

Description

Stainless Steel Grade 308LSi/1.4316 is a low-carbon austenitic stainless steel with a higher silicon content than the standard 308 grade. The increased silicon content improves the material's weldability and fluidity, making it particularly well-suited for welding applications. It is commonly used for welding stainless steels of similar compositions, especially in the food and beverage industry, chemical processing, and other environments where excellent corrosion resistance is required.

Chemical Composition

- Chromium (Cr): 19.0 - 21.0%
 - Nickel (Ni): 9.0 - 11.0%
 - Silicon (Si): 0.65 - 1.00%
 - Manganese (Mn): $\leq 2.0\%$
 - Carbon (C): $\leq 0.03\%$
 - Phosphorus (P): $\leq 0.030\%$
 - Sulfur (S): $\leq 0.030\%$
 - Iron (Fe): Balance
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Mechanical Properties

- Tensile Strength: 510 - 750 MPa
 - Yield Strength: 210 MPa (min)
 - Elongation at Break: 40% (min)
 - Hardness: 150 HB (max)
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Thermal & Physical Properties

- Density: 7.9 g/cm³
- Melting Point: 1399 - 1454 °C
- Specific Heat Capacity: 500 J/kg·K
- Thermal Conductivity: 16.3 W/m·K

- Electrical Resistivity: 0.73 $\mu\Omega\cdot\text{m}$
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Other Designations

- UNS S30883
 - EN 1.4316
 - Werkstoff Nr. 1.4316
 - AISI 308LSi
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Fabrication and Heat Treatment

- Welding: Excellent weldability, can be welded using standard methods like TIG, MIG, and SMAW.
 - Forming: Good formability, suitable for forming operations such as bending, drawing, and spinning.
 - Machining: Machinable with standard techniques; care should be taken to prevent work hardening.
 - Heat Treatment: Not hardenable by heat treatment. Annealing can be done at 1010-1120°C followed by rapid cooling.
 - Corrosion Resistance: Excellent resistance to intergranular corrosion due to its low carbon content, making it ideal for applications requiring corrosion resistance post-welding.
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Applications

- Food and Beverage Industry: Equipment and piping that come into contact with food and beverages.
- Chemical Processing: Vessels and piping in chemical processing plants.
- Pharmaceuticals: Manufacturing and processing equipment.
- Aerospace: Components exposed to high temperatures and corrosive environments.
- Marine Applications: Piping and equipment used in marine environments due to its corrosion resistance.

Supplied Forms

- Bars
- Wires

Features

- Excellent Weldability: High silicon content improves fluidity and reduces welding defects.
- Corrosion Resistance: Superior resistance to intergranular corrosion.
- Good Formability: Can be easily formed into various shapes.
- Mechanical Strength: Good tensile and yield strength for structural applications.
- High Temperature Resistance: Suitable for high-temperature applications up to 870°C.

