ADVANCED MATERIALS

Silicon Aluminum (SiAl)™

Sputtering Targets for Large Area Coating Applications
Silicon Aluminum (SiAl)

PRODUCTION
SiAl rotatable targets are produced by a fully controlled proprietary plasma spray process in Germany and in the U.S. Materion is also engaged in the complete preparation of the backing tubes including a recycling process.

APPLICATIONS
SiAl rotatable targets are reactively sputtered to obtain SiN and SiO₂ layers. Due to their low index of refraction (~1.48), SiO₂ layers are used in reflective and anti-reflective coating systems. In low-e architectural glass, SiN/SiO₂ layers are embedded to protect the IR-reflecting silver layer from corrosion and to optimize the visual characteristics of the glass. SiN is often used as a scratch-resistant top coating due to its density and hardness.

In photovoltaic applications, SiN/SiO₂ function as a scratch resistant layer with anti-reflective characteristics.

TARGET GEOMETRY
Rotatable target lengths up to .4 mm are available.

Common SiAl thicknesses available:
- Straight versions – 5 mm, 6 mm, 9 mm
- Dogbone Versions – 5/7 mm, 6/9 mm, 9/13 mm

PURITY
SiAl rotatable sputtering targets are produced in metallic purities of 99.9%. Higher purities are available on request.

COMPOSITION
- The Alloy compositions from SiAl6-16wt% are available.
- Other compositions may be requested.

<table>
<thead>
<tr>
<th>TECHNICAL/PHYSICAL DATA</th>
<th>TYPICAL METALLIC IMPURITIES</th>
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</thead>
<tbody>
<tr>
<td>Grain Size [µm]</td>
<td>&lt; 200</td>
</tr>
<tr>
<td>Density [g/cm³]</td>
<td>&gt; 2.1</td>
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<tr>
<td>Thermal Conductivity [W/(m • K)]</td>
<td>33’</td>
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<tr>
<td>Spec. Electrical Resistivity [Ω cm]</td>
<td>&lt; 0.005*</td>
</tr>
<tr>
<td>Thermal Expansion Coefficient [10⁻6/K⁻¹]</td>
<td>4.7’</td>
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<tr>
<td>Melting Point [°C]/Melting Internal</td>
<td>660 – 1410</td>
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</tbody>
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*data related to SiAl10

QUALITY ASSURANCE
Materion uses DIN EN ISO9001:2008 certified procedures to guarantee the highest and most consistent product reliability. We strive for continuous process improvements using statistical process control. In addition to detailed specifications and sophisticated analytical methods, our employees are dedicated to the highest quality standards.