

# 321 Stainless Steel | 321H Stainless Steel

## 321/321H STAINLESS STEEL DATASHEET

321 stainless steel is titanium stabilized austenitic stainless steel plate with good general corrosion resistance. It has excellent resistance to intergranular corrosion after exposure to temperatures in the chromium carbide precipitation range of 800 - 1500°F (427 - 816°C). The alloy resists oxidation to 1500°F (816°C) and has higher creep and stress rupture properties than alloys 304 and 304L. It also possesses good low temperature toughness. 321 stainless steel cannot be hardened by heat treatment, only by cold working. It can be easily welded and processed by standard shop fabrication practices.

321H stainless steel is the higher carbon (0.04 - 0.10) version of the alloy. It was developed for enhanced creep resistance and for higher strength at temperatures above 1000°F (537°C). In most instances, the carbon content of the material enables dual certification.

Common industry/applications are: Aerospace, Chemical Processing, Food Processing, and Oil and Gas.

Product forms include round bar, plate & sheet, and forgings.

### Standards

- UNS S32100
- UNS S32109

### Physical Properties

- Density: 0.286LB/in<sup>3</sup> (7.92g/cm<sup>3</sup>)
- Melting Point: 2550–2590°F (1398–1421°C)
- Modulus of Elasticity: 28.0x10<sup>6</sup>psi (193 GPa)
- Magnetic Permeability: 1.02 Max @ 200 H (Annealed)

### Characteristics

- Suitable for use at high temperatures.
- Improved corrosion resistance.
- Weldable.



### Chemical Composition

	C	Mn	S	P	Si	Cr	Ni	N	Ti
321	0.08 Max	2.00 Max	0.030 Max	0.045 Max	0.750 Max	17.00 - 19.00	9.00 - 12.00	0.10 Max	5x (C+N)-0.70
321H	0.04 - 0.10	2.00 Max	0.030 Max	0.045 Max	0.750 Max	17.00 - 19.00	9.00 - 12.00	0.10 Max	5x (C+N)-0.70

### Mechanical Properties

Tensile (min) KSI (Mpa)	Yield (min) KSI (Mpa)	Elongation (min) %	Reduction of Area (min) % **	Hardness * HRB (BHN)
75 (515)	30 (205)	60%	70%	95 (217)

Mechanical properties can be altered (increased/decreased) by the addition of other chemical elements like Selenium (Se) to form 303Se. However, these grades are more specialized and may not be available in all forms and sizes.

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