

Carpenter Invar 36® Alloy, Cold Drawn Bars

Category : Metal , Electronic/Magnetic Alloy , Superalloy , Iron Base

Material Notes:

Data provided by Carpenter Technology Corporation. Carpenter Invar "36" alloy is a 36% nickel-iron alloy possessing a rate of thermal expansion approx. one-tenth that of carbon steel up to 200°C. This alloy has been used for applications where dimensional changes due to temperature variation must be minimized, such as in radio and electronic devices, aircraft controls, optical and laser systems, etc. This alloy has also been used in conjunction with high expansion alloys where a motion is desired when the temperature changes, such as in bimetallic thermostats and in rod and tube assemblies for temperature regulators. Invar 36® is a registered trademark of Carpenter Technology Corporation.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carpenter-Invar-36-Alloy-Cold-Drawn-Bars.php

Physical Properties	Metric	English	Comments
Density	8.05 g/cc	0.291 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	90	90	
Tensile Strength, Ultimate	621 MPa	90100 psi	
Tensile Strength, Yield	483 MPa @Strain 0.200 %	70100 psi @Strain 0.200 %	
Elongation at Break	20 %	20 %	in 50.8 mm
Reduction of Area	60 %	60 %	
Modulus of Elasticity	148 GPa	21500 ksi	(Cold Rolled)

Thermal Properties	Metric	English	Comments
CTE, linear	1.30 µm/m-°C	0.722 µin/in-°F	
	@Temperature 93.0 °C	@Temperature 199 °F	
	4.18 µm/m-°C	2.32 µin/in-°F	
	@Temperature 260 °C	@Temperature 500 °F	
	7.60 µm/m-°C	4.22 µin/in-°F	
	@Temperature 371 °C	@Temperature 700 °F	
Specific Heat Capacity	0.515 J/g-°C	0.123 BTU/lb-°F	
Thermal Conductivity	10.15 W/m-K	70.44 BTU-in/hr-ft ² -°F	

Melting Point Thermal Properties	1427 °C Metric	2601 °F English	Comments
Solidus	1427 °C	2601 °F	Melting Point
Liquidus	1427 °C	2601 °F	Melting Point

Component Elements Properties	Metric	English	Comments
Carbon, C	0.020 %	0.020 %	
Iron, Fe	63 %	63 %	as remainder
Manganese, Mn	0.35 %	0.35 %	
Nickel, Ni	36 %	36 %	
Silicon, Si	0.20 %	0.20 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000820 ohm-cm	0.0000820 ohm-cm	Temperature Coefficient = 0.0011
Curie Temperature	279 °C	534 °F	

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