

Key Features

- Low Coefficient of Thermal Expansion (CTE)
- Precision Machinability
- Thermal Stability
- Corrosion Resistance

Common Applications

- Radio and electronic devices
- Aircraft control
- Optical and laser systems
- Bimetallic thermostats
- Components of temperature regulator

Material Description

Invar is a nickel-iron alloy known for its low coefficient of thermal expansion (CTE), which means it exhibits minimal dimensional changes over a wide temperature range. The low CTE of Invar makes it valuable in precision engineering applications where dimensional stability is critical, such as in instruments, precision tools, and optical devices. Invar's unique thermal properties make it particularly useful in applications where temperature fluctuations can affect the accuracy and performance of components, such as in aerospace, telecommunications, and scientific instrumentation. Additionally, Invar is also used in manufacturing molds, dies, and fixtures where precise tolerances are required.

Chemical Composition (%)

	C	Fe	Mn	Ni	Si						
Min.											
Max.	0.020	63	0.35	36	0.20						

Mechanical Properties

Ultimate Tensile Strength	65,000 PSI
Tensile Yield Strength	40,000 PSI
Hardness	Rockwell B70
Elongation at Break	35%

Physical Properties

Density	0.291 lb/in ³ (8.05 g/cm ³)
Thermal Conductivity	10.15W/m.K
Modulus of elasticity	20,500 KSI (141 GPa)
Melting Point	2,601°F (1,427 °C)

Technical Assistance

Our knowledgeable staff, supported by our in-house team of expert metallurgists and engineers, is ready to assist you with any technical inquiries.

InstaVoxel™ – On-Demand Manufacturing Expert

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InstaVoxel's quality control system is ISO-9001 certified, and all our partners hold relevant certifications.



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