# Technical Specification References

| Classification | Specification | Designation of Grade | Mechanical Properties | | | | | Chemical Composition % | | | | | | | | | Impact Properties | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Tensile Strength N/mm² | | Yield Strength Min. | Elongation Min. | | C | Si | Mn | P | S | Mo | Al | CEV | Cu | Test Temperature | Min average absorbed energy for standard test piece |
| | | | | | | CHS | RHS or SHS | | | | | | | | | | | |
| | | | t<3mm | 3mm ≤ t ≤ 40mm | N/mm² | % | | Max | Max | Max | Max | Max | Max | Max | Max | - | °C | J |
| Cold formed welded structural hollow sections of non-alloy and fine grain steels | BS EN 10219 | S235JRH | 360-510 | 360-510 | 235 | 24 | | 0.17 | - | 1.4 | 0.045 | 0.045 | - | - | 0.35 | - | 20 | 27 |
| | | S275J0H | 430-580 | 410-560 | 275 | 20 | | 0.20 | - | 1.5 | 0.040 | 0.040 | - | - | 0.40 | - | 0 | 27 |
| | | S275J2H | 430-580 | 410-560 | 275 | 20 | | 0.20 | - | 1.5 | 0.035 | 0.035 | - | - | 0.40 | - | -20 | 27 |
| | | S355J0H | 510-680 | 470-630 | 355 | 20 | | 0.22 | 0.55 | 1.6 | 0.040 | 0.040 | - | - | 0.45 | - | 0 | 27 |
| | | S355J2H | 510-680 | 470-630 | 355 | 20 | | 0.22 | 0.55 | 1.6 | 0.035 | 0.035 | - | - | 0.45 | - | -20 | 27 |
| Structural Steel Hollow Sections for Australian Standard | AS 1163 | C 250 | 320 | | 250 | 22 | 18 | 0.12 | 0.05 | 0.5 | 0.040 | 0.030 | 0.10 | 0.10 | 0.25 | - | - | - |
| | | C 250 L0 | 320 | | 250 | 22 | 18 | 0.12 | 0.05 | 0.5 | 0.040 | 0.030 | 0.10 | 0.10 | 0.25 | - | 0 | 27 |
| | | C 350 | 430 | | 350 | 20 | 16 | 0.20 | 0.25 | 1.6 | 0.040 | 0.030 | 0.10 | 0.10 | 0.39 | - | - | - |
| | | C 350 L0 | 430 | | 350 | 20 | 16 | 0.20 | 0.25 | 1.6 | 0.040 | 0.030 | 0.10 | 0.10 | 0.39 | - | 0 | 27 |
| | | C 450 | 500 | | 450 | 16 | 14 | 0.20 | 0.45 | 1.6 | 0.040 | 0.030 | 0.35 | 0.10 | 0.39 | - | - | - |
| | | C 450 L0 | 500 | | 450 | 16 | 14 | 0.20 | 0.45 | 1.6 | 0.040 | 0.030 | 0.35 | 0.10 | 0.39 | - | 0 | 27 |
| Carbon Steel Square Pipes for General Structural Purposes | JIS G 3466 | STKR 400 | 400 | | 245 | - | 23 (N1) | 0.25 | - | - | 0.04 | 0.04 | - | - | - | - | - | - |
| | | STKR 490 | 490 | | 325 | - | 23 (N1) | 0.18 | 0.55 | 1.5 | 0.04 | 0.04 | - | - | - | - | - | - |
| Carbon Steel Tubes For General | JIS G 3444 | STK 290 | 290 | | - | 30 (N1) 20 (N2) | - | - | - | - | 0.050 | 0.050 | - | - | - | - | - | - |
| | | STK 400 | 400 | | 235 | 23 (N2) 18 (N2) | - | 0.250 | - | - | 0.040 | 0.040 | - | - | - | - | - | - |
| | | STK 500 | 500 | | 355 | 15 (N1) 10 (N2) | - | 0.300 to 1.00 | 0.300 | 0.350 | 0.040 | 0.040 | - | - | - | - | - | - |
| | | STK 540 | 540 | | 390 | 20 (N1) 16 (N2) | - | 0.230 | 1.500 | 0.550 | 0.040 | 0.040 | - | - | - | - | - | - |
| Cold-Formed Welded Carbon Steel Structural SHS & RHS | ASTM A - 500 | Grade A | 310 | | 270 | As Specified in ASTM A500 Specification | | 0.30 | - | 1.40 | 0.045 | 0.045 | - | - | - | 0.18 min | - | - |
| | | Grade B | 400 | | 315 | | | 0.30 | - | 1.40 | 0.045 | 0.045 | - | - | - | 0.18 min | - | - |
| | | Grade C | 425 | | 345 | | | 0.27 | - | 1.35 | 0.045 | 0.045 | - | - | - | 0.18 min | - | - |
| | | Grade D | 400 | | 250 | | | 0.30 | - | 1.40 | 0.045 | 0.045 | - | - | - | 0.18 min | - | - |
| Cold-Formed Welded Carbon Steel Structural CHS | | Grade A | 310 | | 230 | | | 0.30 | - | 1.40 | 0.045 | 0.045 | - | - | - | 0.18 min | - | - |
| | | Grade B | 400 | | 290 | | | 0.30 | - | 1.40 | 0.045 | 0.045 | - | - | - | 0.18 min | - | - |
| | | Grade C | 425 | | 315 | | | 0.27 | - | 1.35 | 0.045 | 0.045 | - | - | - | 0.18 min | - | - |
| | | Grade D | 400 | | 250 | | | 0.30 | - | 1.40 | 0.045 | 0.045 | - | - | - | 0.18 min | - | - |
| Lipped Channels & Plain Channels | JIS G 3350 | SCC 400 | 400-450 | | 245 | 21 (N2) | | 0.25 | - | - | 0.05 | 0.05 | - | - | - | - | - | - |
| High Tensile C Purlin | Equivalent to ASTM A446 | | | | 450 | 345 | 12 | 0.40 | - | - | 0.20 | 0.04 | - | - | - | - | - | - |



**NOTES :**

a) The impact properties of steel qualities JR and J0 are verified by laboratory testing only when specified at the time of the inquiry and order.

b) The steel qualities J0 and J2 can be produced upon request with extra cost.

c) (N1) Test piece No. 11 and 12

d) (N2) Test Piece No. 5
- When the tensile test is carried out on No.5 and 12 test piece for the tube under 8mm in wall thickness, the minimum elongation value shall be detemined by reducing 1.5% per 1mm of decrease in wall thickness from the values given in the Table above and rounding off the value obtained to integer in accordance with JIS Z 8401.

e) t - thickness
CHS - Circular Hollow Sections
RHS - Rectangular Hollow Section
SHS - Square Hollow Section