



321

**Description**

Type 321 is the basic 18/8 steel stabilized by a titanium addition. It is not sensitive to intergranular corrosion when heated within the carbide precipitation range of 800-1600°F and can be used in this temperature range in corrosive environments.

**Typical Applications**

- Aircraft Exhaust Manifolds
- Expansion Joints
- Bellows
- Furnace Parts
- Heating Element Tubing

**Corrosion Resistance**

Excellent. Equivalent to Types 302 or 304 in the annealed condition. and superior if a weldment in these grades has not been post-weld annealed or if the application involves service in the 800-1600°F range.

**Heat Resistance**

Good oxidation resistance intermittent service to 1600°F and in continuous service to 1700°F. Performs as well as any of the heat resisting stainless steels in the 800-1600°F range where serious corrosive conditions are present.

**Heat Treatment**

Annealing - Heat to 1750-2050°F and cool rapidly for maximum corrosive resistance.  
 Stabilizing - Heat to 1550-1650°F for 1 hour per inch of thickness and air cool.  
 Stress Relief - Heat to 1300°F for 1 to 2 hours and air cool.  
 This grade cannot be hardened by thermal treatment.

**Welding**

Good Characteristics suited to all standard methods. Use Type 347 filler rod or electrodes.

Chemical Analysis		C	Mn	P	S	Si	Cr	Ni	Ti
Max values	321	0.08	2.0	0.045	0.030	1.0	17.0-19.0	9.0-12.0	5xC Min

Typical Mechanical Properties- Annealed	Yield Strength	Tensile Strength	Elongation	Hardness		Impact Charpy	Modulus of Elasticity in Tension
	ksi	ksi	% in 2"	R b	BHN		
	35	90	45	84	160	135	28000

Other Properties	Creep Strength 1% flow 10,000 hours at 1000°F -ksi	Magnetic Permeability at 200 H-Annealed	Electrical Resistivity - Microhm-Cm At 68°F	Coefficient of Thermal expansion: (ln/ln°F x 10 <sup>-6</sup> ) 32°- 212°F	Thermal Conductivity BTU/ft. <sup>2</sup> /Hr./°F/ft.	
	18.0	1.02	72	9.3	At 212°F	At 932°F
					9.3	12.8