

# ELGILOY Specialty Metals – Wire Products

## Nitronic® 50 (XM-19)

UNS S20910  
W.Nr 1.3964

Nitronic® 50 is a nitrogen-strengthened austenitic stainless steel with better corrosion resistance and higher strength than many other austenitic stainless steels. Nitronic® 50 is non-magnetic even 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, and boat shafting.

Industries supplied include: Marine, Oil & Gas Extraction, and Medical.

### Nominal Composition

	Cr	Ni	Mn	Mo	Si	Fe	V	Cb	C	P	S
min	20.5	11.5	4	1.5			0.1	0.1			
max	23.5	13.5	6	3	1	balance	0.3	0.3	0.06	0.04	0.03

### Physical Properties

	At 70°F	At 20°C
Density	0.285 lb/in <sup>3</sup>	7.88 g/cm <sup>3</sup>
Modulus of Elasticity (E)	29 x 10 <sup>3</sup> ksi	200 GPa
Modulus of Rigidity (G)	10.8 x 10 <sup>3</sup> ksi	74.5 GPa
Coefficient of Expansion	9.6 microinches/in.-°F (70-600°F)	17.3 x μm/m-°C (20-300°C)
Electrical Resistivity	32.3 μ ohm.in	82 μ ohm.cm
Thermal Conductivity	108 Btu-in./ft. <sup>2</sup> hr.-°F (At 300°F)	15.6 W/m-K (At 149°C)

### Applicable Specifications

Wire & Bar | ASTM A276, ASTM A580, ASTM F1314.

### 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)

Nitronic® is a registered trademark of AK Steel Corporation.

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