

Description

Grade 303Cu/1.4570 is an austenitic chromium-nickel stainless steel that includes copper to enhance machinability and corrosion resistance. This grade is recognized for its excellent machinability, making it suitable for various applications where high-speed machining is required. The addition of copper improves the material's performance in high-temperature environments while maintaining good mechanical properties.

Chemical Composition

The typical chemical composition of 303Cu is as follows (in weight %):

- Carbon (C): ≤ 0.15
- Silicon (Si): ≤ 1.00
- Manganese (Mn): ≤ 2.00
- Phosphorus (P): ≤ 0.15
- Sulfur (S): ≥ 0.10
- Nickel (Ni): 8.00 - 10.00
- Chromium (Cr): 17.00 - 19.00
- Copper (Cu): 1.50 - 3.50
- Molybdenum (Mo): ≤ 0.60

Mechanical Properties

The mechanical properties of 303Cu are as follows:

- Yield Strength (Rp0.2): 334 MPa (minimum)
- Tensile Strength (Rm): 471 MPa (minimum)
- Elongation (A): 21% (minimum)
- Reduction of Area (Z): 12% (minimum)
- Hardness (HBW): 134

Thermal & Physical Properties

- Density: 7.93 g/cm³
- Thermal Conductivity: 23 W/m·K
- Specific Heat: 500 J/kg·K
- Electric Resistance: 42 $\mu\Omega\cdot\text{cm}$

Other Designations

- DIN Number: 1.4570
- UNS: S30330
- AISI: 303Cu
- SUS: 303Cu

Fabrication and Heat Treatment

303Cu is not hardenable by heat treatment, making it suitable for various fabrication processes such as:

- Hot and Cold Working: Suitable for forging, rolling, and machining.
- Welding: Can be welded using standard methods for austenitic stainless steels.
- Heat Treatment: Typically, solution treatment is performed at temperatures around 1010-1120°C, followed by rapid cooling.

Applications

303Cu is utilized in various applications, including:

- Valve bodies and trim
- Fasteners and fittings
- Mechanical parts requiring corrosion resistance
- Chemical processing equipment

Supplied Forms

303Cu is available in various forms, including:

- Round bars
- Flat bars

Features

- Excellent machinability
- Good corrosion resistance
- Non-magnetic in the annealed condition
- Suitable for high-temperature applications

This datasheet provides a comprehensive overview of the 303Cu grade, highlighting its properties, applications, and specifications.

