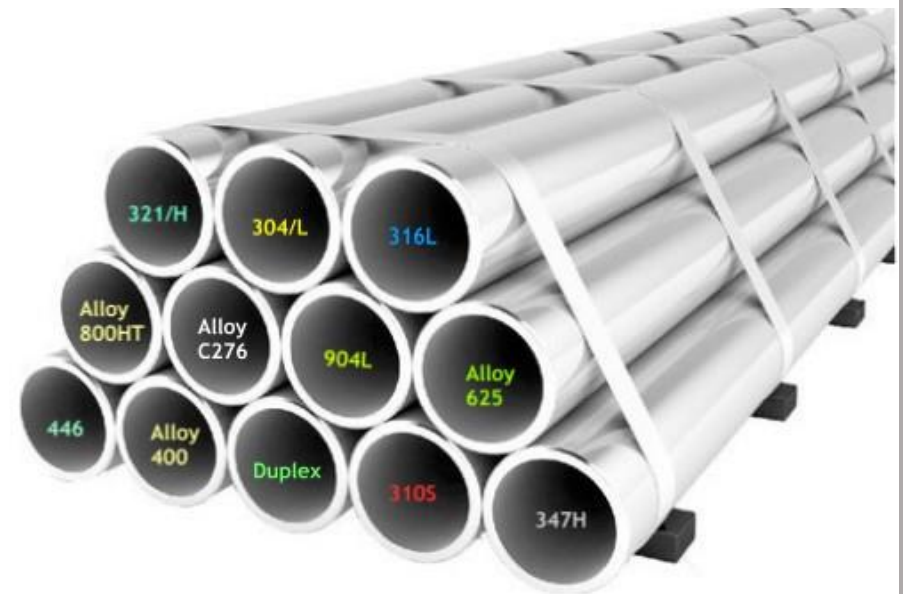


INCOLOY 800/800H/800HT

Datasheet for Incoloy 800/800H/800HT

- Pipes & Tubes
- Sheets & Plates
- Bars & Rods, Forgings
- Fittings & Flanges
- Nuts & Bolts
- Valves



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Datasheet for Incoloy 800/800H/800HT

UNS N08800, UNS N08810, UNS N08811, W.Nr. 1.4876, W.Nr. 1.4958, W.Nr. 1.4959

What is Incoloy 800/800H/800HT?

- **Incoloy Alloy 800 (UNS N08800 or W.Nr. 1.4876)** is an iron-nickel-chromium alloy with good strength and excellent resistance to oxidation and carburization in high-temperature atmospheres. It also has excellent resistance to corrosion by many aqueous environments and resistance to chloride stress-corrosion cracking. Incoloy 800 alloy maintains a stable austenitic structure during prolonged exposure to high temperatures since it doesn't form the embrittling sigma phase after long time exposure at 1200°F [649°C].
- **Incoloy Alloy 800H (UNS N08810 or DIN W.Nr. 1.4958)** has almost the same chemical composition as Alloy 800 except that it requires a higher carbon addition resulting in improved high-temperature properties. Compared to Incoloy 800, it has better creep and stress-rupture characteristics in the 1100°F (592°C) to 1800°F (980°C) temperature range. While Incoloy 800 is usually annealed at approximately 1800°F (980°C), Incoloy 800H should be annealed at approximately 2100°F (1150°C). Besides, Alloy 800H has a coarser average grain size in accordance with ASTM 5.
- **Incoloy Alloy 800HT (UNS N08811 or DIN W.Nr. 1.4959)** also has the same basic composition as Incoloy 800 and Incoloy 800H but with significantly higher creep-rupture strength. The higher strength results from deliberate control of the carbon, aluminum, and titanium contents in conjunction with a high-temperature anneal.
- **Alloy 800/800H/800HT** alloys are mainly used in chemical and petroleum processing, in power plants for superheater and reheater tubing, in industrial furnaces, petrochemical process piping, heat exchangers, carburizing equipment, and nuclear steam generator tubing.

Incoloy 800/800H/800HT Product Specification

Product	Incoloy Alloy 800/H/HT
Equivalents	UNS N08800, N08810, N08811, DIN W.Nr. 1.4876, 1.4958, 1.4959
Items	Pipe, Tubes, Tubing, Fittings, Flanges, Valves, Fasteners, Sheet, Square Bar, Threaded Bar, Plate, Hexagon Bar, Fasteners and Fixings, Round Bar, Flat Bar, Rebar, Angle, Tube & Pipe, Wire
Size	1/4" - 60"
Pipe Type	Seamless, Welded, ERW, Fabricated, Custom Size Pipes
Specifications	ASTM, ASME, DIN, GOST, JIS

Certification	EN 10204 3.1
Fittings Type	Butt Weld, Screwed & Socket Weld, Flanges, Instrumentation
Other Fittings	Elbows, Tees, Reducers, Caps, Stub Ends, Flanges (ANSI, Table E, D and H), Nuts, Bolts, Screws, Threaded Bars

Incoloy Alloy 800/800H/800HT Product Forms & Standards

Product Form	Standard
Alloy 800/H/HT Rod and Bar	ASTM B408, EN 10095
Alloy 800/H/HT Plate, Sheet & Strip	ASTM A240, A480, ASTM B409, B906
Alloy 800/H/HT Seamless Pipe & Tube	ASTM B829, B407
Alloy 800/H/HT Welded Pipe & Tube	ASTM B514, B515, B751, B775
Buttweld Fittings	ASTM B366
Forging (Flange & Fittings)	ASTM B564, DIN 17460

Chemical, Mechanical & Physical Properties of Alloy 800/H/HT

Chemical Composition of Alloy 800/H/HT

Element	Values in %		
	Alloy 800	Alloy 800H	Alloy 800HT
Ni	30-35	30-35	30-35
Cr	19-23	19-23	19-23
Fe, min	39.5	39.5	39.5

C, max	0.10	0.05-0.10	0.06-0.10
Al	0.15-0.60	0.15-0.60	0.25-0.60
Ti	0.15-0.60	0.15-0.60	0.25-0.60
Al+Ti	0.30-1.20	0.30-1.20	0.85-1.20

Physical Properties of Alloy 800/H/HT

Density	0.287 lb/in ³ / 7.94 g/cm ³
Melting Point	2475 – 2525 °F / 1357 – 1385 °C
Specific Heat @ 70°F	0.11 Btu/lb•°F
Permeability @ 70°F Annealed	1.014 (200 Oersted)
Curie Temperature	-115 °C / -175 °F
Elastic Modulus	28.50 X 10 ⁶ psi
Electrical Resistivity @ 70°F	595 ohm•circ mil/ft
Annealing Incoloy 800	983 – 1038 °C / 1800 – 1900 °F
Annealing Incoloy 800H / Ht	1147 – 1177°C / 2100 – 2150 °F
Quench	Rapid Air / Water

Mechanical Properties of Alloy 800, 800H or 800 HT

Grade	Tensile Strength (MPa) min	Yield Strength 0.2% Proof (MPa) min	Elongation (% in 50mm) min
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800-H-HT	Psi – 75,000, MPa – 520	Psi – 30,000, MPa –205	30
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- The above are typical minimum values.

Characteristics of Alloy 800/800H/800HT

Incoloy 800H and 800HT are both austenitic high-strength solid-solution nickel-iron-chromium alloy with controlled levels of carbon, aluminium, titanium, silicon and manganese and controlled content of (Al + Ti). The analyses are similar to that of Incoloy 800, but a special solution anneal treatment (with grain sizes $\geq 90 \mu\text{m}$ /ASTM No. 4) gives significantly increased creep-rupture strength for Incoloy 800H above 600 °C and highest creep-rupture strength for Incoloy 800HT above 700 °C due to the precipitation of TiC.

Incoloy 800H is characterized by:

- Good creep-rupture properties at temperatures above 600 °C (1110 °F) without loss of ductility during long-term use at temperatures below 700 °C (1290 °F), due to limitation of (Ti + Al) content to max. 0.7 %
- Good resistance to reducing, oxidizing and nitriding atmospheres and to atmospheres which alternate between reducing and oxidizing conditions
- Metallurgical stability in long-term application at high temperatures

Incoloy 800HT is characterized by:

- Excellent creep strength at temperature above 700°C. However, for applications where frequent excursions to temperatures lower than 700°C during service cannot be excluded or parts of the material are permanently exposed to a temperature below 700°C, the use of Incoloy 800H is recommended
- Good resistance to reducing, oxidizing and nitriding atmospheres and to atmospheres which alternate between reducing and oxidizing conditions
- Metallurgical stability in long-term application at high temperatures

Corrosion Resistance of Alloy 800/800H/800HT

- Incoloy 800, like many austenitic stainless steels, can be sensitized, or made susceptible to intergranular attack in some aggressive media, by exposure to the temperature range of 1000 to 1400°F (540–760°C).
- Alloys 800, 800H and 800HT have the same nickel, chromium, and iron contents and generally display similar corrosion resistance. The high nickel and chromium contents of Incoloy 800H, 800HT and 800 ensure excellent resistance to oxidation.
- Compared to Incoloy 800, Alloy 800H and 800HT can be used at higher temperature and still have a good strength, the alloys are also very resistant to carburization, nitridation and oxidizing sulphur-bearing atmospheres at high temperature.

- Resistance to hydrogen is excellent for Incoloy 800H and 800HT.

Types of Nickel Alloys

ASTM/AISI	UNS No	EN	DIN	JIS
Incoloy 800	N08800	1.4558	X2NiCrAlTi3220	NCF2B
Incoloy 800H	N08810			
Incoloy 825	N08825	2.4858	NiCr21Mo	NCF825
Inconel 600	N06600	2.4816	LC-NiCr12Fe	NCF1B
Hastelloy B	N10001			N12MV
Hastelloy B2	N10665	2.4617	NiMo28	
Hastelloy C				
Hastelloy C276	N10276	2.4819	NiMo16Cr15W	NW 0276
Hastelloy C4	N06455	2.461		
Hastelloy C22	N06022	2.4602		
Inconel 625	N06625	2.4856	NiCr22Mo9Nb	
Inconel 718	N07718	2.4668		
Monel 400	N04400	2.4360		NW 4400
Nickel 200	N02200	2.4060		

- **Trademark Notice:** Some names are trade names and/or trademarks of specific manufacturers. We are not affiliated with any manufacturer(s). Orders will be filled to meet specifications from any available source(s). Names are listed solely for reference to help identify products consistent with listed specifications.

Incoloy 800	Incoloy 800H	Incoloy 800 HT
Alloy 800	Alloy 800H	Alloy 800 HT
UNS N08800	UNS N08810	UNS N08811
DIN W.Nr. 1.4876	DIN W.Nr. 1.4958	DIN W.Nr. 1.4959

Manufacturing Incoloy 800/800H/800HT Products

Incoloy Alloy 800/800H/800HT Sheet	Incoloy Alloy 800/800H/800HT Plate Cuttings/Profiles	Incoloy Alloy 800/800H/800HT Nuts, Bolts and Fasteners
Incoloy Alloy 800/800H/800HT Plate	Incoloy Alloy 800/800H/800HT Foil, Coil	Incoloy Alloy 800/800H/800HT Wire
Incoloy Alloy 800/800H/800HT Blocks/Slabs	Incoloy Alloy 800/800H/800HT Strip	Incoloy Alloy 800/800H/800HT Ingot
Incoloy Alloy 800/800H/800HT Rod/Bar	Incoloy Alloy 800/800H/800HT Pipes and Tubes	Incoloy Alloy 800/800H/800HT Forgings and Castings
Incoloy Alloy 800/800H/800HT Flanges	Incoloy Alloy 800/800H/800HT Forged Fittings	Incoloy Alloy 800/800H/800HT Buttweld Fittings

About Metallica Metals – The Steel Pipes Factory

- Established in 1975, the Metallica Metals Group (The Steel Pipes Factory) has its operations spread across major cities in India. We are a pioneer in the stainless steel pipes, nickel alloy products, titanium products, carbon steel pipes and alloy steel pipes manufacturing and processing industry. Our products including pipe fittings, flanges, pipes, sheet plates and valves are exported to over 70 countries across the world, while in India we have supplied to even the remote areas. With over 250 tons of sale in stainless steel and carbon steel pipes every day, Metallica has emerged as a prominent vendor for many buyers in India and Overseas
- More than 3000 tons ready from stock and new production ready in just a few weeks.
- Feel free to contact us on - Email: info@metallicametals.com | Tel: +91 8928722715 | +91-22-66581538, +91-22-67436694, +91-22-66109768

Our Key Products

STAINLESS STEEL & NICKEL ALLOYS

Pure Nickel Alloys

INSTRUMENTATION TUBES & FITTINGS

Instrumentation Tube

PRODUCTS

Steel Sheet & Plate

Monel Alloys (Ni-Cu Alloys)

Inconel (Ni-Cr-Mo) Alloys

Incoloy Alloys (Ni-Cr-Fe)

Hastelloy Alloys

Stainless Steel 304/304L

Stainless Steel 309S/309H

Stainless Steel 310/310S

Stainless Steel 316/316L

Stainless Steel 316Ti

Stainless Steel 317/317L

Stainless Steel 321/321H

Stainless Steel 347/347H

Stainless Steel 904L

Duplex Steels (UNS S32205, UNS S31803)

Super Duplex Steels (UNS S32760 / UNS S32750)

Stainless Steel 254 SMO (UNS S31254 / 1.4547)

Hydraulic Tubing

Seamless Tubing

Instrumentation Tube Fittings

Double Compression Tube Fittings

Precision Pipe Fittings

Needle & Gauge Valves

Manifold Valves

Steel Coil & Strip

Steel Pipes

Steel Tubes

Electropolish Tube

Heat Exchanger Tubes

Steel Bars/Rods & Wire

Fasteners (Nut, Bolt, Washer)

Steel Angle Bars

Hex Steel Bars

Round Steel Bars & Rod

Flat Steel Bars

Forgings, Rings & Forged Blocks

Stainless Steel Pipe

Stainless Steel Seamless Pipe

Stainless Steel Welded Pipe

Stainless Steel Tubes

Stainless Steel Furnace Tubes

Stainless Steel Seamless Tubing

Stainless Steel Heat Exchanger Tubes

Large Diameter Pipe

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