

INCOLOY 800HT, UNS N08811, WNR 1.4959, DIN 1.4859

Introduction :

Incoloy 800HT material is a nickel-iron-chromium alloy with good strength and excellent resistance to oxidation and carburization in high-temperature exposure. Except for the higher level of carbon in alloy 800H, 800 and 800HT alloys are identical and the addition of up to 1.20 percent titanium and aluminum in 800HT alloy. Incoloy 800HT has additional modifications to the combined titanium and aluminum levels [.85-1.20%] to make sure optimum heat properties. 800H/HT alloy combines the properties of both forms and it is dual certified. Incoloy 800HT was meant for high temperature structural applications. The nickel content makes the alloys extremely proof against each chloride stress-corrosion cracking and to embrittlement from precipitation of sigma phase. Alloy 800HT have superior creep and stress rupture properties. Incoloy 800HT is used where resistance to creep and rupture is required i.e under temperatures above 1100° F. The nickel steel alloy exhibits excellent resistance to carburization, oxidation and nitriding atmospheres due to the chemical balance. Many stainless steels become brittle after long periods of usage in the 1200-1600° F range. Incoloy 800HT won't become embrittled even when long periods of usage within the 1200-1600° F range where many stainless steels become brittle. 800HT Incoloy exhibits excellent cold forming characteristics typically associated with the nickel-chromium alloys.

Products Available in forms :

- INCOLOY 800HT, UNS N08811, WNR 1.4959, DIN 1.4859 Plates
- INCOLOY 800HT, UNS N08811, WNR 1.4959, DIN 1.4859 Pipes
- INCOLOY 800HT, UNS N08811, WNR 1.4959, DIN 1.4859 Round Bar
- INCOLOY 800HT, UNS N08811, WNR 1.4959, DIN 1.4859 Tube
- INCOLOY 800HT, UNS N08811, WNR 1.4959, DIN 1.4859 Flanges
- INCOLOY 800HT, UNS N08811, WNR 1.4959, DIN 1.4859 Wire
- INCOLOY 800HT, UNS N08811, WNR 1.4959, DIN 1.4859 Fittings

Standard Available in forms :

- ASTM B407 / ASME SB407
- ASTM B154 / ASME SB154
- ASTM B163 / ASME SB163
- ASTM B515 / ASME SB515
- ASTM B409 / ASME SB409
- ASTM B408 / ASME SB408
- ASTM B564 / ASME SB564
- ASTM B366 / ASME SB366
- ASTM B829 / ASME SB829
- ASTM B775 / ASME SB775
- ASTM A240 / ASME SA240
- ASTM A480 / ASME SA480

Chemical Composition

	Incoloy 800 HT	UNS N08811	WNR 1.4959	DIN 1.4859
Carbon	0.6-0.10	0.6-0.10	0.6-0.10	0.6-0.10
Nickel	30.0-35.0	30.0-35.0	30.0-35.0	30.0-35.0
Chromium	19.0-23.0	19.0-23.0	19.0-23.0	19.0-23.0
Iron	39.5min	39.5min	39.5min	39.5min
Alluminum	0.25-0.60	0.25-0.60	0.25-0.60	0.25-0.60
Titanium	0.25-0.60	0.25-0.60	0.25-0.60	0.25-0.60
Aluminum	0.85-1.2	0.85-1.2	0.85-1.2	0.85-1.2

Mechanical Properties

	Incoloy 800 HT	UNS N08811	WNR 1.4959	DIN 1.4859
Ultimate Tensile Strength, ksi[Mpa]	75(515)	75(515)	75(515)	75(515)
0.2% Offset Yield Strength, ksi[Mpa]	30(205)	30(205)	30(205)	30(205)
Elongation in 2" or 50mm, %	30 min	30 min	30 min	30 min

SPECIFICATION	ASTM	ASME
Pipe Smls	B407	SB407
Pipe Welded	B154	SB154
Tube Smls	B163	SB163
Tube Welded	B515	SB515
Sheet/Plate	B409	SB409
Bar	B408	SB408
Forging	B564	SB564
Fitting	B366	SB366

Characteristics of Incoloy 800HT

- High temperature strength
- High creep rupture strength
- Resistant to oxidation and carburization in high temperature environments
- Good corrosion resistance in many acidic environments
- Good resistance to many sulfur-containing atmospheres

Resistance to Corrosion

- High nickel and chromium contents in alloy 800HT result in excellent resistance to oxidation, carburization and sulfidation.
- The high nickel content also increases the resistance to nitriding, although not as good as other alloys such as Alloy 600, which contains a higher percentage of nickel.

Applications of Incoloy 800HT

- Ethylene furnace quench boilers
- Hydrocarbon cracking
- Valves, fittings and other components exposed to corrosive attack from 1100-1800° F
- Industrial furnaces
- Heat-treating equipment
- Chemical and petrochemical processing
- Super-heater and re-heaters in power plants
- Pressure vessels
- Heat exchangers
- Alloys 800HT are used in a variety of applications involving exposure to corrosive environments and high temperatures such as heat treating equipment, chemical and petrochemical processing, nuclear power plants and the paper pulp industry.
- Heat-treating equipment such as baskets, trays, and fixtures employ Incoloy 800HT.
- Chemical and petrochemical processing industries use the alloys for heat exchangers and other piping systems in nitric acid media especially where resistance to chloride stress-corrosion cracking is required.
- Power plants use them for super-heater and re-heater tubing.



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