

MOLYBDENUM POWDER METALLURGY PRODUCTS

Number PD-7040 Issue 1-26.11.2009

## PURE MOLYBDENUM Powder Metallurgy Target

ST-100-1

**Description of Product:** This specification covers hot rolled molybdenum plates produced from pressed

and sintered powder metallurgy sheet bar for sputtering applications.

## Chemical Characteristics<sup>1)</sup> (Mass fraction in %)

Mo (by difference)	min.	99.95	%				
Ag	max.	0.0005	%	N	max.	0.001	%
Al	max.	0.002	%	Na	max.	0.001	%
As	max.	0.0005	%	Nb	max.	0.001	%
Ва	max.	0.001	%	Ni	max.	0.002	%
С	max.	0.003	%	0	max.	0.005	%
Ca	max.	0.002	%	Р	max.	0.002	%
Cd	max.	0.001	%	Pb	max.	0.001	%
Co	max.	0.003	%	S	max.	0.002	%
Cr	max.	0.006	%	Si	max.	0.003	%
Cu	max.	0.002	%	Sn	max.	0.001	%
Fe	max.	0.006	%	Та	max.	0.002	%
Н	max.	0.0005	%	Ti	max.	0.001	%
K	max.	0.002	%	W	max.	0.030	%
Mg	max.	0.001	%	Zn	max.	0.0005	%
Mn	max.	0.001	%	Zr	max.	0.0005	%

The impurity levels of the above elements are based on historical data.

**Density** Plate will be greater than or equal to 99.5 %. (Theoretical density is 10.2 g/cm³)

Structure Plates will be supplied in the recrystallized condition unless otherwise specified

and agreed upon between the customer and the supplier.

**Mechanical Properties** Tensile properties can be supplied if requested when the Purchase Order is

placed.

**Dimensional Tolorances** Tolerances as agreed upon at the time of order entry.

Plate will be sheared, abrasive cut, band saw cut, or water jet cut to the agreed

upon tolerances.

The deviation from flatness will be determined by laying a straight edge across the plate and measuring the gap between the bottom of the straight edge and the plate. The flatness tolerance will be agreed upon at the time of order entry.

**Surface Condition** The plate will not have cracks, surface contamination, pits, voids, stains,

abrasions, and discolorations. When the order is placed, the customer will

request a finish for each side from the list below:

As rolled: rnatte finish

Machined:  $\nabla\nabla$ 

<sup>1)</sup> Information on testing methods is available upon request.



## **High Performance Metal Solutions**

Number PD-7040 Issue 1-26.11.2009

Machined:  $\nabla\nabla\nabla$ 

**Identification** The material will be identified with appropriate specification number, ingot

number, and nominal size. Shipping containers will be marked with the name of

the customer and the purchase order number.

Packaging The molybdenum plate shall be packed for shipment in accordance with the

requirernents of ASTM B386 Section 15. Specifically, the molybdenum plate shall be packaged in a properly labeled sturdy wood outer container closed with rnetal banding and nails. Machined surfaces will be protected with the application of low tack film. Internal packaging will provide moisture protection with desiccant and a dual layer vapor protection consisting of 6-mil poly film covered by marvelpak 22 grade c (-greased proofed, water proofed, flexible, acid free, non-corrosive moldable and self adherent film per Govt. Spec. Jan-b-121 AMD #2). The material shall be protected from shock with the use of micro foam and corrugated void

fillers.

**Labeling** Labeling shall include:

Shipped from Shipped to MSDS Gross wt Net wt

Shop Order Number Purchase Order Number

Box size

Pre-cautionary Labels (e.g. Do Not Stack)

**Certification** Certification includes:

Identification (individual ingot number, sales order number)

Chemistry (Historical Data)

Dimensions Weight

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.

**Rejection** H.C. Starck must receive written notification of rejected material with the reason

for rejection. The right is reserved to inspect rejected material at customer plant for claim validation. The material may be returned only after proper authorization.

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**High Performance Metal Solutions** 

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