



ED FAGAN INC.

Alloy 52

Controlled Expansion Alloys



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DESCRIPTION

A controlled expansion alloy, consisting of 51% Nickel, balance Iron; used in a wide variety of electronic applications, especially for glass seals.

APPLICATIONS

Glass to metal seals for electronic tubes, automotive and industrial lamps, and specialty hermetic devices.

AKA: Pernifer 50², NILO 50, Glass Seal 52¹

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

MECHANICAL PROPERTIES

Tensile Strength	ksi	80
	MPa	552
Yield Strength	ksi	40
	MPa	276
Elongation	% in 2 in.	35
Typical Hardness Ann.	Rockwell	HRB 80
Modulus of Elasticity	Mpsi	23
	kMPa	159

PHYSICAL PROPERTIES

Density	lb/cu in	0.3
Specific Gravity		8.3
Curie Temp	°F	986
	°C	530
Melting Point	°F	2600
	°C	1427
Electrical Resistivity	micro-ohm-cm	44
	ohm-cir mil/ft	258
Thermal Conductivity	W/cm °C	0.14
	BTU-in/sq. ft-hr-°F	97
Specific Heat	Cal/g-°C	0.12
	BTU-lbm-°F	0.12
Thermal Expansion	ppm/°F(75°F to 842°F)	5.5
	ppm/°C(25°C to 450°C)	9.9

SPECIFICATIONS

ASTM F-30 **MIL** I-23011 CI 2 **AMS** I-23011 CI 2

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

30-100	10.5	30-375	-	30-550	10.2-10.7
30-150	10.5	30-400	10.1	30-600	10.8
30-200	10.4	30-425	-	30-700	11.7
30-250	10.4	30-450	9.6-10.1	30-800	12.5
30-300	10.2	30-475	10.1	30-900	13.3
30-325	-	30-500	10.0	30-1000	14.2
30-350	10.2	30-525	10.4		



CHEMISTRY - maximum % unless noted

Iron	Bal	Sulfur	0.025
Nominal Nickel	50.5	Chromium	0.025
Nominal Cobalt	-	Titanium	-
Carbon	0.05	Magnesium	-
Silicon	0.30		

FORMS AVAILABLE

Rod	1.016mm - 12.70mm
Sheet*	
Plate*	
Strip/Coil Annealed	0.254mm - 0.381mm
Photo-Etch*	

*Though not a standard stock item, we may be able to supply you with the exact size, shape & quantities you require. Please call.
 Strip/Coil can be slit to customer requirements down to 4mm widths.



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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 +44 (0) 1548 858 770



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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