

TZM

MOLYBDENUM

Refractory Metals and Alloys



Description

TZM Molybdenum is an alloy produced by powder metallurgy techniques with the addition of particle-strengthened carbides and oxides to inhibit grain growth at high temperatures. It is suited to high strength, high temperature applications, especially above 1,000°C. Compared to unalloyed molybdenum, TZM has a higher recrystallisation temperature, higher strength and hardness, as well as good ductility at room and elevated temperatures. TZM is also machinable and has strong thermal conductivity, corrosion resistance, and low vapour pressure.

Applications

Components for HIP, sintering, and heat treatment furnaces, X-ray target base bodies, boats for annealing and sintering (up to 1400°C), forming tools, hot runner nozzles for plastic injection molding, billets for isothermal forging, die inserts for casting aluminum.

PHYSICAL PROPERTIES		MECHANICAL PROPERTIES	
Density	10.22g/cm ³	Tensile strength	760 MPa
Melting point	2623°C	Elongation	15%
Electrical resistivity	6.85 microhm-cm	Hardness DPH (vickers) RC	220
Thermal conductivity	118 W/mK	Modulus of elasticity	320 GPa
Recrystallisation temperature	1400°C		
Specific heat	0.255 J/g°C		
Coefficient of linear thermal expansion	5.2 x 10 ⁻⁶ K ⁻¹ at 20°C and 5.8 x 10 ⁻⁶ K ⁻¹ at 1000°C		

FORMS AVAILABLE:



SPECIFICATIONS

ASTM	B386 type 364 (plate, sheet, coil)
ASTM	B387 type 364 (rod, wire)
AMS	7817
UNS	R03634

CHEMISTRY

28 Nickel Ni 58.6934	-
27 Cobalt Co 58.933	-
26 Iron Fe 55.847	-
Mo	99.2%
Zr	0.08%
Ti	0.5%
C	0.01%-0.04%

28 Nickel Ni 58.6934	27 Cobalt Co 58.933	26 Iron Fe 55.847
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More than just metal

We're one of Europe's leading suppliers of premium quality refractory metals and alloys, soft magnetic alloys, and controlled expansion alloys. We hold a large stock of UK-certified, materials, all with full chain custody. With a deep technical understanding, comprehensive workshop facilities, and top accreditations, we help our customers get more from their materials.

Knowledge and advice

Our team understands exactly how our products are made, how they will behave in different situations, and how they should perform. Their knowledge and expertise helps save time, effort and cost by ensuring that all materials are sourced, processed and tested to perform in the most effective way.

We partner with leading academic institutions and scientific organisations that add value to our service and help develop solutions to the challenges impacting our customers. We're keen to share these unique insights in order to deliver practical operational improvements.

Workshop and machining

Our purpose-built facilities are centred around a fully equipped workshop designed to address almost any customer request:

- CNC Proturn RLX 1630 lathe for high precision rod and bar processing
- Saws to cut bars, plate and billets from Ø 2mm to Ø 270mm
- Guillotines for sheet and coil
- Grinding machinery
- De-coiler to check for imperfections before shipping
- Coil handling equipment to inspect product before dispatch
- Water jet and laser cutting
- Heat treatments

Quality control

All orders are fully tested before shipping.

Our state-of-the-art metrology lab features:

- Micrometers, verniers and gauges for all applications
- Surface roughness tester
- Straightness and roundness testing apparatus
- Magnetometers for measuring inductance, coercive and saturation
- Capabilities for evaluating properties such as CTE, tensile and elongation.

Best practice

We are committed to continuous improvement, reflected in our achievement of internationally-recognised industry accreditations. These are the foundation of best practice and provide you with solid assurances of competence and integrity:

- **AS9120** certified – a top aerospace industry award.
- **Green Mark level 1** accreditation – an environmental certification that supports greater sustainability.
- **JOSCAR** (the Joint Supply Chain Accreditation Register) accredited – an award that helps to streamline procurement processes.
- **Cyber Essentials** certified – a government-backed programme that provides security assurance of a supplier's digital infrastructure.



Discover how we can **optimise** operational performance

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