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Industrial Piping Products

AISI 321 / UNS S32100 / DIN 1.4541

Stabilized Austentic Alloy

Alloy 321 Data Sheet

Introduction

Alloy 321 is also known as stabilized austentic alloy due to its titanium content, this addition prevents carbide precipitation during welding following exposure to temperature range from 800 to 1500° F. Alloy 321 cannot be hardened by thermal treatment, but strength and hardness can be increased considerably by cold working, following reduction in ductility.

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	17.000	19.000
Nickel	9.000	12.000
Titanium	5x(C+N)	0.700
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	40
Reduction in Area, %	55
Hardness (HB), Max	217

Physical Properties

Parameter	Value
Density (Kg/m^3)	7900
Elastic Modulus (Gpa)	193
Co-eff of Expansion (µm/m/°C)	17.2
Thermal Condc. (W/m.K)	16.2
Electric Resistivity (nΩ.m)	720

Corrosion Data

Type 321 stainless steel has identical corrosion nature to type 304 with an exception of enhanced intergranular corrosion resistance due to its stabilization. Resistance to organic acids and some inorganic acids is excellent, but long term exposure to temperature between 900-1500°F may reduce its overal general corrosion resistance however it remains better than other unstabilize grades.

Equivalent Grade Designation

AISI 321
UNS S32100
BS 321S31
DIN EN 1.4541
0Cr18Ni10Ti
Z6 CNT 18-10
SS 2337

Available Product Forms

Round, Sqaure, 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
Valves
Guages

Common Manufacturing Specifications

AMS 5510, 5557, 5559, 5570, 5576, 5645, 5689, 5896, 7490
ASME SA-182, SA-193, SA-194, SA-213, SA-240, SA-249, SA-312, SA-320, SA-358, SA-376, SA-403, SA-409, SA-479
ASTM A182, A193, B8T, A194, A213, A240, A249, A269, A276, A312, A313, A314, A320, A336, A358, A376, A403, A509, A430, A473, A493, A511, A554, A580, A632, A774, A778, A813, A814, A943, A965, F593, F594, F738, F836

Alternate to Alloy

304L require resistance to intergranular corrosion, not for high temperature strength.
304H only mild high temperature" environment is present up to about 800°C.
310 For high temperature operations upto 1100°C.
S30815 For high temperature operations upto 1100°C.
3Cr12 only mild high temperature" environment is present up to about 600°C.

Applications & Industries

Aerospace(Piston Engine Manifolds)
Chemical Processing
Expansion Joints
Food Processing(Equipment or Storage)
Waste Treatment (Thermal Oxidizers)
Pharmaceutical Production
Petroleum Reining (Polythionic Acid Services)

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