



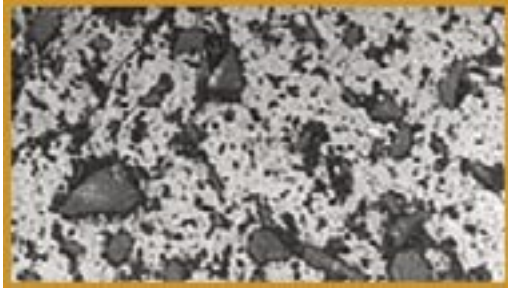
Pioneer Materials

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

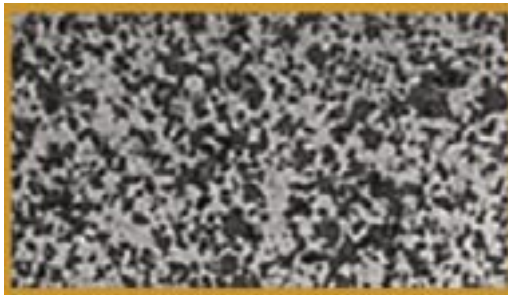
ZnS HiP-x

Zinc Sulfide Sputtering Targets

Pioneer Materials Inc, (PMI), provides high density, low particle Zinc-Sulfide target ZnS-SiO₂ (dielectric layers for CD-RW and DVD-RW).



Conventional targets have **inconsistent** materials structure



PMI microstructure shows **high material consistency**

The dense target generally leads to a 5.3% ~ 6% higher yield per target than our competitors.

THE PMI ADVANTAGE

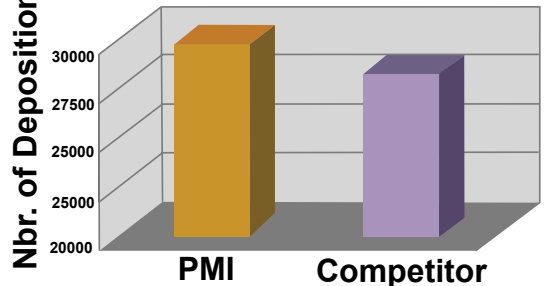
- Proprietary Powder Selection
- Consolidation Processes

Material Performance

Our targets are characterized by their High Performance (HiP) attributes. Our target density (essential for keeping particle levels low) is second to none. Our materials consistency (essential for film uniformity) is the highest in the industry.

Performance Optimization

A Comparison of Disk Yield Per Target Between PMI and a Competitor



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

Equipped with lab-scale press
CIP, HIP
Powder blender
Hardness tester
Annealing furnace
Box annealing furnace

Customer Support Sites

Silicon Valley, California USA
Hsinchu, Taiwan
China



COMPOSITION	ZnS-SiO ₂
PURITY	99.9+%
DENSITY	97%
SIZE	150 mm ~ 205 diameter by 4 mm ~ 11 mm thickness
TOLERANCE	Diameter: +/- 0.25 mm Thickness: +/- 0.13 mm
SURFACE FINISH	32 RMS (micro-in)