

## **F60-Technical Specification**

**1. Product Description:-** F60 is a high-performance duplex stainless steel with enhanced corrosion resistance and strength compared to F51. Its dual-phase microstructure, consisting of approximately equal proportions of ferrite and austenite, provides excellent mechanical properties and superior resistance to stress corrosion cracking, pitting, and crevice corrosion. F60 is widely used in industries like oil & gas, marine, and chemical processing.

### **2. Chemical Composition:-**

<b>Element</b>	<b>Composition</b>
Chromium (Cr)	22.0 - 23.0
Nickel (Ni)	4.5 - 6.5
Molybdenum (Mo)	3.0 - 3.5
Manganese (Mn)	Max 2.0
Silicon (Si)	Max 1.0
Carbon (C)	Max 0.03
Nitrogen (N)	0.14 - 0.20
Phosphorus (P)	Max 0.03
Sulfur (S)	Max 0.02
Iron (Fe)	Balance

### **3. Mechanical Properties:-**

<b>Property</b>	<b>Value</b>
Tensile Strength (UTS)	655 MPa (95 ksi) min
Yield Strength (YS)	450 MPa (65 ksi) min
Elongation	25% min
Hardness (Brinell)	Max 290 HB
Impact Toughness	High, even at low temperatures

### **4. Physical Properties:-**

<b>Property</b>	<b>Value</b>
Density	7.8 g/cm <sup>3</sup>
Melting Point	1350°C - 1400°C (2462°F - 2552°F)
Thermal Conductivity	19 W/m·K at 20°C
Electrical Resistivity	0.85 μΩ·m at 20°C
Modulus of Elasticity	200 GPa

## 5. Heat Treatment

- **Solution Annealing:**
  - Heat to 1020°C - 1100°C (1868°F - 2012°F) and quench rapidly to maintain the duplex microstructure.
- **Avoid Critical Temperatures:**
  - Avoid prolonged exposure to 475°C - 900°C (887°F - 1652°F) to prevent embrittlement or sigma phase formation.

## 6. Applications:-

- Marine Industry: Offshore platforms, seawater systems, shipbuilding, and desalination plants.
- Oil & Gas: Subsea piping, pressure vessels, risers, and separators.
- Chemical Processing: Storage tanks, heat exchangers, and reactors in corrosive environments.
- Power Generation: Heat recovery systems and cooling water systems.

## 7. Corrosion Resistance:-

- Pitting and Crevice Corrosion: Excellent resistance due to high chromium, molybdenum, and nitrogen content, especially in chloride-rich environments.
- Stress Corrosion Cracking (SCC): Superior resistance to SCC, even in high-temperature and high-stress conditions.
- General Corrosion: Performs well in oxidizing and reducing environments, including acidic and alkaline solutions.
- Marine Environments: High resistance to seawater and brine exposure, making it ideal for offshore applications.