JAYNE™

Inconel® 601

Description

Inconel® 601 is a nickel-chromium alloy, that is highly resistant to oxidation through 2200ºF. 601 alloy develops a tightly adherent oxide scale which resists spalling even under severe thermal cycling. The alloy has good high temperature strength, and retains its ductility after long service exposure. 601 alloy has good hot corrosion resistance under oxidizing conditions. 601 alloy is not suggested for use in strongly reducing, sulphur bearing environments.

Typical Applications

- Copper brazing, annealing and sintering muffles and retorts
- Radiant tubes
- Strand annealing tubes
- Steam superheater tube supports
- Rotary kilns and calciners
- Thermocouple protection tubs

Corrosion Resistance

The substantial nickel and chromium contents of INCONEL alloy 601 in conjunction with its content of aluminum give the alloy superior resistance to high temperature corrosion mechanisms. Of particular significance is its resistance to oxidation at temperatures up to 2200°F (1200°C). By virtue of its contents of chromium and aluminum, alloy 601 offers unique resistance to oxide spalling under cyclic thermal conditions.

Heat Resistance

601 alloy is resistance to oxidation at temperatures up to 2200°F (1200°C). the solution-treated condition is used for rupture-limited applications (temperatures of about 1000°F (540°C) and higher). The annealed condition is normally used for tensile-limited applications (temperatures below about 1000°F (540°C).

Heat Treatment

Heat to 1150ºC for 1 hr and cool rapidly

Welding

Weld with 601 alloy GTAW wire. RA 602 CA fillers can also provide a strong weld which is more oxidation resistant than the 601 alloy base metal

Chemical Analysis Max values		Ni	Cr	C	Mn	Cu	Si	S	Al
	601	58-63	21-25	0.10	1.00	1.00	0.50	0.015	1.0-1.7

Typical Mechanical Properties- Annealed	Yield Strength ksi	Tensile Strength ksi	Elongation % in 2"	Hardness		Density Lb/in³	Modulus of Elasticity in Tension - ksi
				R b	BHN		
	54	100	45	75	≤220	0.293	30000

Other Properties	Creep Strength 1% Flow/ 1000 hours at 1400ºF -ksi	Electrical Resistivity - Ohm-circ mil/ft At 68ºF	Coefficient of Thermal expansion: (ln/ln/ºF x 10^{-6}) 32º- 212ºF	Thermal Conductivity BTU/ft.^{2} /Hr./ºF/ft.	
				At 212ºF	At 932ºF
	4.1	710	7.60	6.5	11.6