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Maraging 300 - Technical Specification

1. Product Description:- Maraging 300 is a cobalt-rich, ultra-high-strength, low-carbon maraging steel that provides excellent toughness, good weldability, and resistance to crack propagation. Known for its strength and dimensional stability, it is widely used in aerospace, tooling, defense, and nuclear applications.

2. Chemical Composition:-

Element	Percentage (%)
Iron (Fe)	Balance
Nickel (Ni)	18.0–19.0
Cobalt (Co)	8.5–9.5
Molybdenum (Mo)	4.8–5.3
Titanium (Ti)	0.6–0.8
Aluminum (Al)	0.05–0.15
Manganese (Mn)	0.10 max
Silicon (Si)	0.10 max
Carbon (C)	0.03 max
Sulfur (S)	0.01 max
Phosphorus (P)	0.01 max

3. Mechanical Properties:-

Property	Solution Annealed	Aged Condition
Tensile Strength	~200 ksi (1379 MPa)	~300 ksi (2068 MPa)
Yield Strength (0.2%)	~150 ksi (1034 MPa)	~285 ksi (1965 MPa)
Elongation	~15%	~10%
Hardness (Rockwell)	~C40	~C54

4. Physical Properties:-

Property	Value
Density	8.0 g/cm ³
Melting Range	~1425°C (2597°F)
Thermal Conductivity	~14.5 W/m·K (at 20°C)
Electrical Resistivity	~0.83 μΩ·m (at 20°C)

5. Heat Treatment

- **Solution Annealing:** Heat to ~815°C (1500°F), hold, then air cool or quench.

- **Aging:** Age at ~480–510°C (896–950°F) for 3–6 hours to achieve maximum strength through precipitation hardening.

- **6. Applications:-**
- **Aerospace:** Landing gear, fasteners, and structural components.
- **Tooling:** Die-casting molds, extrusion dies, and high-strength tooling.
- **Defense:** Missile components, armor plating, and rocket motor cases.
- **Nuclear Industry:** High-strength structural components for reactors.
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7. Corrosion Resistance:-

- **Atmospheric Corrosion:** Moderate resistance; suitable for controlled environments.

- **Chloride Environments:** Susceptible to pitting and crevice corrosion; protective coatings recommended.

- **Stress-Corrosion Cracking:** Resistant in non-chloride environments but requires additional protection in harsh conditions.