

Description

Alloy **218/1.3964**, also known as NITRONIC® 60, is a high-performance austenitic stainless steel designed for high-temperature applications. It exhibits excellent resistance to corrosion, wear, and galling, making it suitable for various demanding environments.

Chemical Composition

The chemical composition of Alloy 218 is as follows:

- Chromium (Cr): 17% - 18%
- Nickel (Ni): 8% - 9%
- Manganese (Mn): 7% - 9%
- Silicon (Si): 3.5% - 4.5%
- Nitrogen (N): 0.08% - 0.18%
- Carbon (C): 0.10% max
- Iron (Fe): Balance

Mechanical Properties

The mechanical properties of Alloy **218/1.3964** vary based on the size of the bar:

- Ultimate Tensile Strength:
 - For bars $\leq 0.5"$: 724 MPa (105 Ksi)
 - For bars $> 0.5"$: 655 MPa (95 Ksi)
- Yield Strength (0.2% Offset):
 - For bars $\leq 0.5"$: 379 MPa (55 Ksi)
 - For bars $> 0.5"$: 345 MPa (50 Ksi)
- Elongation in 4D: 35%
- Hardness: Typically ≤ 241 HB

Thermal & Physical Properties

- Melting Point: Approximately 1400 - 1450 °C
- Density: Approximately 8.0 g/cm³
- Thermal Conductivity: 16.3 W/m·K

Other Designations

- DIN Number: 1.3964
- Other Designations: AISI 218, ASTM A276, ASTM A479, AMS 5848

Fabrication and Heat Treatment

Alloy **218/1.3964** can be fabricated using standard techniques for stainless steels. It can be welded using various methods, including TIG and MIG welding. Heat treatment is typically not required for this alloy; however, it can be solution annealed at temperatures of 1040 - 1120 °C followed by rapid cooling.

Applications

Alloy 218/1.3964 is widely used in applications that require high strength and corrosion resistance, including:

- Marine components
- Automotive valves
- Fasteners
- Pins for prosthetics
- Expansion joints in bridges

Supplied Form

Alloy 218 is supplied in various forms, including:

- Bar (round, flat, square)
- Wire

Features

- Excellent resistance to galling and wear
- High strength at elevated temperatures
- Good resistance to pitting and crevice corrosion
- Suitable for use in harsh environments

This datasheet provides a comprehensive overview of Alloy 218 (NITRONIC® 60), highlighting its properties and applications, ensuring it meets the needs of various industries.