

Description

Stainless Steel Grade 304S (DIN 1.4306) is a high-quality austenitic stainless steel known for its excellent corrosion resistance, formability, and durability. This grade is often used in a variety of applications where strong resistance to oxidation and corrosion is required. 304S is a variant of 304 stainless steel with slightly modified properties, designed to meet specific application needs, particularly in environments where slightly enhanced resistance to corrosion is beneficial.

Chemical Composition

- Chromium (Cr): 18.0 - 20.0%
 - Nickel (Ni): 8.0 - 12.0%
 - Manganese (Mn): $\leq 2.0\%$
 - Silicon (Si): $\leq 1.0\%$
 - Carbon (C): $\leq 0.08\%$
 - Phosphorus (P): $\leq 0.045\%$
 - Sulfur (S): $\leq 0.03\%$
 - Nitrogen (N): $\leq 0.10\%$
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Mechanical Properties

- Tensile Strength: 505 MPa (73,000 psi) min
 - Yield Strength: 215 MPa (31,200 psi) min
 - Elongation: 40% min in 50 mm
 - Hardness: Brinell Hardness ≤ 201 HB
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Thermal & Physical Properties

- Density: 8.00 g/cm³
- Melting Point: 1400 - 1450°C (2550 - 2650°F)
- Thermal Conductivity: 16.2 W/m·K

- Specific Heat Capacity: 500 J/kg·K
 - Coefficient of Thermal Expansion: 16.0×10^{-6} /K (20 - 100°C)
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Other Designations

- DIN: 1.4306
 - AISI/ASTM: 304S
 - UNS: S30400
 - JIS: SUS304
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Fabrication and Heat Treatment

- Cold Working: Grade 304S can be easily cold worked using standard techniques such as rolling, bending, and stamping. Cold working increases its hardness and strength.
 - Welding: It exhibits good weldability using standard welding methods such as TIG, MIG, and resistance welding. Recommended filler metals include those with similar alloy compositions.
 - Heat Treatment: Typically, 304S is used in the annealed condition. Heat treatment is not commonly required, but if performed, the temperature should be kept between 1010 - 1120°C (1850 - 2050°F) and followed by rapid cooling to retain corrosion resistance.
 - Machinability: It has good machinability, though it may work-harden during machining. Appropriate cutting tools and techniques should be used to manage work-hardening.
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Applications

- Architectural: Cladding, structural components, and interior fittings.
- Food Processing: Equipment and machinery in contact with food.
- Chemical: Tanks, piping, and equipment in various chemical processing applications.
- Automotive: Exhaust systems, trim components, and other parts exposed to moderate temperatures and environmental conditions.

- Medical: Surgical instruments, medical equipment, and other devices requiring high cleanliness and corrosion resistance.
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Supplied Forms

- Bars: Round, square, and hexagonal shapes.
 - Wires
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Features

- Excellent Corrosion Resistance: Suitable for use in most environments, including those exposed to moisture and chemicals.
- Good Formability: Easily formed into various shapes and sizes.
- High Strength and Durability: Provides structural strength and resistance to mechanical wear.
- Non-Magnetic: Generally non-magnetic in the annealed state.
- Ease of Cleaning: Smooth surface is easy to clean and maintain, making it ideal for sanitary applications.



VENUS
STAINLESS STEEL WIRES & BARS