

Description

Stainless Steel Grade 316H/1.4919 is an enhanced version of Grade 316 stainless steel, offering improved high-temperature strength and oxidation resistance. It is a molybdenum-bearing austenitic stainless steel with a higher carbon content compared to standard 316, making it suitable for high-temperature environments where greater strength and durability are required. Grade 316H is commonly used in chemical processing, petrochemical industries, and high-temperature applications where resistance to corrosion and scaling is crucial.

Chemical Composition

- Chromium (Cr): 16.0 - 18.0%
 - Nickel (Ni): 10.0 - 14.0%
 - Molybdenum (Mo): 2.0 - 3.0%
 - Carbon (C): 0.04 - 0.10%
 - Manganese (Mn): $\leq 2.0\%$
 - Silicon (Si): $\leq 1.0\%$
 - Phosphorus (P): $\leq 0.045\%$
 - Sulfur (S): $\leq 0.030\%$
 - Nitrogen (N): $\leq 0.10\%$
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Mechanical Properties

- Tensile Strength: 515 MPa (75,000 psi) (min)
 - Yield Strength: 205 MPa (30,000 psi) (min)
 - Elongation in 50 mm: 40% (min)
 - Hardness: Rockwell B 85 (approximate)
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Thermal & Physical Properties

- Density: 8.0 g/cm³

- Melting Point: 1375 - 1400°C (2500 - 2550°F)
 - Thermal Conductivity: 16.3 W/m·K
 - Specific Heat Capacity: 500 J/kg·K
 - Coefficient of Thermal Expansion: $16.0 \times 10^{-6} / ^\circ\text{C}$ ($0.0090 \times 10^{-6} / ^\circ\text{F}$) in the temperature range of 20 - 100°C
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Other Designations

- UNS: S31609
 - ISO: 1.4401 (for standard 316), 1.4404 (for standard 316L)
 - DIN: X6CrNiMoTi17-12-2
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Fabrication and Heat Treatment

- Forming: Grade 316H/1.4919 can be cold worked using standard techniques such as bending, drawing, and rolling. It is highly formable due to its austenitic structure.
- Welding: Suitable for welding using common techniques such as TIG and MIG. It is recommended to use a filler metal with a similar composition to ensure weld integrity.
- Heat Treatment: Typically not hardened by heat treatment. Annealing is performed at temperatures of 1010 - 1120°C (1850 - 2050°F) followed by rapid cooling to relieve stresses and improve toughness.

STAINLESS STEEL WIRES & BARS

Applications

- Chemical Processing: Equipment and piping systems used in the chemical industry that are exposed to corrosive chemicals and high temperatures.
- Petrochemical Industry: Components in refineries and chemical plants that operate under extreme conditions.
- Marine Environment: Parts exposed to marine environments where resistance to chloride-induced pitting is crucial.

- High-Temperature Furnaces: Components and structures in high-temperature furnace applications.
 - Food Processing: Equipment in food and beverage industries where high-temperature sterilization is required.
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Supplied Forms

- Bars and Rods
 - Wires and Strips
 - Fittings and Flanges
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Features

- High-Temperature Strength: Maintains strength and resistance to scaling and oxidation at elevated temperatures.
- Excellent Corrosion Resistance: Superior resistance to pitting, crevice corrosion, and oxidation.
- Good Fabricability: Can be easily formed and welded, suitable for complex shapes and structures.
- Durability: Robust performance in harsh environments and high-temperature conditions.

The logo for VENUS features a stylized blue figure of a woman in a high-heeled shoe, with a series of vertical lines extending upwards from her feet, resembling a fan or a set of wires. The word "VENUS" is written in a large, bold, blue, sans-serif font, partially overlapping the vertical lines.

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