

MP35N - Technical Specification

1. **1. Product Description:** - MP35N is a nickel-cobalt-chromium-molybdenum alloy with exceptional strength, excellent corrosion resistance, and outstanding biocompatibility. It is highly resistant to hydrogen embrittlement, stress-corrosion cracking, and pitting, even in harsh environments, including seawater and sour gas conditions. It is commonly used in aerospace, medical, and chemical processing industries.

2. Chemical Composition:-

Element	Percentage (%)
Nickel (Ni)	33.0-37.0
Cobalt (Co)	35.0 min (Balance)
Chromium (Cr)	19.0-21.0
Molybdenum (Mo)	9.0-10.5
Iron (Fe)	1.0 max
Manganese (Mn)	0.15 max
Silicon (Si)	0.15 max
Carbon (C)	0.025 max
Phosphorus (P)	0.015 max
Sulfur (S)	0.010 max

3. Mechanical Properties:-

Property	Value
Tensile Strength	260-300 ksi (1793-2068 MPa)
Yield Strength (0.2%)	200-270 ksi (1379-1862 MPa)
Elongation	8-15%
Hardness (Rockwell)	~C48-C55

4. Physical Properties:-

Property	Value
Density	8.43 g/cm ³
Melting Range	1350-1430°C (2462-2606°F)

Thermal Conductivity	~10.5 W/m·K (at 20°C)
Electrical Resistivity	~0.92 $\mu\Omega\cdot\text{m}$ (at 20°C)

5. Heat Treatment: - MP35N achieves its strength and corrosion resistance through work hardening and age hardening. Aging is typically performed at 593–649°C (1100–1200°F) to optimize mechanical properties.

6. Applications:-

- Aerospace: Fasteners, springs, and components exposed to extreme environments.
- Medical: Surgical instruments, orthodontic wires, and implants.
- Chemical Processing: High-pressure seals, valves, and pump shafts.
- Oil & Gas: Downhole tools and components exposed to sour gas conditions.

7. Corrosion Resistance:-

- Superior resistance to stress-corrosion cracking in chloride and sour gas environments.
- Excellent resistance to pitting, crevice corrosion, and hydrogen embrittlement.
- Performs well in marine, acidic, and oxidizing environments.