

EN 10219 cold formed welded circular hollow section

EN 10219 cold formed welded circular hollow sections (CHS) from TPMC are manufactured by ERW or SAW without subsequent heat treatment.

Supplied with nominally square-cut ends, they are ready for welding to structures or bolting with end plates. These CHS offer consistent mechanical properties and dimensional accuracy, ideal for load-bearing applications such as frameworks, trusses, columns, and mechanical supports.



- Certificate: CE certified
- Standard: EN 10219-1 / EN 10219-2
- Length: 6m / 5.8m / 11.8m / 12m / 20ft, etc.
- End: Cut nominally square to the axis
- Surface: Bare (black) / light oiling
Water-based black paint
FBE / polyester resin powder
Hot-dip galvanized / duplex coating

Available sizes

Outside diameter			Specified thickness (mm)	Weight (kg/m)	Cross-sectional area (cm ²)	Second moment of area (cm ⁴)	Ref. No.
NPS	DN	OD (mm)					
1/2"	15	21.3	2.5	1.16	1.48	0.66	P1101 (CE)
3/4"	20	26.9	2.5	1.50	1.92	1.44	P1102 (CE)
1"	25	33.7	3.0	2.27	2.89	3.44	P1103 (CE)
1-1/4"	32	42.4	3.0	2.91	3.71	7.24	P1104 (CE)
1-1/2"	40	48.3	3.0	3.35	4.27	10.99	P1105 (CE)
2"	50	60.3	3.0	4.24	5.40	22.21	P1106 (CE)
2-1/2"	65	76.1	4.0	7.11	9.06	59.03	P1107 (CE)
3"	80	88.9	4.0	8.38	10.66	96.29	P1108 (CE)
4"	100	114.3	5.0	13.48	17.16	256.79	P1109 (CE)
5"	125	139.7	5.0	16.61	21.15	480.30	P1110 (CE)
6"	150	168.3	6.0	24.02	30.58	1008.18	P1112 (CE)
8"	200	219.1	8.0	41.65	53.03	2958.13	P1113 (CE)
10"	250	273.0	10.0	64.86	82.58	7150.47	P1114 (CE)
12"	300	323.9	12.0	92.30	117.52	14312.30	P1115 (CE)
14"	350	355.6	12.0	101.68	130.00	19140.00	P1116 (CE)
16"	400	406.4	12.0	116.72	149.00	28940.00	P1117 (CE)
18"	450	457.0	16.0	174.01	222.00	53960.00	P1118 (CE)
20"	500	508.0	16.0	194.14	247.00	74910.00	P1119 (CE)
24"	600	610.0	16.0	234.38	299.00	131800.00	P1120 (CE)

Note: Dimensions and properties are in accordance with EN 10219-2. TPMC selects one practical wall thickness per size suitable for common structural applications.

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Chemical composition (%) per EN 10219-1

Grade	Type of deoxidation	C	Si	Mn	P	S	N
S235JRH	FF	≤ 0.17	-	≤ 1.40	≤ 0.040	≤ 0.040	≤ 0.009
S355J0H	FF	≤ 0.22	≤ 0.55	≤ 1.60	≤ 0.035	≤ 0.035	≤ 0.009
S355J2H	FF	≤ 0.22	≤ 0.55	≤ 1.60	≤ 0.030	≤ 0.030	—

Note:

- FF = Fully killed steel with nitrogen-binding elements (e.g. min. 0.020% total Al or 0.015% soluble Al).
- The maximum N value does not apply if Al ≥ 0.020% with Al/N ≥ 2:1, or if other nitrogen-binding elements are present.
- Carbon Equivalent (CEV): $CEV = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$. Maximum CEV (≤ 40 mm thickness): S235JRH: 0.35; S355J0H / S355J2H: 0.45.

Mechanical properties per EN 10219-1

Grade	Yield strength ReH (MPa)	Tensile strength Rm (MPa)	Longitudinal elongation A (%)	Impact energy KV (J)
S235JRH	≥ 235 (T ≤ 16 mm) ≥ 225 (16 < T ≤ 40 mm)	360 ~ 510	≥ 24 (T ≤ 40 mm)	≥ 27, at 20°C
S355J0H	≥ 355 (T ≤ 16 mm) ≥ 345 (16 < T ≤ 40 mm)	430 ~ 580 (T < 3 mm) 410 ~ 560 (3 ≤ T ≤ 40 mm)	≥ 20 (T ≤ 40 mm)	≥ 27, at 0°C
S355J2H	≥ 355 (T ≤ 16 mm) ≥ 345 (16 < T ≤ 40 mm)	510 ~ 680 (T < 3 mm) 470 ~ 630 (3 ≤ T ≤ 40 mm)	≥ 20 (T ≤ 40 mm)	≥ 27, at -20°C

Note:

- For CHS with D/T < 15 and thickness > 3 mm, the minimum elongation is reduced by 2 %.
- For S235JRH with thickness ≤ 3 mm, the minimum elongation is 17 %.
- Impact properties are verified only when specified in the order.



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Standard requirements

- Delivery condition: Cold formed without subsequent heat treatment; weld seam may be as-welded or heat treated.
- Chemical composition: Cast analysis per EN 10219-1.
- Tensile test: Tensile, yield, and elongation tested per standard.
- Weld seam: Non-destructive testing (NDT) for ERW and SAW weld seam per standard.



Dimensional Tolerances per EN 10219-2

- Outside diameter: $\pm 1\%$ (min ± 0.5 mm, max ± 10.0 mm).
- Wall thickness: For $D \leq 406.4$ mm: $\pm 10\%$ when $T \leq 5$ mm; ± 0.5 mm when $T > 5$ mm. For $D > 406.4$ mm: $\pm 10\%$, max ± 2.0 mm.
- Weld bead height (for SAW): Max 3.5 mm when $T \leq 14.2$ mm; max 4.8 mm when $T > 14.2$ mm.
- Cut length: if length 6 m, $+15/-0$ mm.
- Weight: $\pm 6\%$ per individual length.



Other quality assurance

- Straightness: 0.20 % of total length with max 3 mm over any 1 m length.
- Out-of-roundness: 2% max for $D/T \leq 100$.
- Coating inspection: DFT and adhesion (see TPMC PA11-PA51).
- Marking: Legibly marked per standard (see TPMC PA71).
- Packaging: End protection, bundling, and shipping marks (see TPMC PA81).
- Test certificate: Issued by TPMC with full traceability to MTC/MTR.