

## Description

The **307SI/1.4316** grade is a type of stainless steel filler metal primarily used for welding applications. It is characterized by its excellent corrosion resistance, high ductility, and low ferrite content, making it suitable for various environments, particularly those exposed to corrosive elements.

## Chemical Composition

The typical chemical composition of 307SI is as follows:

- Carbon (C): 0.04 - 0.14%
- Chromium (Cr): 19.5 - 22.0%
- Nickel (Ni): 8.0 - 10.7%
- Molybdenum (Mo): 0.5 - 1.5%
- Manganese (Mn): 3.3 - 6.0%
- Silicon (Si): 0.8 - 1.0%
- Phosphorus (P):  $\leq 0.045\%$
- Sulfur (S):  $\leq 0.03\%$
- Nitrogen (N):  $\leq 0.10\%$
- Copper (Cu):  $\leq 0.75\%$ .

## Mechanical Properties

The mechanical properties of **307SI/1.4316** include:

- Tensile Strength: Approximately 600 MPa
- Yield Strength: Approximately 300 MPa
- Elongation: Minimum of 30%
- Hardness: Typically around 200 HB.

## Thermal & Physical Properties

- Density: Approximately 8.0 g/cm<sup>3</sup>
- Melting Point: 1400 - 1450 °C
- Thermal Conductivity: 16.2 W/m·K
- Specific Heat Capacity: 500 J/kg·K.

## Other Designations

The 307SI grade is also known by several other designations, including:

- AWS ER307Si
- DIN 1.4316
- EN 1.4316.

## Fabrication and Heat Treatment

**307SI/1.4316** can be fabricated using standard welding techniques, including MIG and TIG welding. It does not require extensive pre- or post-weld heat treatment, although stress relief may be beneficial in certain applications. The recommended welding parameters should be followed to ensure optimal performance and integrity of the weld.

## Applications

This grade is commonly used in:

- Welding of austenitic stainless steels
- Fabrication of equipment in the food processing and chemical industries
- Repair and maintenance of stainless steel structures.

## Supplied Form

307SI is typically supplied in the form of:

- Welding wire (solid and tubular)
- Filler rods for various welding processes.

## Features

- High resistance to intergranular corrosion
- Good resistance to oxidation at elevated temperatures
- Excellent weldability and ease of fabrication
- Non-magnetic properties.

## DIN Number

The DIN number for 307SI is DIN 1.4316.

This datasheet provides a comprehensive overview of the **307SI/1.4316** grade, highlighting its composition, properties, and applications, ensuring it serves as a reliable reference for users in various industries.

