

Molybdenum

Technical Datasheet

DURO METALL

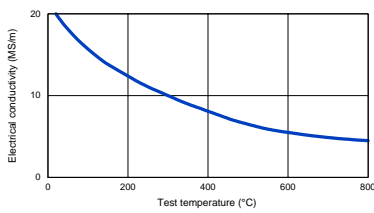
Ein Unternehmen der Wieland-Gruppe

Code	Mo	Chemical	Mo
Material-No.	-	Composition	100
		(Typical analysis in %)	
Material Properties	High melting point, high endurance strength under elevated temperatures (under vacuum or protective gas up to 2.000 K/1.727 °C), good thermal strength, low thermal expansion.		
Applications	<ul style="list-style-type: none"> • Resistance welding electrodes/discs for copper and brass • Parts of electronic tubes • Construction material in semi-conductors • Heating wire in protective gas furnaces • Radiation sheets in high temperature furnace constructions • Sinter boats 		
Mechanical Properties (Typical)	Hardness	HV	200 - 220
	Tensile strength c. 85 % reduction	N/mm ²	590 – 690
	Yield strength	N/mm ²	540 - 640
	Elongation L = 5 D	%	15 - 20
	Modulus of elasticity at 293 K (20 °C)	kN/mm ²	330
Physical Properties (Typical)	Electrical conductivity 293 K (20 °C)	MS/m	c. 20 (c. 35 % I.A.C.S.)
	Electrical resistance 293 K (20 °C)	$\frac{\Omega \cdot \text{mm}^2}{\text{m}}$	c. 0,05
	Coefficient of electrical resistance	$\frac{1}{\text{K}}$	c. 0,0046
	Coefficient of thermal expansion 273-593 K (0-320°C)	$\frac{1}{\text{K}}$	5,3 – 5,7 · 10 ⁻⁶
	Specific heat	$\frac{\text{J}}{\text{g} \cdot \text{K}}$	0,27
	Thermal conductivity 293 K (20 °C)	$\frac{\text{W}}{\text{m} \cdot \text{K}}$	c. 130
	Density	$\frac{\text{g}}{\text{cm}^3}$	10,2
Available Products	Wire, bars, sheets, machined parts		
Tensile strength properties depend on cross-section and design.			

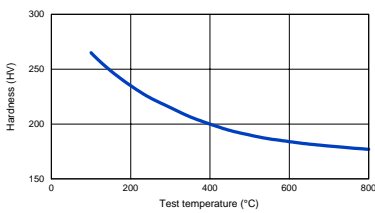
MOLYBDENUM

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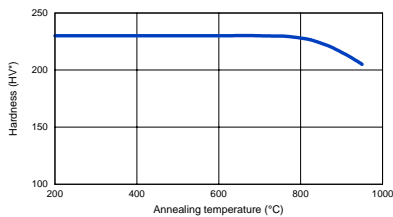
Electrical Conductivity of Molybdenum depending of temperature



Hardness at elevated temperatures of Molybdenum



Softening point of Molybdenum



Machining Instruction

Machinability of Molybdenum is relatively difficult. In case of necessary machining the following instructions are suitable:

Turning

Cutting speed m/min.

Tungsten carbide
K 05

70 – 120

High Speed Steel
THYRAPID 3202

30 – 40

Rake angle

c. 20°

c. 20°

Feed mm/U

0,05 – 0,40

0,05 – 0,30

Depth of cut mm

0,5 – 5,0

0,3 - 5,0

Milling

Cutting speed m/min.

Tungsten carbide
ISO K 10 or ISO K 05

80 – 120

High Speed Steel
THYRAPID 3202

20 – 25

Rake angle

10°

10°

Feed/tooth mm

0,05 – 0,10

0,03 – 0,10

Drilling

Cutting speed m/min.

Tungsten carbide
ISO K 05

12

High Speed Steel
THYRAPID 3202

10 - 15

Feed mm

0,05 – 0,10

0,03 – 0,10

All statements as to the properties or utilization of the materials and products mentioned in this data sheet are only for the purpose of description. Guarantees in respect of the existence of certain properties or utilization at the material mentioned are only valid if agreed upon in writing.

*) Vickers hardness at R.T. after 5 hours at temperature between 50 and 800 °C annealed