MoTa sputtering targets. Outstanding corrosion resistance.

Thanks to its good adherence to glass and a high level of electrical conductivity, molybdenum is a popular material for electrode layers in thin-film transistors (TFT-LCD) and touch sensors (touch panels).

Both during the production process and as a component in the future displays, these layers are exposed to atmospheric humidity and perspiration from the user's hand. The answer to corrosion: Plansee's molybdenum-tantalum solutions.

MoTa sputtering targets. Outstanding corrosion resistance.
The most important facts

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density [%]</td>
<td>≥ 99.5</td>
</tr>
<tr>
<td>Purity [%]</td>
<td>&gt; 99.97</td>
</tr>
<tr>
<td>Coefficient of thermal expansion [ppm/K]</td>
<td>5.34</td>
</tr>
<tr>
<td>Thermal conductivity [W/(m·K)]</td>
<td>97</td>
</tr>
<tr>
<td>Electrical conductivity [MS/m]</td>
<td>13</td>
</tr>
<tr>
<td>Microstructure</td>
<td>fine-grained, homogeneous</td>
</tr>
</tbody>
</table>

High density.

We use hot forming processes to compact our MoTa sputtering targets to 99.5 % and more. The benefit to you: Particularly high conductivity in the layer and rapid sputtering due to high deposition rates.

Outstanding purity.

Metallic and gaseous impurities in the sputtering target are reproduced almost 1:1 in the sputtered functional layer and result in particle formation during the PVD process. We guarantee that our MoTa targets have a purity of at least 99.97 %.

Unbeatable corrosion resistance.

We dope pure molybdenum with small quantities of the extremely corrosion-resistant element, tantalum. In this way, we are able to combine the beneficial properties of the two metals. MoTa has proven its corrosion resistance in numerous tests.
Etched thin films (thickness: 300 nm) of molybdenum and MoTa after different exposure times at 60 °C and 90 % relative humidity:

Reliable etching results.

MoTa is particularly quick and easy to structure. The taper angle of MoTa is 45°. In contrast, at 90°, this angle is very steep in competing products offering a similar level of corrosion resistance. Any functional layers that are subsequently applied are not able to optimally cover these steep inclines. This can result in fissures and short-circuits.

Flawless quality from a single supplier.

We are the only manufacturer of sputtering targets to perform every stage of the production process in-house. From the raw material through to the finished product: including the development of new materials and the optimization of our coating methods and coatings.
Sintering is the cornerstone of our powder metallurgical production process. This is the method we use to manufacture compact metallic components from porous powder blanks. With the world's largest hot rolling mill for refractory metals, we produce planar targets of maximum density. We use special forming processes to manufacture our rotary targets.

You want the perfect coating? We create it.

In the PVD process, everything must fit together perfectly. Only if all the process parameters are fully harmonized it is possible to create the coating that precisely meets your requirements. In our PVD application laboratory, we perform sputtering in near-real life conditions. Here, our team of developers creates coatings and conducts in-depth analyses based on your specifications. Thanks to this collaboration with you and a wide range of development institutes, we can minimize the time to market required for the development of new coating materials.

The best proof of our expertise is us! We coat many of our products such as semiconductor base plates and x-ray targets in-house using the PVD, CVD, APS and VPS coating processes.