

Stainless steel

Alloy 310S

(UNS S31008)

Application

Alloy 310S is an austenitic stainless steel designed for high temperature applications. It offers excellent resistance to oxidation and sulfidation up to 1100°C (2010°F) and maintains good strength at elevated temperatures.

The low carbon content of 310S reduces the risk of sensitization and makes it suitable for welded components in high-temperature environments.

The alloy contains high chromium and nickel levels, enhancing its corrosion and scaling resistance in oxidizing atmospheres. It is widely used in heat treatment equipment, furnace parts, and combustion chambers, as well as in petrochemical processing where thermal stability is required.

Available tube product forms

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

Typical manufacturing specifications

ASTM A213, ASTM A269, ASTM A312

Also individual customer specifications.

Industries predominantly using this grade

Heat treatment equipment, Petrochemical, refinery industries

Power generation, Industrial furnaces and kilns

Maximum Coil Length per Dimension (Unit : meter)

		Wall thickness (mm)					
		0.51	0.71	0.89	1.24	1.65	2.11
Outside diameter (mm)	3.175	2927	2273	1956	-	-	-
	6.35	1336	994	819	628	-	-
	9.53	865	635	517	387	306	254
	12.7	-	467	379	280	218	178
	19.05	-	-	246	180	139	111
	25.4	-	-	-	133	102	81

* We can provide longer length according to customer requirement

Technical Data

Chemical composition(% by weight)

Element	C	Mn	P	S	Si	Ni	Cr	-	-	-	-	-
Minimum	-	-	-	-	-	19.0	24.0	-	-	-	-	-
Maximum	0.080	2.00	0.045	0.030	1.00	22.0	26.0	-	-	-	-	-
Aiming	0.01	0.6	0.03	^{0.001} - _{0.007}	0.4	12.1	17.5	-	-	-	-	-

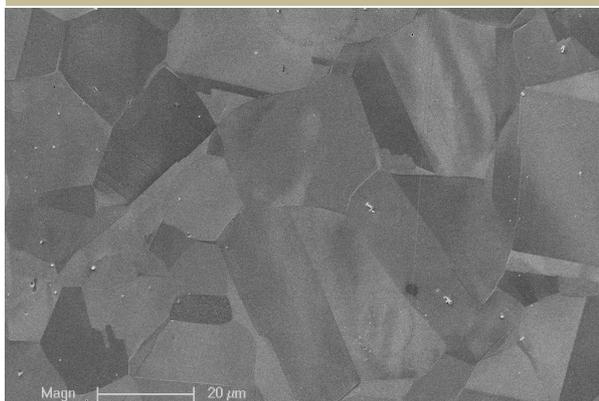
Mechanical Properties

	Specifications(Tubing, Annealed)		Actual data	
Tensile Rm	75	ksi (min.)	79~98	ksi
Tensile Rm	515	MPa (min.)	550~680	MPa
Yield (R.p. 0.2%)	30	ksi (min.)	31~50	ksi
Yield (R.p. 0.2%)	205	MPa (min.)	220~350	MPa
Elongation	35	% (min.)	45~58	%

Physical Properties(Room Temperature)

Specific Heat (0-100°C)	500	J.kg ⁻¹ .°K ⁻¹
Thermal Conductivity	14.2	W.m ⁻¹ .°K ⁻¹
Thermal Expansion	15.9	µm/m/°C
Modulus Elasticity	200	GPa
Electrical Resistivity	78	µohm·cm
Density	7.9	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 (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

* Please let us know your design pressure, we can produce requested tube size

* The table above is for your reference