

ALLOY 36



CHEMICAL COMPOSITION %	
Chemical Element	
Iron	Bal
Nickel	35
Cobalt	0.50
Manganese	0.60
Silicon	0.40
Carbon	0.05
Aluminum	0.10
Magnesium	0.10
Zirconium	0.10
Titanium	0.10
Chromium	0.25
Phosphorus	0.015
Sulfur	0.015
Physical Properties	
Density	0.291
Specific Gravity	8.05
Specific Heat	0.123
Curie Temperature	535
Melting Point	2600°F
Electrical Resistivity	495
Thermal Conductivity	72.6
Tensile KSI (Annealed)	
85 max. (Sheet/Strip)	
72.5 max (Plate)	
Linear coefficient of thermal expansion cm. per cm. per °C x 10⁻⁶	
Temp. range – °C	
30-150	1.2 - 2.7

Invar is an iron-nickel austenitic alloy of lowest thermal expansivity. It is strong, tough, ductile and possesses a useful degree of corrosion resistance. It is magnetic at temperatures below its Curie point and non-magnetic at temperatures above. Invar is therefore always magnetic in the temperature range in which it exhibits the low expansion characteristics.

Invar is the standard alloy for low expansivity up to 400°F. For applications at higher temperatures, the higher nickel alloys are recommended. The effect of heat treatment upon the expansion of the alloy is dependent upon the method of cooling. Rapid cooling (quenching) decreases the rate of expansion while the reverse is true when slow cooling is employed.

Cold working is even more effective than quenching in lowering the expansivity. Subsequent annealing will remove the lowering of the coefficients induced by cold work in proportion to the temperatures employed, the alloy assuming the values corresponding to the annealed condition when a temperature of about 1100°F is reached. Invar which has been subjected to cold working or machining may require a stress-relieving heat treatment for stabilization if the material is to be used for high precision work. This material is never used above its thermal inflection point.

NEA An ISO Certified Corporation
Specialty Metal Service Center
Dedicated to Customer Service & Quality

NATIONAL ELECTRONIC ALLOYS
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ALLOY 36 FROM STOCK

All Certified with Physical & Chemical Analysis

Coil/Sheet

Thick.		Width		
.004"	x	12/24"	x	Coil
.005"	x	24"	x	Coil
.006"	x	24"	x	Coil
.007"	x	24"	x	Coil
.008"	x	24"	x	Coil
.010"	x	12/24"	x	Coil
.015"	x	24"	x	Coil

Flat Sheet

Thick.		Width		Length
.020	x	24"	x	72"
.030	x	24"	x	72"
.040	x	24"	x	72"
.050	x	24"	x	72"
.060	x	24"	x	60" & 120"
.100	x	24"	x	72"
.125	x	24" & 27"	x	60" & 120"

Invar Plate From Stock

- Hot Rolled Pickled & Annealed
- Hot Rolled Smooth Ground Surface
- Widths Up to 96"
- Lengths Up to 244"

Available in Most Common Thicknesses

.1875	.750	1.875	3.500
.250	1.00	2.00	4.00
.375	1.250	2.500	4.500
.500	1.500	3.00	5.00

Rod

3', 6' or 12' RANDOM LENGTHS

Diameter

.078	.625	2.500
.093	.750	2.750
.100	.875	3.00
.125	1.00	3.500
.200	1.250	4.00
.250	1.500	4.500
.375	1.750	5.00
.437	2.00	5.500
.500	2.250	6.00



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