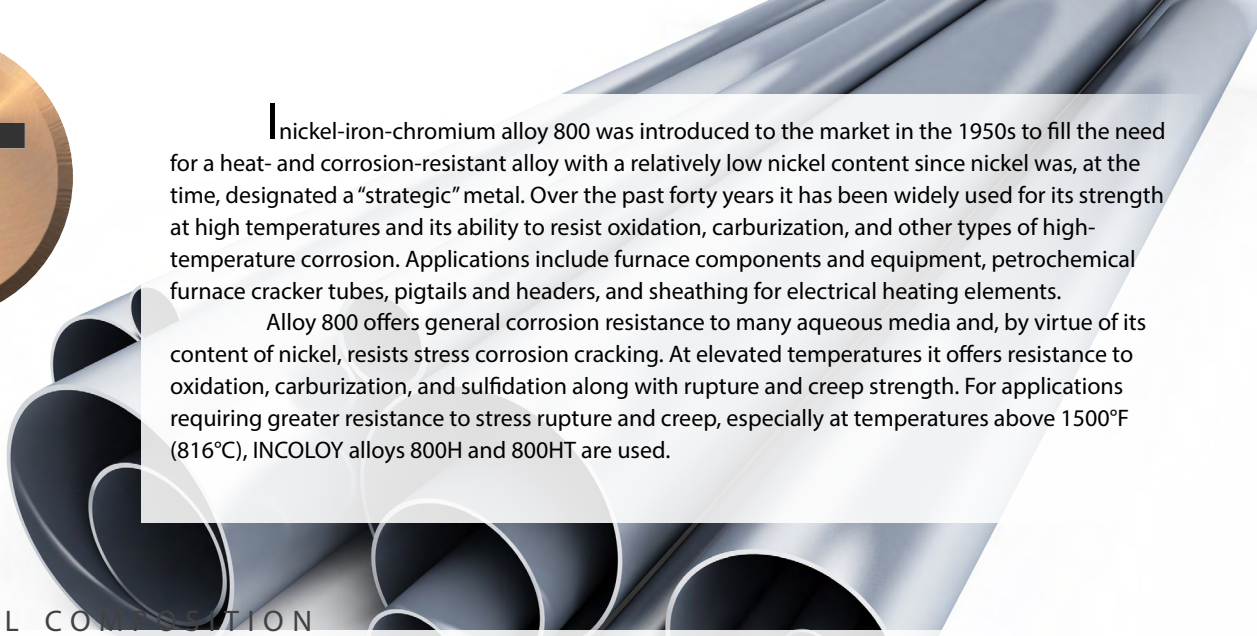
Alloy 800 Nickel- Iron-Chromium

AMERITUBE



Inickel-iron-chromium alloy 800 was introduced to the market in the 1950s to fill the need for a heat- and corrosion-resistant alloy with a relatively low nickel content since nickel was, at the time, designated a "strategic" metal. Over the past forty years it has been widely used for its strength at high temperatures and its ability to resist oxidation, carburization, and other types of high-temperature corrosion. Applications include furnace components and equipment, petrochemical furnace cracker tubes, pigtails and headers, and sheathing for electrical heating elements.

Alloy 800 offers general corrosion resistance to many aqueous media and, by virtue of its content of nickel, resists stress corrosion cracking. At elevated temperatures it offers resistance to oxidation, carburization, and sulfidation along with rupture and creep strength. For applications requiring greater resistance to stress rupture and creep, especially at temperatures above 1500°F (816°C), INCOLOY alloys 800H and 800HT are used.

CHEMICAL COMPOSITION

	C	Mn	P	S	Si	Cr	Ni	Ti	Al	Al+Ti	Cu	Fe
800	0.02	1	0.02	0.01	0.35	21	32	0.4	0.4	-	0.30	39.5
800H	0.02	1	0.02	0.01	0.35	21	32	0.4	0.4	-	0.30	39.5
800AT												

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APPLICABLE SPECIFICATIONS

Pipe Seamless	Pipe Welded	Tube Seamless	Sheet/Plate	Bar	Tube Welded	Fitting	Forging
ASTM B407	ASTM B154	ASTM B163	ASTM B409	ASTM B408	ASTM B515	ASTM B564	ASTM B366

APPLICATIONS

Industrial Heating Industry radiant tubes	Return bends, muffles, retorts and furnace fixtures	Convection tubing	Quenching system piping	High temperature heat
Petrochemical furnace cracker tubes	Hydrocarbon Processing Industry catalyst tubing	Outlet manifolds	Power Generation Industry steam superheating tubing	Engine thrust-reverser systems

PHYSICAL PROPERTIES

Density	Electrical Resistivity	Coefficient of Thermal Expansion	Modulus of Rigidity	Modulus of Elasticity	Specific Heat Capacity	Melting Point	Specific Gravity
0.287 lb/in^3	595 Ω circ mil/ft @ 70°F	7.9 x 10-6 in/in °F (70 - 212°F)	78.9 kN/mm^2	196.5 kN/mm^2	0.110 BTU/lb-°F	2475-2525 °F	7.98
7.94 g/cm^3	0.989 µΩ cm @ 20°C	14.4 µm/m °C (20 - 100°C)	11444 ksi	28500 ksi	0.460 J/g-°C	1357-1385 °C	7.98

MAXIUM PRESSURE WORK

P = Maxium work pressure(psi)
S = Minimum tensile strength of material for a specific temper(It is the value of the tensile strength in psi in Mechanica properties table)
D = Exterior diameter of tube
T = Wall thickness of tube

$$P = \frac{2T \times S}{5D}$$

NON DESTRUCTIVE TESTS

Eddy Current Testing
Hydrostatic Testing
Air Underwater Testing
Ultrasonic Testing
(PMI) Positive Material Identification

DESTRUCTIVE TESTS

Microstructure Test
Tensile Test
Expansion Test
Optical Spectrometry Test

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