Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes

Rev	Reason of change	Date	Made By	Reviewed By	Approved By	Status
0	---	31-12-15	MN	AS	KKD	

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1.0 SCOPE

1.1 This specification covers seamless, straight-scam welded, and heavily cold worked welded austenitic stainless steel pipe intended for high-temperature and general corrosive service.

2.0 APPLICABLE SPECIFICATIONS

2.1 ASTM A312/A ASTM A312M GRADE-TP304/L/H.

3.0 CHEMISTRY REQUIREMENTS

3.1 The heat and product analysis shall conform to one of the compositions listed below. Values are weight percentages.

	C	Mn	P	S	Si	Cr	Nickel
TP304	0.08	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0
TP304L	0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.0-13.0
TP304H	0.04-0.10	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0

4.0 MECHANICAL PROPERTIES

4.1 Heat Treatment :

All pipe shall be furnished in the heat-treated. Alternatively, for seamless pipe, immediately following hot forming while the temperature of the pipes is not less than the specified minimum solution treatment temperature, pipes may be individually quenched in water or rapidly cooled by other means.

4.2 Annealing Requirements : Heat Treating Temperature should be 1900° F (1040°C).

4 . 3 Tensile Requirements:

	Grade Designation	Tensile Strength, min ksi [MPa]	Yield Strength, min ksi [MPa]
TP304	530400	75 [515]	30 [205]
TP304L	S30403	70 [485]	25 [170]
TP304H	S30409	75 [515]	30 [205]

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4.4 Elongation in 2" or 50 mm (or 4D), min. % :

Longitudinal = 35% and Transverse = 25%

4.5 Hardness : 90 HRB max.

5.0 Permitted Variations in Wall Thickness:

In addition to the implicit limitation of wall thickness for seamless pipe imposed by the limitation on weight in Specification A 999/A 999M, the wall thickness for seamless and welded pipe at any point shall be within the tolerances.

	Tolerance	%from Nominal
1/8 to 2'/2 incl , all t/D ratios	20.0	12.5
3 to 18 incl , t/D up to 5 % incl.	22.5	12.5
3 to 18 incl., t/D > 5 %	15.0	12.5
20 and larger, welded, all t/D ratios	17.5	12.5
20 and larger, seamless, t/D up to 5 % incl.	22.5	12.5
20 and larger, seamless, t/D > 5 %	15.0	12.5

Where: t = Nominal Wall Thickness, D = Ordered Outside Diameter

6.0 Workmanship, Finish & Appearance:

The finished pipes shall be reasonably straight and shall have a workmanlike finish. Imperfections may be removed by grinding, provided the wall thicknesses are not decreased to less than that permitted.

6.1 Repair by Welding

For welded pipe whose diameter equals or exceeds NPS 6, and whose nominal wall thickness equals or exceeds 0.200, weld repairs made with the addition of compatible filler metal.

TABLE 5 Pipe and Filler Metal Specification

Pipe	Filler Metal		
Grade	UNS Designation	AWS A5.9 Class	UNS Designation
TP304	S30400	ER308	S30800, W30840
TP304L	S30403	ER308L	S30883, W30843
TP304H	S30409	ER308	S30880, W30840

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