



MATERION



ADVANCED MATERIALS

**Silicon Aluminum
(SiAl)TM**

**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.

BENEFITS

- Recycle program for backing tubes available in U.S.
- Target material of extremely high homogeneity
- Variety of target lengths and thicknesses available
- Compositions beyond SiAl6-16wt% are available
- Recycle program for backing tubes available
- Metallic purities of >99.9% on request
- Targets with customized composition, purity and microstructure available
- Company dedicated to Quality Assurance and ISO 9001:2008 certified procedures



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.

TECHNICAL/PHYSICAL DATA		TYPICAL METALLIC IMPURITIES	
Grain Size [μm]	< 200	Iron (Fe)	< 500 ppm
Density [g/cm^3]	> 2.1	Copper (Cu)	< 150 ppm
Thermal Conductivity [$\text{W}/(\text{m} \cdot \text{K})$]	33*	Nickel (Ni)	< 150 ppm
Spec. Electrical Resistivity [$\Omega \text{ cm}$]	< 0.005*	Chromium (Cr)	< 150 ppm
Thermal Expansion Coefficient [$10^{-6}/\text{K}$]	4.7*	Calcium (Ca)	< 200 ppm
Melting Point [$^{\circ}\text{C}$]/Melting Internal	660 – 1410		

*data related to SiAl10



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Europe: +44.1635.223838
Germany: +49 60.23.91.82.0
Asia: +65 6559.4450

USA: +1 800.327.1355
Albuquerque, NM: +1 505.343.9440

MATERION CORPORATION
www.materion.com

MATERION ADVANCED MATERIALS, now expanded with the addition of the Heraeus target materials business, is the world's leading supplier of sputtering targets for large area coatings. To achieve optimal results during the deposition process, sputtering targets must be capable of consistently producing uniform thin films. This requires the highest quality materials that meet or exceed industry standards. Our high purity sputtering targets are specifically developed to produce low defect and high performance thin films.