

## ASTM A795 ERW steel pipe

ERW steel pipe is formed by rolling strip and welding the seam, with tighter dimensional tolerances and less weight. The weld seam is heat treated after welding that no untempered martensite remains, and the weld flash can be removed from both inner and outer surfaces.

ASTM A795 ERW pipe 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: UL Listed / FM Approved
- Standard: ASTM A795, Type E, Grade B / UL 852
- 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	P0202 (UL/FM)
1"	25	33.4	2.77	2.09	4.8	P0203 (UL/FM)
1-1/4"	32	42.2	2.77	2.69	6.9	P0204 (UL/FM)
1-1/2"	40	48.3	2.77	3.11	6.9	P0205 (UL/FM)
2"	50	60.3	2.77	3.93	6.9	P0206 (UL/FM)
2-1/2"	65	73.0	3.05	5.26	6.9	P0207 (UL/FM)
3"	80	88.9	3.05	6.46	6.9	P0208 (UL/FM)
4"	100	114.3	3.05	8.37	8.3	P0209 (UL/FM)
5"	125	141.3	3.40	11.56	8.3	P0210 (UL/FM)
6"	150	168.3	3.40	13.83	6.9	P0211 (UL/FM)
8"	200	219.1	4.78	25.26	5.5	P0212 (UL/FM)
10"	250	273.1	4.78	31.63	4.8	P0213 (UL/FM)

**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	P0221 (ISO)
3/4"	20	26.7	2.87	1.69	4.8	P0222 (ISO)
1"	25	33.4	3.38	2.50	4.8	P0223 (UL/FM)
1-1/4"	32	42.2	3.56	3.39	6.9	P0224 (UL/FM)
1-1/2"	40	48.3	3.68	4.05	6.9	P0225 (UL/FM)
2"	50	60.3	3.91	5.44	6.9	P0226 (UL/FM)
2-1/2"	65	73.0	5.16	8.63	6.9	P0227 (UL/FM)
3"	80	88.9	5.49	11.29	6.9	P0228 (UL/FM)
4"	100	114.3	6.02	16.08	8.3	P0229 (UL/FM)
5"	125	141.3	6.55	21.77	8.3	P0230 (UL/FM)
6"	150	168.3	7.11	28.26	8.3	P0231 (UL/FM)
8"	200	219.1	7.04	36.82	8.3	P0232 (UL/FM)
10"	250	273.1	7.80	51.03	6.9	P0233 (UL/FM)

**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:**

1. For exact length (cut length), length tolerance is -0.0mm / +6.0mm, as ASTM A530.
2. The weight (mass) tolerance of unit pipe is ±5%.
3. 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.

### Note:

The formula of hydrostatic test pressure follows ASTM A53:  $P = 2St/D$ .

P = Minimum hydrostatic test pressure in psi or MPa.

S = Pipe wall stress in psi or MPa, 60% of the minimum yield strength.

t = Pipe wall thickness in inch or mm.

D = Pipe outside diameter in inch or mm.



### Other tests

- Tensile test, bending test and flattening test.
- Permissible variations: tolerance on outer diameter, thickness, length.
- 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.