

MP35N® alloy

UNS R30035
W. Nr 2.4999

Applicable Specifications

Strip and Foil ASTM F688, NACE MR0175/ISO 15156, NACE MR0103

Description: MP35N® is a non-magnetic Cobalt-Nickel-Chromium-Molybdenum alloy having an excellent combination of very high strength, excellent corrosion resistance and high fatigue strength. MP35N® is highly resistant to sulfide stress corrosion cracking and provides excellent performance in the most demanding sour well environments. In seawater MP35N® is virtually immune to crevice and stress corrosion and pitting even at the highest strength levels and can operate at cryogenic temperatures up to 850°F (454°C).

Applications include: Seals, springs, medical devices & implants

Industries supplied include: Oil & Gas Extraction, Medical & Dental, Aerospace, Defense and Space Exploration

Nominal Composition

| | Co | Ni | Cr | Mo | C | Fe | Mn | P | S | Si | Ti |
|-----|-----|----|----|------|-------|-----|------|-------|------|------|-----|
| min | bal | 33 | 19 | 9 | - | - | - | - | - | - | - |
| max | - | 37 | 21 | 10.5 | 0.025 | 1.0 | 0.15 | 0.015 | 0.01 | 0.15 | 1.0 |

Physical Properties

| | At 70°F | At 20°C |
|---------------------------|----------------------------------|---------------------------|
| Density | 0.304 lb/in ³ | 8.42 g/cm ³ |
| Modulus of Elasticity (E) | 33.8 x 10 ³ ksi | 233 GPa |
| Modulus of Rigidity (G) | 12.1 x 10 ³ ksi | 83.4 GPa |
| Coefficient of Expansion | 8.2 microinches/in-°F (70-600°F) | 14.8 x µm/m-°C (20-300°C) |
| Electrical Resistivity | 40.6 µohm-in | 103 µohm-cm |
| Thermal Conductivity | 78 Btu-in/ft ² hr-°F | 11.2 W/m-K |

Typical Mechanical Properties

| Condition | Heat Treatment | Tensile Strength | Suggested Operating Conditions |
|----------------------|----------------------------|---------------------------|-----------------------------------|
| Annealed | 1900-2150°F (1040-1175°C) | 115-135 ksi (790-930 MPa) | -300°F to 800°F (-184°C to 427°C) |
| Spring Temper | (Stress relieve as needed) | 200 ksi min (1380 MPa) | -300°F to 800°F (-184°C to 427°C) |
| Spring Temper + Aged | 1000-1200°F | 275 ksi min (1900 MPa) | -300°F to 800°F (-184°C to 427°C) |

MP35N® is a registered trademark of SPS Technologies.

Elgiloy Specialty Metals - Strip Products

1565 Fleetwood Dr.

Elgin, IL 60123 USA

Phone: 1-888-843-2350

www.elgiloy.com

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