

Pipe & Tube Reference Guide

Common Specifications



A-53 Seamless, Welded

Chemical & Mechanical

	C (Max)	Mn (Max)	YS (Min)	TS (Min)
Grade A	.25	.95	30,000	48,000
Grade B	.30	1.20	35,000	60,000

Size Range: 1/8" through 24" O.D.

Hydrostatic Tested: Yes

O.D. Tolerance: 2" and larger +/- 1% of diameter

Wall Tolerance: Minimum .875 times Nominal

A-106 Seamless Carbon Steel Pipe for High Temperature Service

Chemical & Mechanical

	C (Max)	Mn	S (Min)	YS (Min)	TS (in)	Elong* (Min)
Grade A	.25	.27/1.93	.10	30,000	48,000	28
Grade B	.30	.29/1.06	.10	35,000	60,000	22
Grade C	.35	.29/1.06	.10	40,000	70,000	20

* Longitudinal, for Standard 50mm Gauge Length

Size Range: 1/8" through 24" O.D.

Hydrostatic Tested: Yes

O.D. Tolerance

1/8" to 1 1/2"	Over .015"	Under .015"
Over 1 1/2" to 4"	Over .031"	Under .031"
Over 4" to 8"	Over .062"	Under .031"
Over 8" to 18"	Over .093"	Under .031"
Over 18"	Over .125"	Under .031"

Wall Tolerance: Minimum: Must be .875 times Nominal

Maximum: Determined by weight (see Spec)

API-5L Seamless, Welded Line Pipe

Chemical & Mechanical

Grade B#	C (Max)	Mn (Max)	YS (Min)	TS (Min)
Seamless	.27	1.15	36,000	60,000
Welded	.26	1.1	36,000	60,000

Size Range: 1/8" through 48" O.D.

Hydrostatic Tested: Yes

O.D. Tolerance

4 1/2" to 18"	Over .75%	Under .75%
20" & Over	Over 1%	Under 1%

Wall Tolerance

Seamless & Welded 3" OD	Over 18%	Under 12.5%
Seamless 4" OD & Larger	Over 15%	Under 12.5%
Welded 4" to 18"	Over 15%	Under 12.5%
Welded 20" & Larger	Over 17.5%	Under 10%

Weld area not limited by over tolerance

A-335 Seamless Alloy High Temperature Pipe

This high temperature service pipe is suitable for bending, van stone flanging and similar forming operations, and for fusion welding. A-335 must be ordered to the grade suitable to the temperature range and application. The ferritic steels in this specification are low and intermediate alloy steels containing up to and including 10% chromium for corrosion resistance.

Sizes: Up through 24" ID SRL and DRL in stock; Inquire on other

Traceability: Original mill certifications on all inventory

Special Requirements: Supplemental Testing available

Marking: Special markings, color coding & packaging available

Fabrication: Cutting, threading, grooving

See other side for dimensions and weights for plain end pipe.



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A-178 / A-214 Electric Welded Boiler and Heat Exchanger Tube

Scope: This specification is for minimum-wall-thickness welded tubes made of carbon steel intended for boiler tubes, boiler flues, super heater flues, and heat exchanger and condenser tubes.

Testing: Crush Test – When requested, flattening, flange test, hydrostatic, Brinell or Rockwell hardness.

Sizes: 1/2" through 5"

Carbon Max.	Manganese	Phosphorus	Sulfur
0.18	0.27-0.63	0.050	0.060

Tubing is heat treated after welding and free from scale. Harness 72 HRB.

MIL-T-20157C / MIL-P-24691/1 Tube & Pipe, Carbon Steel, Seamless

Scope: This specification covers seamless carbon steel tube and pipe for various services such as oil, water, steam and gas for use at temperatures not over 775 degrees Fahrenheit (F).

Chemical Requirements & Chemical Components

Type	Carbon (max) %	Manganese %	Phosphorus (max.) %	Sulfur (max.) %	Silicon (max.) %
E	.30	0.29-1.06	.048	.045	.10

¹The molybdenum and chromium content shall not exceed 0.25 percent each. The copper content shall not exceed 0.35 percent.

Mechanical Properties

Elongation in 2 inches (minimum longitudinal)

Type	Tensile strength (min.) p.s.i.	Yield point (min.) p.s.i.	Full section tests percent	Type RP
E	60,000	35,000	30.0	22.0

²Seamless steel tube and pipe shall be of the following types, as specified:

Working pressure (p.s.i.) As specified

SA / A213

Scope: This specification covers minimum-wall-thickness seamless ferritic and austenitic steel boiler and superheater tubes and austenitic steel heat exchanger tubes, designated by grades.

Chemical Analysis

Grade	Carbon	Manganese	Phosphorus Max.	Sulfur Max.	Silicon	Chromium	Molybdenum
T-11	.05 min., .15 max.	.30-.60	.025	.025	.50 to 1.00	1.00 to 1.50	.44 to .65
T-12	.05 min., .15 max.	.30-.61	.025	.025	.50 max	.80 to 1.25	.44 to .65

Mechanical, min ksi

	Tensile	Yield	Elongation
T-11	60	30	30
T-12	60	32	30

Testing: Tension testing, flattening, flaring, hardness, hydrostatic or nondestructive electric test.

Sizes: 1/8" OD to 5" OD

Walls as required.

SA / 210

Scope: This specification covers minimum-wall-thickness seamless medium steel boiler tubes, boiler flues, safe ends, arch and stay tubes, and superheater tubes.

Chemical Analysis

Grade	Carbon Max.	Manganese	Phosphorus Max.	Sulfur Max.	Silicon Min.
A-1	.27	.93	.035	.035	.10
Grade C	.35	.29-1.06	.035	.035	.10

Mechanical, min. ksi

Grade	Tensile	Yield	Elongation
A-1	60	37	30
Grade C	70	40	30

Testing: Tension testing, flattening, flaring, hardness, hydrostatic or nondestructive electric test.

Sizes: 1/2" OD to 5" OD Walls as required.

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Dimension & Weight Chart

Common Specifications



Pipe Size	O.D. in Inches	10	0.188	20	30	STD	40	60	XS	80	100	120	140	160	XXS
		Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.	Wall / In. Wt./Ft.
1/8	0.405					.068 .24	.068 .24		.095 .31	.095 .31					
1/4	0.540					.088 .43	.088 .43		.119 .54	.119 .54					
3/8	0.675					.091 .57	.091 .57		.126 .74	.126 .74					
1/2	0.840					.109 .85	.109 .85		.147 1.09	.147 1.09				.188 1.31	.294 1.72
3/4	1.050					.113 1.13	.113 1.13		.154 1.48	.154 1.48				.219 1.95	.308 2.44
1	1.315					.133 1.68	.113 1.68		.179 2.17	.179 2.17				.250 2.85	.358 3.66
1 1/4	1.660	.109 1.81				.140 2.27	.140 2.27		.191 3.00	.191 3.00				.250 3.77	.382 5.22
1 1/2	1.900	.109 2.09				.145 2.72	.145 2.72		.200 3.63	.200 3.63				.281 4.86	.400 6.41
2	2.375	.109 2.64				.154 3.66	.154 3.66		.218 5.03	.218 5.03				.344 7.47	.436 9.04
2 1/2	2.875	.120 3.53	.188 5.40			.203 5.80	.203 5.80		.276 7.67	.276 7.67				.375 10.02	.552 13.71
3	3.500	.120 4.34	.188 6.66			.216 7.58	.216 7.58		.300 10.26	.300 10.26				.438 14.34	.600 18.60
3 1/2	4.000	.120 4.98	.188 7.66			.226 9.12	.226 9.12		.318 12.52	.318 12.52					.636 22.87
4	4.500	.120 5.62	.188 8.67			.237 10.80	.237 10.80		.337 15.00	.337 15.00		.438 19.02		.531 22.53	.674 27.57
5	5.563	.134 7.78				.258 14.63	.258 14.63		.375 20.80	.375 20.80		.500 27.06		.625 32.99	.750 38.59
6	6.625	.134 9.30	.188 12.94			.280 18.99	.280 18.99		.432 28.60	.432 28.60		.562 36.43		.719 45.39	.864 53.21
8	8.625	.148 13.41	.188 16.96	.250 22.38	.277 24.72	.322 28.58	.322 28.58	.406 25.67	.500 43.43	.500 43.43	.594 51.00	.719 60.77	.812 67.82	.906 74.76	.875 72.49
10	10.750	.165 18.67	.188 21.23	.250 28.06	.307 34.27	.365 40.52	.365 40.52	.500 54.79	.500 54.79	.594 64.49	.719 77.10	.844 89.38	1.000 104.23	1.125 115.75	1.000 104.23
12	12.750	.180 24.19	.188 25.25	.250 33.41	.330 43.81	.375 49.61	.406 53.57	.562 73.22	.500 65.48	.688 88.71	.844 107.42	1.000 125.61	1.125 139.81	1.312 160.42	1.000 125.61
14	14.000	.250 36.75		.312 45.65	.375 54.62	.375 54.62	.438 63.50	.594 85.13	.500 72.16	.750 106.23	.938 130.98	1.094 150.93	1.250 170.37	1.406 189.29	
16	16.000	.250 42.09		.312 52.32	.375 62.64	.375 62.64	.500 82.85	.656 107.60	.500 82.85	.844 136.74	1.031 164.98	1.219 192.61	1.438 223.85	1.594 245.48	
18	18.000	.250 47.44		.312 58.99	.438 82.23	.375 70.65	.562 104.76	.750 138.30	.500 93.54	.938 171.08	1.156 208.15	1.375 244.37	1.562 274.48	1.781 308.79	
20	20.000	.250 52.78		.375 78.67	.500 104.23	.375 78.67	.594 123.23	.812 166.56	.500 104.23	1.031 209.06	1.281 256.34	1.500 296.65	1.750 341.41	1.969 379.53	
22	22.000	.250 58.13		.375 86.69	.500 114.92	.375 86.69	.875 197.60	.500 114.92	1.125 251.05	1.375 303.16	1.625 353.94	1.875 403.38	2.125 451.49		
24	24.000	.250 63.47		.375 94.71	.562 140.81	.375 94.71	.688 171.45	.969 238.57	.500 125.61	1.219 296.86	1.531 367.74	1.812 429.79	2.062 483.57	2.344 542.64	



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