



ELMET
TECHNOLOGIES

FABRICATED PRODUCTS

MOLYBDENUM-COPPER COMPOSITE MATERIALS

Molybdenum-copper composite materials are produced by copper infiltration of porous sintered molybdenum. They are available with different copper contents. A thermal conductivity over 200 W/m*K is producible.

RANGE OF APPLICATION

Balance weights, radiation protection, vibration absorbers, heat transfer, drilling bars. The mechanical characteristics have to guarantee the stability and strength in any application case.

The absorption of x-ray and gamma radiation is in direct proportion to the density of the shielding material. Tungsten high density composites are more than 1,5 times as effective as lead and provide extremely efficient protection, particularly where space is limited.

STANDARDS

Switching contacts for high-voltage and medium-voltage, heat sinks for passive thermal management (rolled sheets), electrodes for erosive processing.

TYPICAL PROPERTIES:

Material	MoCu	65/35	70/30	80/20	Material
Molybdenum content	%	65 ±3	70 ±3	80 ±3	Molybdenum content
Copper content	%	35 ±3	30±3	20 ±3	Copper content
Density	g/cm ³	9,72 ±0,04	9,78 ±0,04	9,92 ±0,05	Density
Hardness	HB2,5/62,5	120-160	130-170	135-175	Hardness
Median coefficient of linear thermal expansion (20 - 100 °C)	10 ⁻⁶ /K	8,6	8,2	6,3	Median coefficient of linear thermal expansion (20 - 100 °C)
(20 - 300 °C)	10 ⁻⁶ /K	9,2	8,6	6,4	(20 - 300 °C)
(20 - 450 °C)	10 ⁻⁶ /K	9,6	8,8	6,6	(20 - 450 °C)
Young' s modulus (guide value)	GPa	200	210	220	Young' s modulus (guide value)
Ultimate tensile strength Typical value (round bar) Typical value (sheet)	MPa	280 370 650	290 420 720	300 470 750	Ultimate tensile strength Typical value (round bar) Typical value (sheet)
Electrical conductivity	%IACS MS/m	≥ 47 ≥ 27	≥ 45 ≥ 26	≥ 35 ≥ 20	Electrical conductivity
Specific electrical resistance	Ω*mm ² /m	≤ 0,040	≤ 0,038	≤ 0,042	Specific electrical resistance
Thermal conductivity	W/mK	≥ 200	≥ 190	≥ 170	Thermal conductivity

DELIVERY FORM:

The products may be delivered as semi-finished products (round bars or sheets) for further machining by the customer or according to customer drawing as finished products.

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