

ASTM A795 seamless steel pipe

Seamless steel pipe (SMLS) is formed by drawing a solid billet over a piercing rod to create the hollow shell, without welding or seam. It is suitable for bending and cutting. The advantage of seamless steel pipe is the ability of with standing higher pressure.

ASTM A795 specification also covers seamless steel pipe, which is intended for use in water based fire protection systems for water distribution or valve trim application, such as wet, dry, preaction, or deluge sprinkler systems.



- Certificate: ISO
- Standard: ASTM A795, Type S, Grade B
- Length: 6m / 5.8m / 11.8m / 12m / 20ft, etc.
- End: Plain (square cut) / beveled to 30° / roll groove as AWWA C606 / NPT thread as ANSI B1.20.1 / BSPT as ISO 7-1
- Surface: Fusion bonded epoxy (FBE) / polyester resin / hot dip galvanized / red paint / black paint, etc.

Available size for Sch10 pipe (Light-weight pipe)

Size			Thickness	Mass	Test pressure	Ref. No.
NPS	DN	OD (mm)	T (mm)	kg/m	MPa	
3/4"	20	26.7	2.11	1.28	4.8	P1302
1"	25	33.4	2.77	2.09	4.8	P1303
1-1/4"	32	42.2	2.77	2.69	6.9	P1304
1-1/2"	40	48.3	2.77	3.11	6.9	P1305
2"	50	60.3	2.77	3.93	6.9	P1306
2-1/2"	65	73.0	3.05	5.26	6.9	P1307
3"	80	88.9	3.05	6.46	6.9	P1308
4"	100	114.3	3.05	8.37	8.3	P1309
5"	125	141.3	3.40	11.56	8.3	P1310
6"	150	168.3	3.40	13.83	6.9	P1311
8"	200	219.1	4.78	25.26	5.5	P1312
10"	250	273.1	4.78	31.63	4.8	P1313

Note: For pipe NPS 8" and NPS 10", the thickness follows ASTM A795, not Sch10 of ASME B36.10M (8"/3.76mm, 10"/4.19mm).

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Available size for Sch40 pipe (Standard-weight pipe)

Size			Thickness	Mass	Test pressure	Ref. No.
NPS	DN	OD (mm)	T (mm)	kg/m	MPa	
1/2"	15	21.3	2.77	1.27	4.8	P1321
3/4"	20	26.7	2.87	1.69	4.8	P1322
1"	25	33.4	3.38	2.50	4.8	P1323
1-1/4"	32	42.2	3.56	3.39	6.9	P1324
1-1/2"	40	48.3	3.68	4.05	6.9	P1325
2"	50	60.3	3.91	5.44	6.9	P1326
2-1/2"	65	73.0	5.16	8.63	6.9	P1327
3"	80	88.9	5.49	11.29	6.9	P1328
4"	100	114.3	6.02	16.08	8.3	P1329
5"	125	141.3	6.55	21.77	8.3	P1330
6"	150	168.3	7.11	28.26	8.3	P1331
8"	200	219.1	7.04	36.82	8.3	P1332
10"	250	273.1	7.80	51.03	6.9	P1333

Note: For pipe NPS 8" and NPS 10", the thickness follows Sch30 of ASME B36.10M, not Sch40 of ASME B36.10M (8"/8.18mm, 10"/9.27mm).

Permissible variations

Size			OD tolerance	THK tolerance		Remark
NPS	DN	OD (mm)	mm	Sch10 (mm)	Sch40 (mm)	
1/2"	15	21.3	20.9 ~ 21.7	/	2.42 ~ 3.32	1. For pipe ≤ NPS 1-1/2", OD tolerance is ±0.4mm. 2. For pipe ≥ NPS 2", OD tolerance is ± 1%. 3. The min THK at any point is not more than 12.5%. 4. The max THK is not defined in ASTM A795, and TPMC refers to ASTM A530 with 20%, 22.5% or 15% as t/D ratio.
3/4"	20	26.7	26.3 ~ 27.1	1.85 ~ 2.53	2.51 ~ 3.44	
1"	25	33.4	33.0 ~ 33.8	2.42 ~ 3.32	2.96 ~ 4.06	
1-1/4"	32	42.2	41.8 ~ 42.6	2.42 ~ 3.32	3.12 ~ 4.27	
1-1/2"	40	48.3	47.9 ~ 48.7	2.42 ~ 3.32	3.22 ~ 4.42	
2"	50	60.3	59.7 ~ 60.9	2.42 ~ 3.32	3.42 ~ 4.69	
2-1/2"	65	73.0	72.3 ~ 73.7	2.67 ~ 3.66	4.52 ~ 6.19	
3"	80	88.9	88.0 ~ 89.8	2.67 ~ 3.74	4.80 ~ 6.31	
4"	100	114.3	113.2 ~ 115.4	2.67 ~ 3.74	5.27 ~ 7.37	
5"	125	141.3	139.9 ~ 142.7	2.98 ~ 4.17	5.73 ~ 8.02	
6"	150	168.3	166.6 ~ 170.0	2.98 ~ 4.17	6.22 ~ 8.71	
8"	200	219.1	216.9 ~ 221.3	4.18 ~ 5.86	6.16 ~ 8.62	
10"	250	273.1	270.4 ~ 275.8	4.18 ~ 5.86	6.83 ~ 9.56	

Note:

- For exact length (cut length), length tolerance is -0.0mm / +6.0mm, as ASTM A530.
- The weight (mass) tolerance of unit pipe is ±5%.
- For pipe ≤ NPS 4", weight is measured as per bundle. For pipe > NPS 4", measured as per individual length.

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Chemical compositions (%) and Mechanical properties

C	Mn	P	S	Si	Cu	Cr	Mo	V
≤ 0.30	≤ 1.20	≤ 0.035	≤ 0.035	-	-	-	-	-
Tensile strength / psi (MPa)			Yield strength / psi (MPa)			Longitudinal elongation (%)		
≥ 60000 (415)			≥ 35000 (240)			≥ 19		

* The mechanical properties are not defined in ASTM A795, and TPMC refers to ASTM A53, Grade B.



Hydrostatic test and NDE test

- It shall be applied to each pipe ≥ 5s, without leakage through the pipe.
- The min test pressure shall not exceed 2500 psi (17.2 MPa) for pipe ≤ NPS 3", nor 2800 psi (19.3 MPa) for pipe > NPS 3", refer to ASTM A53.
- Nondestructive electric test (NDE) is alternative to hydrostatic test, including ASTM E213 Ultrasonic testing, ASTM E309 Eddy current examination, or ASTM E570 Flux leakage examination.



Other tests

- Tensile test, bending test and flattening test.
- Straightness: The finished pipe shall be reasonably straight.
- Ovality (out of roundness): It is included in OD tolerance. For thin-wall pipe, any one cross-section shall not exceed 1.5% of OD (Refer to ASTM A530).
- Surface / coating test.
- Quantity and weight measurement.