ADVANCED MATERIALS GROUP

Tungsten - Titanium Sputtering Targets
Tungsten-Titanium (W-Ti) Sputtering Targets

Materion Advanced Materials Group is an industry leader in producing superior quality products for thin film deposition markets and a worldwide supplier for W-Ti material. Our high purity W-Ti sputtering targets are specifically developed to produce low defect and high performance W-Ti thin films.

FEATURES

Our W-Ti targets’ microstructure and phase structure are customized for low particulation, high uniformity, conductive films.

High density and low variability across the target

- >98% bulk density
- Less than +/-0.5% density variation across targets

Low defect content including low porosity, and very low exogenous and indigenous inclusions

Minimal lamellar β (Ti-W) phase

Engineered target surfaces to suppress secondary flaking due to back deposition

High Purity with low oxygen and low alkali content. Purity levels available as high as 99.999%

Large lot sizes allowing a larger number of targets from a single production lot

Consistent grain sizes of less than 20μm both over the area of the target and through the thickness

APPLICATIONS

Materion is a leading supplier of sputtering targets for W-Ti wafer bumping. W-Ti is also used as a diffusion barrier layer and as a capping layer in interconnect metallization.

Target Specifications

<table>
<thead>
<tr>
<th>Alloy Composition</th>
<th>5 - 30% wt% Ti</th>
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<tbody>
<tr>
<td>Compositional Tolerance</td>
<td>Typically ±0.5wt%</td>
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<tr>
<td>Purity</td>
<td>Up to 99.999%</td>
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<tr>
<td>Grain size</td>
<td>Typically &lt;20μm</td>
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<tr>
<td>Form factor</td>
<td>Up to 17.5&quot; (450mm) diameter monolithic</td>
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BENEFITS

- Particulation rate is less than one third our competitor’s due to our low porosity and low inclusion content, engineered target surfaces and lack of β (Ti-W).
- High deposition uniformity resulting from a consistent grain size of less than 20μm, uniform phase structure, and high density over the entire target.
- Consistent performance over the lifetime of the target due to uniform grain size, pore content, and phase structure through the target thickness.
- Large lot sizes for added target-to-target consistence for large volume applications.
- High purity for demanding applications and high performance.
- Surface engineered to minimize flaking, thus reducing extrinsic wafer defects and impairing nodule formation on the target.

The above comparison of sputter deposited W-Ti films shows the lower particulation rate associated with Materion targets relative to the competitor's targets.