

Not For Production Use (For Reference Only)

ASTM A268/A268M-05 and UI

Specification for Welded Ferritic + Martensitic Steel Tubing for General Service

Note - Identical to ASME SA268

ASTM Chemical Requirements

Elements	409	439	12SR*	18SR	18CrCb	29-4C	441**
	S40900	S43035				S44735	(typical)
(C) Carbon, max	0.080	0.070	0.030	0.030	0.030	0.030	0.009
(Mn) Manganese, max	1.000	1.000	1.000	1.000	1.000	1.000	0.35
(P) Phosphorus, max	0.045	0.040	0.040	0.045	0.040	0.040	0.023
(S) Sulfur, max	0.030	0.030	0.030	0.030	0.030	0.030	0.002
(Si) Silicon	1.00	1.00	0.5-1.00	N/A	1.00	1.00	0.34
(Ni) Nickel	0.50	0.50	0.50	1.00 max	1.00	1.00 max	0.30
(Cr) Chromium	10.50-11.70	17.0-19.0	11.5-13.5	17.00-19.00	17.5-19.5	28.0-30.0	18.0
(Mo) Molybdenum	N/A	N/A	N/A	N/A	N/A	3.60-4.20	N/A
(N) Nitrogen	N/A	0.040	0.030	N/A	N/A	0.045	0.014
(AL) Aluminum	N/A	0.15 max	1.00-1.75	1.50-2.00	N/A	N/A	0.05
(Cb) Columbium / (Nb)	N/A	N/A	0.30+9C to 0.90	N/A	0.3-0.9	N/A	0.71
(Ti) Titanium	6xC min 0.75 max	min. 1.10 max	0.2-0.6	0.15-0.50	0.1-0.5	6 (C+N) min (Ti +Cb) = 0.2-1.00	0.29

Heat Treatment

The tubes shall be reheated to 1200 degree F min and cooled appropriately for the grade.

Surface Condition

The tube will be free of excessive mill scale.

Product Marking

Manufacturer's name or brand, specification number, and marked "welded". For tubes less than 1 1/4" OD at tubes less than 3' in length, the required information can be marked on a tag securely fixed to the bundle or box.

Mechanical Testing Test

Test	ASTM	United
Flare	Not Required	Required
Flatten	Not Required	Required
Tension	Required	Required
Flange	Required	Required
Reverse Bend	Not Required	Required
Reverse Flatten	Required	Required
Eddy Current	Required*	Required
Hydrostatic	Required*	Not Required
Hardness	Required	Required

Mechanical Properties

Type	Tensile	Yield	Elong. At 2"	Hardness
	min, ksi (Mpa)	min, ksi (Mpa)	min, %	Rockwell B, max.
409	55 (380)	25 (170)	20	95
439	60 (415)	30 (205)	20	90
12SR**	60	55	25	95
18CrCb**	62	38	28	88
29-4C	75 (515)	60 (415)	18	100
441 (typ)***	72 (496)	45 (310)	31	82

* ASTM required either an Eddy Current or a Hydrostatic test be performed. **Manufacturer's specification.

*** Data is manufacturer's typical value and should not be misconstrued as maximum or minimum values for specification.

Dimensional Requirements

Size	Outside Diameter		Squareness		Length**		Straightness		Weld Height		Wall***	
	ASTM	United	ASTM	United	ASTM	United	ASTM	United	ASTM	United	ASTM	United
1"	+/- .005	+/- .005	N/A	0	-0 +1/8	-0 +1/8	.030/36"	.030/36"	.006	+0.04	+/- 10%	+/- 10%
1-1/2"	+/- .010	+/- .010	N/A	.025	-0 +3/16	-0 +3/16	.030/36"	.030/36"	.006	+0.10	+/- 10%	+/- 10%
2"	+/- .010	+/- .010	N/A	.035	-0 +3/16	-0 +3/16	.030/36"	.030/36"	.006	+0.10	+/- 10%	+/- 10%
2-1/2"	+/- .010	+/- .010	N/A	.040	-0 +3/16	-0 +3/16	.030/36"	.030/36"	.010	+0.10	+/- 10%	+/- 10%
3"	+/- .010	+/- .010	N/A	.045	-0 +3/16	-0 +3/16	.030/36"	.030/36"	.010	+0.10	+/- 10%	+/- 10%
3-1/2"	+/- .015	+/- .015	N/A	.045	-0 +3/16	-0 +3/16	.030/36"	.030/36"	.010	+0.10	+/- 10%	+/- 10%
4"	+/- .015	+/- .015	N/A	.045	-0 +3/16	-0 +3/16	.030/36"	.030/36"	.010	+0.10	+/- 10%	+/- 10%

** These tolerances apply to 24 ft. lengths or less. For lengths over 24 ft. add a tolerance of 1/8 in. for each 10 ft., or fraction thereof, up to a max of 1/2 in.

*** Applicable only when nominal wall is specified. When minimum wall is specified, the tolerance is -0 +18%.