



ED FAGAN INC.

Alloy 48

Controlled Expansion Alloys



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DESCRIPTION

A controlled expansion alloy, consisting of 48% Nickel, balance Iron; used in a variety of electronic application, especially for glass and ceramic seals.

APPLICATIONS

Glass to metal seals for variety of electronic tubes and hermetic devices.

AKA: Pernifer 48², NILO 48, Glass Seal 48¹

Footnotes: 1. Trademark Carpenter Technology Corp., Reading PA;
 2. Trademark ThyssenKrupp-VDM, Germany

PHYSICAL PROPERTIES

Density	lb/cu in	0.298
Specific Gravity		8.25
Curie Temp	°F	880
	°C	471
Melting Point	°F	2600
	°C	1427
Electrical Resistivity	micro-ohm-cm	49
	ohm-cir mil/ft	290
Thermal Conductivity	W/cm °C	0.13
	BTU-in/sq. ft-hr-°F	90
Specific Heat	Cal/g-°C	0.12
	BTU-lbm-°F	0.12
Thermal Expansion	ppm/°F(75°F to 842°F)	5.0
	ppm/°C(25°C to 450°C)	9.0

SPECIFICATIONS

ASTM F-30 **MIL** I-23011 CI 3 **AMS** I-23011 CI 3

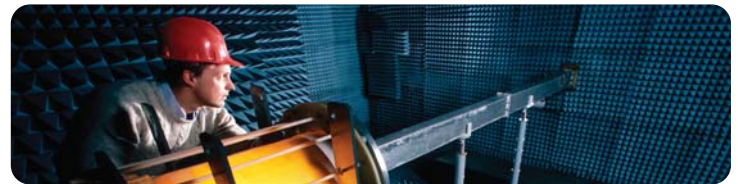
LINEAR COEFFICIENT OF THERMAL EXPANSION - (ppm per °C) Deg. °C Class 1

30-100	9.4	30-375	-	30-550	9.6-
30-150	9.4	30-400	8.2-9.2	10.3	
30-200	9.4	30-425	8.9	30-600	10.4
30-250	9.3	30-450	9.0	30-700	11.3
30-300	8.8	30-475	9.3	30-800	12.1
30-325	-	30-500	9.4	30-900	13.0
30-350	9.0	30-525	-	30-1000	13.9



MECHANICAL PROPERTIES

Tensile Strength	ksi	79
	MPa	545
Yield Strength	ksi	36
	MPa	248
Elongation	% in 2 in.	30
Typical Hardness Ann.	Rockwell	HRB 80
Modulus of Elasticity	Mpsi	23
	kMPa	159



CHEMISTRY - maximum % unless noted

Iron	Bal	Silicon	0.30
Nominal Nickel	48	Sulfur	0.025
Nominal Cobalt	-	Chromium	0.025
Carbon	0.05		

FORMS AVAILABLE

Rod 1.574mm - 28.575mm
Strip/Coil - Annealed 0.025mm - 2.032mm
 Strip/Coil can be slit to customer requirements down to 4mm widths.
 For other forms - Sheet, Plate - please call us with your size, shape, form, and quantity requirements for a material price quote.



Ed Fagan Inc also specializes in locating exotic materials. So, if you can't locate that hard-to-find material you need... Put EFI's material locator service to work for you!

www.material-locator.com

**THE MATERIALS YOU NEED,
 WHEN YOU NEED THEM**



www.edfagan.eu
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 ED FAGAN INC.

Glass Sealing/ Controlled Expansion Alloys

EFI provides the highest quality materials including materials from Carpenter Technology Corp.

ASTM F15 Alloy:

aka Kovar & Pernifer 2918
Coil/Strip, Sheet, Plate,
Bar, Wire

Invar 36:

Bar, Sheet, Plate

42/46/48/52 Alloy:

Coil/Strip, Sheet, Plate, Bar

Electronic Nickel

200/201/233/270:

Coil/Strip, Rod, Sheet, Plate

Soft Magnetic Alloys/ EMI Shielding & Laminations

EFI is a distributor of magnetic shielding alloys for the world's leading producer of these alloys – ThyssenKrupp VDM.

EFI Alloy 79: aka Magnifer 7904,

Moly-Permalloy & HyMu 80
Sheet, Coil/Strip

EFI 50:

aka Magnifer 50 & High Perm 49
Bar, Coil/Strip

Carpenter VimVar Core Iron:

Rod, Bar

Carpenter Hiperco 50:

Coil/Strip, Billet

Radiometal 4550: Rod, Coil/Strip

Refractory Metals/Alloys

EFI is a stocking distributor of Molybdenum & Tungsten products, as well as many other refractory metals and alloys, providing the highest quality materials available.

Molybdenum:

Bar, Sheet, Plate, Coil/Strip

TZM Molybdenum Alloy:

Sheet, Bar

Tungsten:

Bar, Coil/Strip, Sheet

Tantalum: Sheet, Tubing

Niobium: Strip

Tungsten Alloy: Rod, Shapes

Rhenium: Sheet

Hard-to-Find Special Purpose Metals, Alloys and Materials

Are you spending too much of your valuable time trying to locate suppliers of specialty metals and materials? Use EFI's Material Locator (see below) to source it for you so you can get back to doing what you do best.

- Coil/Strip
- Sheet
- Plate
- Rod
- Tube
- Pipe
- Wire

JUST IN TIME DELIVERY

All standard stock items can be **shipped within 24 hours** – and are often **shipped the same day**. All materials are certified with shipment.

METALS WE DISTRIBUTE

Titanium
Zirconium

High Temperature Alloys
Corrosion Resistant Alloys
Stainless Steel

Copper – OFE, OFHC
Brass & Bronze
Beryllium Copper

SERVICES WE OFFER

Slitting, Shearing, Saw Cutting, Centerless Grinding, Water-jet Cutting, Laser Cutting,
Custom Stocking Programs • Consignment Programs



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