

ASTM A53 seamless steel pipe

ASTM A53 seamless steel pipe from TPMC is manufactured by piercing solid billets using the advanced PQF process, ensuring a uniform, seamless structure with exceptional strength and reliability.

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

Additionally, our TPMC pipe is ideal for high-pressure mechanical applications and general service in oil, gas, water, and air lines.



- Certificate: UL Listed
- Standard: ASTM A53 Type S Grade B / UL 852 / 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/cut-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 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	4.8	P2101-SCH40 (UL)
3/4"	20	26.7	SCH40 (STD)	2.87	1.69	4.8	P2102-SCH40 (UL)
1"	25	33.4	SCH40 (STD)	3.38	2.50	4.8	P2103-SCH40 (UL)
1-1/4"	32	42.2	SCH40 (STD)	3.56	3.39	9.0	P2104-SCH40 (UL)
1-1/2"	40	48.3	SCH40 (STD)	3.68	4.05	9.0	P2105-SCH40 (UL)
2"	50	60.3	SCH40 (STD)	3.91	5.44	17.2	P2106-SCH40 (UL)
2-1/2"	65	73.0	SCH40 (STD)	5.16	8.63	17.2	P2107-SCH40 (UL)
3"	80	88.9	SCH40 (STD)	5.49	11.29	17.2	P2108-SCH40 (UL)
4"	100	114.3	SCH40 (STD)	6.02	16.07	15.2	P2109-SCH40 (UL)
5"	125	141.3	SCH40 (STD)	6.55	21.77	13.4	P2110-SCH40 (UL)
6"	150	168.3	SCH40 (STD)	7.11	28.26	12.3	P2111-SCH40 (UL)
8"	200	219.1	SCH40 (STD)	8.18	42.55	10.8	P2112-SCH40 (UL)
10"	250	273.0	SCH40 (STD)	9.27	60.29	9.9	P2113-SCH40 (UL)

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Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
12"	300	323.8	SCH40	10.31	79.70	9.2	P2114-SCH40 (UL)
14"	350	355.6	SCH40	11.13	94.55	9.0	P2115-SCH40 (UL)
16"	400	406.4	SCH40	12.70	123.30	9.0	P2116-SCH40 (ISO)
18"	450	457.0	SCH40	14.27	155.87	9.0	P2117-SCH40 (ISO)
20"	500	508.0	SCH40	15.09	183.42	8.6	P2118-SCH40 (ISO)
24"	600	610.0	SCH40	17.48	255.24	8.3	P2119-SCH40 (ISO)

Available sizes for Schedule 80 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	SCH80 (XS)	3.73	1.62	5.9	P2101-SCH80 (ISO)
3/4"	20	26.7	SCH80 (XS)	3.91	2.20	5.9	P2102-SCH80 (ISO)
1"	25	33.4	SCH80 (XS)	4.55	3.24	5.9	P2103-SCH80 (UL)
1-1/4"	32	42.2	SCH80 (XS)	4.85	4.47	13.1	P2104-SCH80 (UL)
1-1/2"	40	48.3	SCH80 (XS)	5.08	5.41	13.1	P2105-SCH80 (UL)
2"	50	60.3	SCH80 (XS)	5.54	7.48	17.2	P2106-SCH80 (UL)
2-1/2"	65	73.0	SCH80 (XS)	7.01	11.41	17.2	P2107-SCH80 (UL)
3"	80	88.9	SCH80 (XS)	7.62	15.27	17.2	P2108-SCH80 (UL)
4"	100	114.3	SCH80 (XS)	8.56	22.32	19.3	P2109-SCH80 (UL)
5"	125	141.3	SCH80 (XS)	9.52	30.94	19.3	P2110-SCH80 (UL)
6"	150	168.3	SCH80 (XS)	10.97	42.56	18.9	P2111-SCH80 (UL)
8"	200	219.1	SCH80 (XS)	12.70	64.64	16.8	P2112-SCH80 (UL)
10"	250	273.0	SCH80	15.09	95.97	16.0	P2113-SCH80 (ISO)
12"	300	323.8	SCH80	17.48	132.04	15.7	P2114-SCH80 (ISO)
14"	350	355.6	SCH80	19.05	158.10	15.5	P2115-SCH80 (ISO)
16"	400	406.4	SCH80	21.44	203.54	15.3	P2116-SCH80 (ISO)
18"	450	457.0	SCH80	23.83	254.57	15.1	P2117-SCH80 (ISO)
20"	500	508.0	SCH80	26.19	311.19	15.0	P2118-SCH80 (ISO)
24"	600	610.0	SCH80	30.96	441.78	14.7	P2119-SCH80 (ISO)

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Available sizes for standard (STD) pipe

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
12"	300	323.8	STD	9.52	73.78	8.5	P2114-STD (ISO)
14"	350	355.6	STD	9.52	81.25	7.7	P2115-STD (ISO)
16"	400	406.4	STD	9.52	93.17	6.8	P2116-STD (ISO)
18"	450	457.0	STD	9.52	105.10	6.1	P2117-STD (ISO)
20"	500	508.0	STD	9.52	117.02	5.4	P2118-STD (ISO)
24"	600	610.0	STD	9.52	140.88	4.5	P2119-STD (ISO)

Note: STD and SCH40 are identical for wall thickness up to NPS 10". For sizes larger than NPS 10", STD has a fixed wall thickness of 3/8" (9.52 mm).

Available sizes for extra-strong (XS) pipe

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
10"	250	273.0	XS	12.70	81.53	13.4	P2113-XS (ISO)
12"	300	323.8	XS	12.70	97.43	11.4	P2114-XS (ISO)
14"	350	355.6	XS	12.70	107.39	10.3	P2115-XS (ISO)
16"	400	406.4	XS	12.70	123.30	9.0	P2116-XS (ISO)
18"	450	457.0	XS	12.70	139.20	8.1	P2117-XS (ISO)
20"	500	508.0	XS	12.70	155.12	7.2	P2118-XS (ISO)
24"	600	610.0	XS	12.70	186.94	6.1	P2119-XS (ISO)

Note: XS and SCH80 are identical for wall thickness up to NPS 8". For sizes larger than NPS 8", XS has a fixed wall thickness of 1/2" (12.70 mm).

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Chemical composition (%) per ASTM A53 Type S Grade B

C	Mn	P	S	Cu	Ni	Cr	Mo	V
≤ 0.30	≤ 1.20	≤ 0.05	≤ 0.045	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.15	≤ 0.08

Note:

1. Carbon-Manganese adjustment: For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum is permitted, up to a maximum of 1.65%.
2. Residual elements limit: The combined content of Cu, Ni, Cr, Mo, and V shall not exceed 1.00%.

Mechanical properties per ASTM A53 Type S 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 2 and the requirements of Table X4.1/X4.2 of ASTM A53-2024. 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

- Tensile test: Tensile, yield, and elongation tested per standard.
- Bend test: NPS ≤ 2", cold bent 90° around a 12 x OD mandrel, no cracks.
- Flattening test: Although not required for seamless pipe, pipe shall be capable of meeting flattening test requirements.



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) for NPS ≤ 3" and 2800 psi (19.3 MPa) for larger sizes.



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 hydrostatic test, nondestructive electric test (NDE) is permitted for full-body examination in accordance with any of the following Practices:
ASTM E213 (ultrasonic),
ASTM E309 (eddy current),
ASTM E570 (flux leakage).



Dimensional tolerances

- Outside diameter: $\pm 1/64"$ (0.4 mm) for NPS $\leq 1-1/2"$, $\pm 1\%$ for NPS $\geq 2"$.
- Wall thickness: Minimum 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: $\pm 10\%$; measured per bundle for NPS $\leq 4"$, per individual length for NPS $> 4"$.



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.