

## Description

Grade 316N/1.4401 stainless steel is an austenitic alloy with enhanced mechanical properties, particularly at elevated temperatures. It is known for its excellent corrosion resistance, especially in chloride environments, making it suitable for marine applications and various industrial processes.

## Chemical Composition

The typical chemical composition of 316N stainless steel is as follows:

| Element        | % Present     |
|----------------|---------------|
| Carbon (C)     | 0.04 - 0.10   |
| Manganese (Mn) | 0.0 - 2.0     |
| Silicon (Si)   | 0.0 - 1.0     |
| Phosphorus (P) | 0.0 - 0.045   |
| Sulfur (S)     | 0.0 - 0.03    |
| Chromium (Cr)  | 16.50 - 18.50 |
| Nickel (Ni)    | 10.00 - 14.00 |

|                 |             |
|-----------------|-------------|
| Molybdenum (Mo) | 2.00 - 2.50 |
| Nitrogen (N)    | 0.10 - 0.16 |
| Iron (Fe)       | Balance     |

## Mechanical Properties

The mechanical properties of 316N stainless steel are characterized by the following values:

| Property               | Value      |
|------------------------|------------|
| Tensile Strength (MPa) | 500 - 700  |
| Proof Stress (MPa)     | 205 Min    |
| Elongation (A50 mm)    | 35% Min    |
| Hardness (Brinell)     | 215 Max HB |

## Thermal & Physical Properties

The physical properties of 316N stainless steel include:

| Property               | Value                       |
|------------------------|-----------------------------|
| Density                | 8.00 g/cm <sup>3</sup>      |
| Melting Point          | 1400°C                      |
| Modulus of Elasticity  | 193 GPa                     |
| Electrical Resistivity | 0.74 x 10 <sup>-6</sup> Ω·m |
| Thermal Conductivity   | 16.3 W/m·K                  |
| Thermal Expansion      | 15.9 x 10 <sup>-6</sup> /K  |

## Other Designations

316N stainless steel corresponds to several designations and specifications:

- Euronorm: 1.4401
- UNS: S31600
- BS: 316S31
- DIN: 1.4401

## Fabrication and Heat Treatment

Fabrication of 316N stainless steel can be performed using standard techniques such as:

- Welding: Suitable for various welding methods including TIG, MIG, and submerged arc welding.
- Forming: Can be easily formed into various shapes through processes like rolling and stamping.

Heat treatment is typically not required for this grade, but post-weld annealing is recommended to relieve internal stresses.

## Applications

316N stainless steel is widely used in various applications, including:

- Marine environments (boats, ships)
- Chemical processing (storage tanks, pipes)
- Food and beverage industry (equipment, containers)
- Pharmaceutical manufacturing (cleanroom environments)
- Oil and gas industry (offshore platforms)

## Supplied Form and Features

316N stainless steel is available in various forms, including:

- Bars and rods
- Wire and profiles

The features of 316N include high strength, excellent corrosion resistance, and good weldability, making it a versatile choice for demanding applications.

This datasheet provides a comprehensive overview of 316N stainless steel, highlighting its properties, applications, and specifications.