



## MOLYBDENUM POWDER METALLURGY PRODUCTS

# PURE MOLYBDENUM

## Tube Targets

This specification covers extruded molybdenum tubes produced from pressed and sintered powder metallurgy billet for sputtering applications.

### CHEMICAL CHARACTERISTICS<sup>1</sup>

(Mass fraction in %)

<b>Mo</b> (By Difference)	<b>min.</b>	<b>99.95 %</b>
Ag	max.	0.0005 %
Al	max.	0.002 %
As	max.	0.0005 %
Ba	max.	0.001 %
C	max.	0.005 %
Ca	max.	0.002 %
Cd	max.	0.001 %
Co	max.	0.003 %
Cr	max.	0.006 %
Cu	max.	0.002 %
Fe	max.	0.006 %
H	max.	0.001 %
K	max.	0.002 %
Mg	max.	0.001 %
Mn	max.	0.001 %

<b>Mo</b> (By Difference)	<b>min.</b>	<b>99.95 %</b>
N	max.	0.0001 %
Na	max.	0.001 %
Nb	max.	0.001 %
Ni	max.	0.002 %
O	max.	0.005 %
P	max.	0.002 %
Pb	max.	0.001 %
S	max.	0.002 %
Si	max.	0.003 %
Sn	max.	0.001 %
Ta	max.	0.002 %
Ti	max.	0.001 %
W	max.	0.030 %
Zn	max.	0.0005 %
Zr	max.	0.0005 %

### PHYSICAL CHARACTERISTICS

Density min. 10.2 gm/cc

<sup>1</sup> Information on testing methods on request.

## **SURFACE AND INTERNAL CONDITION**

Surface finish per customer specification.

Tubes will be supplied in the heat treated condition.

OD of tube to be free of cracks, or de-laminations as determined by dye penetrate inspection.

Surface to be free of cutting oil, lubricants, makings, etchings or stamp.

## **DIMENSIONAL**

Dimensions per customers specification.

## **IDENTIFICATION**

Each tube shall be identified with lot number listed on tag attached to each tube or per customer specification.

## **QUALITY DOCUMENTS**

For each lot of tubes a certification will be supplied and will include the following:

- > Certification to analysis of chemical of elements listed above
- > Certification to dimensional integrity
- > Certification to surface finish per customer specification.

**Hazards identification in Advertising (Directive 67/548/EEC Article 26, Directive 1999/45/EC Article 13 and REGULATION (EC) No 1272/2008 Article 48) none.**

## **PACKAGING**

Packaging shall be adequate to prevent damage, during transit and will comply with requirements of country of destination and or customer specifications:

Wooden box constructed from 1-1/2 thick lumber on sides and 1/2" plywood on top and bottom ( maximum four tubes per box).

Each tube shall be wrapped in stretch wrap completely covering tube and tucked into each end. Each end will be protected by protective netting and/or rubber end cap.

Tubes will be placed on Expanded Polystyrene Foam Cradles with 1-1/2 inch thick rubber foam placed between tubes and on ends.



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