

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

Certified to ASTM F1684,
AMS/MIL I 23011 Class 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 ISO 9001:2015
Specialty Metal Service Center
Dedicated to Customer Service & Quality

NATIONAL ELECTRONIC ALLOYS
www.nealloys.com

EAST COAST

3 Fir Court, Oakland, NJ 07436
201-337-9400 • Fax: 201-337-9698
Toll Free: 800-524-4309
Email: Sales@nealloys.com

WEST COAST

1847 W. Business Center Dr., Orange, CA 92867
714-556-5561 • Fax: 714-556-5562
Toll Free: 877-632-9378
Email: Sales@nealloyswest.com

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

NEA ISO 9001:2015
Specialty Metal Service Center
Dedicated to Customer Service & Quality

NATIONAL ELECTRONIC ALLOYS
www.nealloys.com

EAST COAST

3 Fir Court, Oakland, NJ 07436

201-337-9400 • Fax: 201-337-9698

Toll Free: 800-524-4309

Email: Sales@nealloys.com

WEST COAST

1847 W. Business Center Dr., Orange, CA 92867

714-556-5561 • Fax: 714-556-5562

Toll Free: 877-632-9378

Email: Sales@nealloyswest.com