Description

Grade **309/1.4828** is a high-temperature austenitic stainless steel known for its excellent oxidation resistance and high-temperature strength. It is commonly used in applications requiring resistance to scaling and corrosion in elevated temperature environments.

Chemical Composition

The chemical composition of Grade 309 stainless steel is as follows:

Element	% Present (in product form)
Carbon (C)	0.20 max
Manganese (Mn)	2.00 max
Phosphorus (P)	0.045 max
Sulfur (S)	0.030 max
Silicon (Si)	1.50 - 2.00
Chromium (Cr)	22.0 - 24.0

Nickel (Ni)	12.0 - 15.0
Iron (Fe)	Balance

Mechanical Properties

At room temperature in the annealed condition, the mechanical properties of Grade 309 are:

Property	Value
Tensile Strength (MPa)	560 (minimum)
Proof Strength (0.2% Offset) (MPa)	285 (minimum)
Elongation (%)	40 (long products)
Hardness (Brinell)	159 (maximum)

Thermal & Physical Properties

- Maximum Recommended Service Temperature:
  - Continuous: 1,100 °C
  - Intermittent: 980 °C
- Thermal Conductivity:
  - Approximately 16.3 W/m·K at 100 °C

- Specific Heat:
    - About 0.50 J/g·K

Other Designations

- UNS S30900
- EN 1.4828
- ASTM A240

Fabrication and Heat Treatment

- Fabrication: Grade **309/1.4828** can be easily fabricated using standard techniques such as welding, machining, and forming. It is ductile and can be readily shaped into various forms.
- Heat Treatment:
    - Annealing: Heat between 1,050 °C and 1,150 °C followed by water quenching.
    - Stress Relieving: 250-400 °C for 1 hour.
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Applications

Grade 309 is commonly used in:

- High-temperature applications such as furnace components, heat exchangers, and kilns.
- Equipment exposed to corrosive environments, particularly in the petrochemical and power generation industries.

Supplied Form

Grade 309 is available in various forms, including:

- Bars and rods

Features

- Excellent oxidation resistance at high temperatures.
- Good mechanical properties at elevated temperatures.
- Non-magnetic in the annealed condition.

DIN Number

The DIN number for Grade **309 is 1.4828**.

This datasheet provides a comprehensive overview of Stainless Steel Grade 309, highlighting its properties, applications, and specifications relevant for engineering and industrial applications.