

Description

Stainless Steel Grade 317/1.4449 is an austenitic stainless steel known for its high strength and excellent corrosion resistance, particularly in environments exposed to chlorides. It is primarily used in applications where resistance to pitting and crevice corrosion is essential.

Chemical Composition

The typical chemical composition of Grade 317 is as follows:

Element	Composition (%)
Carbon (C)	0.03 Max
Manganese (Mn)	2.0 Max
Silicon (Si)	0.75 Max
Chromium (Cr)	18.0 - 20.0
Nickel (Ni)	11.0 - 15.0
Molybdenum (Mo)	3.0 - 4.0

Phosphorus (P)	0.045 Max
Sulfur (S)	0.03 Max
Nitrogen (N)	0.10 Max
Iron (Fe)	Balance

Mechanical Properties

The mechanical properties of Grade 317 are as follows:

Property	Value
Ultimate Tensile Strength (ksi)	75 Min
0.2% Yield Strength (ksi)	30 Min
Elongation (%)	35
Hardness (Brinell)	217 Max

Thermal & Physical Properties

- Density: 7.9 g/cm³
- Thermal Conductivity: 16.2 W/m·K
- Electrical Resistivity: 0.73 μΩ·m
- Coefficient of Thermal Expansion: 16.5 μm/m·°C

Other Designations

- UNS S31700
- DIN 1.4449
- AISI 317
- BS 317S16
- X5CrNiMo 17 13
- SUS Y317

Fabrication and Heat Treatment

Grade 317 can be fabricated using standard techniques such as welding, machining, and forming. It is readily weldable using conventional methods, but it is recommended to use filler metals with a higher molybdenum content for optimal results. Heat treatment is not typically required for this grade, but annealing can be performed at temperatures between 1010-1120°C.

Applications

Common applications of Grade 317 include:

- Chemical processing equipment
- Pulp and paper production
- Flue gas desulfurization systems
- Oil and gas industry components
- Marine applications
- Pharmaceutical and food processing equipment

Supplied Form

Grade 317 is available in various forms, including:

- Bars
- Fittings
- Flanges

Features

- Excellent resistance to pitting and crevice corrosion
- High strength and ductility
- Good weldability
- Resistance to sulfuric acid and other corrosive environments

This datasheet provides a comprehensive overview of Stainless Steel Grade 317, including its properties, applications, and specifications.

