TEXSA
TECNOLOGIE PER SALDATURA

Molybdenum
Technical Datasheet

Code Material-N°.	Mo -	Chemical Composition (Typical analysis in weight %)	Mo 100

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	• 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	approx. 20 (approx. 35 % IACS)
	Electrical resistance 293 K (20 °C)	$\frac{\Omega \cdot mm^2}{m}$	approx. 0,05
	Coefficient of electrical resistance	$\frac{1}{K}$	approx. 0,0046
	Coefficient of thermal expansion 273-593 K (0-320 °C)	$\frac{1}{K}$	$5,3 - 5,7 \times 10^{-6}$
	Specific heat	$\frac{J}{g \cdot K}$	0,27
	Thermal conductivity 293 K (20 °C)	$\frac{W}{m \cdot K}$	approx. 130
	Density	$\frac{g}{cm^3}$	10,2

Available Products	Wire, bars, sheets, machined parts

	Tensile strength properties depend on cross-section and design.

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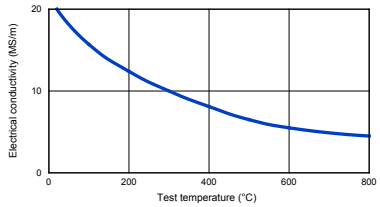
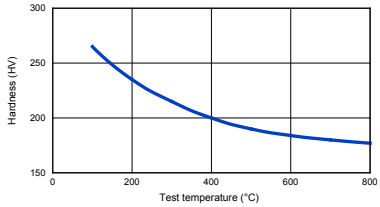
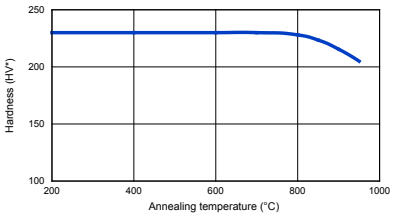
Electrical Conductivity of Molybdenum depending of temperature



Hardness at elevated temperatures of Molybdenum



Softening point of Molybdenum



*) Vickers hardness at R.T. after treating 5 hours at temperature between 500 and 800 °C

Machining Instruction

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

Turning		Tungsten carbide K 05	HSS* 1. 3202
Cutting speed	m/min.	70 – 120	30 – 40
Rake angle		approx. 20°	approx. 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		Tungsten carbide ISO K 10 or ISO K 05	HSS* 1.3202
Cutting speed	m/min.	80 – 120	20 – 25
Rake angle		10°	10°
Feed/tooth	mm	0,05 – 0,10	0,03 – 0,10

Drilling		Tungsten carbide ISO K 05	HSS* 1. 3202
Cutting speed	m/min.	12	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.

*(HSS) High Speed Steel

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