

Description

Stainless Steel Grade 385/1.4305 is an austenitic stainless steel known for its high sulfur content, which enhances its machinability. This grade is specifically designed for high-speed machining operations. It provides good corrosion resistance and formability, making it suitable for various industrial applications that require precision and efficiency in machining.

Chemical Composition

- Chromium (Cr): 19.0 - 21.0%
 - Nickel (Ni): 9.0 - 11.0%
 - Manganese (Mn): $\leq 2.0\%$
 - Silicon (Si): $\leq 1.0\%$
 - Sulfur (S): 0.15 - 0.35%
 - Carbon (C): $\leq 0.05\%$
 - Phosphorus (P): $\leq 0.045\%$
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Mechanical Properties

- Tensile Strength: 515 - 690 MPa
 - Yield Strength: 205 MPa
 - Elongation: 40%
 - Hardness: 85 HRB
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Thermal & Physical Properties

- Density: 7.98 g/cm³
- Melting Point: 1400 - 1450°C
- Thermal Conductivity: 16.2 W/m·K (at 100°C)
- Electrical Resistivity: $0.072 \times 10^{-6} \Omega \cdot m$ (at 20°C)
- Coefficient of Thermal Expansion: $17.2 \times 10^{-6} / ^\circ C$ (0-100°C)

Other Designations

- UNS: S30485
- EN: 1.4305
- AISI: 303
- DIN: X8CrNiS18-9

Fabrication and Heat Treatment

- Machining: Optimized for high-speed machining due to high sulfur content.
- Welding: Not recommended for critical welds due to sulfur content.
- Forming: Good formability, can be easily formed using standard methods.
- Heat Treatment: Annealing is performed at 1010-1120°C followed by rapid cooling. This grade is not hardenable by heat treatment.

Applications

- Automotive: Precision machined parts, fittings.
- Aerospace: Components requiring high machinability.
- Industrial Machinery: Screws, bolts, and other fasteners.
- Electrical: Connectors and terminals.
- Consumer Goods: Kitchen appliances and other high-precision items.

Supplied Forms

- Bars
 - Rods
 - Wires
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Features

- Enhanced Machinability: High sulfur content ensures excellent machinability.
- Corrosion Resistance: Good resistance to atmospheric corrosion and mild environments.
- Formability: Easily formed into complex shapes.
- Economic: Reduced machining time leads to cost savings in manufacturing.
- Non-Hardenable: Cannot be hardened by heat treatment, retaining its machinability.

