EN 10224 ERW steel tube

EN 10224 ERW steel tube from TPMC is produced by high-frequency welding of steel strip, featuring a longitudinal weld seam, precise dimensions, and lightweight construction.
Designed to convey water, wastewater, and other aqueous liquids at ambient temperatures, it offers robust strength and excellent weldability for easy, dependable installation.

- Certificate: ISO
- Standard: EN 10224 L235
- Length: 6m / 5.8m / 11.8m / 12m / 20ft, etc.
- End: Plain: square cut
  Beveled: 30° angle (+5°/-0°)
  Roll-grooved: per ISO 6182-12
  Threaded (NPT): per ASME B1.20.1
  Threaded (BSPT): per ISO 7-1 / BS 21
- Surface: FBE / polyester resin powder
  Water-based red or black paint
  Hot-dip galvanized / duplex coating
  Plastic lining (PE, UPVC, etc.)

Available sizes for Medium series tube

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Listed range	Selected T (mm)	kg/m	MPa	
3/4"	20	26.9	2.0 ~ 8.0	2.6	1.56	7.0	P1002-M (ISO)
1"	25	33.7	2.0 ~ 8.8	3.2	2.41	7.0	P1003-M (ISO)
1-1/4"	32	42.4	2.0 ~ 11.0	3.2	3.09	7.0	P1004-M (ISO)
1-1/2"	40	48.3	2.0 ~ 12.5	3.2	3.56	7.0	P1005-M (ISO)
2"	50	60.3	2.0 ~ 14.2	3.6	5.03	7.0	P1006-M (ISO)
2-1/2"	65	76.1	2.0 ~ 17.5	3.6	6.44	7.0	P1007-M (ISO)
3"	80	88.9	2.0 ~ 20.0	4.0	8.38	7.0	P1008-M (ISO)
4"	100	114.3	2.0 ~ 25.0	4.5	12.19	7.0	P1009-M (ISO)
5"	125	139.7	2.0 ~ 25.0	5.0	16.61	7.0	P1010-M (ISO)
6"	150	168.3	2.0 ~ 25.0	5.0	20.14	7.0	P1012-M (ISO)
8"	200	219.1	2.0 ~ 25.0	5.6	29.49	7.0	P1013-M (ISO)
10"	250	273.0	2.0 ~ 25.0	5.6	36.93	6.7	P1014-M (ISO)
12"	300	323.9	2.6 ~ 25.0	5.6	43.96	5.7	P1015-M (ISO)

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Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Listed range	Selected T (mm)	kg/m	MPa	
14"	350	355.6	2.6 ~ 25.0	6.3	54.27	5.8	P1016-M (ISO)
16"	400	406.4	2.6 ~ 25.0	6.3	62.16	5.1	P1017-M (ISO)
18"	450	457.0	3.2 ~ 25.0	6.3	70.02	4.5	P1018-M (ISO)
20"	500	508.0	3.2 ~ 25.0	6.3	77.95	4.1	P1019-M (ISO)
24"	600	610.0	3.2 ~ 25.0	6.3	93.80	3.4	P1020-M (ISO)

Note:

1. Dimensions follow listed sizes in Table 4 of EN 10224:2002. TPMC selects one practical wall thickness per application, with reference to EN 10255 Medium series and ASME B36.10 SCH10.
2. Hydrostatic leak tightness test is performed at the lower of 70 bar or P = 20ST/D, where S is the stress corresponding to 70% of the specified minimum yield strength (TPMC calculates it with L235 grade).

Available sizes for Heavy series tube

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Listed range	Selected T (mm)	kg/m	MPa	
3/4"	20	26.9	2.0 ~ 8.0	3.2	1.87	7.0	P1002-H (ISO)
1"	25	33.7	2.0 ~ 8.8	4.0	2.93	7.0	P1003-H (ISO)
1-1/4"	32	42.4	2.0 ~ 11.0	4.0	3.79	7.0	P1004-H (ISO)
1-1/2"	40	48.3	2.0 ~ 12.5	4.0	4.37	7.0	P1005-H (ISO)
2"	50	60.3	2.0 ~ 14.2	4.5	6.19	7.0	P1006-H (ISO)
2-1/2"	65	76.1	2.0 ~ 17.5	4.5	7.95	7.0	P1007-H (ISO)
3"	80	88.9	2.0 ~ 20.0	5.0	10.35	7.0	P1008-H (ISO)
4"	100	114.3	2.0 ~ 25.0	5.4	14.50	7.0	P1009-H (ISO)
5"	125	139.7	2.0 ~ 25.0	5.4	17.89	7.0	P1010-H (ISO)
6"	150	168.3	2.0 ~ 25.0	7.1	28.23	7.0	P1012-H (ISO)
8"	200	219.1	2.0 ~ 25.0	8.0	41.65	7.0	P1013-H (ISO)
10"	250	273.0	2.0 ~ 25.0	8.8	57.34	7.0	P1014-H (ISO)
12"	300	323.9	2.6 ~ 25.0	10.0	77.41	7.0	P1015-H (ISO)
14"	350	355.6	2.6 ~ 25.0	11.0	93.48	7.0	P1016-H (ISO)
16"	400	406.4	2.6 ~ 25.0	12.5	121.43	7.0	P1017-H (ISO)
18"	450	457.0	3.2 ~ 25.0	14.2	155.07	7.0	P1018-H (ISO)
20"	500	508.0	3.2 ~ 25.0	16.0	194.14	7.0	P1019-H (ISO)
24"	600	610.0	3.2 ~ 25.0	17.5	255.71	7.0	P1020-H (ISO)

Note:

1. Dimensions follow listed sizes in Table 4 of EN 10224:2002. TPMC selects one practical wall thickness per application, with reference to EN 10255 Heavy series and ASME B36.10 SCH40.
2. Hydrostatic leak tightness test is performed at the lower of 70 bar or P = 20ST/D, where S is the stress corresponding to 70% of the specified minimum yield strength (TPMC calculates it with L235 grade).

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Chemical composition (%) per EN 10224 L235

C	Si	Mn	P	S
≤ 0.16	≤ 0.35	≤ 1.20	≤ 0.030	≤ 0.025

Note:
1. Elements not listed may be present but shall not be intentionally added without purchaser agreement, except for cast finishing elements.
2. Lower copper content (than EN 10020 permits) may be specified by purchaser to facilitate forming operations.

Mechanical properties per EN 10224 L235

Tensile strength Rm (MPa)	Yield strength Re (MPa)	Longitudinal elongation A (%)	Drift expanding test
360 ~ 500	≥ 235 (T ≤ 16 mm) ≥ 225 (T > 16 mm)	≥ 25	≥ 10% increase (d/D ratio ≤ 0.8)

Note: Drift expanding test applies to tubes with OD ≤ 150 mm and thickness ≤ 10 mm.

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Standard requirements

· Chemical analysis: Cast analysis complies with specification.

· Tensile test: Tensile, yield, and elongation tested per standard.

· Flattening test: Cold flattened to ≤ 67% of OD per EN ISO 8492. No cracks or imperfections.

· Drift expanding test: May replace flattening test (OD ≤ 150 mm, T ≤ 10 mm). Expanded with 60° angle until OD increase ≥ 10% (≥ 12% if d/D > 0.8). No cracks or imperfections.

· Weld bend test: Applicable to SAW tubes only (not required for ERW).

Leak tightness test

· Each tube is hydrostatically tested by default at the lower of 70 bar or P = 20ST/D. No leakage or visible deformation.

· At manufacturer's discretion, an electromagnetic test is alternative per EN 10246-1 (eddy current or flux leakage).

Hydrostatic test pressure formula

· The test pressure is the lower of 70 bar or the calculated value P = 20ST/D, whichever is lower.

Where:

P = Minimum hydrostatic test pressure (bar).

S = Pipe wall stress = 70% of the specified minimum yield strength (MPa).

T = Specified wall thickness (mm).

D = Specified outside diameter (mm).

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Dimensional tolerances

· Outside diameter: D ≤ 219.1 mm: ±1% (min. ±0.5 mm); D > 219.1 mm: ±0.75%.

· Wall thickness: ±10% or ±0.3 mm (whichever greater). External weld trimmed flush, internal bead height ≤ 0.5 + 0.05T.

· Cut length: if length 6 m, D < 406.4 mm: +10/-0 mm;
D ≥ 406.4 mm: +25/-0 mm.

· Weight: Not separately stated. (agreed tolerances may apply).

Other quality assurance

· Straightness: deviation ≤ 0.2% × L (tube length).

· Out-of-roundness: D/T ≤ 100: ≤ 2%; D/T ＞ 100: subject to agreement.

· 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.