

Elgiloy®

**UNS R30003
W.Nr 2.4711**

Elgiloy® is a non-magnetic Cobalt-Chromium-Nickel-Molybdenum alloy having a unique combination of very high strength while maintaining excellent formability, excellent corrosion resistance, and high fatigue strength. Additional strength increases of up to 25% can be achieved through aging cold reduced material. Elgiloy® is highly resistant to sulfide stress corrosion cracking, and as a result is the alloy of choice in the most demanding sour well environments. In seawater, Elgiloy® is virtually immune to crevice and stress corrosion and pitting even at the highest strength levels. Elgiloy® performs across a wide range of temperatures: from cryogenic up to 850°F (454°C).

Applications include: springs, seals, semiconductor components, orthodontics, medical devices, surgical implants, satellite communications equipment, and weapons systems.

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

Nominal Composition

	C	Mn	Si	P	S	Cr	Ni	Co	Mo	Be	Fe
min		1.5				19.0	14.0	39.0	6.0		Remainder
max	0.15	2.5	1.20	0.015	0.015	21.0	16.0	41.0	8.0	0.10	

Physical Properties

	At 70°F	At 20°C
Density	0.30 lb/in ³	8.30 g/cm ³
Modulus of Elasticity (E)	27 - 29 x 10 ³ ksi cold reduced 30 – 32 x 10 ³ ksi cold reduced & aged	186 – 200 GPa cold reduced 206 – 221 GPa cold reduced & aged
Modulus of Rigidity (G)	11x 10 ³ ksi	76 GPa
Coefficient of Expansion	8.4 microinches/in.-°F (70-600°F)	15.2 µm/m-°C (20-300°C)
Electrical Resistivity	39.21 µ ohm.in	99.6 µ ohm.cm
Thermal Conductivity	86.5 Btu-in./ft. ² hr.-°F	12.5 W/m-K

Applicable Specifications

Strip and Foil | AMS 5876, ASTM F1058, NACE MR 0175 & MR 0103, ISO 5832-7

Typical Mechanical Properties

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	Per AMS 5876	100 ksi min (690 MPa)	-300°F to 850°F (-184°C to 454°C)
Spring Temper	No Heat Treatment	Up to 310 ksi (2100 MPa)	-300°F to 850°F (-184°C to 454°C)
Spring Temper + Aged	After cold rolling. Age: Per AMS 5876, Nace MR 0175	Up to 380ksi (2600MPa)	-300°F to 850°F (-184°C to 454°C)

Elgiloy® is a registered trademark of Elgiloy Specialty Metals.

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