

Nitronic® 50 Alloy

UNS: S20910

Description: Nitronic® 50 is a nitrogen-strengthened austenitic stainless steel with increased corrosion resistance and higher strength compared to other austenitic stainless steels. Nitronic® 50 is non-magnetic when cold-worked or at sub-zero temperatures and provides good resistance to pitting and crevice corrosion in sea water.

Applications Include: Springs, valves, marine hardware, boat shafting, pumps, cables, screens

Industries supplied include: Oil & Gas, Chemical Processing, Food Processing, Marine

Nominal Composition

	C	Mn	P	S	Si	Cr	Ni	N	Fe	Nb	V
min	-	4.0	-	-	-	20.5	11.5	0.20	BAL	0.10	0.10
max	0.06	6.0	0.040	0.030	1.00	23.5	13.5	0.40	-	0.30	0.30

Physical Properties

	At 70°F	At 20°C
Density	0.285 lb/in ³	7.88 g/cm ³
Modulus of Elasticity (E)	28.9 x 10 ³ ksi	199 GPa
Modulus of Rigidity (G)	10.8 x 10 ³ ksi	74.5 GPa
Coefficient of Expansion	9.6 microinches/in.-°F (70-600°F)	17.3 μm/m-°C (20-300°C)
Electrical Resistivity	32.3 μ ohm.in	82 μ ohm.cm
Thermal Conductivity	108 Btu-in./ft. ² hr.-°F (300°F)	15.6 W/m-K (149°C)

Applicable Specifications

Wire & Bar | AMS 5764, ASTM A276, ASTM A479, ASTM A580, ASTM F1314, NACE MR0185/ISO 15156

Typical Mechanical Properties – Spring Applications

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	2050°F (1120°C)	100-145 ksi (690-1000 MPa)	-300°F to 570°F (184°C to 300°C)
Spring Temper	-	200-260 ksi (1380-1790 MPa)	-300°F to 570°F (184°C to 300°C)

Typical mechanical properties are based on ASTM A240



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