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Industrial Piping Products

Alloy 321H Data Sheet

AISI 321H / UNS S32109 / DIN 1.4541

High Carbon Stabilized Austentic Alloy

Introduction

Alloy 321H is is an high carbon version of type 321 stabilized austentic alloy. its titanium content brings the stability, this addition prevents carbide precipitation during welding following exposure to temperature range from 800 to 1500° F. It provide
improved high temperature strength due to its high carbon content. In most cases the carbon content of the plate enables dual certification.

Chemical Composition (Typical)

Element	Limits	
	min	max
Carbon	0.040	0.100
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 321H 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 321H
UNS S32109
BS 321S51
DIN EN 1.4878
1Cr18Ni9Ti
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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FERROBEND | Industrial Piping Products
#1016 Prasad Chambers Opera House Mumbai 400004 INDIA
Tel : 91 - 22 - 6666 5432 Fax : 91 - 22 - 6636 3375
www.ferrobend.com