

## 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 <sup>3</sup>	8.05 g/cm <sup>3</sup>
Modulus of Elasticity (E)	24-29 x 10 <sup>3</sup> ksi	165-200 GPa
Modulus of Rigidity (G)	10.2 x 10 <sup>3</sup> 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

### 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

NI-SPAN-C® is a trademark of the Special Metals Corporation group of companies.

Phone: 1 847 695 1900

Elgiloy Specialty Metals - Wire Products  
 356 N. Cross Street  
 Sycamore, IL 60178 USA

[WWW.ELGILOY.COM](http://WWW.ELGILOY.COM)

#### **LIMITATION OF LIABILITY AND DISCLAIMER OF WARRANTY:**

The content in these data sheets is provided primarily by third-party melting mills and is provided for reference only. It is not intended for engineering or design.

Applications may be discussed, however, Elgiloy Specialty Metals does not recommend or endorse any material for any particular end use or application.

The data included in this data sheet are typical values and may vary.

Elgiloy Specialty Metals makes no representations or warranties, express or implied, as to the accuracy, completeness, condition, suitability, performance, fitness for a particular purpose, or merchantability of any information contained in any data sheet.

In no event will Elgiloy Specialty Metals be liable for any damages whatsoever arising from the use of the information included in the data sheets.