

Molybdenum Lanthanum Oxide

Refractory Metals and Alloys

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42

Mo

95.94

Molybdenum

8

O

Oxygen

57

La

Lanthanum

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	0.376
	g/cm ³	≥10.1
Melting Point	°F	4748
	°C	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	4.90
	Micro-in/°C x 10 ⁻⁶	2.70

Typical Mechanical Properties

Tensile Strength

2mm Sheet; Recrystallized;	ksi (MPa)-20°C	70 (480)
Longitudinal Direction	ksi (MPa)-1000°C	22 (150)
	ksi (MPa)-1400°C	12 (80)

Elongation at Fracture A

22mm Sheet; Recrystallized;	%-20°C	15
longitudinal Direction	%-1000°C	20
	%-1400°C	25

Typical Hardness

Recrystallized Sheet (MLR) 1mm	Vickers HV	≤ 250
Stress Relieved Sheet (MLS)	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



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

CHEMISTRY

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



EFINEA METALS | www.efineametals.com | sales@efineametals.com

Special Purpose Alloys & Metal From Stock

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EFINEA Services

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

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 | Glass Sealing

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

Kovar® | 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; 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

Refractory Metals & 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

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 | 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®, Mangnifer®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

Core Iron (Pure Iron)

Forms: Round Bar/Rod, Plate

Trade Names: Electrical Iron®, Alliedpureiron®

Electrical & Electronic Nickels

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

Electronic Nickels

200/201/205/233/270

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

Copper Metals

EFINEA supplies select, Commercially pure grades of Copper in Coil Form

Copper OFHC 101/102

Nickel-Silver 770

Cupro-Nickel 715 (CuNi 70/30)

Forms: Coil

Stainless Steels & Other Alloys

EFINEA supplies select aircraft quality grades of Stainless Steel available in various forms and sizes.

17-4PH (Type 630)

15-5PH Vac Melt

300 Grade Stainless Steel Coils

Forms: Round Bar/Coils