

Alloy 825 (UNS N08825)

Smiths Advanced Metals

Rev: SAM/datasheets/high-temperature-bars/alloy-825/feb-2022

Page: 1 of 1

Nickel-based Alloy Bars

An austenitic nickel-iron-chromium alloy for superb corrosion resistance.

Alloy 825 is a titanium stabilised austenitic nickel base alloy with additions of molybdenum and copper.

The alloy offers exceptional corrosion resistance in reducing and oxidating environments and provides resistance to chloride stress corrosion cracking and pitting. The addition of titanium in the alloying process stabilises the product against sensitisation in the 'as-welded' condition. The resulting alloy is resistant to intergranular attack in exposed temperature ranges. A similar effect would occur on unstabilised stainless steel.

Alloy 825 offers good mechanical properties from cryogenic to moderately high temperatures. The alloy is readily formable and weldable by various methods. Our product finds use in applications such as oil & gas piping systems, nuclear fuel processing and acids production.

Smiths Advanced Metals offers Alloy 825 bars from stock in various sizes to suit your engineering requirements.



Grades / Specifications

- ASME SB425
- ASME SB564
- ASTM B425
- ASTM B564
- BS 3076
- NACE MR0103
- 2.4858
- NA16
- NiCr21Mo
- UNS N08825

Benefits

- Excellent phosphoric & sulfuric acid resistance
- Good mechanical properties
- Good performance at low and high temperature
- Excellent resistance to chloride stress corrosion cracking

*Chemical Composition (weight %)

| | Cr | Ni | Mo | Ti | Cu | C | Mn | Si | S | Fe | Al |
|------|-------|-------|------|------|------|------|------|------|------|-------|------|
| min. | 19.50 | 38.00 | 2.50 | 0.60 | 1.50 | | | | | 22.00 | |
| max. | 23.50 | 46.00 | 3.50 | 1.20 | 3.00 | 0.05 | 1.00 | 0.50 | 0.03 | | 0.20 |

* As per ASTM B425

Mechanical Properties

| | | |
|----------------------------|-----------------------|--------|
| 0.2% Proof Stress | 241 N/mm ² | 35 ksi |
| Tensile Strength | 586 N/mm ² | 85 ksi |
| Elongation, 5.65√S0 and 4D | 30% | |

* Properties as per ASTM B425, annealed condition

Physical Properties

| | |
|--|---------|
| Density (Kg.m-1) | 81.4 |
| Magnetic Permeability (20°C) | 1.005 |
| Young's Modulus (N/mm ²) | 196 |
| Thermal conductivity, 20°C (W/(m.K)) | 10.8 |
| Specific Electrical Resistance, 20°C (Ω-m) | 0.00113 |

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