

TATA STEEL



Hybox® 355 technical guide

Structural hollow sections



A close-up photograph of a metal structure, likely a window or door frame, featuring several bolts and a purple semi-circular overlay on the left side. The background is a bright, overexposed area, possibly a window or sky.

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HYBOX® 355

Hybox® 355 is a cold formed, high-grade multi-purpose hollow section, offering trusted formability and toughness. It is batch-tested for your assurance.

Hybox® 355 key features:

- Excellent quality, made with steel from a high quality production process
- Minimum strength of 355 MPa
- Properties suitable for low temperature applications (-20°C)
- Dimensional consistency and corner radius controlled
- High levels of formability and, because the steel is fully-killed, excellent weldability
- Suitable for applications demanding specific properties
- Suitable for structural applications and fully compliant with design codes
- Batch-tested to give the properties of the specific delivered material; full test certification supplied
- Clearly marked as **Hybox® 355**, with the reassurance of batch traceability
- Specific technical support available
- Excellent supply availability through approved stockholders
- All **Hybox® 355** material is CE marked and is fully compliant with the Construction Products Directive.

TECHNICAL DATA

High strength cold formed hollow sections suitable for construction and mechanical applications where controlled specifications and associated design regulations apply.

Hybox® 355 hollow sections are supplied with a minimum yield strength of 355 N/mm² and fully comply with the European Standard for cold formed structural hollow sections, EN10219: S355J2H.

Chemical composition and mechanical properties

| Yield strength R _{eH} min N/mm ² | Tensile strength R _m N/mm ² | | Elongation % min L ₀ = 5,65 √S ₀ specimen | Impact strength 10mm x 10mm | | Chemical composition % max | | | | | Carbon equivalent (CEV) max |
|---|--|----------------|---|--------------------------------|----|----------------------------|------|------|-------|-------|-----------------------------|
| | T < 3 | 3mm ≤ T ≤ 40mm | | °C | J | C | Si | Mn | P | S | |
| T ≤ 16mm | T < 3 | 3mm ≤ T ≤ 40mm | T ≤ 40mm | °C | J | C | Si | Mn | P | S | |
| 355 | 510-680 | 470-630 | 20* | -20 | 27 | 0.22 | 0.55 | 1.60 | 0.030 | 0.030 | 0.45 |

* For section sizes D/T < 15 (circular) and (B+H)/2T < 12.5 (square/rectangle) min elongation is reduced by 2%.

Hybox® 355 is produced from fully-killed steel – critical to formability and weldability.

Inspection and testing

Hybox® 355 hollow sections EN10219: S355J2H are subject to specific inspection and testing and are supplied with an inspection certificate type 3.1 to EN10204.

Designation

Hybox® 355 hollow sections are designated by their product name, outside dimensions and thickness in millimetres.

CE marking

All **Hybox® 355** material is CE marked and is fully compliant with the Construction Products Directive.

Examples

Rectangular Hollow Section

Hybox® 355 100 x 50 x 4.0

or **100 x 50 x 4.0 RHS EN10219: Part 1: S355J2H**

Circular Hollow Section

Hybox® 355 114.3 x 5.0

or **114.3 x 5.0 CHS EN10219: Part 1: S355J2H**

Dimensional tolerances EN10219: Part 2

| | Circular | Square/Rectangular | |
|--|--|--|--------------------------|
| | | Side length (mm) | Tolerance |
| Outside dimension (D B and H) | ±1% with a min of ±0.50mm and a max of ±10mm | H, B < 100 | ±1% with a min of ±0.5mm |
| Thickness (T) | For D ≤ 406.4mm T ≤ 5mm ±10% T > 5mm ±0.50mm For D > 406.4mm ±10% with a max of ±2mm | 100 ≤ H, B ≤ 200 | ±0.8% |
| | | H, B > 200 | ±0.6% |
| | | T ≤ 5mm | ±10% |
| Out of roundness (O) | 2% for D/T < 100, where D/T ≥ 100 out-of-roundness tolerance to be agreed | T > 5mm | ±0.50mm |
| | | | |
| Concavity/Convexity (independent tolerance on outside dimensions) | – | Max 0.8% with a min of 0.5mm | |
| Squareness of side | – | 90° ± 1° | |
| External corner profile (radius need not be tangential to the sides) EN10219: Part 2 Table 3 | – | T ≤ 6.0 | 1.6T to 2.4T |
| | | 6.0 < T ≤ 10.0 | 2.0T to 3.0T |
| | | T > 10.0 | 2.4T to 3.6T |
| Twist (V) | – | 2mm plus 0.5mm/m length | |
| Straightness | 0.20% of total length & 3mm over any 1m length | 0.15% of total length & 3mm over any 1m length | |
| Mass (M) | ±6% on individual lengths | ±6% on individual lengths | |
| Length | -0 +50mm | -0 +50mm | |

Hybox® 355 Square Hollow Sections – length and tolerances

| Size mm | Standard mill lengths m | Special mill lengths (UK) m** | Special mill lengths (NL) m** | Tolerance mm |
|-------------------------|-----------------------------|----------------------------------|----------------------------------|-----------------|
| 25 x 25 uti 30 x 30 | 6.0, 7.5 | 6.0 - 8.0 | n/a | + 50-0 |
| 40 x 40 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 12.0 | 3.2 - 12.8 | + 50-0 |
| 50 x 50 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 12.0* | 3.2 - 15.0 | + 50-0 |
| 60 x 60 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 12.0* | 5.0 - 14.0 | + 50-0 |
| 70 x 70 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 14.0 | 5.0 - 15.0 | + 50-0 |
| 80 x 80 uti 100 x 100 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 15.0 | 5.0 - 15.0 | + 50-0 |
| 120 x 120 uti 250 x 250 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 18.0 | 6.0 - 18.0 | + 50-0 |
| 300 x 30 uti 400 x 400 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 18.0 | n/a | + 50-0 |

(uti – up to and including)

* For sizes 50 x 50 x 5.00 & 60 x 60 x 5.00, the maximum length available is 7.5m

Hybox® 355 Rectangular Hollow Sections – length and tolerances

| Size mm | Standard mill lengths m | Special mill lengths (UK) m** | Special mill lengths (NL) m** | Tolerance mm |
|-------------------------|-----------------------------|----------------------------------|----------------------------------|-----------------|
| 50 x 25 | 6.0, 7.5 & 10.0 | 6.0 - 10.0 | n/a | + 50-0 |
| 50 x 30 uti 60 x 40 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 12.0* | 3.2 - 12.8 | + 50-0 |
| 70 x 40 uti 80 x 60 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 15.0* | 5.0 - 15.0 | + 50-0 |
| 90 x 50 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 12.0 | 5.0 - 15.0 | + 50-0 |
| 100 x 40 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 15.0 | 5.0 - 15.0 | + 50-0 |
| 100 x 50 uti 100 x 60 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 13.0 | 5.0 - 15.0 | + 50-0 |
| 100 x 80 uti 120 x 40 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 15.0 | 5.0 - 15.0 | + 50-0 |
| 120 x 60 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 13.0 | 5.0 - 15.0 | + 50-0 |
| 120 x 80 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 15.0 | 5.0 - 15.0 | + 50-0 |
| 140 x 80 uti 150 x 100 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 18.0 | 6.0 - 18.0 | + 50-0 |
| 160 x 80 | 6.0, 7.5, 10.0 & 12.0 | 6.0 - 14.0 | 6.0 - 18.0 | + 50-0 |
| 180 x 80 uti 300 x 200 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 18.0 | 6.0 - 18.0 | + 50-0 |
| 400 x 200 uti 500 x 300 | 6.0, 7.5, 10.0, 12.0 & 15.0 | 6.0 - 18.0 | n/a | + 50-0 |

(uti – up to and including)

* For sizes 60 x 40 x 5.00 & 80 x 40 x 5.00, the maximum length available is 7.5m

Hybox® 355 Circular Hollow Sections – length and tolerances

| Outside diameter mm | Standard mill lengths mm | Special mill lengths (UK) m | Special mill lengths (NL) m** | Tolerance mm |
|------------------------|-----------------------------|--------------------------------|----------------------------------|-----------------|
| 33.7 | 6.0 & 7.5 | 6.0 - 8.0 | 3.2 - 12.8 | + 50-0 |
| 42.4 | 6.0, 7.5, & 8.5 | 6.0 - 10.0 | 3.2 - 12.8 | + 50-0 |
| 48.3 - 60.3 | 6.0, 7.5, 8.5 & 12.0 | 6.0 - 12.0 | 3.2 - 12.8 | + 50-0 |
| 76.1 - 114.3 | 6.0, 7.5, 8.5 & 12.0 | 6.0 - 14.0 | 5.0 - 12.5 | + 50-0 |
| 139.7 - 193.7 | 6.0, 7.5, 8.5, 12.0 & 15.0 | 6.0 - 15.0 | 6.0 - 18.0 | + 50-0 |
| 219.1 - 323.9 | 6.0, 7.5, 8.5, 12.0 & 15.0 | 6.0 - 18.0 | 6.0 - 18.0 | + 50-0 |
| 355.6 - 508.0 | 6.0, 7.5, 8.5, 12.0 & 15.0 | 6.0 - 18.0 | n/a | + 50-0 |

** Lengths available in 100mm increments

SIZE RANGE CHARTS

Hybox® 355 Circular Hollow Sections

| Outside Diameter (mm) | Thickness (mm) | | | | | | | | | | | | |
|-----------------------|----------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|---|
| | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 6.0 | 6.3 | 8.0 | 10.0 | 12.0 | 12.5 | 16.0 | |
| 33.7 | ■ | | | | | | | | | | | | |
| 42.4 | ■ | | | | | | | | | | | | |
| 48.3 | ■ | | ■ | | | | | | | | | | |
| 60.3 | ■ | | ■ | | | | | | | | | | |
| 76.1 | ■ | | ■ | | | | | | | | | | |
| 88.9 | ■ | ■ | ■ | | ■ | | ■ | | | | | | |
| 114.3 | ■ | ■ | ■ | | ■ | ■ | ■ | | | | | | |
| 139.7 | ■ | | ■ | | ■ | ■ | ■ | ■ | ■ | | | | |
| 168.3 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | |
| 193.7 | | | ■ | | ■ | ■ | ■ | ■ | ■ | | | ■ | |
| 219.1 | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 244.5 | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 273.0 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 323.9 | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 355.6 | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 406.4 | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 457.0 | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 508.0 | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ |

Hybox® 355 Square Hollow Sections

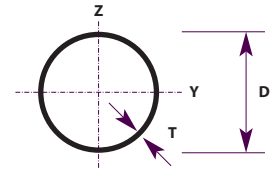
| Size (mm) | Thickness (mm) | | | | | | | | | | | | |
|-----------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|---|
| | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 5.0 | 6.0 | 6.3 | 8.0 | 10.0 | 12.0 | 12.5 | |
| 25 x 25 | ■ | ■ | | | | | | | | | | | |
| 30 x 30 | ■ | ■ | ■ | | | | | | | | | | |
| 40 x 40 | ■ | ■ | ■ | | ■ | | | | | | | | |
| 50 x 50 | | ■ | ■ | | ■ | ■ | | | | | | | |
| 60 x 60 | | | ■ | | ■ | ■ | ■ | | | | | | |
| 70 x 70 | | | ■ | ■ | ■ | ■ | ■ | | | | | | |
| 80 x 80 | | | ■ | ■ | ■ | ■ | ■ | | | | | | |
| 90 x 90 | | | ■ | ■ | ■ | ■ | ■ | | | | | | |
| 100 x 100 | | | ■ | | ■ | ■ | ■ | | ■ | | | | |
| 120 x 120 | | | ■ | | ■ | ■ | ■ | | ■ | ■ | | | |
| 140 x 140 | | | | | ■ | ■ | ■ | | ■ | ■ | | | |
| 150 x 150 | | | | | ■ | ■ | ■ | | ■ | ■ | | | |
| 160 x 160 | | | | | ■ | ■ | ■ | | ■ | ■ | | | |
| 180 x 180 | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 200 x 200 | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 250 x 250 | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 300 x 300 | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ |
| 350 x 350 | | | | | | | | | ■ | ■ | ■ | ■ | ■ |
| 400 x 400 | | | | | | | | | | ■ | ■ | ■ | ■ |

Hybox® 355 Rectangular Hollow Sections

| Size (mm) | Thickness (mm) | | | | | | | | | | | |
|-----------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 5.0 | 6.0 | 6.3 | 8.0 | 10.0 | 12.0 | 12.5 |
| 50 x 25 | | | | | | | | | | | | |
| 50 x 30 | | | | | | | | | | | | |
| 60 x 40 | | | | | | | | | | | | |
| 70 x 40 | | | | | | | | | | | | |
| 70 x 50 | | | | | | | | | | | | |
| 80 x 40 | | | | | | | | | | | | |
| 80 x 50 | | | | | | | | | | | | |
| 80 x 60 | | | | | | | | | | | | |
| 90 x 50 | | | | | | | | | | | | |
| 100 x 40 | | | | | | | | | | | | |
| 100 x 50 | | | | | | | | | | | | |
| 100 x 60 | | | | | | | | | | | | |
| 100 x 80 | | | | | | | | | | | | |
| 120 x 40 | | | | | | | | | | | | |
| 120 x 60 | | | | | | | | | | | | |
| 120 x 80 | | | | | | | | | | | | |
| 140 x 80 | | | | | | | | | | | | |
| 150 x 100 | | | | | | | | | | | | |
| 160 x 80 | | | | | | | | | | | | |
| 180 x 80 | | | | | | | | | | | | |
| 180 x 100 | | | | | | | | | | | | |
| 200 x 100 | | | | | | | | | | | | |
| 200 x 120 | | | | | | | | | | | | |
| 200 x 150 | | | | | | | | | | | | |
| 250 x 150 | | | | | | | | | | | | |
| 300 x 100 | | | | | | | | | | | | |
| 300 x 200 | | | | | | | | | | | | |
| 400 x 200 | | | | | | | | | | | | |
| 450 x 250 | | | | | | | | | | | | |
| 500 x 300 | | | | | | | | | | | | |

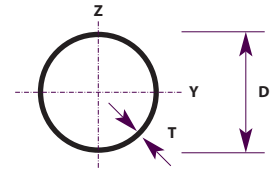
- The tables above and opposite show our normal capability, reference should be made to the sectional properties table to identify sizes that are readily available and should be given preference.
- Minimum order quantities may apply to some sizes.
- Other sizes can be manufactured – please consult us.

HYBOX® 355 CIRCULAR



Hybox® 355 EN10219: S355J2H Cold formed circular hollow section

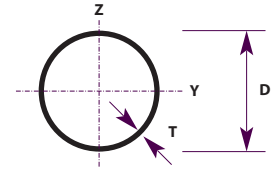
| Outside Diameter D mm | Thickness T mm | Mass M kg/m | Sectional area A cm ² | Moment of inertia I cm ⁴ | Radius of gyration i cm | Elastic modulus W _{el} cm ³ | Plastic modulus W _{pl} cm ³ | Torsional constants I _t cm ⁴ C _t cm ³ | | Superficial area/m A _s m ² /m | Approx. length /tonne m/t |
|-----------------------------|----------------------|-------------------|--|---|-------------------------------|---|---|--|------|---|------------------------------|
| 33.7 | 3.0 | 2.27 | 2.89 | 3.44 | 1.09 | 2.04 | 2.84 | 6.88 | 4.08 | 0.106 | 440 |
| 42.4 | 3.0 | 2.91 | 3.71 | 7.25 | 1.40 | 3.42 | 4.67 | 14.5 | 6.84 | 0.133 | 343 |
| 48.3 | 3.0 | 3.35 | 4.27 | 11.0 | 1.61 | 4.55 | 6.17 | 22.0 | 9.11 | 0.152 | 298 |
| | 4.0 | 4.37 | 5.57 | 13.8 | 1.57 | 5.70 | 7.87 | 27.5 | 11.4 | 0.152 | 229 |
| 60.3 | 3.0 | 4.24 | 5.40 | 22.2 | 2.03 | 7.37 | 9.86 | 44.4 | 14.7 | 0.189 | 236 |
| | 4.0 | 5.55 | 7.07 | 28.2 | 2.00 | 9.34 | 12.7 | 56.3 | 18.7 | 0.189 | 180 |
| 76.1 | 3.0 | 5.41 | 6.89 | 46.1 | 2.59 | 12.1 | 16.0 | 92.2 | 24.2 | 0.239 | 185 |
| | 4.0 | 7.11 | 9.06 | 59.1 | 2.55 | 15.5 | 20.8 | 118 | 31.0 | 0.239 | 141 |
| 88.9 | 3.0 | 6.36 | 8.10 | 74.8 | 3.04 | 16.8 | 22.1 | 150 | 33.6 | 0.279 | 157 |
| | 3.5 | 7.37 | 9.39 | 85.7 | 3.02 | 19.3 | 25.5 | 171 | 38.6 | 0.279 | 136 |
| | 4.0 | 8.38 | 10.7 | 96.3 | 3.00 | 21.7 | 28.9 | 193 | 43.3 | 0.279 | 119 |
| | 5.0 | 10.3 | 13.2 | 116 | 2.97 | 26.2 | 35.2 | 233 | 52.4 | 0.279 | 96.7 |
| 114.3 | 6.3 | 12.8 | 16.3 | 140 | 2.93 | 31.5 | 43.1 | 280 | 63.1 | 0.279 | 77.9 |
| | 3.0 | 8.23 | 10.5 | 163 | 3.94 | 28.4 | 37.2 | 325 | 56.9 | 0.359 | 121 |
| | 3.5 | 9.56 | 12.2 | 187 | 3.92 | 32.7 | 43.0 | 374 | 65.5 | 0.359 | 105 |
| | 4.0 | 10.9 | 13.9 | 211 | 3.90 | 36.9 | 48.7 | 422 | 73.9 | 0.359 | 91.9 |
| 139.7 | 5.0 | 13.5 | 17.2 | 257 | 3.87 | 45.0 | 59.8 | 514 | 89.9 | 0.359 | 74.2 |
| | 6.0 | 16.0 | 20.4 | 300 | 3.83 | 52.5 | 70.4 | 600 | 105 | 0.359 | 62.4 |
| | 6.3 | 16.8 | 21.4 | 313 | 3.82 | 54.7 | 73.6 | 625 | 109 | 0.359 | 59.6 |
| | 3.0 | 10.1 | 12.9 | 301 | 4.83 | 43.1 | 56.1 | 602 | 86.2 | 0.439 | 98.9 |
| | 4.0 | 13.4 | 17.1 | 393 | 4.80 | 56.2 | 73.7 | 786 | 112 | 0.439 | 74.7 |
| 168.3 | 5.0 | 16.6 | 21.2 | 481 | 4.77 | 68.8 | 90.8 | 961 | 138 | 0.439 | 60.2 |
| | 6.0 | 19.8 | 25.2 | 564 | 4.73 | 80.8 | 107 | 1129 | 162 | 0.439 | 50.5 |
| | 6.3 | 20.7 | 26.4 | 589 | 4.72 | 84.3 | 112 | 1177 | 169 | 0.439 | 48.2 |
| | 8.0 | 26.0 | 33.1 | 720 | 4.66 | 103 | 139 | 1441 | 206 | 0.439 | 38.5 |
| | 10.0 | 32.0 | 40.7 | 862 | 4.60 | 123 | 169 | 1724 | 247 | 0.439 | 31.3 |
| | 4.0 | 16.2 | 20.6 | 697 | 5.81 | 82.8 | 108 | 1394 | 166 | 0.529 | 61.7 |
| 168.3 | 4.5 | 18.2 | 23.2 | 777 | 5.79 | 92.4 | 121 | 1554 | 185 | 0.529 | 55.0 |
| | 5.0 | 20.1 | 25.7 | 856 | 5.78 | 102 | 133 | 1712 | 203 | 0.529 | 49.7 |
| | 6.0 | 24.0 | 30.6 | 1009 | 5.74 | 120 | 158 | 2017 | 240 | 0.529 | 41.6 |
| | 6.3 | 25.2 | 32.1 | 1053 | 5.73 | 125 | 165 | 2107 | 250 | 0.529 | 39.7 |
| | 8.0 | 31.6 | 40.3 | 1297 | 5.67 | 154 | 206 | 2595 | 308 | 0.529 | 31.6 |
| | 10.0 | 39.0 | 49.7 | 1564 | 5.61 | 186 | 251 | 3128 | 372 | 0.529 | 25.6 |
| | 12.5 | 48.0 | 61.2 | 1868 | 5.53 | 222 | 304 | 3737 | 444 | 0.529 | 20.8 |
| 193.7 | 4.0 | 18.7 | 23.8 | 1073 | 6.71 | 111 | 144 | 2146 | 222 | 0.609 | 53.4 |
| | 4.5 | 21.0 | 26.7 | 1198 | 6.69 | 124 | 161 | 2395 | 247 | 0.609 | 47.6 |
| | 5.0 | 23.3 | 29.6 | 1320 | 6.67 | 136 | 178 | 2640 | 273 | 0.609 | 43.0 |
| | 6.0 | 27.8 | 35.4 | 1560 | 6.64 | 161 | 211 | 3119 | 322 | 0.609 | 36.0 |
| | 6.3 | 29.1 | 37.1 | 1630 | 6.63 | 168 | 221 | 3260 | 337 | 0.609 | 34.3 |
| | 8.0 | 36.6 | 46.7 | 2016 | 6.57 | 208 | 276 | 4031 | 416 | 0.609 | 27.3 |
| | 10.0 | 45.3 | 57.7 | 2442 | 6.50 | 252 | 338 | 4883 | 504 | 0.609 | 22.1 |
| | 12.5 | 55.9 | 71.2 | 2934 | 6.42 | 303 | 411 | 5869 | 606 | 0.609 | 17.9 |



Hybox® 355 EN10219: S355J2H Cold formed circular hollow section (continued)

| Outside Diameter D mm | Thickness T mm | Mass M kg/m | Sectional area A cm ² | Moment of inertia I cm ⁴ | Radius of gyration i cm | Elastic modulus W_{el} cm ³ | Plastic modulus W_{pl} cm ³ | Torsional constants I_t cm ⁴ C_t cm ³ | | Superficial area/m A_s m ² /m | Approx. length /tonne m/t |
|------------------------------------|-----------------------------|--------------------------|---|--|--------------------------------------|---|---|--|-------|---|---------------------------------|
| 219.1 | 4.5 | 23.8 | 30.3 | 1747 | 7.59 | 159 | 207 | 3494 | 319 | 0.688 | 42.0 |
| | 5.0 | 26.4 | 33.6 | 1928 | 7.57 | 176 | 229 | 3856 | 352 | 0.688 | 37.9 |
| | 6.0 | 31.5 | 40.2 | 2282 | 7.54 | 208 | 273 | 4564 | 417 | 0.688 | 31.7 |
| | 6.3 | 33.1 | 42.1 | 2386 | 7.53 | 218 | 285 | 4772 | 436 | 0.688 | 30.2 |
| | 8.0 | 41.6 | 53.1 | 2960 | 7.47 | 270 | 357 | 5919 | 540 | 0.688 | 24.0 |
| | 10.0 | 51.6 | 65.7 | 3598 | 7.40 | 328 | 438 | 7197 | 657 | 0.688 | 19.4 |
| | 12.0 | 61.3 | 78.1 | 4200 | 7.33 | 383 | 515 | 8400 | 767 | 0.688 | 16.3 |
| | 12.5 | 63.7 | 81.1 | 4345 | 7.32 | 397 | 534 | 8689 | 793 | 0.688 | 15.7 |
| 16.0 | 80.1 | 102 | 5297 | 7.20 | 483 | 661 | 10593 | 967 | 0.688 | 12.5 | |
| 244.5 | 5.0 | 29.5 | 37.6 | 2699 | 8.47 | 221 | 287 | 5397 | 441 | 0.768 | 33.9 |
| | 6.0 | 35.3 | 45.0 | 3199 | 8.43 | 262 | 341 | 6397 | 523 | 0.768 | 28.3 |
| | 6.3 | 37.0 | 47.1 | 3346 | 8.42 | 274 | 358 | 6692 | 547 | 0.768 | 27.0 |
| | 8.0 | 46.7 | 59.4 | 4160 | 8.37 | 340 | 448 | 8321 | 681 | 0.768 | 21.4 |
| | 10.0 | 57.8 | 73.7 | 5073 | 8.30 | 415 | 550 | 10146 | 830 | 0.768 | 17.3 |
| | 12.0 | 68.8 | 87.7 | 5938 | 8.23 | 486 | 649 | 11877 | 972 | 0.768 | 14.5 |
| | 12.5 | 71.5 | 91.1 | 6147 | 8.21 | 503 | 673 | 12295 | 1006 | 0.768 | 14.0 |
| 16.0 | 90.2 | 115 | 7533 | 8.10 | 616 | 837 | 15066 | 1232 | 0.768 | 11.1 | |
| 273.0 | 4.0 | 26.5 | 33.8 | 3058 | 9.51 | 224 | 289 | 6116 | 448 | 0.858 | 37.7 |
| | 4.5 | 29.8 | 38.0 | 3422 | 9.49 | 251 | 324 | 6843 | 501 | 0.858 | 33.6 |
| | 5.0 | 33.0 | 42.1 | 3781 | 9.48 | 277 | 359 | 7562 | 554 | 0.858 | 30.3 |
| | 6.0 | 39.5 | 50.3 | 4487 | 9.44 | 329 | 428 | 8974 | 657 | 0.858 | 25.3 |
| | 6.3 | 41.4 | 52.8 | 4696 | 9.43 | 344 | 448 | 9392 | 688 | 0.858 | 24.1 |
| | 8.0 | 52.3 | 66.6 | 5852 | 9.37 | 429 | 562 | 11703 | 857 | 0.858 | 19.1 |
| | 10.0 | 64.9 | 82.6 | 7154 | 9.31 | 524 | 692 | 14308 | 1048 | 0.858 | 15.4 |
| | 12.0 | 77.2 | 98.4 | 8396 | 9.24 | 615 | 818 | 16792 | 1230 | 0.858 | 12.9 |
| | 12.5 | 80.3 | 102 | 8697 | 9.22 | 637 | 849 | 17395 | 1274 | 0.858 | 12.5 |
| | 16.0 | 101 | 129 | 10707 | 9.10 | 784 | 1058 | 21414 | 1569 | 0.858 | 9.86 |
| 323.9 | 5.0 | 39.3 | 50.1 | 6369 | 11.3 | 393 | 509 | 12739 | 787 | 1.02 | 25.4 |
| | 6.0 | 47.0 | 59.9 | 7572 | 11.2 | 468 | 606 | 15145 | 935 | 1.02 | 21.3 |
| | 6.3 | 49.3 | 62.9 | 7929 | 11.2 | 490 | 636 | 15858 | 979 | 1.02 | 20.3 |
| | 8.0 | 62.3 | 79.4 | 9910 | 11.2 | 612 | 799 | 19820 | 1224 | 1.02 | 16.0 |
| | 10.0 | 77.4 | 98.6 | 12158 | 11.1 | 751 | 986 | 24317 | 1501 | 1.02 | 12.9 |
| | 12.0 | 92.3 | 118 | 14320 | 11.0 | 884 | 1168 | 28639 | 1768 | 1.02 | 10.8 |
| | 12.5 | 96.0 | 122 | 14847 | 11.0 | 917 | 1213 | 29693 | 1833 | 1.02 | 10.4 |
| | 16.0 | 121 | 155 | 18390 | 10.9 | 1136 | 1518 | 36780 | 2271 | 1.02 | 8.23 |
| 355.6 | 5.0 | 43.2 | 55.1 | 8464 | 12.4 | 476 | 615 | 16927 | 952 | 1.12 | 23.1 |
| | 6.0 | 51.7 | 65.9 | 10071 | 12.4 | 566 | 733 | 20141 | 1133 | 1.12 | 19.3 |
| | 6.3 | 54.3 | 69.1 | 10547 | 12.4 | 593 | 769 | 21094 | 1186 | 1.12 | 18.4 |
| | 8.0 | 68.6 | 87.4 | 13201 | 12.3 | 742 | 967 | 26403 | 1485 | 1.12 | 14.6 |
| | 10.0 | 85.2 | 109 | 16223 | 12.2 | 912 | 1195 | 32447 | 1825 | 1.12 | 11.7 |
| | 12.0 | 102 | 130 | 19139 | 12.2 | 1076 | 1417 | 38279 | 2153 | 1.12 | 9.83 |
| | 12.5 | 106 | 135 | 19852 | 12.1 | 1117 | 1472 | 39704 | 2233 | 1.12 | 9.45 |
| | 16.0 | 134 | 171 | 24663 | 12.0 | 1387 | 1847 | 49326 | 2774 | 1.12 | 7.46 |

The dimensions shown in silver are standard sizes and should be given preference
All other sizes are non-standard and therefore minimum order quantities may apply

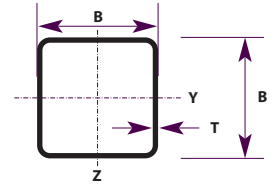


Hybox® 355 EN10219: S355J2H Cold formed circular hollow section (continued)

| Outside Diameter D mm | Thickness T mm | Mass M kg/m | Sectional area A cm ² | Moment of inertia I cm ⁴ | Radius of gyration i cm | Elastic modulus W_{el} cm ³ | Plastic modulus W_{pl} cm ³ | Torsional constants I_t cm ⁴ C_t cm ³ | | Superficial area/m A_s m ² /m | Approx. length /tonne m/t |
|------------------------------------|-----------------------------|--------------------------|---|--|--------------------------------------|---|---|--|------|---|---------------------------------|
| 406.4 | 6.0 | 59.2 | 75.5 | 15128 | 14.2 | 745 | 962 | 30257 | 1489 | 1.28 | 16.9 |
| | 6.3 | 62.2 | 79.2 | 15849 | 14.1 | 780 | 1009 | 31699 | 1560 | 1.28 | 16.1 |
| | 8.0 | 78.6 | 100 | 19874 | 14.1 | 978 | 1270 | 39748 | 1956 | 1.28 | 12.7 |
| | 10.0 | 97.8 | 125 | 24476 | 14.0 | 1205 | 1572 | 48952 | 2409 | 1.28 | 10.2 |
| | 12.0 | 117 | 149 | 28937 | 14.0 | 1424 | 1867 | 57874 | 2848 | 1.28 | 8.57 |
| | 12.5 | 121 | 155 | 30031 | 13.9 | 1478 | 1940 | 60061 | 2956 | 1.28 | 8.24 |
| 457.0 | 6.0 | 66.7 | 85.0 | 21618 | 15.9 | 946 | 1220 | 43236 | 1892 | 1.44 | 15.0 |
| | 6.3 | 70.0 | 89.2 | 22654 | 15.9 | 991 | 1280 | 45308 | 1983 | 1.44 | 14.3 |
| | 8.0 | 88.6 | 113 | 28446 | 15.9 | 1245 | 1613 | 56893 | 2490 | 1.44 | 11.3 |
| | 10.0 | 110 | 140 | 35091 | 15.8 | 1536 | 1998 | 70183 | 3071 | 1.44 | 9.07 |
| | 12.0 | 132 | 168 | 41556 | 15.7 | 1819 | 2377 | 83113 | 3637 | 1.44 | 7.59 |
| | 12.5 | 137 | 175 | 43145 | 15.7 | 1888 | 2470 | 86290 | 3776 | 1.44 | 7.30 |
| 508.0 | 6.0 | 74.3 | 94.6 | 29812 | 17.7 | 1174 | 1512 | 59623 | 2347 | 1.60 | 13.5 |
| | 6.3 | 77.9 | 99.3 | 31246 | 17.7 | 1230 | 1586 | 62493 | 2460 | 1.60 | 12.8 |
| | 8.0 | 98.6 | 126 | 39280 | 17.7 | 1546 | 2000 | 78560 | 3093 | 1.60 | 10.1 |
| | 10.0 | 123 | 156 | 48520 | 17.6 | 1910 | 2480 | 97040 | 3820 | 1.60 | 8.14 |
| | 12.0 | 147 | 187 | 57536 | 17.5 | 2265 | 2953 | 115072 | 4530 | 1.60 | 6.81 |
| | 12.5 | 153 | 195 | 59755 | 17.5 | 2353 | 3070 | 119511 | 4705 | 1.60 | 6.55 |
| | 16.0 | 194 | 247 | 74909 | 17.4 | 2949 | 3874 | 149818 | 5898 | 1.60 | 5.15 |

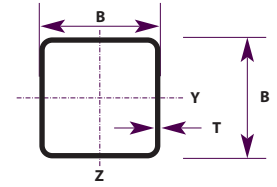
The dimensions shown in silver are standard sizes and should be given preference
 All other sizes are non-standard and therefore minimum order quantities may apply

HYBOX[®] 355 SQUARE



Hybox[®] 355 EN10219: S355J2H Cold formed square hollow section

| Size | Thickness | Mass | Sectional area | Moment of inertia | Radius of gyration | Elastic modulus | Plastic modulus | Torsional constants | Superficial area/m | Approx. length | |
|-----------|-----------|--------|-------------------|-------------------|--------------------|---------------------------------|---------------------------------|--------------------------------|--------------------------------|----------------------------------|------------|
| B x B mm | T mm | M kg/m | A cm ² | I cm ⁴ | i cm | W _{el} cm ³ | W _{pl} cm ³ | I _t cm ⁴ | C _t cm ³ | A _s m ² /m | /tonne m/t |
| 25 x 25 | 2.0 | 1.36 | 1.74 | 1.48 | 0.924 | 1.19 | 1.47 | 2.53 | 1.80 | 0.093 | 733 |
| | 2.5 | 1.64 | 2.09 | 1.69 | 0.899 | 1.35 | 1.71 | 2.97 | 2.07 | 0.091 | 610 |
| 30 x 30 | 2.0 | 1.68 | 2.14 | 2.72 | 1.13 | 1.81 | 2.21 | 4.54 | 2.75 | 0.113 | 596 |
| | 2.5 | 2.03 | 2.59 | 3.16 | 1.10 | 2.10 | 2.61 | 5.40 | 3.20 | 0.111 | 492 |
| | 3.0 | 2.36 | 3.01 | 3.50 | 1.08 | 2.34 | 2.96 | 6.15 | 3.58 | 0.110 | 423 |
| 40 x 40 | 2.0 | 2.31 | 2.94 | 6.94 | 1.54 | 3.47 | 4.13 | 11.3 | 5.23 | 0.153 | 434 |
| | 2.5 | 2.82 | 3.59 | 8.22 | 1.51 | 4.11 | 4.97 | 13.6 | 6.21 | 0.151 | 355 |
| | 3.0 | 3.30 | 4.21 | 9.32 | 1.49 | 4.66 | 5.72 | 15.8 | 7.07 | 0.150 | 303 |
| | 4.0 | 4.20 | 5.35 | 11.1 | 1.44 | 5.54 | 7.01 | 19.4 | 8.48 | 0.146 | 238 |
| 50 x 50 | 2.5 | 3.60 | 4.59 | 16.9 | 1.92 | 6.78 | 8.07 | 27.5 | 10.2 | 0.191 | 278 |
| | 3.0 | 4.25 | 5.41 | 19.5 | 1.90 | 7.79 | 9.39 | 32.1 | 11.8 | 0.190 | 236 |
| | 4.0 | 5.45 | 6.95 | 23.7 | 1.85 | 9.49 | 11.7 | 40.4 | 14.4 | 0.186 | 183 |
| | 5.0 | 6.56 | 8.36 | 27.0 | 1.80 | 10.8 | 13.7 | 47.5 | 16.6 | 0.183 | 152 |
| 60 x 60 | 3.0 | 5.19 | 6.61 | 35.1 | 2.31 | 11.7 | 14.0 | 57.1 | 17.7 | 0.230 | 193 |
| | 4.0 | 6.71 | 8.55 | 43.6 | 2.26 | 14.5 | 17.6 | 72.6 | 22.0 | 0.226 | 149 |
| | 5.0 | 8.13 | 10.4 | 50.5 | 2.21 | 16.8 | 20.9 | 86.4 | 25.6 | 0.223 | 123 |
| | 6.0 | 9.45 | 12.0 | 56.1 | 2.16 | 18.7 | 23.7 | 98.4 | 28.6 | 0.219 | 106 |
| 70 x 70 | 3.0 | 6.13 | 7.81 | 57.5 | 2.71 | 16.4 | 19.4 | 92.4 | 24.7 | 0.270 | 163 |
| | 3.5 | 7.06 | 8.99 | 65.1 | 2.69 | 18.6 | 22.2 | 106 | 28.0 | 0.268 | 142 |
| | 4.0 | 7.97 | 10.1 | 72.1 | 2.67 | 20.6 | 24.8 | 119 | 31.1 | 0.266 | 126 |
| | 5.0 | 9.70 | 12.4 | 84.6 | 2.62 | 24.2 | 29.6 | 142 | 36.7 | 0.263 | 103 |
| | 6.0 | 11.3 | 14.4 | 95.2 | 2.57 | 27.2 | 33.8 | 163 | 41.4 | 0.259 | 88.3 |
| 80 x 80 | 3.0 | 7.07 | 9.01 | 87.8 | 3.12 | 22.0 | 25.8 | 140 | 33.0 | 0.310 | 141 |
| | 3.5 | 8.16 | 10.4 | 99.8 | 3.10 | 25.0 | 29.5 | 161 | 37.6 | 0.308 | 123 |
| | 4.0 | 9.22 | 11.7 | 111 | 3.07 | 27.8 | 33.1 | 180 | 41.8 | 0.306 | 108 |
| | 5.0 | 11.3 | 14.4 | 131 | 3.03 | 32.9 | 39.7 | 218 | 49.7 | 0.303 | 88.7 |
| | 6.0 | 13.2 | 16.8 | 149 | 2.98 | 37.3 | 45.8 | 252 | 56.6 | 0.299 | 75.7 |
| 90 x 90 | 3.0 | 8.01 | 10.2 | 127 | 3.53 | 28.3 | 33.0 | 201 | 42.5 | 0.350 | 125 |
| | 3.5 | 9.26 | 11.8 | 145 | 3.51 | 32.2 | 37.9 | 232 | 48.5 | 0.348 | 108 |
| | 4.0 | 10.5 | 13.3 | 162 | 3.48 | 36.0 | 42.6 | 261 | 54.2 | 0.346 | 95.4 |
| | 5.0 | 12.8 | 16.4 | 193 | 3.43 | 42.9 | 51.4 | 316 | 64.7 | 0.343 | 77.9 |
| | 6.0 | 15.1 | 19.2 | 220 | 3.39 | 49.0 | 59.5 | 368 | 74.2 | 0.339 | 66.2 |
| 100 x 100 | 3.0 | 8.96 | 11.4 | 177 | 3.94 | 35.4 | 41.2 | 279 | 53.2 | 0.390 | 112 |
| | 4.0 | 11.7 | 14.9 | 226 | 3.89 | 45.3 | 53.3 | 362 | 68.1 | 0.386 | 85.2 |
| | 5.0 | 14.4 | 18.4 | 271 | 3.84 | 54.2 | 64.6 | 441 | 81.7 | 0.383 | 69.4 |
| | 6.0 | 17.0 | 21.6 | 311 | 3.79 | 62.3 | 75.1 | 514 | 94.1 | 0.379 | 58.9 |
| | 8.0 | 21.4 | 27.2 | 366 | 3.67 | 73.2 | 91.1 | 645 | 114 | 0.366 | 46.8 |
| 120 x 120 | 3.0 | 10.8 | 13.8 | 312 | 4.76 | 52.1 | 60.2 | 488 | 78.2 | 0.470 | 92.3 |
| | 4.0 | 14.2 | 18.1 | 402 | 4.71 | 67.0 | 78.3 | 637 | 101 | 0.466 | 70.2 |
| | 5.0 | 17.5 | 22.4 | 485 | 4.66 | 80.9 | 95.4 | 778 | 122 | 0.463 | 57.0 |
| | 6.0 | 20.7 | 26.4 | 562 | 4.61 | 93.7 | 112 | 913 | 141 | 0.459 | 48.2 |
| | 8.0 | 26.4 | 33.6 | 677 | 4.49 | 113 | 138 | 1163 | 175 | 0.446 | 37.9 |
| | 10.0 | 31.8 | 40.6 | 777 | 4.38 | 129 | 162 | 1376 | 203 | 0.437 | 31.4 |
| 140 x 140 | 4.0 | 16.8 | 21.3 | 652 | 5.52 | 93.1 | 108 | 1023 | 140 | 0.546 | 59.7 |
| | 5.0 | 20.7 | 26.4 | 791 | 5.48 | 113 | 132 | 1256 | 170 | 0.543 | 48.3 |
| | 6.0 | 24.5 | 31.2 | 920 | 5.43 | 131 | 155 | 1479 | 198 | 0.539 | 40.8 |
| | 8.0 | 31.4 | 40.0 | 1127 | 5.30 | 161 | 194 | 1901 | 248 | 0.526 | 31.8 |
| | 10.0 | 38.1 | 48.6 | 1312 | 5.20 | 187 | 230 | 2274 | 291 | 0.517 | 26.2 |

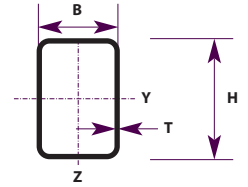


Hybox® 355 EN10219: S355J2H Cold formed square hollow section (continued)

| Size | Thickness | Mass | Sectional area | Moment of inertia | Radius of gyration | Elastic modulus | Plastic modulus | Torsional constants | Superficial area/m | Approx. length | |
|-----------|-----------|--------|-------------------|-------------------|--------------------|---------------------------------|---------------------------------|--------------------------------|--------------------------------|----------------------------------|------------|
| B x B mm | T mm | M kg/m | A cm ² | I cm ⁴ | i cm | W _{el} cm ³ | W _{pl} cm ³ | I _t cm ⁴ | C _t cm ³ | A _s m ² /m | /tonne m/t |
| 150 x 150 | 4.0 | 18.0 | 22.9 | 808 | 5.93 | 108 | 125 | 1265 | 162 | 0.586 | 55.5 |
| | 5.0 | 22.3 | 28.4 | 982 | 5.89 | 131 | 153 | 1554 | 197 | 0.583 | 44.9 |
| | 6.0 | 26.4 | 33.6 | 1146 | 5.84 | 153 | 180 | 1833 | 230 | 0.579 | 37.9 |
| | 8.0 | 33.9 | 43.2 | 1412 | 5.71 | 188 | 226 | 2364 | 289 | 0.566 | 29.5 |
| | 10.0 | 41.3 | 52.6 | 1653 | 5.61 | 220 | 269 | 2839 | 341 | 0.557 | 24.2 |
| 160 x 160 | 4.0 | 19.3 | 24.5 | 987 | 6.34 | 123 | 143 | 1541 | 185 | 0.626 | 51.9 |
| | 5.0 | 23.8 | 30.4 | 1202 | 6.29 | 150 | 175 | 1896 | 226 | 0.623 | 42.0 |
| | 6.0 | 28.3 | 36.0 | 1405 | 6.25 | 176 | 206 | 2239 | 264 | 0.619 | 35.4 |
| | 8.0 | 36.5 | 46.4 | 1741 | 6.12 | 218 | 260 | 2897 | 334 | 0.606 | 27.4 |
| | 10.0 | 44.4 | 56.6 | 2048 | 6.02 | 256 | 311 | 3490 | 395 | 0.597 | 22.5 |
| 180 x 180 | 5.0 | 27.0 | 34.4 | 1737 | 7.11 | 193 | 224 | 2724 | 290 | 0.703 | 37.1 |
| | 6.0 | 32.1 | 40.8 | 2037 | 7.06 | 226 | 264 | 3223 | 340 | 0.699 | 31.2 |
| | 6.3 | 33.3 | 42.4 | 2096 | 7.03 | 233 | 273 | 3383 | 354 | 0.693 | 30.0 |
| | 8.0 | 41.5 | 52.8 | 2546 | 6.94 | 283 | 336 | 4189 | 432 | 0.686 | 24.1 |
| | 10.0 | 50.7 | 64.6 | 3017 | 6.84 | 335 | 404 | 5074 | 515 | 0.677 | 19.7 |
| | 12.0 | 58.5 | 74.5 | 3322 | 6.68 | 369 | 454 | 5865 | 584 | 0.658 | 17.1 |
| | 12.5 | 60.5 | 77.0 | 3406 | 6.65 | 378 | 467 | 6050 | 600 | 0.656 | 16.5 |
| 200 x 200 | 5.0 | 30.1 | 38.4 | 2410 | 7.93 | 241 | 279 | 3763 | 362 | 0.783 | 33.2 |
| | 6.0 | 35.8 | 45.6 | 2833 | 7.88 | 283 | 330 | 4459 | 426 | 0.779 | 27.9 |
| | 6.3 | 37.2 | 47.4 | 2922 | 7.85 | 292 | 341 | 4682 | 444 | 0.773 | 26.8 |
| | 8.0 | 46.5 | 59.2 | 3566 | 7.76 | 357 | 421 | 5815 | 544 | 0.766 | 21.5 |
| | 10.0 | 57.0 | 72.6 | 4251 | 7.65 | 425 | 508 | 7072 | 651 | 0.757 | 17.6 |
| | 12.0 | 66.0 | 84.1 | 4730 | 7.50 | 473 | 576 | 8230 | 743 | 0.738 | 15.2 |
| | 12.5 | 68.3 | 87.0 | 4859 | 7.47 | 486 | 594 | 8502 | 765 | 0.736 | 14.6 |
| 250 x 250 | 6.0 | 45.2 | 57.6 | 5672 | 9.92 | 454 | 524 | 8843 | 681 | 0.979 | 22.1 |
| | 6.3 | 47.1 | 60.0 | 5873 | 9.89 | 470 | 544 | 9290 | 711 | 0.973 | 21.2 |
| | 8.0 | 59.1 | 75.2 | 7229 | 9.80 | 578 | 676 | 11598 | 878 | 0.966 | 16.9 |
| | 10.0 | 72.7 | 92.6 | 8707 | 9.70 | 697 | 822 | 14197 | 1062 | 0.957 | 13.8 |
| | 12.0 | 84.8 | 108 | 9859 | 9.55 | 789 | 944 | 16691 | 1226 | 0.938 | 11.8 |
| | 12.5 | 88.0 | 112 | 10161 | 9.52 | 813 | 975 | 17283 | 1266 | 0.936 | 11.4 |
| 300 x 300 | 6.0 | 54.7 | 69.6 | 9964 | 12.0 | 664 | 764 | 15434 | 997 | 1.18 | 18.3 |
| | 6.3 | 57.0 | 72.6 | 10342 | 11.9 | 689 | 795 | 16218 | 1042 | 1.17 | 17.5 |
| | 8.0 | 71.6 | 91.2 | 12801 | 11.8 | 853 | 991 | 20312 | 1293 | 1.17 | 14.0 |
| | 10.0 | 88.4 | 113 | 15519 | 11.7 | 1035 | 1211 | 24966 | 1572 | 1.16 | 11.3 |
| | 12.0 | 104 | 132 | 17767 | 11.6 | 1184 | 1402 | 29514 | 1829 | 1.14 | 9.65 |
| | 12.5 | 108 | 137 | 18348 | 11.6 | 1223 | 1451 | 30601 | 1892 | 1.14 | 9.30 |
| 350 x 350 | 6.0 | 64.1 | 81.6 | 16008 | 14.0 | 915 | 1049 | 24683 | 1372 | 1.38 | 15.6 |
| | 6.3 | 66.9 | 85.2 | 16645 | 14.0 | 951 | 1093 | 25939 | 1436 | 1.37 | 14.9 |
| | 8.0 | 84.2 | 107 | 20681 | 13.9 | 1182 | 1366 | 32557 | 1787 | 1.37 | 11.9 |
| | 10.0 | 104 | 133 | 25189 | 13.8 | 1439 | 1675 | 40127 | 2182 | 1.36 | 9.61 |
| | 12.0 | 123 | 156 | 29054 | 13.6 | 1660 | 1949 | 47598 | 2552 | 1.34 | 8.16 |
| | 12.5 | 127 | 162 | 30045 | 13.6 | 1717 | 2020 | 49393 | 2642 | 1.34 | 7.86 |
| 400 x 400 | 6.0 | 73.5 | 93.6 | 24104 | 16.0 | 1205 | 1379 | 37039 | 1808 | 1.58 | 13.6 |
| | 6.3 | 76.8 | 97.8 | 25096 | 16.0 | 1255 | 1438 | 38925 | 1892 | 1.57 | 13.0 |
| | 8.0 | 96.7 | 123 | 31269 | 15.9 | 1563 | 1800 | 48934 | 2362 | 1.57 | 10.3 |
| | 10.0 | 120 | 153 | 38216 | 15.8 | 1911 | 2214 | 60431 | 2892 | 1.56 | 8.35 |
| | 12.0 | 141 | 180 | 44319 | 15.7 | 2216 | 2587 | 71843 | 3395 | 1.54 | 7.07 |
| | 12.5 | 147 | 187 | 45877 | 15.7 | 2294 | 2683 | 74598 | 3518 | 1.54 | 6.81 |

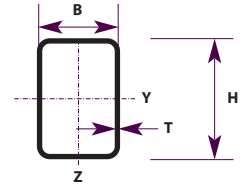
The dimensions shown in silver are standard sizes and should be given preference
 All other sizes are non-standard and therefore minimum order quantities may apply

HYBOX[®] 355 RECTANGULAR



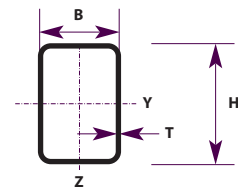
Hybox[®] 355 EN10219: S355J2H Cold formed rectangular hollow section

| Size | Thickness | Mass | Sectional area | Moment of inertia | Radius of gyration | Elastic modulus | Plastic modulus | Torsional constants | Superficial area/m | Approx length | | | | | |
|----------|-----------|--------|-------------------|---------------------------------|---------------------------------|--------------------|--------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------|--------------------------------|----------------------------------|------------|
| H x B mm | T mm | M kg/m | A cm ² | I _{yy} cm ⁴ | I _{zz} cm ⁴ | i _{yy} cm | i _{zz} cm | W _{el,yy} cm ³ | W _{el,zz} cm ³ | W _{pl,yy} cm ³ | W _{pl,zz} cm ³ | I _t cm ⁴ | C _t cm ³ | A _s m ² /m | /tonne m/t |
| 50 x 25 | 2.0 | 2.15 | 2.74 | 8.38 | 2.81 | 1.75 | 1.01 | 3.35 | 2.25 | 4.26 | 2.62 | 7.06 | 3.92 | 0.143 | 465 |
| | 2.5 | 2.62 | 3.34 | 9.89 | 3.28 | 1.72 | 0.991 | 3.95 | 2.62 | 5.11 | 3.12 | 8.43 | 4.60 | 0.141 | 382 |
| | 3.0 | 3.07 | 3.91 | 11.2 | 3.67 | 1.69 | 0.969 | 4.47 | 2.93 | 5.86 | 3.56 | 9.64 | 5.18 | 0.140 | 326 |
| 50 x 30 | 2.0 | 2.31 | 2.94 | 9.54 | 4.29 | 1.80 | 1.21 | 3.81 | 2.86 | 4.74 | 3.33 | 9.77 | 4.84 | 0.153 | 434 |
| | 2.5 | 2.82 | 3.59 | 11.3 | 5.05 | 1.77 | 1.19 | 4.52 | 3.37 | 5.70 | 3.98 | 11.7 | 5.72 | 0.151 | 355 |
| | 3.0 | 3.30 | 4.21 | 12.8 | 5.70 | 1.75 | 1.16 | 5.13 | 3.80 | 6.57 | 4.58 | 13.5 | 6.49 | 0.150 | 303 |
| | 4.0 | 4.20 | 5.35 | 15.3 | 6.69 | 1.69 | 1.12 | 6.10 | 4.46 | 8.05 | 5.58 | 16.5 | 7.71 | 0.146 | 238 |
| 60 x 40 | 2.5 | 3.60 | 4.59 | 22.1 | 11.7 | 2.19 | 1.60 | 7.36 | 5.87 | 9.06 | 6.84 | 25.1 | 9.72 | 0.191 | 278 |
| | 3.0 | 4.25 | 5.41 | 25.4 | 13.4 | 2.17 | 1.58 | 8.46 | 6.72 | 10.5 | 7.94 | 29.3 | 11.2 | 0.190 | 236 |
| | 4.0 | 5.45 | 6.95 | 31.0 | 16.3 | 2.11 | 1.53 | 10.3 | 8.14 | 13.2 | 9.89 | 36.7 | 13.7 | 0.186 | 183 |
| | 5.0 | 6.56 | 8.36 | 35.3 | 18.4 | 2.06 | 1.48 | 11.8 | 9.21 | 15.4 | 11.5 | 42.8 | 15.6 | 0.183 | 152 |
| 70 x 40 | 3.0 | 4.72 | 6.01 | 37.3 | 15.5 | 2.49 | 1.61 | 10.7 | 7.75 | 13.4 | 9.05 | 36.5 | 13.2 | 0.210 | 212 |
| | 4.0 | 6.08 | 7.75 | 46.0 | 18.9 | 2.44 | 1.56 | 13.1 | 9.44 | 16.8 | 11.3 | 45.8 | 16.2 | 0.206 | 164 |
| | 5.0 | 7.34 | 9.36 | 52.9 | 21.5 | 2.38 | 1.52 | 15.1 | 10.8 | 19.8 | 13.3 | 53.8 | 18.7 | 0.203 | 136 |
| 70 x 50 | 3.0 | 5.19 | 6.61 | 44.1 | 26.1 | 2.58 | 1.99 | 12.6 | 10.4 | 15.4 | 12.2 | 53.6 | 17.1 | 0.230 | 193 |
| | 4.0 | 6.71 | 8.55 | 54.7 | 32.2 | 2.53 | 1.94 | 15.6 | 12.9 | 19.5 | 15.4 | 68.1 | 21.2 | 0.226 | 149 |
| | 5.0 | 8.13 | 10.4 | 63.5 | 37.2 | 2.48 | 1.90 | 18.1 | 14.9 | 23.1 | 18.2 | 80.8 | 24.6 | 0.223 | 123 |
| 80 x 40 | 3.0 | 5.19 | 6.61 | 52.3 | 17.6 | 2.81 | 1.63 | 13.1 | 8.78 | 16.5 | 10.2 | 43.9 | 15.3 | 0.230 | 193 |
| | 4.0 | 6.71 | 8.55 | 64.8 | 21.5 | 2.75 | 1.59 | 16.2 | 10.7 | 20.9 | 12.8 | 55.2 | 18.8 | 0.226 | 149 |
| | 5.0 | 8.13 | 10.4 | 75.1 | 24.6 | 2.69 | 1.54 | 18.8 | 12.3 | 24.7 | 15.0 | 65.0 | 21.7 | 0.223 | 123 |
| 80 x 50 | 3.0 | 5.66 | 7.21 | 61.1 | 29.4 | 2.91 | 2.02 | 15.3 | 11.8 | 18.8 | 13.6 | 65.0 | 19.7 | 0.250 | 177 |
| | 4.0 | 7.34 | 9.35 | 76.4 | 36.5 | 2.86 | 1.98 | 19.1 | 14.6 | 24.0 | 17.2 | 82.7 | 24.6 | 0.246 | 136 |
| | 5.0 | 8.91 | 11.4 | 89.2 | 42.3 | 2.80 | 1.93 | 22.3 | 16.9 | 28.5 | 20.5 | 98.4 | 28.7 | 0.243 | 112 |
| 80 x 60 | 3.0 | 6.13 | 7.81 | 70.0 | 44.9 | 3.00 | 2.40 | 17.5 | 15.0 | 21.2 | 17.4 | 88.3 | 24.1 | 0.270 | 163 |
| | 3.5 | 7.06 | 8.99 | 79.3 | 50.7 | 2.97 | 2.37 | 19.8 | 16.9 | 24.1 | 19.8 | 101 | 27.3 | 0.268 | 142 |
| | 4.0 | 7.97 | 10.1 | 87.9 | 56.1 | 2.94 | 2.35 | 22.0 | 18.7 | 27.0 | 22.1 | 113 | 30.3 | 0.266 | 126 |
| | 5.0 | 9.70 | 12.4 | 103 | 65.7 | 2.89 | 2.31 | 25.8 | 21.9 | 32.2 | 26.4 | 136 | 35.7 | 0.263 | 103 |
| 90 x 50 | 3.0 | 6.13 | 7.81 | 81.9 | 32.7 | 3.24 | 2.05 | 18.2 | 13.1 | 22.6 | 15.0 | 76.7 | 22.4 | 0.270 | 163 |
| | 4.0 | 7.97 | 10.1 | 103 | 40.7 | 3.18 | 2.00 | 22.8 | 16.3 | 28.8 | 19.1 | 97.7 | 28.0 | 0.266 | 126 |
| | 5.0 | 9.70 | 12.4 | 121 | 47.4 | 3.12 | 1.96 | 26.8 | 18.9 | 34.4 | 22.7 | 116 | 32.7 | 0.263 | 103 |
| 100 x 40 | 3.0 | 6.13 | 7.81 | 92.3 | 21.7 | 3.44 | 1.67 | 18.5 | 10.8 | 23.7 | 12.4 | 59.0 | 19.4 | 0.270 | 163 |
| | 4.0 | 7.97 | 10.1 | 116 | 26.7 | 3.38 | 1.62 | 23.1 | 13.3 | 30.3 | 15.7 | 74.5 | 24.0 | 0.266 | 126 |
| | 5.0 | 9.70 | 12.4 | 136 | 30.8 | 3.31 | 1.58 | 27.1 | 15.4 | 36.1 | 18.5 | 87.9 | 27.9 | 0.263 | 103 |
| 100 x 50 | 3.0 | 6.60 | 8.41 | 106 | 36.1 | 3.56 | 2.07 | 21.3 | 14.4 | 26.7 | 16.4 | 88.6 | 25.0 | 0.290 | 152 |
| | 4.0 | 8.59 | 10.9 | 134 | 44.9 | 3.50 | 2.03 | 26.8 | 18.0 | 34.1 | 20.9 | 113 | 31.3 | 0.286 | 116 |
| | 5.0 | 10.5 | 13.4 | 158 | 52.5 | 3.44 | 1.98 | 31.6 | 21.0 | 40.8 | 25.0 | 135 | 36.8 | 0.283 | 95.4 |
| | 6.0 | 12.3 | 15.6 | 179 | 58.7 | 3.38 | 1.94 | 35.8 | 23.5 | 46.9 | 28.5 | 154 | 41.4 | 0.279 | 81.5 |
| 100 x 60 | 3.0 | 7.07 | 9.01 | 121 | 54.6 | 3.66 | 2.46 | 24.1 | 18.2 | 29.6 | 20.8 | 122 | 30.6 | 0.310 | 141 |
| | 3.5 | 8.16 | 10.4 | 137 | 61.9 | 3.63 | 2.44 | 27.4 | 20.6 | 33.8 | 23.8 | 139 | 34.8 | 0.308 | 123 |
| | 4.0 | 9.22 | 11.7 | 153 | 68.7 | 3.60 | 2.42 | 30.5 | 22.9 | 37.9 | 26.6 | 156 | 38.7 | 0.306 | 108 |
| | 5.0 | 11.3 | 14.4 | 181 | 80.8 | 3.55 | 2.37 | 36.2 | 26.9 | 45.6 | 31.9 | 188 | 45.8 | 0.303 | 88.7 |
| | 6.0 | 13.2 | 16.8 | 205 | 91.2 | 3.49 | 2.33 | 41.1 | 30.4 | 52.5 | 36.6 | 216 | 51.9 | 0.299 | 75.7 |
| 100 x 80 | 3.0 | 8.01 | 10.2 | 149 | 106 | 3.82 | 3.22 | 29.8 | 26.4 | 35.4 | 30.4 | 196 | 41.9 | 0.350 | 125 |
| | 4.0 | 10.5 | 13.3 | 189 | 134 | 3.77 | 3.17 | 37.9 | 33.5 | 45.6 | 39.2 | 254 | 53.4 | 0.346 | 95.4 |
| | 5.0 | 12.8 | 16.4 | 226 | 160 | 3.72 | 3.12 | 45.2 | 39.9 | 55.1 | 47.2 | 308 | 63.7 | 0.343 | 77.9 |
| | 6.0 | 15.1 | 19.2 | 258 | 182 | 3.67 | 3.08 | 51.7 | 45.5 | 63.8 | 54.7 | 357 | 73.0 | 0.339 | 66.2 |
| 120 x 40 | 3.0 | 7.07 | 9.01 | 148 | 25.8 | 4.05 | 1.69 | 24.7 | 12.9 | 32.2 | 14.6 | 74.6 | 23.5 | 0.310 | 141 |
| | 4.0 | 9.22 | 11.7 | 187 | 31.9 | 3.99 | 1.65 | 31.1 | 15.9 | 41.2 | 18.5 | 94.2 | 29.2 | 0.306 | 108 |
| | 5.0 | 11.3 | 14.4 | 221 | 36.9 | 3.92 | 1.60 | 36.8 | 18.5 | 49.4 | 22.0 | 111 | 34.1 | 0.303 | 88.7 |



Hybox® 355 EN10219: S355J2H Cold formed rectangular hollow section (continued)

| Size | Thickness | Mass | Sectional area | Moment of inertia | Radius of gyration | Elastic modulus | Plastic modulus | Torsional constants | Superficial area/m | Approx length | | | | | |
|-----------|-----------|--------|-------------------|---------------------------------|---------------------------------|--------------------|--------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------|--------------------------------|----------------------------------|------------|
| H x B mm | T mm | M kg/m | A cm ² | I _{yy} cm ⁴ | I _{zz} cm ⁴ | i _{yy} cm | i _{zz} cm | W _{el,yy} cm ³ | W _{el,zz} cm ³ | W _{pl,yy} cm ³ | W _{pl,zz} cm ³ | I _t cm ⁴ | C _t cm ³ | A _s m ² /m | /tonne m/t |
| 120 x 60 | 3.0 | 8.01 | 10.2 | 189 | 64.4 | 4.30 | 2.51 | 31.5 | 21.5 | 39.2 | 24.2 | 156 | 37.1 | 0.350 | 125 |
| | 3.5 | 9.26 | 11.8 | 216 | 73.1 | 4.28 | 2.49 | 35.9 | 24.4 | 44.9 | 27.7 | 179 | 42.2 | 0.348 | 108 |
| | 4.0 | 10.5 | 13.3 | 241 | 81.2 | 4.25 | 2.47 | 40.1 | 27.1 | 50.5 | 31.1 | 201 | 47.0 | 0.346 | 95.4 |
| | 5.0 | 12.8 | 16.4 | 287 | 96.0 | 4.19 | 2.42 | 47.8 | 32.0 | 60.9 | 37.4 | 242 | 55.8 | 0.343 | 77.9 |
| | 6.0 | 15.1 | 19.2 | 328 | 109 | 4.13 | 2.38 | 54.7 | 36.3 | 70.6 | 43.1 | 280 | 63.6 | 0.339 | 66.2 |
| 120 x 80 | 3.0 | 8.96 | 11.4 | 230 | 123 | 4.49 | 3.29 | 38.4 | 30.9 | 46.2 | 35.0 | 255 | 50.8 | 0.390 | 112 |
| | 4.0 | 11.7 | 14.9 | 295 | 157 | 4.44 | 3.24 | 49.1 | 39.3 | 59.8 | 45.2 | 331 | 64.9 | 0.386 | 85.2 |
| | 5.0 | 14.4 | 18.4 | 353 | 188 | 4.39 | 3.20 | 58.9 | 46.9 | 72.4 | 54.7 | 402 | 77.8 | 0.383 | 69.4 |
| | 6.0 | 17.0 | 21.6 | 406 | 215 | 4.33 | 3.15 | 67.7 | 53.8 | 84.3 | 63.5 | 469 | 89.4 | 0.379 | 58.9 |
| | 8.0 | 21.4 | 27.2 | 476 | 252 | 4.18 | 3.04 | 79.3 | 62.9 | 102 | 76.9 | 584 | 108 | 0.366 | 46.8 |
| 140 x 80 | 3.0 | 9.90 | 12.6 | 334 | 141 | 5.15 | 3.35 | 47.8 | 35.3 | 58.2 | 39.6 | 317 | 59.7 | 0.430 | 101 |
| | 4.0 | 13.0 | 16.5 | 430 | 180 | 5.10 | 3.30 | 61.4 | 45.1 | 75.5 | 51.3 | 412 | 76.5 | 0.426 | 77.0 |
| | 5.0 | 16.0 | 20.4 | 517 | 216 | 5.04 | 3.26 | 73.9 | 54.0 | 91.8 | 62.2 | 501 | 91.8 | 0.423 | 62.6 |
| | 6.0 | 18.9 | 24.0 | 597 | 248 | 4.98 | 3.21 | 85.3 | 62.0 | 107 | 72.4 | 584 | 106 | 0.419 | 53.0 |
| | 8.0 | 23.9 | 30.4 | 708 | 293 | 4.82 | 3.10 | 101 | 73.3 | 131 | 88.4 | 731 | 129 | 0.406 | 41.8 |
| | 10.0 | 28.7 | 36.6 | 804 | 330 | 4.69 | 3.01 | 115 | 82.6 | 152 | 103 | 851 | 147 | 0.397 | 34.8 |
| 150 x 100 | 3.0 | 11.3 | 14.4 | 461 | 248 | 5.65 | 4.15 | 61.4 | 49.5 | 73.5 | 55.8 | 507 | 81.4 | 0.490 | 88.4 |
| | 4.0 | 14.9 | 18.9 | 595 | 319 | 5.60 | 4.10 | 79.3 | 63.7 | 95.7 | 72.5 | 662 | 105 | 0.486 | 67.2 |
| | 5.0 | 18.3 | 23.4 | 719 | 384 | 5.55 | 4.05 | 95.9 | 76.8 | 117 | 88.3 | 809 | 127 | 0.483 | 54.5 |
| | 6.0 | 21.7 | 27.6 | 835 | 444 | 5.50 | 4.01 | 111 | 88.8 | 137 | 103 | 948 | 147 | 0.479 | 46.1 |
| | 8.0 | 27.7 | 35.2 | 1008 | 536 | 5.35 | 3.90 | 134 | 107 | 169 | 128 | 1206 | 182 | 0.466 | 36.1 |
| | 10.0 | 33.4 | 42.6 | 1162 | 614 | 5.22 | 3.80 | 155 | 123 | 199 | 150 | 1426 | 211 | 0.457 | 29.9 |
| 160 x 80 | 3.0 | 10.8 | 13.8 | 464 | 159 | 5.80 | 3.39 | 58.0 | 39.8 | 71.4 | 44.3 | 380 | 68.6 | 0.470 | 92.3 |
| | 4.0 | 14.2 | 18.1 | 598 | 204 | 5.74 | 3.35 | 74.7 | 50.9 | 92.9 | 57.4 | 494 | 88.0 | 0.466 | 70.2 |
| | 5.0 | 17.5 | 22.4 | 722 | 244 | 5.68 | 3.30 | 90.2 | 61.0 | 113 | 69.7 | 601 | 106 | 0.463 | 57.0 |
| | 6.0 | 20.7 | 26.4 | 836 | 281 | 5.62 | 3.26 | 105 | 70.2 | 132 | 81.3 | 702 | 122 | 0.459 | 48.2 |
| | 8.0 | 26.4 | 33.6 | 1001 | 335 | 5.46 | 3.16 | 125 | 83.7 | 163 | 100 | 882 | 150 | 0.446 | 37.9 |
| | 10.0 | 31.8 | 40.6 | 1146 | 380 | 5.32 | 3.06 | 143 | 95.0 | 191 | 117 | 1031 | 172 | 0.437 | 31.4 |
| 180 x 80 | 3.0 | 11.8 | 15.0 | 621 | 177 | 6.43 | 3.43 | 69.0 | 44.2 | 85.8 | 48.9 | 445 | 77.5 | 0.510 | 84.9 |
| | 4.0 | 15.5 | 19.7 | 802 | 227 | 6.37 | 3.39 | 89.1 | 56.7 | 112 | 63.5 | 578 | 99.6 | 0.506 | 64.5 |
| | 5.0 | 19.1 | 24.4 | 971 | 272 | 6.31 | 3.34 | 108 | 68.1 | 137 | 77.2 | 704 | 120 | 0.503 | 52.3 |
| | 6.0 | 22.6 | 28.8 | 1128 | 314 | 6.25 | 3.30 | 125 | 78.5 | 160 | 90.2 | 823 | 139 | 0.499 | 44.2 |
| | 8.0 | 28.9 | 36.8 | 1362 | 377 | 6.08 | 3.20 | 151 | 94.1 | 198 | 111 | 1036 | 170 | 0.486 | 34.6 |
| | 10.0 | 35.0 | 44.6 | 1570 | 429 | 5.94 | 3.10 | 174 | 107 | 234 | 131 | 1214 | 196 | 0.477 | 28.6 |
| 180 x 100 | 4.0 | 16.8 | 21.3 | 926 | 374 | 6.59 | 4.18 | 103 | 74.8 | 126 | 84.0 | 854 | 127 | 0.546 | 59.7 |
| | 5.0 | 20.7 | 26.4 | 1124 | 452 | 6.53 | 4.14 | 125 | 90.4 | 154 | 103 | 1045 | 154 | 0.543 | 48.3 |
| | 6.0 | 24.5 | 31.2 | 1310 | 524 | 6.48 | 4.10 | 146 | 105 | 181 | 120 | 1227 | 179 | 0.539 | 40.8 |
| | 8.0 | 31.4 | 40.0 | 1598 | 637 | 6.32 | 3.99 | 178 | 127 | 226 | 150 | 1565 | 222 | 0.526 | 31.8 |
| | 10.0 | 38.1 | 48.6 | 1859 | 736 | 6.19 | 3.89 | 207 | 147 | 268 | 177 | 1859 | 260 | 0.517 | 26.2 |
| 200 x 100 | 4.0 | 18.0 | 22.9 | 1200 | 411 | 7.23 | 4.23 | 120 | 82.2 | 148 | 91.7 | 985 | 142 | 0.586 | 55.5 |
| | 5.0 | 22.3 | 28.4 | 1459 | 497 | 7.17 | 4.19 | 146 | 99.4 | 181 | 112 | 1206 | 172 | 0.583 | 44.9 |
| | 6.0 | 26.4 | 33.6 | 1703 | 577 | 7.12 | 4.14 | 170 | 115 | 213 | 132 | 1417 | 200 | 0.579 | 37.9 |
| | 8.0 | 33.9 | 43.2 | 2091 | 705 | 6.95 | 4.04 | 209 | 141 | 267 | 165 | 1811 | 250 | 0.566 | 29.5 |
| | 10.0 | 41.3 | 52.6 | 2444 | 818 | 6.82 | 3.94 | 244 | 164 | 318 | 195 | 2154 | 292 | 0.557 | 24.2 |



Hybox® 355 EN10219: S355J2H Cold formed rectangular hollow section (continued)

| Size | Thickness | Mass | Sectional area | Moment of inertia | Radius of gyration | Elastic modulus | Plastic modulus | Torsional constants | Superficial area/m | Approx length | | | | | |
|-----------|-----------|--------|-------------------|---------------------------------|---------------------------------|--------------------|--------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------|--------------------------------|----------------------------------|------------|
| H x B mm | T mm | M kg/m | A cm ² | I _{yy} cm ⁴ | I _{zz} cm ⁴ | i _{yy} cm | i _{zz} cm | W _{el,yy} cm ³ | W _{el,zz} cm ³ | W _{pl,yy} cm ³ | W _{pl,zz} cm ³ | I _t cm ⁴ | C _t cm ³ | A _s m ² /m | /tonne m/t |
| 200 x 120 | 4.0 | 19.3 | 24.5 | 1353 | 618 | 7.43 | 5.02 | 135 | 103 | 164 | 115 | 1345 | 172 | 0.626 | 51.9 |
| | 5.0 | 23.8 | 30.4 | 1649 | 750 | 7.37 | 4.97 | 165 | 125 | 201 | 141 | 1652 | 210 | 0.623 | 42.0 |
| | 6.0 | 28.3 | 36.0 | 1929 | 874 | 7.32 | 4.93 | 193 | 146 | 237 | 166 | 1947 | 245 | 0.619 | 35.4 |
| | 8.0 | 36.5 | 46.4 | 2386 | 1079 | 7.17 | 4.82 | 239 | 180 | 298 | 209 | 2507 | 308 | 0.606 | 27.4 |
| | 10.0 | 44.4 | 56.6 | 2806 | 1262 | 7.04 | 4.72 | 281 | 210 | 356 | 250 | 3007 | 364 | 0.597 | 22.5 |
| 200 x 150 | 4.0 | 21.2 | 26.9 | 1584 | 1021 | 7.67 | 6.16 | 158 | 136 | 187 | 154 | 1942 | 219 | 0.686 | 47.3 |
| | 5.0 | 26.2 | 33.4 | 1935 | 1245 | 7.62 | 6.11 | 193 | 166 | 230 | 189 | 2391 | 267 | 0.683 | 38.2 |
| | 6.0 | 31.1 | 39.6 | 2268 | 1457 | 7.56 | 6.06 | 227 | 194 | 271 | 223 | 2826 | 313 | 0.679 | 32.1 |
| | 8.0 | 40.2 | 51.2 | 2829 | 1816 | 7.43 | 5.95 | 283 | 242 | 344 | 283 | 3665 | 396 | 0.666 | 24.9 |
| | 10.0 | 49.1 | 62.6 | 3348 | 2143 | 7.31 | 5.85 | 335 | 286 | 413 | 339 | 4428 | 471 | 0.657 | 20.4 |
| 250 x 150 | 5.0 | 30.1 | 38.4 | 3304 | 1508 | 9.28 | 6.27 | 264 | 201 | 320 | 225 | 3285 | 337 | 0.783 | 33.2 |
| | 6.0 | 35.8 | 45.6 | 3886 | 1768 | 9.23 | 6.23 | 311 | 236 | 378 | 266 | 3886 | 396 | 0.779 | 27.9 |
| | 6.3 | 37.2 | 47.4 | 4001 | 1825 | 9.18 | 6.20 | 320 | 243 | 391 | 276 | 4078 | 412 | 0.773 | 26.8 |
| | 8.0 | 46.5 | 59.2 | 4886 | 2219 | 9.08 | 6.12 | 391 | 296 | 482 | 340 | 5050 | 504 | 0.766 | 21.5 |
| | 10.0 | 57.0 | 72.6 | 5825 | 2634 | 8.96 | 6.02 | 466 | 351 | 582 | 409 | 6121 | 602 | 0.757 | 17.6 |
| | 12.0 | 66.0 | 84.1 | 6458 | 2925 | 8.77 | 5.90 | 517 | 390 | 658 | 463 | 7088 | 684 | 0.738 | 15.2 |
| | 12.5 | 68.3 | 87.0 | 6633 | 3002 | 8.73 | 5.87 | 531 | 400 | 678 | 477 | 7315 | 704 | 0.736 | 14.6 |
| 300 x 100 | 6.0 | 35.8 | 45.6 | 4777 | 842 | 10.2 | 4.30 | 318 | 168 | 411 | 188 | 2403 | 306 | 0.779 | 27.9 |
| | 8.0 | 46.5 | 59.2 | 5978 | 1045 | 10.0 | 4.20 | 399 | 209 | 523 | 238 | 3080 | 385 | 0.766 | 21.5 |
| | 10.0 | 57.0 | 72.6 | 7106 | 1224 | 9.90 | 4.11 | 474 | 245 | 631 | 285 | 3681 | 455 | 0.757 | 17.6 |
| 300 x 200 | 6.0 | 45.2 | 57.6 | 7370 | 3962 | 11.3 | 8.29 | 491 | 396 | 588 | 446 | 8115 | 651 | 0.979 | 22.1 |
| | 6.3 | 47.1 | 60.0 | 7624 | 4104 | 11.3 | 8.27 | 508 | 410 | 610 | 463 | 8524 | 680 | 0.973 | 21.2 |
| | 8.0 | 59.1 | 75.2 | 9389 | 5042 | 11.2 | 8.19 | 626 | 504 | 757 | 574 | 10627 | 838 | 0.966 | 16.9 |
| | 10.0 | 72.7 | 92.6 | 11313 | 6058 | 11.1 | 8.09 | 754 | 606 | 921 | 698 | 12987 | 1012 | 0.957 | 13.8 |
| | 12.0 | 84.8 | 108 | 12788 | 6854 | 10.9 | 7.96 | 853 | 685 | 1056 | 801 | 15236 | 1167 | 0.938 | 11.8 |
| | 12.5 | 88.0 | 112 | 13179 | 7060 | 10.8 | 7.94 | 879 | 706 | 1091 | 828 | 15768 | 1204 | 0.936 | 11.4 |
| 400 x 200 | 6.0 | 54.7 | 69.6 | 14789 | 5092 | 14.6 | 8.55 | 739 | 509 | 906 | 562 | 12069 | 877 | 1.18 | 18.3 |
| | 6.3 | 57.0 | 72.6 | 15330 | 5286 | 14.5 | 8.53 | 766 | 529 | 942 | 585 | 12673 | 916 | 1.17 | 17.5 |
| | 8.0 | 71.6 | 91.2 | 18974 | 6517 | 14.4 | 8.45 | 949 | 652 | 1173 | 728 | 15820 | 1133 | 1.17 | 14.0 |
| | 10.0 | 88.4 | 113 | 23003 | 7864 | 14.3 | 8.36 | 1150 | 786 | 1434 | 888 | 19368 | 1373 | 1.16 | 11.3 |
| | 12.0 | 104 | 132 | 26248 | 8977 | 14.1 | 8.24 | 1312 | 898 | 1656 | 1027 | 22782 | 1591 | 1.14 | 9.65 |
| | 12.5 | 108 | 137 | 27100 | 9260 | 14.1 | 8.22 | 1355 | 926 | 1714 | 1062 | 23594 | 1644 | 1.14 | 9.30 |
| 450 x 250 | 6.0 | 64.1 | 81.6 | 22724 | 9245 | 16.7 | 10.6 | 1010 | 740 | 1221 | 817 | 20687 | 1253 | 1.38 | 15.6 |
| | 6.3 | 66.9 | 85.2 | 23606 | 9615 | 16.6 | 10.6 | 1049 | 769 | 1271 | 851 | 21730 | 1310 | 1.37 | 14.9 |
| | 8.0 | 84.2 | 107 | 29335 | 11916 | 16.5 | 10.5 | 1304 | 953 | 1588 | 1063 | 27222 | 1628 | 1.37 | 11.9 |
| | 10.0 | 104 | 133 | 35737 | 14470 | 16.4 | 10.4 | 1588 | 1158 | 1948 | 1302 | 33473 | 1983 | 1.36 | 9.61 |
| | 12.0 | 123 | 156 | 41137 | 16662 | 16.2 | 10.3 | 1828 | 1333 | 2264 | 1515 | 39591 | 2314 | 1.34 | 8.16 |
| | 12.5 | 127 | 162 | 42536 | 17219 | 16.2 | 10.3 | 1890 | 1377 | 2346 | 1569 | 41057 | 2394 | 1.34 | 7.86 |
| 500 x 300 | 6.0 | 73.5 | 93.6 | 33012 | 15151 | 18.8 | 12.7 | 1320 | 1010 | 1581 | 1117 | 32420 | 1688 | 1.58 | 13.6 |
| | 6.3 | 76.8 | 97.8 | 34346 | 15777 | 18.7 | 12.7 | 1374 | 1052 | 1647 | 1165 | 34062 | 1766 | 1.57 | 13.0 |
| | 8.0 | 96.7 | 123 | 42805 | 19624 | 18.6 | 12.6 | 1712 | 1308 | 2063 | 1458 | 42767 | 2202 | 1.57 | 10.3 |
| | 10.0 | 120 | 153 | 52328 | 23933 | 18.5 | 12.5 | 2093 | 1596 | 2537 | 1791 | 52736 | 2693 | 1.56 | 8.35 |
| | 12.0 | 141 | 180 | 60603 | 27726 | 18.3 | 12.4 | 2424 | 1848 | 2962 | 2093 | 62581 | 3156 | 1.54 | 7.07 |
| | 12.5 | 147 | 187 | 62731 | 28687 | 18.3 | 12.4 | 2509 | 1912 | 3071 | 2169 | 64954 | 3269 | 1.54 | 6.81 |

The dimensions shown in silver are standard sizes and should be given preference
 All other sizes are non-standard and therefore minimum order quantities may apply

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