

## ASTM A53 ERW steel pipe

ASTM A53 ERW steel pipe is formed by rolling strip and welding the seam, with precise dimension and light weight. It can be used for water, steam and air conveyance. It is also weldable and can be used in structural applications.



- Certificate: UL Listed / FM Approved
- Standard: ASTM A53, 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

Size			Thickness	Mass	Test pressure	Ref. No.
NPS	DN	OD (mm)	T (mm)	kg/m	MPa	
1/2"	15	21.3	2.11	1.00	4.8	P0101 (ISO)
3/4"	20	26.7	2.11	1.28	4.8	P0102 (ISO)
1"	25	33.4	2.77	2.09	4.8	P0103 (ISO)
1-1/4"	32	42.2	2.77	2.69	9.0	P0104 (ISO)
1-1/2"	40	48.3	2.77	3.11	9.0	P0105 (ISO)
2"	50	60.3	2.77	3.93	13.2	P0106 (ISO)
2-1/2"	65	73.0	3.05	5.26	12.0	P0107 (ISO)
3"	80	88.9	3.05	6.46	9.9	P0108 (ISO)
4"	100	114.3	3.05	8.37	7.7	P0109 (ISO)
5"	125	141.3	3.40	11.56	6.9	P0110 (ISO)
6"	150	168.3	3.40	13.83	5.8	P0111 (ISO)
8"	200	219.1	3.76	19.97	4.9	P0112 (ISO)
10"	250	273.0	4.19	27.78	4.4	P0113 (ISO)
12"	300	323.8	4.57	35.98	4.1	P0114 (ISO)
14"	350	355.6	6.35	54.69	5.2	P0115 (ISO)
16"	400	406.4	6.35	62.65	4.6	P0116 (ISO)
18"	450	457.0	6.35	70.57	4.0	P0117 (ISO)
20"	500	508.0	6.35	78.56	3.6	P0118 (ISO)
24"	600	610.0	6.35	94.53	3.0	P0119 (ISO)

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## Available size for Sch40 (STD) pipe

Size			Thickness T (mm)		Test pressure (Mpa)		Ref. No.
NPS	DN	OD (mm)	Sch40	STD	Sch40	STD	
1/2"	15	21.3	2.77	2.77	4.8	4.8	P0121 (UL/FM)
3/4"	20	26.7	2.87	2.87	4.8	4.8	P0122 (UL/FM)
1"	25	33.4	3.38	3.38	4.8	4.8	P0123 (UL/FM)
1-1/4"	32	42.2	3.56	3.56	9.0	9.0	P0124 (UL/FM)
1-1/2"	40	48.3	3.68	3.68	9.0	9.0	P0125 (UL/FM)
2"	50	60.3	3.91	3.91	17.2	17.2	P0126 (UL/FM)
2-1/2"	65	73.0	5.16	5.16	17.2	17.2	P0127 (UL/FM)
3"	80	88.9	5.49	5.49	17.2	17.2	P0128 (UL/FM)
4"	100	114.3	6.02	6.02	15.2	15.2	P0129 (UL/FM)
5"	125	141.3	6.55	6.55	13.4	13.4	P0130 (UL/FM)
6"	150	168.3	7.11	7.11	12.3	12.3	P0131 (UL/FM)
8"	200	219.1	8.18	8.18	10.8	10.8	P0132 (UL/FM)
10"	250	273.0	9.27	9.27	9.9	9.9	P0133 (UL/FM)
12"	300	323.8	10.31	9.52	9.2	8.5	P0134 (UL)
14"	350	355.6	11.13	9.52	9.0	7.7	P0135 (ISO)
16"	400	406.4	12.70	9.52	9.0	6.8	P0136 (ISO)
18"	450	457.0	14.27	9.52	9.0	6.1	P0137 (ISO)
20"	500	508.0	15.09	9.52	8.6	5.4	P0138 (ISO)
24"	600	610.0	17.48	9.52	8.3	4.5	P0139 (ISO)

## Chemical compositions (%)

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

\* For each reduction of 0.01 % below the specified carbon max, an increase of 0.06 % manganese will be permitted up to a max of 1.65 %.

\* The total composition of five elements for Cu, Ni, Cr, Mo and V (Copper, Nickel, Chromium, Molybdenum, and Vanadium) shall not exceed 1%.

## Mechanical properties

Tensile strength / psi (MPa)	Yield strength / psi (MPa)	Longitudinal elongation (%)
≥ 60000 (415)	≥ 35000 (240)	≥ 19

\* The elongation value conforms to TABLE 2 and TABLE X4.1/X4.2, and TPMC refers to normal min value of 19%.

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## Hydrostatic test and NDE test

- It shall be applied to each pipe  $\geq 5s$ , without leakage through the pipe.
- The min test pressure need not exceed 2500 psi (17.2 MPa) for pipe  $\leq$  NPS 3", nor 2800 psi (19.3 MPa) for pipe  $>$  NPS 3".
- The weld seam of each ERW pipe  $\geq$  NPS 2" shall be tested with a nondestructive electric test (NDE) in accordance with ASTM E213 Ultrasonic testing, ASTM E273 Ultrasonic examination of weld, ASTM E309 Eddy current examination, or ASTM E570 Flux leakage examination.

### Note:

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

P = Minmum 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.