



SiC Armour Materials for Ballistic Protection from the Ceramics Expert

High Performance Solutions for Lightweight Armour Composites Systems

- for Personal Protection (Body Armour)
- for Object Protection (Vehicle Armour)

SiC Armour Materials for Ballistic Protection



Product Advantages:

- High Strength and Hardness to withstand Advanced Threats
- Low Weight and Areal Density
- Large Variety of Shapes and Sizes
- High Volume and Cost-Effective Manufacturing Techniques
- Net Shape Capabilities Holding Tight Dimensional Tolerances
- Controlled, Homogenous and Uniform Microstructure
- Consistently High Quality Standards
- Compliance to Individual Customer Specification

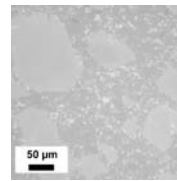
Schunk Engineering Ceramics is developing and producing advanced technical ceramics for more than 20 years.

The company is amongst the world's leading suppliers of technical SiC materials and is offering ballistic SiC grades to armour system designers. Solutions for ballistic protection - developed and tested in close co-operation with our customers – have shown proven protection performance in a variety of highest threat levels.

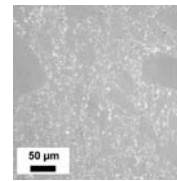


Photo: Courtesy of Mehler Vario Systems

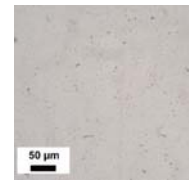
Optical Micrograph



CarSIK-GD
Standard RB SiC (reaction-bonded silicon carbide)
Schunk advantage: Reduced content of metallic silicon



CarSIK-B4C
High protective performance through enrichment with B4C



CarSIK-SD
Schunk advantage: Cost-efficient products through high volume manufacturing (in particular for vehicle armour)

Composition		SiSiC	SiSiC / B ₄ C	SSiC
Density	g/cm ³	3,10	2,85	3,14
Flexural Strength (4 Point bending)	MPa	280	220	390
Young's Modulus	GPa	360	350	400
Compressive Strength	MPa	2600	2900	3800
Hardness HV _{0,1}	MPa	24000	25000	25000
Weibull Modulus		~10	~10	10
SiC Content (nominal)	wt.%	77	57	99
Free Si Content (nominal)	wt.%	12	12	0
B ₄ C Content (nominal)	wt.%	0	~ 30	0

The chart illustrates typical material properties. Above stated values have been measured at test specimens. They cannot be applied to all shapes and may vary with method of production and part size.

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