ASTM A312 welded stainless steel pipe

ASTM A312 welded stainless steel pipe (304/316) from TPMC is manufactured by automatic welding with no filler metal, featuring a longitudinal seam, precise dimensions, and lightweight construction.
As austenitic stainless steel, it offers excellent formability, non-magnetic properties, and superior corrosion resistance. Suitable for high-temperature and general corrosive service, it is widely used in petroleum, chemical, marine, automotive, and mechanical structural applications.

- Certificate: ISO
- Standard: ASTM A312 Welded (WLD), TP304 / TP304L / TP316 / TP316L
- 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: Pickling white / No.2B matte finish / BA finish (Bright Annealed)

Available sizes for Schedule 5S 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	5S	1.65	0.80	16.0	P1901-5S (ISO)
3/4"	20	26.7	5S	1.65	1.02	13.0	P1902-5S (ISO)
1"	25	33.4	5S	1.65	1.29	10.0	P1903-5S (ISO)
1-1/4"	32	42.2	5S	1.65	1.65	8.0	P1904-5S (ISO)
1-1/2"	40	48.3	5S	1.65	1.90	7.0	P1905-5S (ISO)
2"	50	60.3	5S	1.65	2.39	5.5	P1906-5S (ISO)
2-1/2"	65	73.0	5S	2.11	3.69	6.0	P1907-5S (ISO)
3"	80	88.9	5S	2.11	4.52	5.0	P1908-5S (ISO)
4"	100	114.3	5S	2.11	5.84	4.0	P1909-5S (ISO)
5"	125	141.3	5S	2.77	9.46	4.0	P1910-5S (ISO)
6"	150	168.3	5S	2.77	11.31	3.5	P1911-5S (ISO)
8"	200	219.1	5S	2.77	14.78	2.5	P1912-5S (ISO)
10"	250	273.0	5S	3.40	22.61	2.5	P1913-5S (ISO)
12"	300	323.8	5S	3.96	31.24	2.5	P1914-5S (ISO)
14"	350	355.6	5S	3.96	34.34	2.5	P1915-5S (ISO)
16"	400	406.4	5S	4.19	41.56	2.0	P1916-5S (ISO)

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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	
18"	450	457.2	5S	4.19	46.81	2.0	P1917-5S (ISO)
20"	500	508.0	5S	4.78	59.32	2.0	P1918-5S (ISO)
24"	600	609.6	5S	5.54	82.53	2.0	P1919-5S (ISO)

Note:

1. TPMC references ASME B36.19M-2022 for austenitic stainless steel pipe weight, which is about 2% greater than carbon steel equivalents.
2. Test pressure is not tabulated in ASTM A312-2025. TPMC calculates it using the formula P = 2St/D (304 grade), with pressure not to exceed 2500 psi (17.0 MPa) for NPS 1/2" to 3", and 2800 psi (19.0 MPa) for NPS > 3", in accordance with the standard ASTM A999. Actual mill test pressures are documented in the MTC/MTR.

Available sizes for Schedule 10S 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	10S	2.11	1.02	17.0	P1901-10S (ISO)
3/4"	20	26.7	10S	2.11	1.31	16.0	P1902-10S (ISO)
1"	25	33.4	10S	2.77	2.13	17.0	P1903-10S (ISO)
1-1/4"	32	42.2	10S	2.77	2.75	14.0	P1904-10S (ISO)
1-1/2"	40	48.3	10S	2.77	3.17	12.0	P1905-10S (ISO)
2"	50	60.3	10S	2.77	4.01	9.0	P1906-10S (ISO)
2-1/2"	65	73.0	10S	3.05	5.37	9.0	P1907-10S (ISO)
3"	80	88.9	10S	3.05	6.59	7.0	P1908-10S (ISO)
4"	100	114.3	10S	3.05	8.54	5.5	P1909-10S (ISO)
5"	125	141.3	10S	3.40	11.79	5.0	P1910-10S (ISO)
6"	150	168.3	10S	3.40	14.10	4.0	P1911-10S (ISO)
8"	200	219.1	10S	3.76	20.37	3.5	P1912-10S (ISO)
10"	250	273.0	10S	4.19	28.33	3.0	P1913-10S (ISO)
12"	300	323.8	10S	4.57	36.70	3.0	P1914-10S (ISO)
14"	350	355.6	10S	4.78	42.18	3.0	P1915-10S (ISO)
16"	400	406.4	10S	4.78	48.29	2.5	P1916-10S (ISO)
18"	450	457.2	10S	4.78	54.40	2.0	P1917-10S (ISO)
20"	500	508.0	10S	5.54	70.02	2.0	P1918-10S (ISO)
24"	600	609.6	10S	6.35	96.36	2.0	P1919-10S (ISO)

Note:

1. TPMC references ASME B36.19M-2022 for austenitic stainless steel pipe weight, which is about 2% greater than carbon steel equivalents.
2. Test pressure is not tabulated in ASTM A312-2025. TPMC calculates it using the formula P = 2St/D (304 grade), with pressure not to exceed 2500 psi (17.0 MPa) for NPS 1/2" to 3", and 2800 psi (19.0 MPa) for NPS > 3", in accordance with the standard ASTM A999. Actual mill test pressures are documented in the MTC/MTR.

ASTM A312 welded stainless steel pipe

Available sizes for Schedule 40S 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	40S	2.77	1.29	17.0	P1901-40S (ISO)
3/4"	20	26.7	40S	2.87	1.72	17.0	P1902-40S (ISO)
1"	25	33.4	40S	3.38	2.55	17.0	P1903-40S (ISO)
1-1/4"	32	42.2	40S	3.56	3.46	17.0	P1904-40S (ISO)
1-1/2"	40	48.3	40S	3.68	4.13	16.0	P1905-40S (ISO)
2"	50	60.3	40S	3.91	5.55	13.0	P1906-40S (ISO)
2-1/2"	65	73.0	40S	5.16	8.81	15.0	P1907-40S (ISO)
3"	80	88.9	40S	5.49	11.52	13.0	P1908-40S (ISO)
4"	100	114.3	40S	6.02	16.40	11.0	P1909-40S (ISO)
5"	125	141.3	40S	6.55	22.20	10.0	P1910-40S (ISO)
6"	150	168.3	40S	7.11	28.83	9.0	P1911-40S (ISO)
8"	200	219.1	40S	8.18	43.40	8.0	P1912-40S (ISO)
10"	250	273.0	40S	9.27	61.50	7.0	P1913-40S (ISO)
12"	300	323.8	40S	9.52	75.26	6.0	P1914-40S (ISO)
14"	350	355.6	40S	9.52	82.88	5.5	P1915-40S (ISO)
16"	400	406.4	40S	9.52	95.04	5.0	P1916-40S (ISO)
18"	450	457.2	40S	9.52	107.21	4.5	P1917-40S (ISO)
20"	500	508.0	40S	9.52	119.37	4.0	P1918-40S (ISO)
24"	600	609.6	40S	9.52	143.70	3.0	P1919-40S (ISO)

Note:

1. TPMC references ASME B36.19M-2022 for austenitic stainless steel pipe weight, which is about 2% greater than carbon steel equivalents.
2. Test pressure is not tabulated in ASTM A312-2025. TPMC calculates it using the formula P = 2St/D (304 grade), with pressure not to exceed 2500 psi (17.0 MPa) for NPS 1/2" to 3", and 2800 psi (19.0 MPa) for NPS > 3", in accordance with the standard ASTM A999. Actual mill test pressures are documented in the MTC/MTR.

Chemical composition (%) per ASTM A312 304/316

Grade	C	Mn	P	S	Si	Cr	Ni	Mo	Other
TP304	≤ 0.08	≤ 2.00	≤ 0.045	≤ 0.030	≤ 1.00	18.0 ~ 20.0	8.0 ~ 11.0	...	...
TP304L	≤ 0.035	≤ 2.00	≤ 0.045	≤ 0.030	≤ 1.00	18.0 ~ 20.0	8.0 ~ 13.0	...	...
TP316	≤ 0.08	≤ 2.00	≤ 0.045	≤ 0.030	≤ 1.00	16.0 ~ 18.0	10.0 ~ 14.0	2.0 ~ 3.0	...
TP316L	≤ 0.035	≤ 2.00	≤ 0.045	≤ 0.030	≤ 1.00	16.0 ~ 18.0	10.0 ~ 14.0	2.0 ~ 3.0	...

Note: Where ellipses (…) appear, there is no requirement for the element, and analysis need not be determined or reported.

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Mechanical properties per ASTM A312 304/316

Grade	Tensile strength	Yield strength	Longitudinal elongation
TP304	≥ 75 ksi (515 MPa)	≥ 30 ksi (205 MPa)	≥ 35%
TP304L	≥ 70 ksi (485 MPa)	≥ 25 ksi (170 MPa)	≥ 35%
TP316	≥ 75 ksi (515 MPa)	≥ 30 ksi (205 MPa)	≥ 35%
TP316L	≥ 70 ksi (485 MPa)	≥ 25 ksi (170 MPa)	≥ 35%

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Standard requirements

· Heat Treatment: Furnished in solution-annealed condition at ≥1900°F (1040°C), followed by quenching in water or rapid cooling.

· Product analysis: Chemical composition verified by product analysis.

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

· Flattening test: Performed on a sufficient number per ASTM A999.

· Bending test: A transverse guided bend test may be substituted for the flattening test.

Hydrostatic test (when performed)

· 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 (17.0 MPa) for NPS ≤ 3" and 2800 psi (19.0 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 (MPa).

S = 50% of the specified minimum yield strength (MPa, for austenitic stainless steel).

t = Specified wall thickness (mm).

D = Specified outside diameter (mm).

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Nondestructive electric test (NDE)

· As an alternative to hydrostatic test, nondestructive electric test (NDE) is permitted for full length of each pipe in accordance with any of the following Practices:
ASTM E213 (ultrasonic),
ASTM E426 (eddy current),
ASTM E570 (flux leakage).

Dimensional tolerances

· Outside diameter: per ASTM A999, +1/64" / -1/32 for NPS ≤ 1-1/2", ±1/32" for NPS 2" to 4", +1/16" / -1/32" for NPS 5" to 8", +3/32" / -1/32" for NPS 10" to 18", +1/8" / -1/32" for NPS 20" to 24".

· Wall thickness: Minimum not more than 12.5% under nominal (no upper limit).

· Cut length: +1/4" (6.4 mm) / -0" per ASTM A999 (for specified length).

· Weight: NPS ≤ 12", +10% / -3.5%; measured per bundle for NPS ≤ 4", per individual length for NPS > 4".

Other quality assurance

· Straightness: Reasonably straight.

· Coating inspection: Not applicable (per ASTM A312, no external coating is required).

· 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.