

ASTM A135 ERW steel pipe

ASTM A135 ERW steel pipe from TPMC is produced by high-frequency welding of steel strip, featuring a longitudinal weld seam, precise dimensions and lightweight construction.

FM Approved, it provides reliable performance in water-based fire protection systems, including wet, dry, deluge, and preaction pipelines.

Additionally, our TPMC pipe excels in conveying gas, vapor, water, or other liquids, and is ideal for general structural applications.



- Certificate: FM Approved
- Standard: ASTM A135 Grade B / NFPA 13 / NFPA 14
- Length: 6m / 5.8m / 11.8m / 12m / 20ft, etc.
- End: Plain: square cut
Beveled: 37.5° angle per ASME B16.25
Roll-grooved: per AWWA C606
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 Schedule 10 pipe (Light wall)

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
3/4"	20	26.7	SCH10	2.11	1.28	17.2	P0302-SCH10 (ISO)
1"	25	33.4	SCH10	2.77	2.09	17.2	P0303-SCH10 (FM)
1-1/4"	32	42.2	SCH10	2.77	2.69	17.2	P0304-SCH10 (FM)
1-1/2"	40	48.3	SCH10	2.77	3.11	16.5	P0305-SCH10 (FM)
2"	50	60.3	SCH10	2.77	3.93	13.1	P0306-SCH10 (FM)
2-1/2"	65	73.0	SCH10	3.05	5.26	11.7	P0307-SCH10 (FM)
3"	80	88.9	SCH10	3.05	6.46	9.6	P0308-SCH10 (FM)
4"	100	114.3	SCH10	3.05	8.37	7.6	P0309-SCH10 (FM)
5"	125	141.3	SCH10	3.40	11.58	6.9	P0310-SCH10 (FM)
6"	150	168.3	SCH10	3.40	13.85	5.8	P0311-SCH10 (FM)

Note: For NPS 6", SCH10 wall thickness and weight are not listed in ASTM A135-2021. TPMC references ASME B36.10-2022 for these values.

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Available sizes for Schedule 40 pipe

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
1/2"	15	21.3	SCH40 (STD)	2.77	1.27	17.2	P0301-SCH40 (ISO)
3/4"	20	26.7	SCH40 (STD)	2.87	1.69	17.2	P0302-SCH40 (ISO)
1"	25	33.4	SCH40 (STD)	3.38	2.50	17.2	P0303-SCH40 (ISO)
1-1/4"	32	42.2	SCH40 (STD)	3.56	3.39	17.2	P0304-SCH40 (ISO)
1-1/2"	40	48.3	SCH40 (STD)	3.68	4.05	17.2	P0305-SCH40 (ISO)
2"	50	60.3	SCH40 (STD)	3.91	5.44	17.2	P0306-SCH40 (ISO)
2-1/2"	65	73.0	SCH40 (STD)	5.16	8.63	17.2	P0307-SCH40 (ISO)
3"	80	88.9	SCH40 (STD)	5.49	11.29	17.2	P0308-SCH40 (ISO)
4"	100	114.3	SCH40 (STD)	6.02	16.08	15.2	P0309-SCH40 (ISO)
5"	125	141.3	SCH40 (STD)	6.55	21.77	13.4	P0310-SCH40 (ISO)
6"	150	168.3	SCH40 (STD)	7.11	28.26	12.2	P0311-SCH40 (ISO)
8"	200	219.1	SCH40 (STD)	8.18	42.55	10.8	P0312-SCH40 (ISO)
10"	250	273.0	SCH40 (STD)	9.27	60.29	9.8	P0313-SCH40 (ISO)
12"	300	323.8	SCH40	10.31	79.71	9.2	P0314-SCH40 (ISO)
14"	350	355.6	SCH40	11.13	94.55	9.0	P0315-SCH40 (ISO)
16"	400	406.4	SCH40	12.70	123.31	9.0	P0316-SCH40 (ISO)
18"	450	457.0	XS	12.70	139.16	8.0	P0317-XS (ISO)
20"	500	508.0	XS	12.70	155.13	7.2	P0318-XS (ISO)
24"	600	609.6	XS	12.70	186.95	6.0	P0319-XS (ISO)

- Note:**
- For NPS 1/2" to 24", SCH40 dimension and weight are not listed in ASTM A135-2021. TPMC references ASME B36.10-2022 for these values.
 - Nominal (average) wall thickness is limited to 0.5" (12.70 mm) max in ASTM A135-2021. For NPS 18", 20" and 24", SCH40 walls exceed this limit, and TPMC uses Extra Strong (XS) wall of 0.5" (12.70 mm) instead.

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Chemical composition (%) per ASTM A135 Grade B

C	Mn	P	S
≤ 0.30	≤ 1.20	≤ 0.035	≤ 0.035

Mechanical properties per ASTM A135 Grade B

Tensile strength	Yield strength	Longitudinal elongation
≥ 60000 psi (415 MPa)	≥ 35000 psi (240 MPa)	20% ~ 30%

Note: Elongation conforms to the formula in Table 1 of ASTM A135-2021. As a reference, TPMC's typical longitudinal elongation values are ≥ 20 ~ 30%, meeting or exceeding the standard's requirements for all specified wall thicknesses.



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Standard requirements

- Post-weld heat treatment: The weld seam of Grade B ERW pipe shall be heat-treated after welding to a minimum of 1000°F (540°C), or processed equivalently, to ensure no untempered martensite remains.
- Heat analysis: Chemical composition verified by heat analysis.
- Tensile test: Tensile, yield, and elongation tested per standard.
- Flattening test: Three-stage cold flattening: to 2/3 OD (weld ductility, no cracks); to 1/3 OD (base metal ductility, no cracks); continued to walls meeting (soundness, no prior lamination/unsoundness).



Hydrostatic test

- Each pipe is subjected to a hydrostatic test at the specified pressure, held for at least 5 seconds with no leakage.
- Test pressures meet specification minimums but do not exceed 2500 psi (17.2 MPa).



Hydrostatic test pressure formula

- The minimum hydrostatic test pressure is calculated using the formula

$$P = 2St/D$$

Where:

P = Minimum hydrostatic test pressure (psi or MPa).

S = Pipe wall stress = 60% of the specified minimum yield strength (psi or MPa).

t = Specified wall thickness (inch or mm).

D = Specified outside diameter (inch or mm).

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Nondestructive electric test (NDE)

- As an alternative to the hydrostatic test and when accepted by the purchaser, each pipe may be examined using nondestructive electric test (NDE) in accordance with any of the following Practices:
 - ASTM E213 (ultrasonic),
 - ASTM E273 (weld ultrasonic),
 - ASTM E309 (eddy current),
 - ASTM E570 (flux leakage).



Dimensional tolerances

- Outside diameter: $\pm 1\%$.
- Wall thickness: Minimum at any point not more than 12.5% under nominal (no upper limit).
- Cut length: $+1/4"$ (6.4 mm) / $-0"$ per ASTM A530 (for specified length).
- Weight: $\pm 10\%$ per length for SCH10, $+10\%$ / -3.5% per length for SCH40 and carload weight not more than 1.75% under nominal.



Other quality assurance

- Straightness: Reasonably straight.
- 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.