

Molybdenum

Refractory Metals and Alloys



800.348.6268 | sales@efineametals.com
www.efineametals.com

DESCRIPTION

Molybdenum doped with Lanthanum Oxide (ML) is often the alloy of choice when embrittlement after recrystallization must be avoided along with assurance of dimensional shape stability at high-temperatures. Small amounts of Lanthanum Oxide particles (0.3-0.7%) are combined with Molybdenum to create a special stacked fiber micro-structure that is stable at temperatures up to 2000°C. This combination increases the recrystallization temperature to 1300°C (90% def). After recrystallization the elongated grain structure with jagged grain boundaries provides a measurable increase in ductility and creep resistant strength than that of the pure Molybdenum.

APPLICATIONS

Medical devices, high-temperature vacuum furnace fixtures, furnace parts, stranded wires, sintering and annealing boats, lighting retaining and feed wires, evaporation coils, aerospace components.

TYPICAL PHYSICAL PROPERTIES

Density	lb/in ³ g/cm ³	0.376 ≥10.1
Melting Point	°F °C	4748 2620
Electrical Resistivity	Microhm-cm	5.17
Thermal Conductivity	Cal/cm ² /cm°C/sec	0.35
Specific Heat	Cal/gm /°C	0.061
Recrystallization Temp	°C (90% def)	1300
Coefficient of Linear Thermal Expansion	Micro-in/°F x 10 ⁻⁶ Micro-in/°C x 10 ⁻⁶	4.90 2.70

Source: Plansee Brochures, www.plansee.com

TYPICAL MECHANICAL PROPERTIES

Tensile Strength 2mm Sheet; Recrystallized; Longitudinal Direction	ksi (MPa)-20°C	70 (480)
	ksi (MPa)-1000°C	22 (150)
	ksi (MPa)-1400°C	12 (80)
Elongation at Fracture A 2mm Sheet; Recrystallized; Longitudinal Direction	%- 20°C	15
	%-1000°C	20
	%-1400°C	25
Typical Hardness Recrystallized Sheet (MLR) 1mm Stress Relieved Sheet (MLS)	Vickers HV	≤ 250
	Vickers HV	≤ 270

Source: Plansee Brochures, www.plansee.com

FORMS | SIZES AVAILABLE

Sheets	
Recrystallized (MLR)	0.040" - 0.125"
Stress Relieved (MLS)	0.010" - 0.030"

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

TYPICAL APPLICATIONS



Source: Furnace material photos courtesy of ©Plansee SE Reprinted with permission.

CHEMISTRY %

99.30 - 99.70 Molybdenum (Mo), 0.3 - 0.7 Lanthanum Oxide (La₂O₃)

New Jersey Offices

769 Susquehanna Avenue, Franklin Lakes, NJ 07417

3 Fir Court, Oakland, NJ 07436

Toll Free: 800.348.6268 | 800.524.4309



California Offices

10537 Humboldt Street, Los Alamitos, CA 90720

1847 W. Business Center Drive, Orange, CA 92867

Toll Free: 800.348.6268 | 800.524.4309

Special Purpose Alloys & Metals From Stock



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.

Controlled Expansion I Glass Sealing

EFINEA supplies the highest quality metals and alloys including materials from Carpenter Technology Corp.

Kovar® I ASTM F15® Alloy

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

Alloy 42/46/48/52

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil
Trade Names: Pernifer® 40, 46, 48, 50; NILO® 42, 46, 48, 50;
Glass Sealing 42, 46, 48, 52

Free-Cut Invar "36"® Alloy

Forms: Round Bar/Rod

Invar "36"® Alloy

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

Super Invar 32-5®

Forms: Plate, Round Bar/Rod, Sheet

Electrical & Electronic Nickels

EFINEA supplies select, commercially pure grades of Nickel in various forms and sizes.

Electronic Nickels

200/201/205/233/270

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

Refractory Metals and Alloys

EFINEA is your leading source for quality refractory metals & alloys. We stock DFARS Molybdenum, ML/MLS/MLR, Molybdenum TZM, Tantalum & Tungsten manufactured from Plansee.

Molybdenum

Forms: Plate, Round Bar/Rod, Sheet/Coiled Sheet, Threaded Rod/Nuts, Wire

Molybdenum Lanthanum Oxide (ML)

Forms: Sheet – Stress Relieved, Recrystallized

Molybdenum TZM

Forms: Plate, Round Bar/Rod, Sheet

Niobium

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

Rhenium

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

Tantalum

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

Tungsten

Forms: Plate, Precision Cut Wire, Round Bar/Rod, Sheet

Tungsten Alloys

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

Soft Magnetic Alloys I EMI Shielding & Laminations

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

EFINEA Alloy 50

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

EFINEA Alloy 79

Forms: Rectangular Bar, Round Bar/Rod, Sheet, Strip/Coil

Trade Names: Hipernom, HyMu80

Magnifer® 7904, Molypermalloy, Permalloy 80®

Hiperco® 50

Forms: Strip/Coil

Hiperco® 50A

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

Hiperco® 50 HS

Forms: Strip/Coil

Carpenter VimVar Core Iron

Forms: Round Bar/Rod

Allied pure Iron

Forms: Round Bar/Rod

Copper Metals

EFINEA supplies select, commercially pure grades of Copper available in Coil form.

Copper OFHC 101/102

Nickel-Silver 770

Cupro-Nickel 715 (CuNi 70/30)

Forms: Coil

Alloys and Metals We Distribute

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

EFINEA Services

Slitting, Shearing, Saw Cutting,
Grinding, Water Jet Cutting, Laser Cutting,
Custom Stocking and Consignment Programs



New Jersey Offices

769 Susquehanna Avenue, Franklin Lakes, NJ 07417
3 Fir Court, Oakland, NJ 07436

Need pricing? We're here to help:
sales@efineametals.com
1.800.348.6268

California Offices

10537 Humboldt Street, Los Alamitos, CA 90720
1847 W. Business Center Drive, Orange, CA 92867