



# Elgiloy Specialty Metals – Wire Products

## INCOLOY® 825 Alloy

UNS N08825  
W. Nr 2.4858

### Applicable Specifications

Wire & Bar ASTM B425, NACE MR0175/ISO 15156, NACE MR0103

**Description:** INCOLOY® 825 is a nickel-iron-chromium alloy with excellent resistance to sulfuric, phosphoric, and nitric acid environments. Additional alloying elements provide resistance to pitting/crevice corrosion, chloride induced stress corrosion cracking, oxidizing environments, and intergranular corrosion. INCOLOY® 825 can maintain these properties from cryogenic temperatures up to 1000°F while also retaining cold worked strength. The alloy can be fabricated, machined, and welded via most conventional processes similar to those of austenitic stainless steels.

**Applications include:** Heat exchangers, Extraction columns, Mixing tanks, Pipes, Pumps, Valves, Food processing equipment, Fasteners, Springs

**Industries supplied include:** Oil & Gas, Chemical Processing, Nuclear Power Generation, Toxic Waste Management

### Nominal Composition

	C	Mn	S	Si	Ni	Cr	Mo	Ti	Cu	Al	Fe
min	-	-	-	-	38.0	19.5	2.5	0.6	1.5	-	22 Bal
max	0.05	1.0	0.030	0.50	46.0	23.5	3.5	1.2	3.0	0.20	-

### Physical Properties

	At 70°F	At 20°C
Density	0.294 lb/in <sup>3</sup>	8.14 g/cm <sup>3</sup>
Modulus of Elasticity (E)	28.3 x 10 <sup>3</sup> ksi	196 GPa
Modulus of Rigidity (G)	11.0 x 10 <sup>3</sup> ksi	76 GPa
Coefficient of Expansion	11.1 μin/in-°F (70-2000°F)	20.2 μm/m-°C (25-1100°C)
Electrical Resistivity	44.1 μohm-in	112 μohm-cm
Thermal Conductivity	76.8 Btu-in/ft <sup>2</sup> -hr-°F	11.1 W/m-°C

### Typical Mechanical Properties

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	1700-1975°F (930-1080°C)	85-105 ksi (586-724 MPa)	Up to 1000°F (538°C)
Spring	None	150 ksi min (1035 MPa)	Up to 500°F (260°C)

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Rev Date: 6/18/2020

