

AISI 317 / UNS S31700 / DIN 1.4449

Marine Grade Stainless Steel

Alloy 317 Data Sheet

Introduction

Alloy 317L is chrome-nickel austenitic alloy. It also contains molybdenum which increases general corrosion resistance, improves resistance to pitting from chloride ion solutions, the high levels of these elements persuade the alloy has better chloride pitting and general corrosion resistance to the conventional 304/304L and 316/316L grades.

Chemical Composition (Typical)

Element	Limits	
	min	max
Carbon	0.000	0.080
Manganese	0.000	2.000
Phosphorus	0.000	0.045
Sulphur	0.000	0.030
Silicon	0.000	0.750
Chromium	16.000	18.000
Nickel	10.000	14.000
Molybdenum	2.000	3.000
Nitrogen	0.000	0.100
Iron	Remainder	

Mechanical Properties (typical)

Parameter	Value
Yield 0.2 % (ksi/Mpa), Min	205
Tensile (ksi/Mpa), Min	515
Elongation (% in 50mm), Min	35
Reduction in Area, %	50
Hardness (HB), Max	219

Physical Properties

Parameter	Value
Density (Kg/m ³)	8000
Elastic Modulus (Gpa)	200
Co-eff of Expansion ($\mu\text{m}/\text{m}/^\circ\text{C}$)	16.5
Thermal Condc. (W/m.K)	14.4
Electric Resistivity (n Ω .m)	790

Corrosion Data

The higher molybdenum content of Alloy 317 assures remarkable corrosion resistance in most media and resistant to stress corrosion cracking when compared to other austenitic alloy, because of its higher molybdenum content. The higher chromium, molybdenum and nitrogen content of 317 increase its ability to resist pitting and crevice corrosion in the presence of chlorides and other halides.

Equivalent Grade Designation

AISI 317
UNS S31700
BS 317S16
DIN EN 1.4449
X5CrNiMo 17 13
Z4CND19.13M
SUS Y317

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Available Product Forms

Round, Square, Hexagon & Flat Bars
Seamless / Welded Pipes
Seamless / Welded Tubes
Hot & Cold Rolled Plates & Sheets
Forged Bars
Buttweld Pipe Fittings
Forged Fittings
Ferrule Compression Fittings
Forged Flanges
Billet
Gauges

Common Manufacturing Specifications

ASME SA-240, SA-249, SA-312, SA-409
ASTM A182, A213, A240, A249, A269, A276, A312, A314, A403, A409, A473, A478, A479, A511, A554, A580, A632, A813, A814, A943, A988, F899

Alternate to Alloy

316Ti Low Cost subject to resistance to temperatures of around 600-900°C.
303 Higher machinability needed with lower corrosion resistance
316 Lower cost & reduced corrosion resistance and fabrication characteristics needed.
904L higher resistance to chlorides at elevated temperatures, with good formability.
2205 higher resistance to chlorides and higher strength than 317.

Applications & Industries

Air Pollution Control — flue gas desulfurization systems (FGD)
Chemical & Fertilizer Industries
Petroleum - Oil & Gas Industries
Pharmaceutical industry
Food Processing Industry
Condensers in Power Generation
Paper & Pulp Industry

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