

Stainless steel

Alloys 317

(UNS S31700)

Application

Alloy 317 (UNS S31700) is a lowcarbon corrosion resistant austenitic chromium-nickel-molybdenum stainless steel. The high levels of these elements assure the alloy has superior chloride pitting and general corrosion resistance to the conventional 304/304L and 316/316L grades. The alloy provides improved resistance relative to 316L in strongly corrosive environments containing sulfurous media, chlorides, and other halides.

The low carbon content of Alloy 317 enables it to be welded without intergranular corrosion resulting from chromium carbide precipitation enabling it to be used in the as-welded condition. With the addition of nitrogen as a strengthening agent, the alloy can be dual certified as Alloy 317.

Alloy 317 is non-magnetic in the annealed condition. It cannot be hardened by heat treatment, however the material will harden due to cold working. Alloy 317 can be easily welded and processed by standard shop fabrication practices.

Available tube product forms

STRAIGHT || **COILED** || **SEAMLESS** || **WELDED**

Typical manufacturing specifications

ASTM A213, ASTM A269, ASTM A312, ASTM A632

Also individual customer specifications.

Industries predominantly using this grade

Chemical and Petrochemical Processing, Power

Generation

Food and Beverage Processing, Petroleum Refining etc.

Maximum Coil Length per Dimension (Unit : meter)

		Wall thickness (mm)					
		0.51	0.71	0.89	1.24	1.65	2.11
Outside diameter r (mm)	3.175	2954	2294	1974	-	-	-
	6.35	1348	1003	826	634	-	-
	9.53	873	641	522	391	309	256
	12.7	-	472	382	283	220	180
	19.05	-	-	248	182	140	112
	25.4	-	-	-	134	102	82

can provide longer length according to customer requirement

Technical Data

Chemical composition(% by weight)

Element	C	Mn	P	S	Si	Ni	Cr	Mo	-	-	-	-
Minimum	-	-	-	-	-	11.0	18.0	3.0	-	-	-	-
Maximum	0.080	2.00	0.045	0.030	1.00	15.0	20.0	4.0	-	-	-	-
Aiming	0.025	1.7	0.025	0.0039	0.3	13	18.2	3.05	-	-	-	-

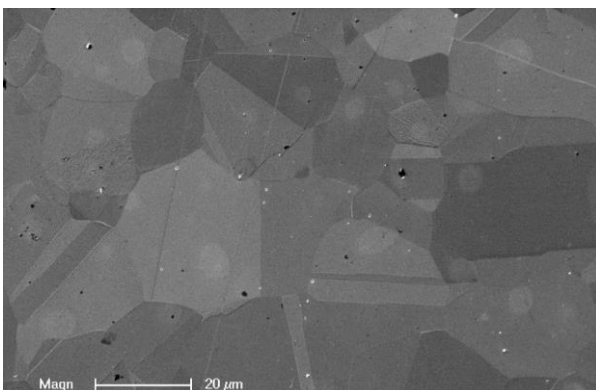
Mechanical Properties

	Specifications(Tubing, Annealed)		Actual data	
Tensile Rm	75	ksi (min.)	81~101	ksi
Tensile Rm	515	MPa (min.)	560~700	MPa
Yield (R.p. 0.2%)	30	ksi (min.)	36~50	ksi
Yield (R.p. 0.2%)	205	MPa (min.)	250~350	MPa
Elongation	34	% (min.)	45~55	%

Physical Properties(Room Temperature)

Specific Heat (0-100°C)	502	J.kg ⁻¹ .°K ⁻¹
Thermal Conductivity	14	W.m ⁻¹ .°K ⁻¹
Thermal Expansion	16.02	mm/m.°C
Modulus Elasticity	200	GPa
Electrical Resistivity	85.1	μohm.cm
Density	7.89	g/cm ³

Microstructure



Maximum allowable pressure (Unit : BAR)

		Wall thickness (mm)						
		0.89	1.24	1.65	2.11	2.77	3.96	4.78
Outside diameter r (mm)	6.35	387	562	770	995	-	-	-
	9.53	249	356	491	646	868	-	-
	12.7	183	261	356	468	636	-	-
	19.05	-	170	229	299	403	-	-
	25.4	-	126	169	219	294	436	540
	31.8	-	-	134	173	231	340	418
	38.1	-	-	111	143	190	279	342
	50.8	-	-	83	106	141	205	251

* We follow customer requested dimensions.

* Select tubes according to design pressure