



# Pioneer Materials

Advanced Targets for photovoltaic • thermoelectric  
• semiconductor • optical media • sensor applications

## GeCr INT-Dx Germanium Chromium Sputtering Targets

Pioneer Materials, Inc. (PMI) provides high density, low particle Germanium Chromium sputtering targets used for high performance rewritable **DVD** applications.

### CHARACTERISTICS

<b>COMPOSITION</b>	GeCr
<b>PURITY</b>	99.9+%
<b>DENSITY</b>	>95% Competitor GeCr density 5.78 g/cm <sup>3</sup> PMI GeCr density 6.18 g/cm <sup>3</sup>
<b>SIZE</b>	150 mm ~ 205 mm diameter by 4 mm ~ 11 mm thickness
<b>TOLERANCE</b>	Diameter: +/- 0.1 mm Thickness: +/- 0.1 mm
<b>SURFACE FINISH</b>	32 RMS (micro-in)

### THE PMI ADVANTAGE

- Proprietary Powder Selection
- Consolidation Processes

#### Proprietary Manufacturing Process

Precise composition control and uniformity are the keys to high performance of interface layer between dielectric layer and phase change recording layer targets for **optical recording**.

PMI has developed proprietary metrology methods to measure the target's composition. The resolution of the control is within +/-10% of customer specification.

#### Powder Preparation

Start with finer powders than industry standards and use a proprietary powder blending process to achieve high uniformity.

#### Powder Consolidation

PMI has developed a proprietary process to achieve densities greater than 95% of theoretical, optimized for minimum stress, resulting in a finer more consistent microstructure.

### THE PMI R&D CUSTOMER PARTNERSHIP PROGRAM

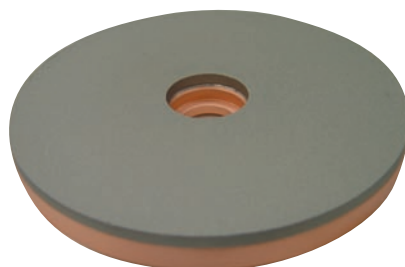
Pioneer Materials Inc. provides Excellent R&D Capabilities and Believes in Strong Customer Partnership. PMI will tailor the composition and dimension of targets for customer's specific needs.

#### In-House Capability

Density  
Precision composition analysis  
Proprietary Powder Consolidations  
Solder Bonding  
Powder blender  
Hardness tester  
Annealing furnace  
Box annealing furnace  
Induction melting furnaces

#### Customer Support Sites

Silicon Valley, California USA  
Hsinchu, Taiwan  
China



#### Materials Characterization

SEM  
TEM  
XPS  
XRD  
XRF  
Chemical  
Wet Analysis



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