Sputtering targets made of titanium-diboride.

During the machining of aluminum, particles of material may adhere to the tool tip. The result: The tool has to exert more force to remove the workpiece material and wear is accelerated. The tool tip often breaks prematurely. Not so with coatings made of titanium diboride (TiB$_2$). These are particularly suitable for the machining and cutting of aluminum and other nonferrous metals.

Titanium diboride is very hard. And the best: Because, unlike other coatings, TiB$_2$ does not react with aluminum, no metal particles adhere to your tools. This ensures trouble-free machining.
Hard material titanium diboride coatings are applied to the tool using the magnetron sputtering process. For this type of application, we can supply pure ceramic TiB$_2$ sputtering targets and bonded targets on molybdenum or copper backplates. These backplates make our bonded targets stable, breakage-resistant and easy to use. We generally use indium as our solder material. However, we are also able to call on other materials depending on the specific application. On request, we can also manufacture arc cathodes. Our titanium diboride targets are popular because of their:

- Fine, homogeneous microstructure
- High density
- High resistance to thermal shocks

The most important details at a glance

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity [%]</td>
<td>99.7</td>
</tr>
<tr>
<td>Guaranteed density [g/cm$^3$]</td>
<td>4.40</td>
</tr>
<tr>
<td>Grain size [µm]</td>
<td>2</td>
</tr>
<tr>
<td>Thermal conductivity [W/(m·K)]</td>
<td>64</td>
</tr>
<tr>
<td>Coefficient of thermal expansion [1/K]</td>
<td>7.4 · 10$^{-6}$</td>
</tr>
</tbody>
</table>
Our optimum microstructure. Your perfect coating.

We subject our TiB$_2$ powder to a special pretreatment phase in order to ensure that our targets have a particularly fine-grained and homogeneous microstructure. The advantage: The target material is eroded uniformly during the coating process and ensures that you benefit from smoother coatings.

High density. Smooth layers.

As a ceramic material, titanium diboride has to be compacted at high temperatures of between 1 700 and 2 000 °C. That is why we use hot pressing techniques to produce our targets and achieve at least 98 % of the theoretical density. As a result, no particles of powder are released from the target during sputtering. The result: a perfect layer structure combined with optimum adherence of the coating.

Optimized resistance to thermal shocks. Long service life.

During the coating process, the target is exposed to high temperatures. Once sputtering has been completed, the material cools down quickly again. This may cause fissures or fractures in the target. Thanks to our special powder metallurgical production process, our targets offer outstanding resistance to thermal shocks and can withstand countless heating/cooling cycles without difficulty.
Guaranteed purity.

The purer the coating material, the better the quality of the hard material layer. From the very outset, we use only the finest powder which we mix in our own equipment to ensure outstanding material purity. We monitor every step - from the powder through to the finished product - and make sure that only targets with the specific guaranteed density, purity and a homogeneous microstructure are shipped from our factories.

Flawless quality from a single supplier.

As a leading manufacturer of sputtering targets, we perform every stage of the production process ourselves. From the mixing and compacting of the metal powder through to the forming, machining and bonding of our targets: including the development of new materials to optimize your coating processes and films. And naturally we also verify the quality of our targets using state-of-the-art measuring methods.