

# HIGH TEMPERATURE SOLUTIONS FOR FURNACE OPERATIONS AND REPAIR



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Whether you are heat treating large aerospace parts in vacuum furnaces, running high production parts for brazing through controlled atmosphere furnaces, or annealing medical and aerospace products to critical specifications, Elmet Technologies offers you value-added product solutions for these crucial applications.

Elmet Technologies serves the heat treating and furnace markets with products from molybdenum, tungsten, tantalum, and alloys such as La-doped molybdenum and TZM. These materials are characterized by their high ductility and toughness, high thermal and electrical conductivity, low coefficient of thermal expansion, and excellent strength and stability at temperatures up to 2000 °C.

We offer product solutions in vacuum heat treating, sintering, annealing, brazing, and all high temperature furnace applications in the medical, aerospace, defense and automotive industries.

- [> Furnace Parts](#)
- [> Heating Element Materials](#)
- [> Heat Shields](#)
- [> Molybdenum & Tungsten Mill Products](#)
- [> Vacuum Furnace Materials](#)
- [> Hot Zone Replacement Parts](#)

PHYSICAL PROPERTIES	UNIT	MOLYBDENUM	TUNGSTEN
Typical Commercial Purity		99.95 %	99.95 %
Specifications	ASTM	B-386	B-760
Density	g/cc	10.2	19.3
	lbs/cu inch	0.369	0.697
Melting Point	Celcius	2623	3422
	Fahrenheit	4753	6192
Boiling Point	Celcius	4612	5644
	Fahrenheit	8335	10211
Typical Hardness	DPH (Vickers)	230	310
Thermal Conductivity @ 20 °C	cal/sec/cm <sup>2</sup> /cm °C	0.35	0.397
Coefficient of Thermal Expansion	°C x 10 <sup>-6</sup>	4.9	4.3
Electrical Resistivity	Microohms-cm	5.7	5.5
Electrical Conductivity	% IACS	34	31
Tensile Strength MPa	Ambient	120-200	100-500
	500 °C	35-85	134
	1000 °C	20-30	50-75
Modulus of Elasticity 10 <sup>6</sup> psi	Ambient	45	59
	500 °C	41	55
	1000 °C	39	50

FORM	THICKNESS	WIDTH	LENGTH
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### MOLYBDENUM FORMS AND TOLERANCES

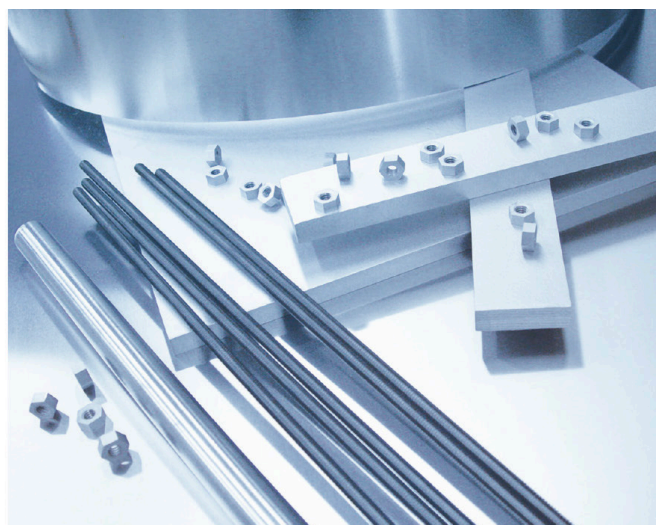
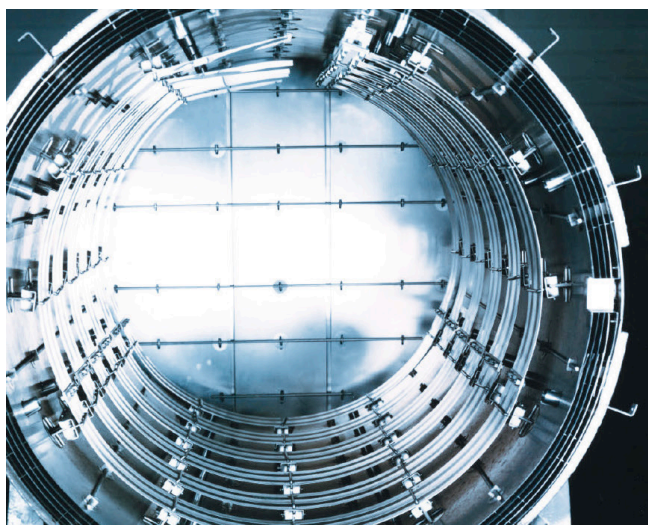
Sheet	0.005" to 0.187" (0.127 mm to 4.750 mm)	24" max. (610 mm)	sheet ** (2.438 m) or coil*
Foil	0.001" to 0.0049" (0.0254 mm to 0.12 mm)	1/2" to 12" (12.7 mm to 305 mm)	coil

### TUNGSTEN FORMS AND TOLERANCES

Sheet	0.040" to 0.187" (1.016 mm to 4.750 mm)	24" max. (610 mm)	sheet ** (2.438 m)
Sheet	0.005" to 0.039" (0.127 mm to 0.991 mm)	12" max. (305 mm)	max. 30 feet (9.144 m) or coil*
Foil	0.002" to 0.0049" (0.50 mm to 0.12 mm)	1/2" to 6" (12.7 mm to 152.4 mm)	coil

\* Coil availability depends on thickness

\*\* Sheet availability depends on width and thickness



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