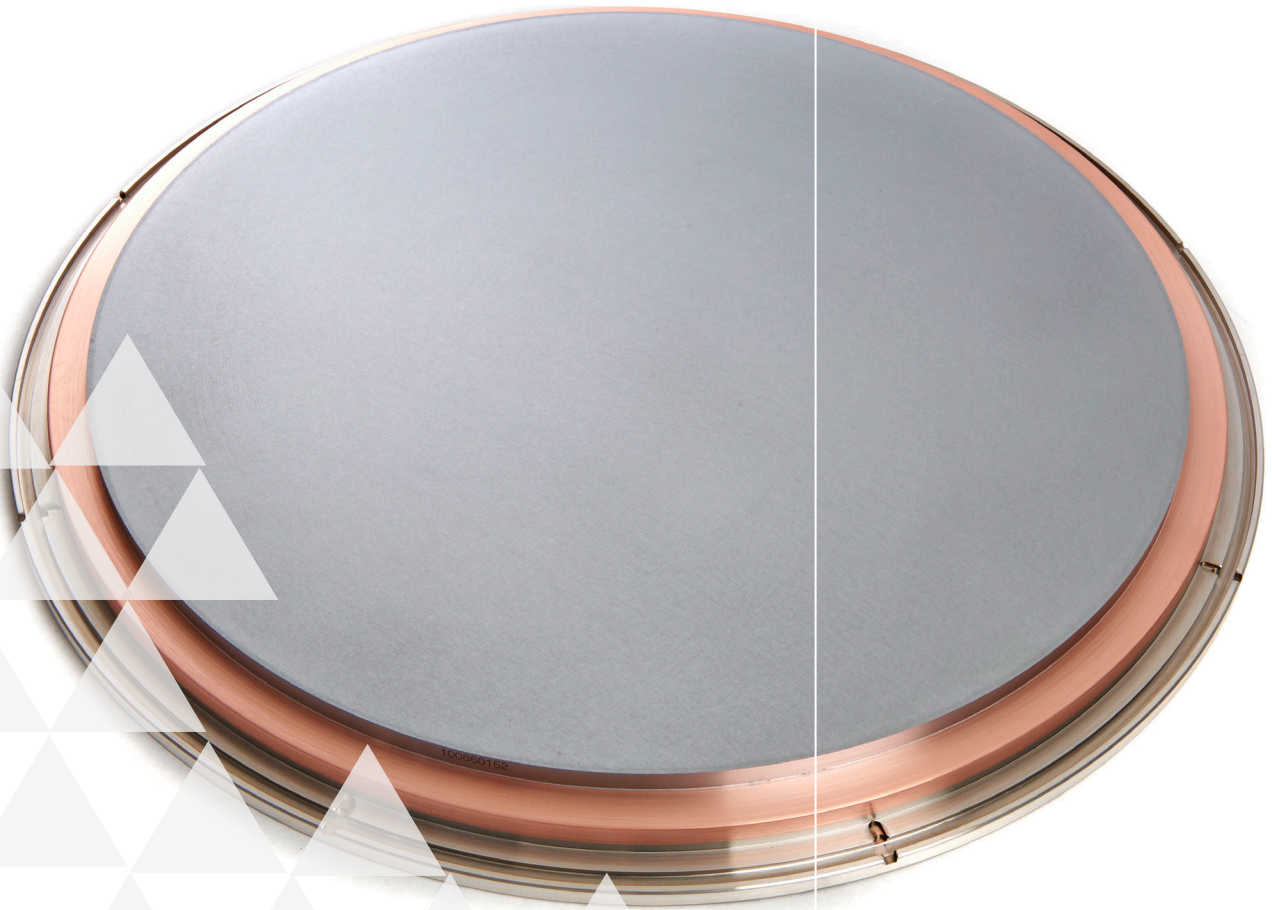




MATERION



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 $\pm 0.5\%$ density variation across targets

Low defect content

including low porosity, and very low exogenous and indigenous inclusions

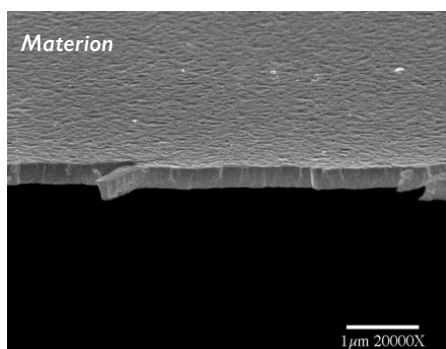
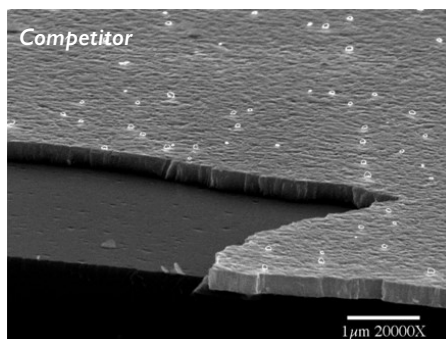
Minimal lamellar β (Ti-W) phase

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 $20\mu\text{m}$ both over the area of the target and through the thickness



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

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

Alloy Composition	5 - 30% wt% Ti
Compositional Tolerance	Typically $\pm 0.5\text{wt}\%$
Purity	Up to 99.999%
Grain size	Typically $<20\mu\text{m}$
Form factor	Up to 17.5" (450mm) diameter monolithic



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DATA SHEET

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 $20\mu\text{m}$, 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.

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