

ELGILOY Specialty Metals – Wire Products

NI-SPAN-C® Alloy 902

UNS N09902

NI-SPAN-C® Alloy 902 is a precipitation hardenable nickel-iron-chromium alloy with a thermoelastic coefficient that can be controlled by the amount of cold work and heat treatment temperature to fit a specific application's needs. Alloy 902 also has low magnetostrictive properties appropriate for specific applications and has been successfully utilized at cryogenic temperatures.

Applications include: Precision instruments, Resonant vibrating systems, Tuning forks, Springs
Industries supplied include: Precision Equipment Manufacturing

Nominal Composition

	C	Mn	Si	S	P	Ni+Co	Cr	Ti	Cr+(Ti-4C)	Al	Fe
min	-	-	-	-	-	41.0	4.90	2.20	7.10	0.30	45 Bal
max	0.06	0.80	1.00	0.04	0.04	43.5	5.75	2.75	8.10	0.80	-

Physical Properties

	At 70°F	At 20°C
Density	0.291 lb/in ³	8.05 g/cm ³
Modulus of Elasticity (E)	24-29 x 10 ³ ksi	165-200 GPa
Modulus of Rigidity (G)	10.2 x 10 ³ ksi	70.3 GPa
Coefficient of Expansion	4.2 µin/in/°F (70-212°F)	7.6 µm/m/°C (20-100°C)
Electrical Resistivity	40 µohm-in	101.6 µohm-cm
Thermal Conductivity	9.0 Btu-in./ft.2hr.-oF	12.1 W/m-K

Applicable Specifications

Wire & Bar	AMS 5221, AMS 5225, HS261
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Typical Mechanical Properties – Spring Applications

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	Per Specifications	85-95 ksi (585-655 MPa)	-50 to 150°F (-45 to 65 °C) For constant modulus
Spring Temper	None	140-160 ksi (965-1105 MPa)	-50 to 150 °F (-45 to 65 °C) For constant modulus
Spring Temper + Aged	1225-1300°F (663-704°C) 3-3.5 hrs	200-220 ksi (1380-1515 MPa)	-50 to 150 °F (-45 to 65 °C) For constant modulus

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