

Mo
95.95

Molybdenum

22	40	6
Ti 47.867 Titanium	Zr 91.224 Zirconium	C 12.011 Carbon

Molybdenum TZM

Refractory Metals and Alloys

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Special Purpose Alloys
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DESCRIPTION

Molybdenum TZM, a refractory alloy, comprised of 0.5% titanium (Ti), 0.08% zirconium (Zr), 0.01 - 0.04% carbon (C), and the balance being the element molybdenum. This alloy is produced by powder metallurgy techniques with the addition of particle-strengthened carbides and oxides to inhibit grain growth at high temperatures. This combination provides increases in the alloy's ductility and creep strength. One of molybdenum TZM most significant improvements is that above 2000°F its tensile strength is approximately twice that of pure molybdenum. TZM is best used for applications where components are subjected to both high temperature environments and high mechanical loading.

APPLICATIONS

Components for HIP, sintering and heat treatment furnaces; Base bodies for X-ray targets; Boats for annealing and sintering processes (temperatures up to 1400°C); Forming tools: hot runner nozzles for plastic injection molding; Billets for isothermal forging; Die inserts for casting aluminum.

PHYSICAL PROPERTIES

Density	lb/in ³	0.37
	gm/cm ³	10.22
Melting Point	°F	4753
	°C	2623
Electrical Resistivity	Micro-ohm-cm	6.85
Thermal Conductivity	Cal/cm ² /cm°C /sec	0.48
Specific Heat	Cal/gm / °C	0.073
Recrystallization Temp	°C	1400
Coefficient of Linear Thermal Expansion	Micro-in/ °F x 10 ⁻⁶	2.50
	Micro-in/ °C x 10 ⁻⁶	5.20

FORMS AVAILABLE

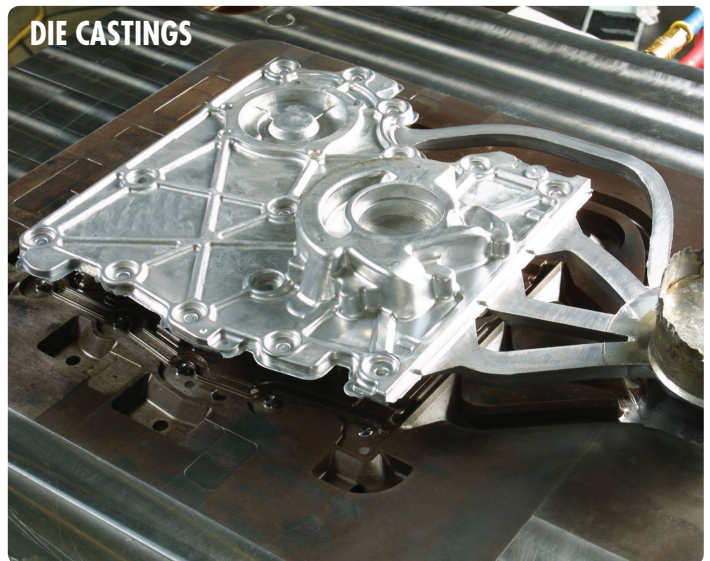
- Bar | Rod •
- Plate •
- Sheet •

Please call us at 800-348-6268 with your form and size requirements.
No order is too small.

MECHANICAL PROPERTIES

Tensile Strength	KSI (MPa) RT	110 (760)
Elongation	% in 1.0"	15
Typical Hardness	DPH/RC	220
Modulus of Elasticity	KSI (GPa)	48 (320)

DIE CASTINGS



CHEMISTRY

Minimum % 99.2 Molybdenum (Mo)
0.50 Titanium (Ti), 0.08 Zirconium (Zr), 0.01 – 0.04 Carbon (C)

SPECIFICATIONS

ASTM B386 Type 364, ASTM B387 Type 364, UNS R03630

769 Susquehanna Avenue, Franklin Lakes, NJ 07417
PH: 201.891.4003 | Toll Free: 800.335.6827



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ASTM F15 Alloy

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

Trade Names: Kovar[®], Pernifer[®] 2918, NILO K[®], DilverP1[®]

Alloy 42/46/48/52

Forms: Plate, Round Bar, Sheet

Trade Names: Pernifer[®] 40, 46, 48, 50; NILO[®] 42, 46, 48, 50;
Glass Seal 42, 46, 48, 50

Invar 36[®]

Forms: Plate, Round Bar, Sheet, Wire, Wire Rod

Trade Names: Pernifer[®] 36, NILO[®] 36, Invar Steel

Super Invar 32-5[®]

Forms: Plate, Round Bar, Sheet

Electronic Nickel

200/201/233/270

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

Soft Magnetic Alloys | EMI Shielding & Laminations

Ed Fagan Inc. is an exclusive distributor of
“EMI shielding alloys” for VDM Metals GmbH,
the world’s leading producer of these alloys.

EFI Alloy 50

Forms: Coil/Strip, Rectangular Bar, Wire

Trade Names: Alloy 47-50,

High Permeability 49[®], Magnifer[®] 50

EFI Alloy 79

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

Trade Names: Hipernom, HyMu80[®],

Magnifer[®] 7904, Molypermalloy, Permalloy 80[®]

Carpenter Hipercor 50[®] and Hipercor[®] 50A

Forms: Coil/Strip, Plate, Round Bar

Carpenter VimVar Core Iron

Forms: Coil/Strip, Round Bar, Sheet

Refractory Metals and Alloys

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

Molybdenum

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

Molybdenum Lanthanum Oxide (ML)

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

Molybdenum TZM

Forms: Bar/Rod, Plate, Sheet

Niobium

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

Rhenium

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

Tantalum

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

Tungsten

Forms: Bar/Rod, Coil/Strip, Parts (To
Specification), Plate, Precision Cut Wire, Sheet

Tungsten Alloy

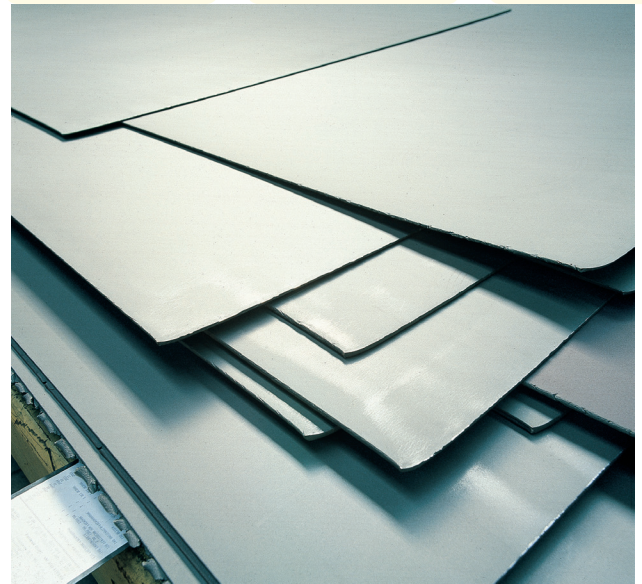
Blank Forms: Flats, Parts, Plate/Sheet, Round Bar, Shapes

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