



26
Fe
55.845
Iron
28
Ni
58.6934
Nickel

Alloy 42

Controlled Expansion Alloys

DESCRIPTION

A controlled expansion alloy consisting of 41% Nickel, balance Iron; used in a wide variety of electronic applications, lead frames, especially for glass and ceramic seals. This alloy is also known as Pernifer[®] 42, NILO[®] 42, Carpenter Glass Sealing[®] 42.

APPLICATIONS

Glass-to-metal seals for a wide variety of electronic tubes, hermetic packages, automotive and industrial lamps.

TYPICAL PHYSICAL PROPERTIES

Density	lb/cu in	0.293
Specific Gravity		8.12
Curie Temp	°F	716
	°C	380
Melting Point	°F	2600
	°C	1425
Electrical Resistivity	ohm-cir mil/ft	430
	Microhms-cm	71
Thermal Conductivity	BTU-in/sq.ft-hr°F	74.5
	W/cm °C	0.11
Specific Heat	BTU / lb °F	0.12

Source: ASTM F30, 42 Alloy | UNS K94100; CarTech Glass Sealing 42 Data Sheet v.7.1.90

FORMS | SIZES AVAILABLE

Plate	0.1875" - 0.410"
Round Bar Rod	0.125" - 6.000"
Sheet	0.020" - 0.125"
Strip Coil	0.010" - 0.080"
Strip Coil Photo-Etch	0.0077" - 0.010"

Listed above are our standard stock items. Our inventory fluctuates based on market demands. If you do not see the size or form you require, please call us.

TYPICAL MECHANICAL PROPERTIES

Tensile Strength	ksi (MPa)	75 (517)
Yield Strength	ksi (MPa)	40 (276)
Elongation	% in 2 in.	30
Hardness Ann.	Rockwell B	76
Modulus of Elasticity	ksi	21.5 x 10 ³

Source: CarTech Glass Sealing 42 Data Sheet v.7.1.90; Material in the annealed condition.

AVERAGE LINEAR COEFFICIENT OF THERMAL EXPANSION μm/m·°C

Temperature Range °C	Alloy 42 UNS K94100
30 to 300	4.0 to 4.7*
30 to 400	6.0
30 to 450	6.7 to 7.4*
30 to 500	7.9
30 to 600	9.6
30 to 700	10.5
30 to 800	11.4
30 to 900	12.3
30 to 1000	13.2

Source: ASTM F30, Table X1.1, UNS K94100; *ASTM F30, Table 2

CHEMISTRY %

Nickel 41.0 nom., Bal. Iron
Source: ASTM F30 Table 1; 42 Alloy, UNS K94100

SPECIFICATIONS

ASTM F30 • AMS 1-23011 CL 5 • MIL-1-23011 CL 5 • UNS K94100



Special Purpose Alloys & Metals From Stock

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Controlled Expansion | Glass Sealing

Ed Fagan Inc. supplies the highest quality metals and alloys including materials from Carpenter Technology Corp.

Kovar® | ASTM F15 Alloy

Forms: Plate, Round Bar, Sheet, Strip/Coil, Wire
Trade Names: Kovar®, Pernifer® 2918, NILO K®, DilverP1®

Alloy 42/46/48/52

Forms: Plate, Round Bar, Sheet, Strip/Coil, Wire
Trade Names: Pernifer®40, 46, 48, 50; NILO® 42, 46, 48, 50; Glass Seal 42, 46, 48, 50

Free-Cut Invar "36"® Alloy

Forms: Round Bar, Wire

Invar "36"® Alloy

Forms: Plate, Sheet
Trade Names: Pernifer® 36, NILO® 36, Invar

Super Invar 32-5®

Forms: Plate, Round Bar, Sheet

Refractory Metals and Alloys

Ed Fagan Inc. is your leading source for quality refractory metals and alloys. We stock Tungsten, Molybdenum and its alloys in various forms and sizes manufactured from Plansee Group.

Molybdenum

Forms: Plate, Precision Cut Wire, Round Bar, Sheet/Strip, Spooled Wire, Threaded Rod/Nuts

Molybdenum Lanthanum Oxide (ML)

Forms: Sheet – Stress Relieved, Recrystallized

Molybdenum TZM

Forms: Plate, Round Bar

Niobium

Forms: Plate, Round Bar, Sheet, Strip/Coil, Wire

Rhenium

Forms: Plate, Round Bar, Sheet, Strip/Coil

Tantalum

Forms: Round Bar, Sheet

Tungsten

Forms: Parts (To Specification), Plate, Precision Cut Wire, Round Bar, Sheet

Tungsten Alloy

Blank Forms: Flats, Parts, Plate/Sheet, Rod, Shapes

Soft Magnetic Alloys | EMI Shielding & Laminations

Ed Fagan Inc. is a distributor of "EMI shielding alloys" for VDM Metals GmbH the world's leading producer of these alloys.

EFI Alloy 50

Forms: Round Bar, Square Bar, Strip/Coil, Wire
Trade Names: Alloy 4750, High Permeability 49®, Magnifer® 50

EFI Alloy 79

Forms: Rectangular Bar, Round Bar, Sheet, Strip/Coil, Wire
Trade Names: Hipernom, HyMu80®, Magnifer® 7904, Molypermalloy, Permalloy 80®

Hiperco® 50, Hiperco® 50A, Hiperco® 50 HS

Forms: Plate, Round Bar, Strip/Coil

Carpenter VimVar Core Iron

Forms: Plate, Round Bar

Electrical & Electronic Nickels

Ed Fagan Inc. supplies select, commercially pure grades of Nickel in various forms and sizes.

Electronic Nickels

200/201/205/233/270

Forms: Round Bar, Sheet, Strip/Coil, Wire

Alloys and Metals We Distribute

Corrosion Resistant Alloys • High-Temperature Alloys • Stainless Steel
• Titanium – CP, 6 Al-4V

Ed Fagan Inc. Services

Slitting, Shearing, Saw Cutting, Grinding, Water Jet Cutting, Laser Cutting,
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JUST-IN-TIME DELIVERY: All of our **standard stock** items can be **shipped within 24-hours** of your order confirmation and most are **shipped the same day**. All materials certified with shipment. For special orders and non-stock materials, contact our sales team for our competitive pricing and delivery lead times.

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