

Description

Stainless Steel Grade 308H/1.4301 is an austenitic chromium-nickel stainless steel with a high carbon content. This grade is designed for use in applications where high-temperature strength is required. The higher carbon content improves high-temperature properties, making it suitable for use in elevated temperature environments. It is commonly used in welding consumables and high-temperature industrial applications.

Chemical Composition

- Chromium (Cr): 19.0 - 21.0%
 - Nickel (Ni): 9.0 - 11.0%
 - Carbon (C): 0.04 - 0.10%
 - Manganese (Mn): $\leq 2.0\%$
 - Silicon (Si): $\leq 0.75\%$
 - Phosphorus (P): $\leq 0.045\%$
 - Sulfur (S): $\leq 0.030\%$
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Mechanical Properties

- Tensile Strength: 550 MPa (min)
 - Yield Strength: 240 MPa (min)
 - Elongation: 40% (min)
 - Hardness: ≤ 217 HB
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Thermal & Physical Properties

- Density: 8.0 g/cm³
- Melting Point: 1400 - 1450 °C
- Thermal Conductivity: 15.0 W/m·K at 100 °C
- Specific Heat Capacity: 500 J/kg·K at 100 °C
- Electrical Resistivity: 0.72 $\mu\Omega\cdot m$ at 20 °C

- Thermal Expansion: 17.2×10^{-6} /K at 20-100 °C
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Other Designations

- UNS: S30809
 - EN: 1.4301
 - JIS: SUS 308H
 - BS: 308S31
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Fabrication and Heat Treatment

- Fabrication: 308H/1.4301 stainless steel can be easily welded and processed by standard shop fabrication practices. It can be readily formed into various shapes and welded using standard techniques like TIG, MIG, and resistance welding.
 - Heat Treatment: Solution annealing can be performed at 1010-1120°C, followed by rapid cooling. Post-weld heat treatment is not required for 308H stainless steel.
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Applications

- Petrochemical Industry: Used in piping, vessels, and heat exchangers that require high-temperature strength.
 - Power Generation: Boiler parts and superheater tubes.
 - Welding Consumables: Commonly used in the production of welding wires and rods.
 - Chemical Processing: Used in chemical processing equipment and furnaces.
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Supplied Forms

- Bars
- Coils
- Wires

Features

- High-Temperature Strength: The increased carbon content provides enhanced strength at elevated temperatures.
- Good Weldability: Suitable for various welding methods and does not require post-weld heat treatment.
- Corrosion Resistance: Offers good resistance to corrosion in oxidizing environments.
- Formability: Can be easily formed and fabricated into various shapes.
- Durability: Robust and durable, making it suitable for high-stress applications.

