

Incoloy 825 Datasheet

Titanium-stabilized nickel-iron-chromium alloy with copper and molybdenum for corrosion resistance in acidic, marine and sour-gas environments.

Alloy Series	Incoloy 825
UNS	N08825
W.Nr.	2.4858
Common Forms	Seamless pipe, welded tube, plate, sheet, round bar, flanges, fittings and forgings
Corrosion Focus	Sulfuric and phosphoric acids, chloride stress-corrosion cracking, sour-gas and marine service

1. Product Overview

Incoloy 825 is a titanium-stabilized fully austenitic nickel-iron-chromium alloy with additions of copper and molybdenum. The chemistry is balanced to provide strong resistance to reducing acids, oxidizing conditions and chloride-bearing environments where many stainless steels or Alloy 800 may not provide enough corrosion resistance.

Grade	Main Metallurgical Difference	Typical Service Focus
Incoloy 825	Ni-Fe-Cr alloy with Mo, Cu and Ti stabilization	Sulfuric acid, phosphoric acid, seawater and general corrosion service
Alloy 800	Ni-Fe-Cr heat-resistant alloy without Mo and Cu additions	High-temperature oxidation and carburization resistance
316L Stainless	Austenitic stainless steel with lower nickel content	General corrosion service where chloride stress-corrosion cracking risk is lower

2. Key Features

- Excellent resistance to sulfuric and phosphoric acids in chemical processing environments.
- High nickel content provides strong resistance to chloride-ion stress-corrosion cracking.
- Molybdenum and copper additions improve performance in reducing acid conditions.
- Titanium stabilization helps resist intergranular corrosion after welding and fabrication.

Further information under:	https://www.nickelcasting.com/nickel-alloys/incoloy-metal-alloys/incoloy-825/
Home page:	www.nickelcasting.com
Email:	ni@Nickelcasting.com

Technical Data

The following values are provided as general reference data for engineering review and procurement planning. Confirm final values against the applicable specification, product form, heat treatment condition and material certificate.

3. Chemical Composition (%)

Element	Content (%)
Nickel (Ni)	38.0-46.0
Iron (Fe)	22.0 min / balance
Chromium (Cr)	19.5-23.5
Molybdenum (Mo)	2.5-3.5
Copper (Cu)	1.5-3.0
Titanium (Ti)	0.6-1.2
Carbon (C)	0.05 max

4. Standard Specifications

Product Form	ASTM / ASME Standards
Pipe & Tube - Seamless	ASTM B423, ASME SB423
Pipe & Tube - Welded	ASTM B704, ASTM B705, ASME SB704 / SB705
Plate, Sheet, Strip	ASTM B424, ASME SB424
Bar & Rod	ASTM B425, ASME SB425
Fittings	ASTM B366, ASME SB366
Forgings	ASTM B564, ASME SB564

5. Mechanical Properties - Typical at Room Temperature

Property	Typical Values
Tensile Strength	85 ksi / 586 MPa min
Yield Strength, 0.2% Offset	35 ksi / 241 MPa min
Elongation	30% min
Hardness	135-165 HB typical

Note: Typical mechanical values vary by product form, section size and heat treatment. Use the required ASTM / ASME specification and material test report for purchase acceptance.

Applications and Ordering Information

Use this section to define inquiry requirements and accelerate technical confirmation for Incoloy 825 products.

6. Typical Applications

Industry / Area	Typical Components
Chemical Processing	Heat exchangers, evaporators, scrubbers and piping for sulfuric, phosphoric and nitric acid service
Oil & Gas	Sour-gas downhole tubing, wellhead components and H2S-containing production equipment
Pollution Control	Flue gas desulfurization scrubbers, acid condensate handling systems and ducting components
Pickling Equipment	Heating coils, tanks, baskets and crates used in sulfuric acid pickling lines
Marine & Offshore	Seawater piping, fasteners and fittings exposed to chloride-bearing environments

7. Available Supply Forms

Pipe & Tube	Plate & Sheet	Bar & Rod
Pipe Fittings	Flanges	Wire & Strip
Forgings	Custom Cutting	Project Supply

8. Information to Include When Requesting a Quote

- Required grade: Incoloy 825 / UNS N08825, with ASTM / ASME specification if applicable.
- Product form: pipe, tube, plate, sheet, bar, fittings, flanges, forgings or machined parts.
- Dimensions: outside diameter, wall thickness, length, width, thickness or drawing number.
- Quantity, delivery destination and required delivery schedule.
- Special requirements: cutting, machining, heat treatment, NDT, PMI, test report or material certificate.

Company Information	
Address	Shanghai, China
Email	ni@Nickelcasting.com
Home Page	www.nickelcasting.com
Product Page	https://www.nickelcasting.com/nickel-alloys/incoloy-metal-alloys/incoloy-825/

Disclaimer

This datasheet is provided for general reference only. Actual values may vary by product form, heat treatment, manufacturing condition and applicable specification. Please contact us for confirmed specifications, test reports and material certificates before ordering.