Visit us at- www.supremesteels.com

Nitronic 50-Technical Specification

1. Product Description:-

Nitronic 50 is a high-performance, austenitic stainless steel that offers superior corrosion resistance and strength. It is particularly known for its excellent resistance to seawater and its ability to perform well in high-temperature environments. The alloy contains a combination of nitrogen, chromium, and nickel that enhance its resistance to a variety of corrosive media, including chlorides and acids

2. Chemical Composition:-

Element	Composition (%)
Nickel (Ni)	12.0-14.0
Chromium (Cr)	19.0-22.0
Molybdenum (Mo)	0.5-2.5
Nitrogen (N)	0.10-0.16
Iron (Fe)	Balance
Manganese (Mn)	5.0-7.0
Silicon (Si)	0.75 max
Carbon (C)	0.03 max
Phosphorus (P)	0.045 max
Sulfur (S)	0.03 max

3. Mechanical Properties:-

Property	Value
Yield Strength (0.2% offset)	60,000–80,000 psi (415–550 MPa)
Ultimate Tensile Strength	90,000–115,000 psi (620–790 MPa)
Elongation (in 8")	30% min
Hardness (Rockwell B)	85 max
Modulus of Elasticity	20,000 ksi (138 GPa)

4. Physical Properties:-

Property	Value
Density	7.9 g/cm^3
Melting Point	1370°C to 1400°C (2500°F to 2552°F)
Electrical Resistivity	0.00095 ohm-cm
Thermal Conductivity	14 W/m·K
Specific Heat	0.12 cal/g°C

5. Heat Treatment :-

- Solution Annealing: Nitronic 50 is typically solution annealed at 1050°C to 1100°C (1922°F to 2012°F) followed by rapid cooling to lock in its corrosion-resistant properties.
- Post-Weld Heat Treatment: Generally not required, but post-weld treatment may be necessary for some applications in highly corrosive environments.

6. Applications:-

- Marine Applications: Used in seawater systems, heat exchangers, and offshore oil and gas structures due to excellent resistance to chloride-induced stress corrosion.
- Chemical Processing: Equipment for handling aggressive chemicals, such as reactors, tanks, and heat exchangers.
- Pulp and Paper Industry: Equipment used in the pulp and paper industry, especially in bleaching and pulping processes that involve corrosive chemicals.
- Food and Beverage Industry: Processing and storage equipment where resistance to corrosion in aggressive environments is crucial.
- Oil and Gas: Used in components exposed to corrosive media, such as pumps, valves, and piping.

7. Corrosion Resistance:-

- Chloride-Induced Stress Corrosion: Outstanding resistance to stress corrosion cracking, especially in chloride environments like seawater.
- Pitting and Crevice Corrosion: Excellent resistance to pitting and crevice corrosion in chloride environments.
- General Corrosion: Superior general corrosion resistance, including in environments with acids like sulfuric acid.
- Oxidizing Acids: Performs well in environments with oxidizing acids, such as phosphoric acid.