

ELGILOY Specialty Metals – Wire Products

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, excellent corrosion resistance and high fatigue strength. 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 and can operate at cryogenic temperatures up to 850°F (454°C).

Applications include springs, torsion bars, seals, medical devices & implants and orthodontic wire.

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

Nominal Composition

	Co	Cr	Ni	Mo	Mn	Fe	Si	C	Be	P	S
min	39	19	14	6	1.5						
max	41	21	16	8	2.5	balance	1.2	0.15	0.1	0.015	0.015

Physical Properties

	At 70°F	At 20°C
Density	0.300 lb/in ³	8.30 g/cm ³
Modulus of Elasticity (E)	Up to 32.0 x 10 ³ ksi	190 GPa
Modulus of Rigidity (G)	11.2 x 10 ³ ksi	77.2 GPa
Coefficient of Expansion	8.4 microinches/in.-°F (70-600°F)	15.2 x μm/m-°C (20-300°C)
Electrical Resistivity	39.2 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

Wire & Bar | AMS 5833, AMS 5834, ASTM F1058, NACE MR0175 (ISO 15156-3), ISO 5832-7.

Typical Mechanical Properties – Spring Applications

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	2048°F (1120°C)	120 – 150 ksi (830-1035 MPa)	-300°F to 850°F (-184°C to 454°C)
Spring Temper		220 – 290 ksi (1515-2000 MPa)	-300°F to 850°F (-184°C to 454°C)
Spring Temper + Aged	After spring coiling. Age: 980°F (527°C) for 5 hours.	260 – 330 ksi (1790-2275 MPa)	-300°F to 850°F (-184°C to 454°C)

Elgiloy® is a registered trademark of Elgiloy Specialty Metals.

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