | 37,25 | 46,51 | 50,75  | 56,96  | 68,33  |        |        |        |
| 250 x 150                   |                           |       | 30,40 | 36,25 | 37,98 | 47,69 | 52,18  | 58,82  | 72,28  | 81,15  | 90,29  |        |
| 260 x 140                   |                           |       |       | 35,82 | 37,25 | 46,51 | 50,75  | 56,96  | 68,33  |        |        |        |
| 260 x 140                   |                           |       |       |       | 37,98 | 47,69 | 52,18  | 58,82  | 72,28  | 81,15  | 90,29  |        |
| 260 x 180                   |                           |       |       | 39,59 | 41,20 | 51,53 | 56,27  | 63,24  | 76,18  |        |        |        |
| 260 x 180                   |                           |       |       |       | 41,94 | 52,72 | 57,71  | 65,10  | 80,13  | 90,06  | 100,33 |        |
| 300 x 100                   |                           | 24,29 | 30,11 | 35,82 | 37,25 | 46,51 | 50,75  | 56,96  | 68,33  |        |        |        |
| 300 x 100                   |                           |       | 30,40 | 36,25 | 37,98 | 47,69 | 52,18  | 58,82  | 72,28  | 81,15  | 90,29  |        |
| 300 x 150                   |                           |       |       | 40,53 | 42,19 | 52,79 | 57,65  | 64,81  | 78,14  |        |        |        |
| 300 x 150                   |                           |       |       |       | 42,93 | 53,97 | 59,09  | 66,67  | 82,09  | 92,29  | 102,85 |        |
| 300 x 200                   |                           | 30,57 | 37,96 | 45,24 | 47,14 | 59,07 | 64,56  | 72,66  | 87,95  |        |        |        |
| 300 x 200                   |                           |       | 38,25 | 45,67 | 47,87 | 60,25 | 66,00  | 74,52  | 91,90  | 103,44 | 115,41 |        |
| 350 x 250                   |                           |       |       |       | 57,03 | 71,63 | 78,38  | 88,36  | 107,58 |        |        |        |
| 350 x 250                   |                           |       |       |       | 57,77 | 72,81 | 79,81  | 90,22  | 111,53 | 125,73 | 140,53 |        |
| 400 x 200                   |                           |       |       | 54,66 | 57,03 | 71,63 | 78,38  | 88,36  | 107,58 |        |        |        |
| 400 x 200                   |                           |       |       |       | 57,77 | 72,81 | 79,81  | 90,22  | 111,53 | 125,73 | 140,53 |        |
| 400 x 300                   |                           |       |       | 64,08 | 66,92 | 84,19 | 92,19  | 104,06 | 127,20 | 142,93 | 159,18 |        |
| 400 x 300                   |                           |       |       |       | 67,66 | 85,37 | 93,63  | 105,92 | 131,15 | 148,03 | 165,65 |        |
| 450 x 250                   |                           |       |       | 64,08 | 66,92 | 84,19 | 92,19  | 104,06 | 127,20 | 142,93 | 159,18 |        |
| 450 x 250                   |                           |       |       |       | 67,66 | 85,37 | 93,63  | 105,92 | 131,15 | 148,03 | 165,65 |        |
| 500 x 300                   |                           |       |       |       |       | 96,75 | 106,01 | 119,76 | 146,83 | 165,23 | 184,30 | 225,16 |
| 500 x 300                   |                           |       |       |       |       | 97,93 | 107,44 | 121,62 | 150,78 | 170,32 | 190,77 | 235,27 |



## Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding
- Marking

## Carbon steel. Precision hollow sections



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding
- Marking

### Square profiles as per EN 10305-5 (as per DIN 2395)

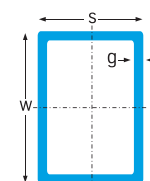
| Dimensions<br>w x s x g<br>mm | Theoretical<br>weight<br>kg/m | Dimensions<br>w x s x g<br>mm | Theoretical<br>weight<br>kg/m |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 15 x 15 x 1,50                | 0,63                          | 60 x 60 x 2,00                | 3,64                          |
| 15 x 15 x 2,00                | 0,81                          | 60 x 60 x 2,50                | 4,50                          |
| 20 x 20 x 1,50                | 0,87                          | 60 x 60 x 3,00                | 5,22                          |
| 20 x 20 x 2,00                | 1,12                          | 60 x 60 x 4,00                | 6,76                          |
| 20 x 20 x 2,50                | 1,33                          | 60 x 60 x 5,00                | 8,13                          |
| 20 x 20 x 3,00                | 1,60                          | 70 x 70 x 2,00                | 4,26                          |
| 25 x 25 x 1,50                | 1,10                          | 70 x 70 x 2,50                | 5,29                          |
| 25 x 25 x 2,00                | 1,44                          | 70 x 70 x 3,00                | 6,16                          |
| 25 x 25 x 2,50                | 1,76                          | 70 x 70 x 4,00                | 8,02                          |
| 25 x 25 x 3,00                | 1,92                          | 70 x 70 x 5,00                | 9,70                          |
| 30 x 30 x 1,50                | 1,34                          | 80 x 80 x 2,00                | 4,89                          |
| 30 x 30 x 2,00                | 1,75                          | 80 x 80 x 2,50                | 6,07                          |
| 30 x 30 x 2,50                | 2,15                          | 80 x 80 x 3,00                | 7,10                          |
| 30 x 30 x 3,00                | 2,39                          | 80 x 80 x 4,00                | 9,28                          |
| 30 x 30 x 4,00                | 3,32                          | 80 x 80 x 5,00                | 11,30                         |
| 35 x 35 x 1,50                | 1,57                          | 90 x 90 x 3,00                | 8,04                          |
| 35 x 35 x 2,00                | 2,07                          | 90 x 90 x 4,00                | 10,50                         |
| 35 x 35 x 2,50                | 2,54                          | 90 x 90 x 5,00                | 12,80                         |
| 35 x 35 x 3,00                | 2,86                          | 100 x 100 x 2,00              | 6,15                          |
| 40 x 40 x 1,50                | 1,81                          | 100 x 100 x 3,00              | 8,99                          |
| 40 x 40 x 2,00                | 2,38                          | 100 x 100 x 4,00              | 11,80                         |
| 40 x 40 x 2,50                | 2,93                          | 100 x 100 x 5,00              | 14,40                         |
| 40 x 40 x 3,00                | 3,33                          |                               |                               |
| 40 x 40 x 4,00                | 4,25                          |                               |                               |
| 45 x 45 x 1,50                | 2,05                          |                               |                               |
| 45 x 45 x 2,00                | 2,69                          |                               |                               |
| 45 x 45 x 2,50                | 3,33                          |                               |                               |
| 45 x 45 x 3,00                | 3,80                          |                               |                               |
| 45 x 45 x 4,00                | 4,88                          |                               |                               |
| 50 x 50 x 1,50                | 2,28                          |                               |                               |
| 50 x 50 x 2,00                | 3,01                          |                               |                               |
| 50 x 50 x 2,50                | 3,72                          |                               |                               |
| 50 x 50 x 3,00                | 4,28                          |                               |                               |
| 50 x 50 x 4,00                | 5,51                          |                               |                               |
| 50 x 50 x 5,00                | 6,56                          |                               |                               |

The standard dimensional range was indicated. Warehouse stock covers certain dimensions only.

## Carbon steel. Precision hollow sections

### Square profiles as per EN 10305-5 (as per DIN 2395)

| Dimensions<br>w x s x g<br>mm | Theoretical<br>weight<br>kg/m | Dimensions<br>w x s x g<br>mm | Theoretical<br>weight<br>kg/m | Dimensions<br>w x s x g<br>mm | Theoretical<br>weight<br>kg/m |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 20 x 10 x 1,50                | 0,63                          | 50 x 25 x 1,50                | 1,69                          | 80 x 20 x 2,00                | 3,01                          |
| 20 x 10 x 2,00                | 0,81                          | 50 x 25 x 2,00                | 2,22                          | 80 x 20 x 3,00                | 4,28                          |
| 20 x 15 x 1,50                | 0,75                          | 50 x 25 x 2,50                | 2,74                          | 80 x 30 x 2,00                | 3,32                          |
| 20 x 15 x 2,00                | 0,97                          | 50 x 25 x 3,00                | 3,10                          | 80 x 30 x 3,00                | 4,75                          |
| 25 x 15 x 1,50                | 0,87                          | 50 x 30 x 1,50                | 1,81                          | 80 x 30 x 4,00                | 6,14                          |
| 25 x 15 x 2,00                | 1,12                          | 50 x 30 x 2,00                | 2,38                          | 80 x 40 x 2,00                | 3,64                          |
| 30 x 10 x 1,50                | 0,87                          | 50 x 30 x 2,50                | 2,93                          | 80 x 40 x 3,00                | 5,22                          |
| 30 x 10 x 2,00                | 1,12                          | 50 x 30 x 3,00                | 3,33                          | 80 x 40 x 4,00                | 6,76                          |
| 30 x 15 x 1,50                | 0,99                          | 50 x 30 x 4,00                | 4,25                          | 80 x 50 x 2,00                | 3,95                          |
| 30 x 15 x 2,00                | 1,28                          | 50 x 34 x 2,00                | 2,51                          | 80 x 50 x 3,00                | 5,69                          |
| 30 x 15 x 3,00                | 1,84                          | 50 x 40 x 1,50                | 2,05                          | 80 x 50 x 4,00                | 7,39                          |
| 30 x 20 x 1,50                | 1,10                          | 50 x 40 x 2,00                | 2,69                          | 80 x 60 x 2,00                | 4,26                          |
| 30 x 20 x 2,00                | 1,44                          | 50 x 40 x 2,50                | 3,33                          | 80 x 60 x 3,00                | 6,16                          |
| 30 x 20 x 2,50                | 1,76                          | 50 x 40 x 3,00                | 3,80                          | 80 x 60 x 4,00                | 8,02                          |
| 30 x 20 x 3,00                | 1,92                          | 50 x 40 x 4,00                | 4,88                          | 100 x 20 x 2,00               | 3,64                          |
| 30 x 25 x 2,00                | 1,59                          | 55 x 34 x 2,00                | 2,66                          | 100 x 20 x 3,00               | 6,22                          |
| 35 x 15 x 2,00                | 1,44                          | 60 x 20 x 1,50                | 1,81                          | 100 x 30 x 3,00               | 5,69                          |
| 35 x 15 x 2,50                | 1,76                          | 60 x 20 x 2,00                | 2,38                          | 100 x 30 x 4,00               | 7,39                          |
| 35 x 20 x 1,50                | 1,22                          | 60 x 20 x 3,00                | 3,33                          | 100 x 40 x 2,00               | 4,26                          |
| 35 x 20 x 2,00                | 1,59                          | 60 x 30 x 1,50                | 2,05                          | 100 x 40 x 3,00               | 6,16                          |
| 35 x 25 x 2,00                | 1,75                          | 60 x 30 x 2,00                | 2,69                          | 100 x 40 x 4,00               | 8,02                          |
| 35 x 25 x 2,50                | 2,15                          | 60 x 30 x 2,50                | 3,33                          | 100 x 50 x 2,00               | 4,58                          |
| 35 x 25 x 3,00                | 2,39                          | 60 x 30 x 3,00                | 3,80                          | 100 x 50 x 3,00               | 6,63                          |
| 40 x 10 x 1,50                | 1,10                          | 60 x 40 x 1,50                | 2,27                          | 100 x 50 x 4,00               | 8,65                          |
| 40 x 10 x 2,00                | 1,44                          | 60 x 40 x 2,00                | 3,01                          | 100 x 50 x 5,00               | 10,05                         |
| 40 x 15 x 1,50                | 1,22                          | 60 x 40 x 2,50                | 3,72                          | 100 x 60 x 3,00               | 7,1                           |
| 40 x 15 x 2,00                | 1,59                          | 60 x 40 x 3,00                | 4,28                          | 100 x 60 x 4,00               | 9,28                          |
| 40 x 20 x 1,50                | 1,34                          | 60 x 40 x 4,00                | 5,51                          | 100 x 60 x 5,00               | 11,3                          |
| 40 x 20 x 2,00                | 1,75                          | 60 x 50 x 2,00                | 3,32                          | 100 x 80 x 3,00               | 8,04                          |
| 40 x 20 x 2,50                | 2,15                          | 60 x 50 x 2,50                | 4,11                          | 100 x 80 x 4,00               | 10,50                         |
| 40 x 25 x 1,50                | 1,46                          | 60 x 50 x 3,00                | 4,75                          | 100 x 80 x 5,00               | 12,80                         |
| 40 x 25 x 2,00                | 1,91                          | 70 x 20 x 2,00                | 2,69                          | 120 x 40 x 2,00               | 4,89                          |
| 40 x 25 x 2,50                | 2,34                          | 70 x 20 x 3,00                | 3,80                          | 120 x 40 x 3,00               | 7,10                          |
| 40 x 25 x 3,00                | 2,63                          | 70 x 30 x 2,00                | 3,01                          | 120 x 40 x 4,00               | 9,28                          |
| 40 x 30 x 1,50                | 1,57                          | 70 x 30 x 3,00                | 4,28                          | 120 x 40 x 5,00               | 11,30                         |
| 40 x 30 x 2,00                | 2,07                          | 70 x 30 x 4,00                | 5,51                          | 120 x 60 x 2,00               | 5,52                          |
| 40 x 30 x 2,50                | 2,54                          | 70 x 40 x 2,00                | 3,32                          | 120 x 60 x 3,00               | 8,04                          |
| 40 x 30 x 3,00                | 2,86                          | 70 x 40 x 3,00                | 4,75                          | 120 x 60 x 4,00               | 10,50                         |
| 45 x 25 x 2,00                | 2,07                          | 70 x 40 x 4,00                | 6,14                          | 120 x 60 x 5,00               | 12,80                         |
| 50 x 20 x 1,50                | 1,57                          | 70 x 40 x 5,00                | 7,34                          | 120 x 80 x 3,00               | 8,99                          |
| 50 x 20 x 2,00                | 2,07                          | 70 x 50 x 2,00                | 3,64                          | 120 x 80 x 4,00               | 11,80                         |
| 50 x 20 x 3,00                | 2,86                          | 70 x 50 x 3,00                | 5,22                          | 120 x 80 x 5,00               | 14,40                         |
|                               |                               | 70 x 50 x 4,00                | 6,76                          |                               |                               |

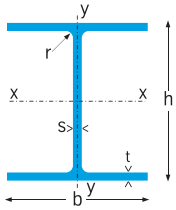


#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding
- Marking

The standard dimensional range was indicated. Warehouse stock covers certain dimensions only.

## Carbon steel. Hot-rolled sections



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

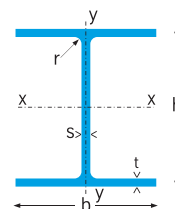
### Wide flange beams, tolerances EN 10034

| EN      | h   | b   | Dimensions |      |      | Cross-sectional area | Theoretical weight | Section properties |                |                |                |      |
|---------|-----|-----|------------|------|------|----------------------|--------------------|--------------------|----------------|----------------|----------------|------|
|         |     |     | s          | t    | r    |                      |                    | I <sub>x</sub>     | I <sub>y</sub> | W <sub>x</sub> | W <sub>y</sub> |      |
|         |     |     | mm         |      |      | cm <sup>2</sup>      | kg/m               | cm <sup>4</sup>    |                |                |                |      |
| HEA 100 | 100 | 96  | 100        | 5    | 8    | 12                   | 21,2               | 16,7               | 349            | 134            | 72,8           | 26,8 |
| HEB 100 | 100 | 100 | 100        | 6    | 10   | 12                   | 26,0               | 20,4               | 450            | 167            | 89,9           | 33,5 |
| HEM 100 | 100 | 120 | 106        | 12   | 20   | 12                   | 53,2               | 41,8               | 1140           | 399            | 190            | 75,3 |
| HEA 120 | 114 | 120 | 120        | 5    | 8    | 12                   | 25,3               | 19,9               | 606            | 231            | 106            | 38,5 |
| HEB 120 | 120 | 120 | 120        | 6,5  | 11   | 12                   | 34,0               | 26,7               | 864            | 318            | 144            | 52,9 |
| HEM 120 | 140 | 126 | 126        | 12,5 | 21   | 12                   | 66,4               | 52,1               | 2020           | 703            | 288            | 112  |
| HEA 140 | 133 | 140 | 140        | 5,5  | 8,5  | 12                   | 31,4               | 24,7               | 1030           | 389            | 155            | 55,6 |
| HEB 140 | 140 | 140 | 140        | 7    | 12   | 12                   | 43,0               | 33,7               | 1510           | 550            | 216            | 78,5 |
| HEM 140 | 160 | 146 | 146        | 13   | 22   | 12                   | 80,6               | 63,2               | 3290           | 1140           | 411            | 157  |
| HEA 160 | 152 | 160 | 160        | 6    | 9    | 15                   | 38,8               | 30,4               | 1670           | 616            | 220            | 76,9 |
| HEB 160 | 160 | 160 | 160        | 8    | 13   | 15                   | 54,3               | 42,6               | 2490           | 889            | 311            | 111  |
| HEM 160 | 180 | 166 | 166        | 14   | 23   | 15                   | 97,1               | 76,2               | 5100           | 1760           | 566            | 212  |
| HEA 180 | 171 | 180 | 180        | 6    | 9,5  | 15                   | 45,3               | 35,5               | 2510           | 925            | 294            | 103  |
| HEB 180 | 180 | 180 | 180        | 8,5  | 14   | 15                   | 65,3               | 51,2               | 3830           | 1360           | 426            | 151  |
| HEM 180 | 200 | 186 | 186        | 14,5 | 24   | 15                   | 113                | 88,9               | 7480           | 2580           | 748            | 277  |
| HEA 200 | 190 | 200 | 200        | 6,5  | 10   | 18                   | 53,8               | 42,3               | 3690           | 1340           | 389            | 134  |
| HEB 200 | 200 | 200 | 200        | 9    | 15   | 18                   | 78,1               | 61,3               | 5700           | 2000           | 570            | 200  |
| HEM 200 | 220 | 206 | 206        | 15   | 25   | 18                   | 131                | 103                | 10640          | 3650           | 967            | 354  |
| HEA 220 | 210 | 220 | 220        | 7    | 11   | 18                   | 64,3               | 50,5               | 5410           | 1950           | 515            | 178  |
| HEB 220 | 220 | 220 | 220        | 9,5  | 16   | 18                   | 91,0               | 71,5               | 8090           | 2840           | 736            | 258  |
| HEM 220 | 240 | 226 | 226        | 15,5 | 26   | 18                   | 149                | 117                | 14600          | 5010           | 1220           | 444  |
| HEA 240 | 230 | 240 | 240        | 7,5  | 12   | 21                   | 76,8               | 60,3               | 7760           | 2770           | 675            | 231  |
| HEB 240 | 240 | 240 | 240        | 10   | 17   | 21                   | 106                | 83,2               | 11260          | 3920           | 938            | 327  |
| HEM 240 | 270 | 248 | 248        | 18   | 32   | 21                   | 200                | 157                | 24290          | 8150           | 1800           | 657  |
| HEA 260 | 250 | 260 | 260        | 7,5  | 12,5 | 24                   | 86,8               | 68,2               | 10450          | 3670           | 836            | 282  |
| HEB 260 | 260 | 260 | 260        | 10   | 17,5 | 24                   | 118                | 93,0               | 14920          | 5130           | 1150           | 395  |
| HEM 260 | 290 | 268 | 268        | 18   | 32,5 | 24                   | 220                | 172                | 31310          | 10450          | 2160           | 780  |
| HEA 280 | 270 | 280 | 280        | 8    | 13   | 24                   | 97,3               | 76,4               | 13670          | 4760           | 1010           | 340  |
| HEB 280 | 280 | 280 | 280        | 10,5 | 18   | 24                   | 131                | 103                | 19270          | 6590           | 1380           | 471  |
| HEM 280 | 310 | 288 | 288        | 18,5 | 33   | 24                   | 240                | 189                | 39550          | 13160          | 2550           | 914  |
| HEA 300 | 290 | 300 | 300        | 8,5  | 14   | 27                   | 113                | 88,3               | 18260          | 6310           | 1260           | 421  |
| HEB 300 | 300 | 300 | 300        | 11   | 19   | 27                   | 149                | 117                | 25170          | 8560           | 1680           | 571  |
| HEM 300 | 340 | 310 | 310        | 21   | 39   | 27                   | 303                | 238                | 59200          | 19400          | 3480           | 1250 |
| HEA 320 | 310 | 300 | 300        | 9    | 15,5 | 27                   | 124                | 97,6               | 22930          | 6990           | 1480           | 466  |
| HEB 320 | 320 | 300 | 300        | 11,5 | 20,5 | 27                   | 161                | 127                | 30820          | 9240           | 1930           | 616  |
| HEM 320 | 359 | 309 | 309        | 21   | 40   | 27                   | 312                | 245                | 68135          | 19709          | 3796           | 1276 |
| HEA 340 | 330 | 300 | 300        | 9,5  | 16,5 | 27                   | 133                | 105                | 27690          | 7440           | 1680           | 496  |
| HEB 340 | 340 | 300 | 300        | 12   | 21,5 | 27                   | 171                | 134                | 36660          | 9690           | 2160           | 646  |
| HEM 340 | 377 | 309 | 309        | 21   | 40   | 27                   | 316                | 248                | 76370          | 19710          | 4050           | 1280 |

## Carbon steel. Hot-rolled sections

### Wide flange beams, tolerances EN 10034

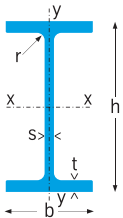
| EN  | Dimensions |      |     |      |      |    | Cross-sectional area | Theoretical weight | Section properties |                |                 |                |
|-----|------------|------|-----|------|------|----|----------------------|--------------------|--------------------|----------------|-----------------|----------------|
|     | h          | b    | s   | t    | r    |    | cm <sup>2</sup>      | kg/m               | I <sub>x</sub>     | I <sub>y</sub> | W <sub>x</sub>  | W <sub>y</sub> |
|     | mm         |      |     |      |      |    |                      |                    | cm <sup>4</sup>    |                | cm <sup>3</sup> |                |
| HEA | 360        | 350  | 300 | 10   | 17,5 | 27 | 143                  | 112                | 33090              | 7890           | 1890            | 526            |
| HEB | 360        | 360  | 300 | 12,5 | 22,5 | 27 | 181                  | 142                | 43190              | 10140          | 2400            | 676            |
| HEM | 360        | 395  | 308 | 21   | 40   | 27 | 319                  | 250                | 84870              | 19520          | 4300            | 1270           |
| HEA | 400        | 390  | 300 | 11   | 19   | 27 | 159                  | 125                | 45070              | 8560           | 2310            | 571            |
| HEB | 400        | 400  | 300 | 13,5 | 24   | 27 | 198                  | 155                | 57680              | 10820          | 2880            | 721            |
| HEM | 400        | 432  | 307 | 21   | 40   | 27 | 326                  | 256                | 104100             | 19340          | 4820            | 1260           |
| HEA | 450        | 440  | 300 | 11,5 | 21   | 27 | 178                  | 140                | 63720              | 9470           | 2900            | 631            |
| HEB | 450        | 450  | 300 | 14   | 26   | 27 | 218                  | 171                | 79890              | 11720          | 3550            | 781            |
| HEM | 450        | 478  | 307 | 21   | 40   | 27 | 335                  | 263                | 131500             | 19340          | 5500            | 1260           |
| HEA | 500        | 490  | 300 | 12   | 23   | 27 | 198                  | 155                | 86970              | 10370          | 3550            | 691            |
| HEB | 500        | 500  | 300 | 14,5 | 28   | 27 | 239                  | 187                | 107200             | 12620          | 4290            | 842            |
| HEM | 500        | 524  | 306 | 21   | 40   | 27 | 344                  | 270                | 161900             | 19150          | 6180            | 1250           |
| HEA | 550        | 540  | 300 | 12,5 | 24   | 27 | 212                  | 166                | 111900             | 10820          | 4150            | 721            |
| HEB | 550        | 550  | 300 | 15   | 29   | 27 | 254                  | 199                | 136700             | 13080          | 4970            | 872            |
| HEM | 550        | 572  | 306 | 21   | 40   | 27 | 354                  | 278                | 198000             | 19160          | 6920            | 1250           |
| HEA | 600        | 590  | 300 | 13   | 25   | 27 | 226                  | 178                | 141200             | 11270          | 4790            | 751            |
| HEB | 600        | 600  | 300 | 15,5 | 30   | 27 | 270                  | 212                | 171000             | 13530          | 5700            | 902            |
| HEM | 600        | 620  | 305 | 21   | 40   | 27 | 364                  | 285                | 237400             | 18980          | 7660            | 1270           |
| HEA | 650        | 640  | 300 | 13,5 | 26   | 27 | 242                  | 190                | 175200             | 11720          | 5470            | 782            |
| HEB | 650        | 650  | 300 | 16   | 31   | 27 | 286                  | 225                | 210600             | 13980          | 6480            | 932            |
| HEM | 650        | 668  | 305 | 21   | 40   | 27 | 374                  | 293                | 281700             | 18980          | 8430            | 1240           |
| HEA | 700        | 690  | 300 | 14,5 | 27   | 27 | 260                  | 204                | 215300             | 12180          | 6240            | 812            |
| HEB | 700        | 700  | 300 | 17   | 32   | 27 | 306                  | 241                | 256900             | 14440          | 7340            | 963            |
| HEM | 700        | 716  | 304 | 21   | 40   | 27 | 383                  | 301                | 329300             | 18800          | 9200            | 1240           |
| HEA | 800        | 790  | 300 | 15   | 28   | 30 | 286                  | 224                | 303400             | 12640          | 7680            | 843            |
| HEB | 800        | 800  | 300 | 17,5 | 33   | 30 | 334                  | 262                | 359100             | 14900          | 8980            | 994            |
| HEM | 800        | 814  | 303 | 21   | 40   | 30 | 404                  | 317                | 442600             | 18630          | 10870           | 1230           |
| HEA | 900        | 890  | 300 | 16   | 30   | 30 | 321                  | 252                | 422100             | 13550          | 9480            | 903            |
| HEB | 900        | 900  | 300 | 18,5 | 35   | 30 | 371                  | 291                | 494100             | 15820          | 10980           | 1050           |
| HEM | 900        | 910  | 302 | 21   | 40   | 30 | 424                  | 333                | 570400             | 18450          | 12540           | 1220           |
| HEA | 1000       | 990  | 300 | 16,5 | 31   | 30 | 347                  | 272                | 553800             | 14000          | 11190           | 934            |
| HEB | 1000       | 1000 | 300 | 19   | 36   | 30 | 400                  | 314                | 644700             | 16280          | 12890           | 1090           |



#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

## Carbon steel. Hot-rolled sections

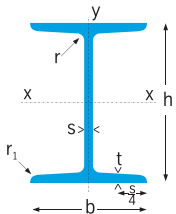


### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

### IPE beams, tolerances EN 10034

| Marking | h   | b   | Dimensions |      | t  | r  | Cross-sectional area | Theoretical weight | I <sub>x</sub> | Section properties |                 |                |
|---------|-----|-----|------------|------|----|----|----------------------|--------------------|----------------|--------------------|-----------------|----------------|
|         |     |     | s          |      |    |    |                      |                    |                | I <sub>y</sub>     | W <sub>x</sub>  | W <sub>y</sub> |
|         |     |     | mm         |      |    |    | cm <sup>2</sup>      | kg/m               |                | cm <sup>4</sup>    | cm <sup>3</sup> |                |
| IPE 80  | 80  | 46  | 3,8        | 5,2  | 5  | 5  | 7,64                 | 6,0                | 80,1           | 8,49               | 20,0            | 3,69           |
| IPE 100 | 100 | 55  | 4,1        | 5,7  | 7  | 7  | 10,3                 | 8,1                | 171            | 15,9               | 34,2            | 5,79           |
| IPE 120 | 120 | 64  | 4,4        | 6,3  | 7  | 7  | 13,2                 | 10,4               | 318            | 27,7               | 53,0            | 8,65           |
| IPE 140 | 140 | 73  | 4,7        | 6,9  | 7  | 7  | 16,4                 | 12,9               | 541            | 44,9               | 77,3            | 12,3           |
| IPE 160 | 160 | 82  | 5,0        | 7,4  | 9  | 9  | 20,1                 | 15,8               | 869            | 68,3               | 109             | 16,7           |
| IPE 180 | 180 | 91  | 5,3        | 8,0  | 9  | 9  | 23,9                 | 18,8               | 1320           | 101                | 146             | 22,2           |
| IPE 200 | 200 | 100 | 5,6        | 8,5  | 12 | 12 | 28,5                 | 22,4               | 1940           | 142                | 194             | 28,5           |
| IPE 220 | 220 | 110 | 5,9        | 9,2  | 12 | 12 | 33,4                 | 26,2               | 2770           | 205                | 252             | 37,3           |
| IPE 240 | 240 | 120 | 6,2        | 9,8  | 15 | 15 | 39,1                 | 30,7               | 3890           | 284                | 324             | 47,3           |
| IPE 270 | 270 | 135 | 6,6        | 10,2 | 15 | 15 | 45,9                 | 36,1               | 5790           | 420                | 429             | 62,2           |
| IPE 300 | 300 | 150 | 7,1        | 10,7 | 15 | 15 | 53,8                 | 42,2               | 8360           | 604                | 557             | 80,5           |
| IPE 330 | 330 | 160 | 7,5        | 11,5 | 18 | 18 | 62,5                 | 49,1               | 11770          | 788                | 713             | 98,5           |
| IPE 360 | 360 | 170 | 8,0        | 12,7 | 18 | 18 | 72,7                 | 57,1               | 16270          | 1040               | 904             | 123,0          |
| IPE 400 | 400 | 180 | 8,6        | 13,5 | 21 | 21 | 84,5                 | 66,3               | 23130          | 1320               | 1160            | 146,0          |
| IPE 450 | 450 | 190 | 9,4        | 14,6 | 21 | 21 | 98,8                 | 77,6               | 33740          | 1680               | 1500            | 176,0          |
| IPE 500 | 500 | 200 | 10,2       | 16,0 | 21 | 21 | 116,0                | 90,7               | 48200          | 2140               | 1930            | 214,0          |
| IPE 550 | 550 | 210 | 11,1       | 17,2 | 24 | 24 | 134,0                | 106,0              | 67120          | 2670               | 2440            | 254,0          |
| IPE 600 | 600 | 220 | 12,0       | 19,0 | 24 | 24 | 156,0                | 122,0              | 92080          | 3387               | 3068            | 307,9          |



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

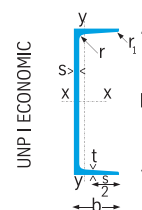
### INP standard beams, tolerances EN 10024

| Marking |     |     | Dimensions |      |      |                | Cross-sectional area | Theoretical weight | Section properties |                |                 |                 |
|---------|-----|-----|------------|------|------|----------------|----------------------|--------------------|--------------------|----------------|-----------------|-----------------|
|         | h   | b   | s          | t    | r    | r <sub>1</sub> |                      |                    | I <sub>x</sub>     | I <sub>y</sub> | W <sub>x</sub>  | W <sub>y</sub>  |
|         | mm  |     |            |      |      |                |                      |                    | cm <sup>2</sup>    | kg/m           | cm <sup>4</sup> | cm <sup>3</sup> |
| INP 80  | 80  | 42  | 3,9        | 5,9  | 3,9  | 2,3            | 7,57                 | 5,94               | 77,8               | 6,29           | 19,5            | 3,00            |
| INP 100 | 100 | 50  | 4,5        | 6,8  | 4,5  | 2,7            | 10,60                | 8,34               | 171,0              | 12,20          | 34,2            | 4,88            |
| INP 120 | 120 | 58  | 5,1        | 7,7  | 5,1  | 3,1            | 14,20                | 11,1               | 328,0              | 21,50          | 54,7            | 7,41            |
| INP 140 | 140 | 66  | 5,7        | 8,6  | 5,7  | 3,4            | 18,20                | 14,3               | 573,0              | 35,20          | 81,9            | 10,70           |
| INP 160 | 160 | 74  | 6,3        | 9,5  | 6,3  | 3,8            | 22,80                | 17,9               | 935,0              | 54,70          | 117,0           | 14,30           |
| INP 180 | 180 | 82  | 6,9        | 10,4 | 6,9  | 4,1            | 27,90                | 21,9               | 1450,0             | 81,30          | 161,0           | 19,80           |
| INP 200 | 200 | 90  | 7,5        | 11,3 | 7,5  | 4,5            | 33,40                | 26,2               | 2140,0             | 117,0          | 214,0           | 26,00           |
| INP 220 | 220 | 98  | 8,1        | 12,2 | 8,1  | 4,9            | 39,50                | 31,1               | 3060,0             | 162,0          | 278,0           | 33,10           |
| INP 240 | 240 | 106 | 8,7        | 13,1 | 8,7  | 5,2            | 46,10                | 36,2               | 4250,0             | 221,0          | 354,0           | 41,70           |
| INP 260 | 260 | 113 | 9,4        | 14,1 | 9,4  | 5,6            | 53,30                | 41,9               | 5740,0             | 288,0          | 442,0           | 51,00           |
| INP 300 | 300 | 125 | 10,8       | 16,2 | 10,8 | 6,5            | 69,00                | 54,2               | 9800,0             | 451,0          | 653,0           | 72,20           |
| INP 340 | 340 | 137 | 12,2       | 18,3 | 12,2 | 7,3            | 86,70                | 68,0               | 15700,0            | 674,0          | 923,0           | 98,40           |
| INP 360 | 360 | 143 | 13,0       | 19,5 | 13,0 | 7,8            | 97,00                | 76,1               | 19610,0            | 818,0          | 1090,0          | 114,00          |
| INP 400 | 400 | 155 | 14,4       | 21,6 | 14,4 | 8,6            | 118,00               | 92,4               | 29210,0            | 1160,0         | 1460,0          | 149,00          |
| INP450  | 450 | 170 | 16,2       | 24,3 | 16,2 | 9,7            | 147,00               | 115,0              | 45850,0            | 1730,0         | 2040,0          | 203,00          |
| INP 500 | 500 | 185 | 18,0       | 27,0 | 18,0 | 10,8           | 179,00               | 141,0              | 68740,0            | 2480,0         | 2750,0          | 268,00          |
| INP 550 | 550 | 200 | 19,0       | 30,0 | 19,0 | 11,9           | 212,00               | 166,0              | 99180,0            | 3490,0         | 3610,0          | 349,00          |

## Carbon steel. Hot-rolled sections

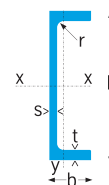
Standard channels UNP, channels with taper flanges C...E, channels with parallel flanges UPE, tolerances EN 10279

| Marking | h   | b   | Dimensions |      | r    | r <sub>1</sub> | Cross-sectional area | Theoretical weight | I <sub>x</sub>  | Section properties | W <sub>x</sub>  | W <sub>y</sub> |
|---------|-----|-----|------------|------|------|----------------|----------------------|--------------------|-----------------|--------------------|-----------------|----------------|
|         |     |     | s          | t    |      |                |                      |                    |                 | I <sub>y</sub>     |                 |                |
|         |     |     | mm         |      |      |                | cm <sup>2</sup>      | kg/m               | cm <sup>4</sup> |                    | cm <sup>3</sup> |                |
| UNP 30  | 30  | 33  | 5,0        | 7,0  | 7,0  | 3,5            | 5,44                 | 4,40               | 3,39            | 5,33               | 4,26            | 2,68           |
| UNP 40  | 40  | 20  | 5,0        | 5,5  | 5,5  | 2,5            | 3,66                 | 2,96               | 7,58            | 1,14               | 3,79            | 0,86           |
| UNP 40  | 40  | 35  | 5,0        | 7,0  | 7,0  | 3,5            | 6,21                 | 5,02               | 14,1            | 6,68               | 7,05            | 3,08           |
| UNP 50  | 50  | 25  | 5,0        | 6,0  | 6,0  | 3,0            | 4,92                 | 3,98               | 16,8            | 2,49               | 6,73            | 1,48           |
| UNP 50  | 50  | 38  | 5,0        | 7,0  | 7,0  | 3,5            | 7,12                 | 5,59               | 26,4            | 9,12               | 10,6            | 3,75           |
| UNP 65  | 65  | 42  | 5,5        | 7,5  | 7,5  | 4,0            | 9,03                 | 7,09               | 57,5            | 14,1               | 17,7            | 5,07           |
| UNP 80  | 80  | 45  | 6,0        | 8,0  | 8,0  | 4,0            | 11,0                 | 8,64               | 106,0           | 19,4               | 26,5            | 6,36           |
| C 80 E  | 80  | 40  | 4,5        | 7,4  | 6,5  | 2,5            | 9,0                  | 7,1                | 89,0            | 12,8               | 22,4            | 4,75           |
| UPE 80  | 80  | 50  | 4,0        | 7,0  | 10,0 |                | 11,3                 | 7,9                | 107,0           | 25,4               | 26,8            | 7,98           |
| UNP 100 | 100 | 50  | 6,0        | 8,5  | 8,5  | 4,5            | 13,5                 | 10,6               | 206,0           | 29,3               | 41,2            | 8,49           |
| C 100 E | 100 | 46  | 4,5        | 7,6  | 7,0  | 3,0            | 10,9                 | 8,6                | 174,0           | 20,4               | 34,8            | 6,46           |
| UPE 100 | 100 | 55  | 4,5        | 7,5  | 10,0 |                | 12,5                 | 9,82               | 207,0           | 38,2               | 41,4            | 10,6           |
| UNP 120 | 120 | 55  | 7,0        | 9,0  | 9,0  | 4,5            | 17,0                 | 13,4               | 364,0           | 43,2               | 60,7            | 11,1           |
| C 120 E | 120 | 52  | 4,8        | 7,8  | 7,5  | 3,0            | 13,3                 | 10,4               | 304,0           | 31,2               | 50,6            | 8,52           |
| UPE 120 | 120 | 60  | 5,0        | 8,0  | 12,0 |                | 15,42                | 12,1               | 364,0           | 55,4               | 60,6            | 13,8           |
| UNP 140 | 140 | 60  | 7,0        | 10,0 | 10,0 | 5,0            | 20,4                 | 16,0               | 605,0           | 62,7               | 86,4            | 14,8           |
| C 140 E | 140 | 58  | 4,9        | 8,1  | 8,0  | 3,0            | 15,6                 | 12,3               | 491,0           | 45,4               | 70,2            | 11,0           |
| UPE 140 | 140 | 65  | 5,0        | 9,0  | 12,0 |                | 18,42                | 14,46              | 599,0           | 78,7               | 85,6            | 18,2           |
| UNP 160 | 160 | 65  | 7,5        | 10,5 | 10,5 | 5,5            | 24,0                 | 18,8               | 925,0           | 85,3               | 116,0           | 18,3           |
| C 160 E | 160 | 64  | 5,0        | 8,4  | 8,5  | 3,5            | 18,1                 | 14,2               | 747,0           | 63,3               | 93,4            | 13,8           |
| UPE 160 | 160 | 70  | 5,5        | 9,5  | 12,0 |                | 21,67                | 17,01              | 911,0           | 107,0              | 114,0           | 22,6           |
| UNP 180 | 180 | 70  | 8,0        | 11,0 | 11,0 | 5,5            | 28,0                 | 22,0               | 1350,0          | 114,0              | 150,0           | 22,4           |
| C 180 E | 180 | 70  | 5,1        | 8,7  | 9,0  | 3,5            | 20,7                 | 16,3               | 1090,0          | 86,0               | 121,0           | 17,0           |
| UPE 180 | 180 | 75  | 5,5        | 10,5 | 12,0 |                | 25,11                | 19,71              | 1353,0          | 144,0              | 150,0           | 28,6           |
| UNP 200 | 200 | 75  | 8,5        | 11,5 | 11,5 | 6,0            | 32,2                 | 25,3               | 1910,0          | 148,0              | 191,0           | 27,0           |
| C 200 E | 200 | 76  | 5,2        | 9,0  | 9,5  | 4,0            | 23,4                 | 18,4               | 1520,0          | 113,0              | 152,0           | 20,5           |
| UPE 200 | 200 | 80  | 6,0        | 11,0 | 13,0 |                | 29,01                | 22,77              | 1909,0          | 187,0              | 191,0           | 34,4           |
| UNP 220 | 220 | 80  | 9,0        | 12,5 | 12,5 | 6,5            | 37,4                 | 29,4               | 2690,0          | 197,0              | 245,0           | 33,6           |
| UPE 220 | 220 | 85  | 6,5        | 12,0 | 13,0 |                | 33,87                | 26,58              | 2682,0          | 246,0              | 244,0           | 42,5           |
| UNP 240 | 240 | 85  | 9,5        | 13,0 | 13,0 | 6,5            | 42,3                 | 33,2               | 3600,0          | 248,0              | 300,0           | 39,6           |
| UPE 240 | 240 | 90  | 7,0        | 12,5 | 15,0 |                | 38,52                | 30,23              | 3599,0          | 311,0              | 300,0           | 50,1           |
| UNP 260 | 260 | 90  | 10,0       | 14,0 | 14,0 | 7,0            | 48,3                 | 37,9               | 4820,0          | 317,0              | 371,0           | 47,7           |
| UPE 270 | 270 | 95  | 7,5        | 13,5 | 15,0 |                | 44,84                | 35,2               | 5255,0          | 401,0              | 389,0           | 60,7           |
| UNP 280 | 280 | 95  | 10,0       | 15,0 | 15,0 | 7,5            | 53,3                 | 41,8               | 6280,0          | 399,0              | 448,0           | 57,2           |
| UNP 300 | 300 | 100 | 10,0       | 16,0 | 16,0 | 8,0            | 58,8                 | 46,2               | 8030,0          | 495,0              | 535,0           | 67,8           |
| UPE 300 | 300 | 100 | 9,5        | 15,0 | 15,0 |                | 56,6                 | 44,4               | 7823,0          | 538,0              | 522,0           | 75,6           |
| UNP 320 | 320 | 100 | 14,0       | 17,5 | 17,5 | 8,75           | 75,8                 | 59,5               | 10870,0         | 597,0              | 679,0           | 80,6           |
| UPE 330 | 330 | 105 | 11,0       | 16,0 | 18,0 |                | 67,8                 | 53,2               | 11008,0         | 681,0              | 667,0           | 89,7           |
| UNP 350 | 350 | 100 | 14,0       | 16,0 | 16,0 | 8,0            | 77,3                 | 60,6               | 12840,0         | 570,0              | 734,0           | 75,0           |
| UPE 360 | 360 | 110 | 12,0       | 17,0 | 18,0 |                | 77,9                 | 61,2               | 14825,0         | 844,0              | 824,0           | 105,0          |
| UNP 380 | 380 | 102 | 13,5       | 16,0 | 16,0 | 8,0            | 80,4                 | 63,1               | 15706,0         | 615,0              | 829,0           | 78,7           |
| UNP 400 | 400 | 110 | 14,0       | 18,0 | 18,0 | 9,0            | 91,9                 | 71,8               | 20350,0         | 846,0              | 1020,0          | 102,0          |
| UPE 400 | 400 | 115 | 13,5       | 18,0 | 18,0 |                | 91,9                 | 72,2               | 20981,0         | 1049,0             | 1049,0          | 123,0          |



## Services

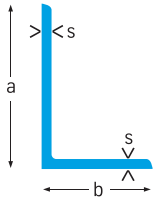
- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding



## Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

## Carbon steel. Hot-rolled merchant bars



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

### Unequal leg angles, tolerances EN 10056

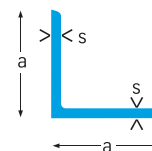
| Dimensions<br>a x b x s | Theoretical<br>weight<br>kg/m |
|-------------------------|-------------------------------|
| 30 x 20 x 3             | 1,11                          |
| 30 x 20 x 4             | 1,45                          |
| 40 x 20 x 3             | 1,35                          |
| 40 x 20 x 4             | 1,77                          |
| 40 x 25 x 4             | 1,93                          |
| 45 x 30 x 3             | 1,72                          |
| 45 x 30 x 4             | 2,25                          |
| 45 x 30 x 5             | 2,77                          |
| 50 x 30 x 4             | 2,41                          |
| 50 x 30 x 5             | 2,96                          |
| 50 x 40 x 4             | 2,71                          |
| 50 x 40 x 5             | 3,35                          |
| 60 x 30 x 5             | 3,37                          |
| 60 x 40 x 5             | 3,76                          |
| 60 x 40 x 6             | 4,46                          |
| 60 x 40 x 7             | 5,14                          |
| 65 x 50 x 5             | 4,35                          |
| 65 x 50 x 7             | 5,97                          |
| 65 x 50 x 9             | 7,52                          |
| 70 x 50 x 6             | 5,40                          |
| 70 x 50 x 7             | 6,51                          |
| 75 x 50 x 7             | 6,51                          |
| 75 x 50 x 8             | 7,4                           |
| 75 x 50 x 9             | 8,23                          |
| 75 x 55 x 5             | 4,95                          |
| 75 x 55 x 7             | 6,80                          |
| 75 x 55 x 9             | 8,59                          |
| 80 x 40 x 6             | 5,41                          |
| 80 x 40 x 8             | 7,07                          |
| 80 x 60 x 7             | 7,36                          |
| 80 x 65 x 8             | 8,66                          |
| 80 x 65 x 10            | 10,7                          |

| Dimensions<br>a x b x s | Theoretical<br>weight<br>kg/m |
|-------------------------|-------------------------------|
| 90 x 60 x 6             | 6,82                          |
| 90 x 60 x 8             | 8,96                          |
| 100 x 50 x 6            | 6,85                          |
| 100 x 50 x 8            | 8,99                          |
| 100 x 50 x 10           | 11,1                          |
| 100 x 65 x 7            | 8,77                          |
| 100 x 65 x 9            | 11,1                          |
| 100 x 65 x 11           | 13,4                          |
| 100 x 75 x 7            | 9,3                           |
| 100 x 75 x 8            | 10,6                          |
| 100 x 75 x 9            | 11,8                          |
| 100 x 75 x 11           | 14,3                          |
| 120 x 80 x 8            | 12,2                          |
| 120 x 80 x 10           | 15,0                          |
| 120 x 80 x 12           | 17,8                          |
| 130 x 65 x 8            | 11,9                          |
| 130 x 65 x 10           | 14,6                          |
| 130 x 65 x 12           | 17,3                          |
| 130 x 90 x 12           | 19,7                          |
| 150 x 75 x 9            | 15,3                          |
| 150 x 75 x 10           | 17,0                          |
| 150 x 75 x 11           | 18,6                          |
| 150 x 100 x 10          | 19,0                          |
| 150 x 100 x 12          | 22,6                          |
| 150 x 100 x 14          | 26,1                          |
| 160 x 80 x 10           | 18,2                          |
| 160 x 80 x 12           | 21,0                          |
| 180 x 90 x 10           | 20,6                          |
| 180 x 90 x 12           | 24,5                          |
| 200 x 100 x 10          | 23,0                          |
| 200 x 100 x 12          | 27,3                          |
| 200 x 100 x 14          | 31,6                          |

## Carbon steel. Hot-rolled merchant bars

### Equal leg angles, tolerances EN 10056

| Dimensions<br>a x s<br>mm | Theoretical<br>weight<br>kg/m | Dimensions<br>a x s<br>mm | Theoretical<br>weight<br>kg/m | Dimensions<br>a x s<br>mm | Theoretical<br>weight<br>kg/m |
|---------------------------|-------------------------------|---------------------------|-------------------------------|---------------------------|-------------------------------|
| 20 x 3                    | 0,88                          | 60 x 8                    | 7,09                          | 110 x 10                  | 16,6                          |
| 20 x 4                    | 1,13                          | 65 x 5                    | 5,29                          | 120 x 10                  | 18,2                          |
| 25 x 3                    | 1,12                          | 65 x 6                    | 5,91                          | 120 x 11                  | 19,9                          |
| 25 x 4                    | 1,45                          | 65 x 8                    | 7,73                          | 120 x 12                  | 21,6                          |
| 30 x 3                    | 1,36                          | 65 x 9                    | 8,62                          | 130 x 10                  | 19,8                          |
| 30 x 4                    | 1,78                          | 65 x 7                    | 6,83                          | 130 x 12                  | 23,6                          |
| 30 x 5                    | 2,18                          | 70 x 6                    | 6,38                          | 140 x 10                  | 21,38                         |
| 35 x 4                    | 2,1                           | 70 x 7                    | 7,38                          | 150 x 10                  | 23,0                          |
| 35 x 5                    | 2,57                          | 70 x 9                    | 9,34                          | 150 x 12                  | 27,3                          |
| 40 x 4                    | 2,42                          | 75 x 5                    | 5,76                          | 150 x 14                  | 31,6                          |
| 40 x 5                    | 2,97                          | 75 x 6                    | 6,85                          | 150 x 15                  | 33,8                          |
| 40 x 6                    | 3,52                          | 75 x 7                    | 7,94                          | 160 x 15                  | 36,2                          |
| 45 x 4                    | 2,74                          | 75 x 8                    | 9,03                          | 160 x 16                  | 38,4                          |
| 45 x 4,5                  | 3,06                          | 80 x 6                    | 7,34                          | 180 x 15                  | 40,9                          |
| 45 x 5                    | 3,38                          | 80 x 8                    | 9,66                          | 180 x 16                  | 43,5                          |
| 50 x 4                    | 3,06                          | 80 x 10                   | 11,9                          | 180 x 18                  | 48,6                          |
| 50 x 5                    | 3,77                          | 90 x 6                    | 8,28                          | 200 x 16                  | 48,5                          |
| 50 x 6                    | 4,47                          | 90 x 7                    | 9,61                          | 200 x 18                  | 54,3                          |
| 50 x 7                    | 5,15                          | 90 x 8                    | 10,9                          | 200 x 20                  | 59,9                          |
| 50 x 8                    | 5,81                          | 90 x 9                    | 12,2                          | 200 x 24                  | 71,1                          |
| 55 x 6                    | 4,94                          | 90 x 10                   | 13,4                          | 250 x 24                  | 90,0                          |
| 60 x 4                    | 4,76                          | 100 x 8                   | 12,2                          | 250 x 22                  | 82,8                          |
| 60 x 5                    | 4,57                          | 100 x 10                  | 15,1                          | 250 x 26                  | 97,0                          |
| 60 x 6                    | 5,42                          | 100 x 12                  | 17,8                          | 300 x 34                  | 150                           |

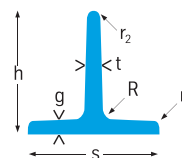


#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

### T-bars, tolerances EN 10055

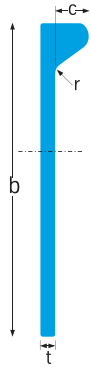
| Dimensions h x b<br>mm | Theoretical weight<br>kg/m |
|------------------------|----------------------------|
| 30 x 4                 | 1,77                       |
| 35 x 4,5               | 2,33                       |
| 40 x 5                 | 2,96                       |
| 50 x 6                 | 4,44                       |
| 60 x 7                 | 6,23                       |
| 70 x 8                 | 8,32                       |
| 80 x 9                 | 10,7                       |
| 90 x 10                | 13,40                      |
| 100 x 11               | 16,4                       |
| 120 x 13               | 23,2                       |
| 140 x 15               | 31,3                       |



#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

## Carbon steel. Hot-rolled merchant bars



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

### Bulb flats, tolerances EN 10067

| Marking  | b   | t  | c  | r  | Cross-sectional area<br>A<br>cm <sup>2</sup> | Theoretical weight<br>G<br>kg/m | Surface area<br>U<br>m <sup>2</sup> /m |
|----------|-----|----|----|----|----------------------------------------------|---------------------------------|----------------------------------------|
| 80 x 5   | 80  | 5  | 14 | 4  | 5,41                                         | 4,25                            | 0,189                                  |
| 80 x 6   | 80  | 6  | 14 | 4  | 6,21                                         | 4,88                            | 0,191                                  |
| 80 x 7   | 80  | 7  | 14 | 4  | 7                                            | 5,5                             | 1,194                                  |
| 100 x 6  | 100 | 6  | 16 | 5  | 7,74                                         | 6,08                            | 0,234                                  |
| 100 x 7  | 100 | 7  | 16 | 5  | 8,74                                         | 6,86                            | 0,236                                  |
| 100 x 8  | 100 | 8  | 16 | 5  | 9,74                                         | 7,65                            | 0,238                                  |
| 120 x 6  | 120 | 6  | 17 | 5  | 9,32                                         | 7,32                            | 0,276                                  |
| 120 x 7  | 120 | 7  | 17 | 5  | 10,52                                        | 8,26                            | 0,278                                  |
| 120 x 8  | 120 | 8  | 17 | 5  | 11,72                                        | 9,2                             | 0,28                                   |
| 140 x 7  | 140 | 7  | 19 | 6  | 12,43                                        | 9,75                            | 0,32                                   |
| 140 x 8  | 140 | 8  | 19 | 6  | 13,83                                        | 10,85                           | 0,322                                  |
| 140 x 9  | 140 | 9  | 19 | 6  | 15,2                                         | 11,9                            | 0,324                                  |
| 160 x 7  | 160 | 7  | 22 | 6  | 14,6                                         | 11,46                           | 0,365                                  |
| 160 x 8  | 160 | 8  | 22 | 6  | 16,2                                         | 12,72                           | 0,367                                  |
| 160 x 9  | 160 | 9  | 22 | 6  | 17,8                                         | 13,97                           | 0,369                                  |
| 180 x 8  | 180 | 8  | 25 | 7  | 18,86                                        | 14,8                            | 0,411                                  |
| 180 x 9  | 180 | 9  | 25 | 7  | 20,66                                        | 16,22                           | 0,413                                  |
| 180 x 10 | 180 | 10 | 25 | 7  | 22,46                                        | 17,63                           | 0,415                                  |
| 180 x 11 | 180 | 11 | 25 | 7  | 24,26                                        | 19,04                           | 0,417                                  |
| 200 x 9  | 200 | 9  | 28 | 8  | 23,66                                        | 18,57                           | 0,457                                  |
| 200 x 10 | 200 | 10 | 28 | 8  | 25,66                                        | 20,14                           | 0,459                                  |
| 200 x 11 | 200 | 11 | 28 | 8  | 27,66                                        | 21,71                           | 0,461                                  |
| 200 x 12 | 200 | 12 | 28 | 8  | 29,66                                        | 23,28                           | 0,463                                  |
| 220 x 10 | 220 | 10 | 31 | 9  | 29                                           | 22,77                           | 0,503                                  |
| 220 x 11 | 220 | 11 | 31 | 9  | 31,2                                         | 24,5                            | 0,506                                  |
| 220 x 12 | 220 | 12 | 31 | 9  | 33,4                                         | 26,22                           | 0,507                                  |
| 240 x 10 | 240 | 10 | 34 | 10 | 32,49                                        | 25,5                            | 0,547                                  |
| 240 x 11 | 240 | 11 | 34 | 10 | 34,89                                        | 27,39                           | 0,549                                  |
| 240 x 12 | 240 | 12 | 34 | 10 | 37,29                                        | 29,27                           | 0,551                                  |
| 260 x 10 | 260 | 10 | 37 | 11 | 36,11                                        | 28,35                           | 0,591                                  |
| 260 x 11 | 260 | 11 | 37 | 11 | 38,71                                        | 30,39                           | 0,593                                  |
| 260 x 12 | 260 | 12 | 37 | 11 | 41,31                                        | 32,43                           | 0,596                                  |
| 280 x 11 | 280 | 11 | 40 | 12 | 42,68                                        | 33,5                            | 0,637                                  |
| 280 x 12 | 280 | 12 | 40 | 12 | 45,48                                        | 35,7                            | 0,639                                  |
| 280 x 13 | 280 | 13 | 40 | 12 | 48,28                                        | 37,9                            | 0,641                                  |
| 300 x 11 | 300 | 11 | 43 | 13 | 46,78                                        | 36,7                            | 0,681                                  |
| 300 x 12 | 300 | 12 | 43 | 13 | 49,79                                        | 39,09                           | 0,683                                  |

## Carbon steel. Hot-rolled merchant bars

### Round bars, tolerances EN 10060, square bars, tolerances N 10059

| Dimensions<br>mm |  |  |
|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                  | Theoretical weight kg/m                                                           |                                                                                   |
| 6                | 0,222                                                                             | 0,283                                                                             |
| 7                | 0,302                                                                             | 0,385                                                                             |
| 8                | 0,395                                                                             | 0,502                                                                             |
| 9                | 0,499                                                                             | 0,636                                                                             |
| 10               | 0,616                                                                             | 0,785                                                                             |
| 11               | 0,746                                                                             | 0,950                                                                             |
| 12               | 0,890                                                                             | 1,13                                                                              |
| 13               | 1,04                                                                              | 1,33                                                                              |
| 14               | 1,21                                                                              | 1,54                                                                              |
| 15               | 1,39                                                                              | 1,77                                                                              |
| 16               | 1,58                                                                              | 2,01                                                                              |
| 17               | 1,78                                                                              | 2,27                                                                              |
| 18               | 2,00                                                                              | 2,54                                                                              |
| 19               | 2,23                                                                              | 2,83                                                                              |
| 20               | 2,47                                                                              | 3,14                                                                              |
| 21               | 2,72                                                                              | 3,46                                                                              |
| 22               | 2,98                                                                              | 3,80                                                                              |
| 23               | 3,26                                                                              | 4,15                                                                              |
| 24               | 3,55                                                                              | 4,52                                                                              |
| 25               | 3,85                                                                              | 4,91                                                                              |
| 26               | 4,17                                                                              | 5,31                                                                              |
| 27               | 4,49                                                                              | 5,72                                                                              |
| 28               | 4,83                                                                              | 6,15                                                                              |
| 29               | 5,19                                                                              | 6,60                                                                              |
| 30               | 5,55                                                                              | 7,07                                                                              |
| 31               | 5,93                                                                              | 7,54                                                                              |
| 32               | 6,31                                                                              | 8,04                                                                              |
| 33               | 6,71                                                                              | 8,55                                                                              |
| 34               | 7,13                                                                              | 9,07                                                                              |
| 35               | 7,55                                                                              | 9,62                                                                              |
| 36               | 7,99                                                                              | 10,2                                                                              |
| 38               | 8,90                                                                              | 11,3                                                                              |
| 40               | 9,86                                                                              | 12,6                                                                              |
| 41               | 10,4                                                                              | 13,2                                                                              |
| 42               | 10,9                                                                              | 13,8                                                                              |
| 43               | 11,4                                                                              | 14,5                                                                              |
| 45               | 12,5                                                                              | 15,9                                                                              |
| 46               | 13,0                                                                              | 16,6                                                                              |
| 48               | 14,2                                                                              | 18,1                                                                              |
| 50               | 15,4                                                                              | 19,6                                                                              |
| 52               | 16,7                                                                              | 21,2                                                                              |
| 53               | 17,3                                                                              | 22,1                                                                              |
| 55               | 18,6                                                                              | 23,8                                                                              |
| 57               | 20,0                                                                              | 25,5                                                                              |

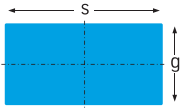
| Dimensions<br>mm |  |  |
|------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                  | Theoretical weight kg/m                                                           |                                                                                     |
| 60               | 22,2                                                                              | 28,3                                                                                |
| 62               | 23,7                                                                              | 30,2                                                                                |
| 63               | 24,5                                                                              | 31,2                                                                                |
| 65               | 26,0                                                                              | 33,2                                                                                |
| 68               | 28,5                                                                              | 36,3                                                                                |
| 70               | 30,2                                                                              | 38,5                                                                                |
| 75               | 34,7                                                                              | 44,2                                                                                |
| 80               | 39,5                                                                              | 50,2                                                                                |
| 85               | 44,5                                                                              | 56,7                                                                                |
| 90               | 49,9                                                                              | 63,6                                                                                |
| 95               | 55,6                                                                              | 70,9                                                                                |
| 100              | 61,7                                                                              | 78,5                                                                                |
| 105              | 68,0                                                                              | 86,5                                                                                |
| 110              | 74,6                                                                              | 95,0                                                                                |
| 115              | 81,5                                                                              | 104                                                                                 |
| 120              | 88,8                                                                              | 113                                                                                 |
| 125              | 96,3                                                                              |                                                                                     |
| 130              | 104                                                                               |                                                                                     |
| 135              | 112                                                                               |                                                                                     |
| 140              | 121                                                                               |                                                                                     |
| 145              | 130                                                                               |                                                                                     |
| 150              | 139                                                                               |                                                                                     |
| 155              | 148                                                                               |                                                                                     |
| 160              | 158                                                                               |                                                                                     |
| 165              | 168                                                                               |                                                                                     |
| 170              | 178                                                                               |                                                                                     |
| 175              | 189                                                                               |                                                                                     |
| 180              | 200                                                                               |                                                                                     |
| 190              | 223                                                                               |                                                                                     |
| 200              | 247                                                                               |                                                                                     |
| 225              | 312                                                                               |                                                                                     |
| 250              | 385                                                                               |                                                                                     |
| 210              | 272                                                                               |                                                                                     |
| 220              | 298                                                                               |                                                                                     |
| 225              | 312                                                                               |                                                                                     |
| 230              | 326                                                                               |                                                                                     |
| 240              | 355                                                                               |                                                                                     |
| 250              | 385                                                                               |                                                                                     |
| 260              | 416                                                                               |                                                                                     |
| 270              | 449                                                                               |                                                                                     |
| 280              | 483                                                                               |                                                                                     |
| 290              | 518                                                                               |                                                                                     |
| 300              | 554                                                                               |                                                                                     |
| 320              | 631                                                                               |                                                                                     |



#### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection

## Carbon steel. Hot-rolled merchant bars



### Services

- Saw cutting
- Shot blasting
- Anticorrosive protection
- Grinding

### Flat bars, tolerances EN 10058

| Width<br>s<br>mm | Thickness g<br>in mm    |      |      |      |       |       |       |       |       |       |       |       |       |       |
|------------------|-------------------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  | 3                       | 4    | 5    | 6    | 8     | 10    | 12    | 14    | 16    | 20    | 25    | 30    | 40    | 50    |
|                  | Theoretical weight kg/m |      |      |      |       |       |       |       |       |       |       |       |       |       |
| 20               | 0,47                    | 0,63 | 0,79 | 0,94 | 1,26  | 1,57  | 1,88  | 2,20  | 2,51  | 3,14  | 3,93  | 4,71  | 6,28  | 7,85  |
| 25               | 0,59                    | 0,79 | 0,98 | 1,18 | 1,57  | 1,96  | 2,36  | 2,75  | 3,14  | 3,93  | 4,91  | 5,89  | 7,85  | 9,81  |
| 30               | 0,71                    | 0,94 | 1,18 | 1,41 | 1,88  | 2,36  | 2,83  | 3,30  | 3,77  | 4,71  | 5,89  | 7,07  | 9,42  | 11,78 |
| 35               |                         | 1,10 | 1,37 | 1,65 | 2,20  | 2,75  | 3,30  | 3,85  | 4,40  | 5,50  | 6,87  | 8,24  | 10,99 | 13,74 |
| 40               | 0,94                    | 1,26 | 1,57 | 1,88 | 2,51  | 3,14  | 3,77  | 4,40  | 5,02  | 6,28  | 7,85  | 9,42  | 12,56 | 15,70 |
| 45               |                         | 1,41 | 1,77 | 2,12 | 2,83  | 3,53  | 4,24  | 4,95  | 5,65  | 7,07  | 8,83  | 10,60 | 14,13 | 17,66 |
| 50               |                         | 1,57 | 1,96 | 2,36 | 3,14  | 3,93  | 4,71  | 5,50  | 6,28  | 7,85  | 9,81  | 11,78 | 15,70 | 19,63 |
| 55               |                         | 1,73 | 2,16 | 2,59 | 3,45  | 4,32  | 5,18  | 6,04  | 6,91  | 8,64  | 10,79 | 12,95 | 17,27 | 21,59 |
| 60               |                         | 1,88 | 2,36 | 2,83 | 3,77  | 4,71  | 5,65  | 6,59  | 7,54  | 9,42  | 11,78 | 14,13 | 18,84 | 23,55 |
| 65               |                         |      | 2,55 | 3,06 | 4,08  | 5,10  | 6,12  | 7,14  | 8,16  | 10,21 | 12,76 | 15,31 | 20,41 | 25,51 |
| 70               |                         |      | 2,75 | 3,30 | 4,40  | 5,50  | 6,59  | 7,69  | 8,79  | 10,99 | 13,74 | 16,49 | 20,41 | 25,51 |
| 75               |                         |      | 2,94 | 3,53 | 4,71  | 5,89  | 7,07  | 8,24  | 9,42  | 11,78 | 14,72 | 17,66 | 23,55 | 29,44 |
| 80               |                         |      | 3,14 | 3,77 | 5,02  | 6,28  | 7,54  | 8,79  | 10,05 | 12,56 | 15,70 | 18,84 | 25,12 | 31,40 |
| 90               |                         |      | 3,53 | 4,24 | 5,65  | 7,07  | 8,48  | 9,89  | 11,30 | 14,13 | 17,66 | 21,20 | 28,26 | 35,33 |
| 100              |                         |      | 3,93 | 4,71 | 6,28  | 7,85  | 9,42  | 10,99 | 12,56 | 15,70 | 19,63 | 23,55 | 31,40 | 39,25 |
| 110              |                         |      | 4,32 | 5,18 | 6,91  | 8,64  | 10,36 | 12,09 | 13,82 | 17,27 | 21,59 | 25,91 | 34,54 | 43,18 |
| 120              |                         |      | 4,71 | 5,65 | 7,54  | 9,42  | 11,30 | 13,19 | 15,07 | 18,84 | 23,55 | 28,26 | 37,68 | 47,10 |
| 130              |                         |      | 5,10 | 6,12 | 8,16  | 10,21 | 12,25 | 14,29 | 16,33 | 20,41 | 25,51 | 30,62 | 40,82 | 51,03 |
| 140              |                         |      | 5,50 | 6,59 | 8,79  | 10,99 | 13,19 | 15,39 | 17,58 | 21,98 | 27,48 | 32,97 | 43,96 | 54,95 |
| 150              |                         |      | 5,89 | 7,07 | 9,42  | 11,78 | 14,13 | 16,49 | 18,84 | 23,55 | 29,44 | 35,33 | 47,10 | 58,87 |
| 160              |                         |      | 6,28 | 7,54 | 10,05 | 12,56 | 15,07 | 17,58 | 20,10 | 25,12 | 31,40 | 37,68 | 47,10 | 62,80 |
| 180              |                         |      | 7,07 | 8,48 | 11,30 | 14,13 | 16,96 | 19,78 | 22,61 | 28,26 | 35,33 | 42,39 | 56,52 | 70,65 |
| 200              |                         |      | 7,85 | 9,42 | 12,56 | 15,70 | 18,84 | 21,98 | 25,12 | 31,40 | 39,25 | 47,10 | 62,80 | 78,50 |

### Cold-drawn bars, tolerances EN 10277/10278

Primary benefits of cold-drawn bars are:

- high straightness,
- reduced dimensional tolerance,
- very smooth, free from pores, damage or surface corrosion stains.

Drawn steel is recommended where precision and accuracy of surface finish are of decisive importance - e.g. in

machine construction, furniture making, power tools or optical equipment manufacturing.

Our warehouse stock includes cold-drawn bars in dimensions from 5 to 60 mm in the most popular grades: S235JR+C, S355J2+C.

We also supply flat and squared bars as per custom requests.

## Engineering and quality steel. Bars and sheets

We supply hot rolled bars in raw, annealed, normalized or quenched and tempered condition, as well as cold drawn bars, polished bars and sheets made of the following steel grades:

- for hardening (quenched and tempered),
- for nitriding,
- for carburizing,
- for bearings,
- for springs,
- for tools,
- for highly loaded components, such as spindles, axles, crankshafts, non-hardened hears, electric motor shafts, regular scissors, wheel hubs, discs, rods, cylinders, rollers, pump rotors (C45),
- for parts exposed to variable loads, such as e.g. axles, crankshafts, gears, levers, con rods, housing and grabbing components of tooling, fasteners, abrasion discs, levers (41Cr4, 42CrMo4),
- for highly loaded machine parts having small dimensions, such as gears, screws, sleeves, pins, cam belts (20Mn-Cr5/16MnCr5).

### Services

- Cutting
- Hole-cutting
- Lipping

| PN    | EN           | IN NO. |
|-------|--------------|--------|
| 15    | C15          | 1.0401 |
|       | C15E         | 1.1141 |
| 35    | C35          | 1.0501 |
|       | C35E         | 1.1181 |
| 45    | C45 (+C)     | 1.0503 |
|       | C45E         | 1.1191 |
| 55    | C55          | 1.0535 |
|       | C55E         | 1.1203 |
| 60    | C60          | 1.0601 |
|       | C60E         | 1.1221 |
| 40H   | 41Cr4        | 1.7035 |
| 40HM  | 42CrMo4      | 1.7225 |
| 34HNM | 34CrNiMo4    | 1.6582 |
| 16HG  | 16MnCr5      | 1.7131 |
| 20HG  | 20MnCr5      | 1.7147 |
| -     | 27MnCrB5-2   | 1.7182 |
| 18HGT | -            | -      |
| 50HS  | -            | -      |
| 50HF  | 51CrV4       | 1.8159 |
| -     | 11SMn30 (+C) | 1.0715 |

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## Welding consumables

### Covered electrodes for manual welding of

- unalloyed steel and fine-grain steel
- high-strength steel
- high-alloy and heat resistant steel
- cast iron
- stainless steel and non-ferrous metals
- hardfacing and regeneration

### Solid and flux cored wires for MIG/MAG welding

- unalloyed steel and fine-grain steel
- high-strength steel
- high-alloy and heat resistant steel
- cast iron
- stainless steel and non-ferrous metals
- hardfacing and regeneration

### Soldering materials for

- unalloyed steel and fine-grain steel
- tool steel and sintered carbides
- high-alloy steel
- stainless steel and non-ferrous metals

### Welding torches and spare parts for torches

- MIG/MAG welding torches
- TIG welding torches
- Plasma cutting torches
- control sockets
- parts and accessories for MIG/MAG and TIG torches and for plasma

### Fittings and accessories

- electrical welding
- gas welding and cutting
- heating and soldering
- gas regulators
- gas accessories
- measuring instruments
- EHS

### Industrial chemicals

- anti-spatter sprays and pastes
- anti-corrosion chemicals
- cleaning preparations

Welding Consumables Department  
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Kolejowa 44  
T: +48 22 594 08 35 / 43  
spawalnictwo@tkmaterials.pl

## Offering for the construction industry

### Construction reinforcement



Modern equipment of our reinforcement workshops enables us to fabricate cut or bent items, or stirrups of any shape. We deliver to custom designs and orders, prepared on the basis of technical drawings supplied to us. We ensure professional delivery and short turnaround times to the project location.

#### Opportunities and benefits:

- fabrication of reinforcement components of any size as per the effective standards,
- bar diameter range from 6 to 32 mm in AIIIIN steel grade,
- single point of contact for the customer,
- centralized production management and logistics oversight,
- timely contract delivery.

#### Technologies:

- fast order processing owing to Poland's most modern technologies, such as e.g. Mega Genius and Bar Wiser,
- automated technical process supported by dedicated Lennerts & Partner software,
- POLYBAR 40-V bar bending machine,
- bending machine for reinforcement stirrups - POLYBEND PBC2-16A,
- DBS 40 double-bending machine with conveyor.

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### Steel structures



Our offering includes:

- acoustic panels pillars,
- steel structures for industrial construction,
- lightweight and heavy steel construction,
- steel frames,
- steel gates and doors for road construction,
- overhead crane beams,
- stainless steel structures,
- structures as per the customer's documentation,
- steel plate girders.

Requirements:

- hot-dip galvanizing (as per PN-EN ISO 1461),
- galvanizing,
- spray metal-plating,
- powder and spray painting.

Certificates:

- PN EN 1090-1-EXC3,
- PN EN ISO 3834-2,
- permissions for making steel bridges.

Structural corrosion protection as per customer.

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