

Incoloy® Alloy 825

UNS N08825

W.Nr 2.4858

Incoloy® Alloy 825 is a Nickel-Iron-Chrome alloy with excellent resistance to sulfuric and phosphoric acids. It is also resistant to oxidizing and reducing acids, stress corrosion cracking, pitting, and intergranular corrosion. Applications include chemical processing, pollution control, oil and gas recovery, acid production, pickling operations, nuclear fuel reprocessing, and radioactive waste handling. Industries supplied include: Chemical and petrochemical, oil & gas, pollution control, and nuclear.

Nominal Composition

	C	Mn	Si	P	S	Cr	Ni	Ti	Al	Cu	Fe	Mo	
min	-	-	-	-	-	19.50	38.00	0.60	-	1.50	22.00	2.50	
max	0.05	1.00	0.50	-	0.030	23.50	46.00	1.20	0.20	3.00	-	3.50	

Physical Properties

	At 70°F	At 20°C
Density	0.294 lb/in ³	8.14 g/cm ³
Modulus of Elasticity (E)	28.30 x 10 ³ ksi	196 GPa
Modulus of Rigidity (G)	11 x 10 ³ ksi	76 GPa
Coefficient of Expansion	8.8 microinches/in.-°F (70-1000°F)	15.8 µm/m-°C (20-538°C)
Electrical Resistivity	44.4 µ ohm.in	113.0 µ ohm.cm
Thermal Conductivity	76.8 Btu-in./ft. ² hr.-°F	11.1 W/m-K

Applicable Specifications

Strip	ASTM B424, NACE MR0175
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Typical Mechanical Properties – Spring Applications

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	1832°F (1000°C)	85 ksi (586 MPa) min	-300°F to 1600°F (-184°C to 871°C)

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Phone: 1.888.843.2350

Elgiloy Specialty Metals - Strip Products

1565 Fleetwood Dr.

Elgin, IL 60123 USA

WWW.ELGILOY.COM

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