



CARBORUNDUM



## Hexoloy® SA Silicon Carbide Wear Resistant Parts for the Mining Industry

*Hexoloy SA SiC components for mining applications.*

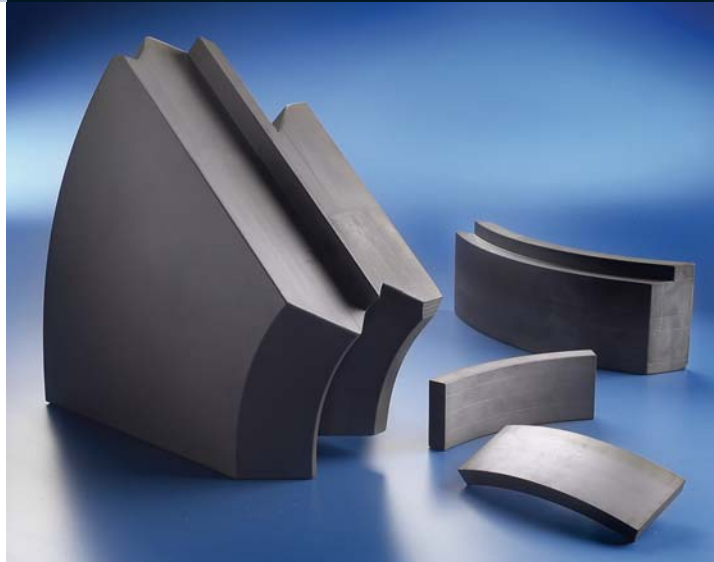
### A superior alternative to metals, tungsten carbide and alumina ceramics

Hexoloy® SA SiC is a superior alternative to metals, tungsten carbide and other alumina ceramics for efficiency, uptime and reliability. It offers:

- Extreme hardness and high strength
- Virtually universal corrosion resistance
- Good thermal conductivity
- Low thermal expansion
- Excellent thermal shock resistance

### Hexoloy SA SiC offers distinct advantages for mining applications

Hexoloy SA SiC is a fully dense, monolithic ceramic with excellent corrosion and erosion resistance. These important qualities coupled with high thermal conductivity make Hexoloy SA SiC an ideal material for tough mining applications. Hexoloy SA SiC valve trim has set performance standards for use in nickel and gold ore processing. Hexoloy SA SiC has provided reliable performance in extreme temperature, pressure and corrosive environments.



*(Above) Hexoloy SA SiC wear liners.*

*(Below) Hexoloy SA SiC plug head and seat insert for let down valves.*



## Hexoloy® SA SiC Typical Physical Properties

Property	Units	Typical Value
Composition *	–	SiC
Grain Size	µm	4-10
Density	g/cm <sup>3</sup>	3.10
Hardness (Knoop) **	kg/mm <sup>2</sup>	2800
Flexural Strength 4 pt @ RT ***	MPa x10 <sup>3</sup> lb/in <sup>2</sup>	380 55
Flexural Strength 3 pt @ RT ***	MPa x10 <sup>3</sup> lb/in <sup>2</sup>	550 80
Compressive Strength @ RT	MPa x10 <sup>3</sup> lb/in <sup>2</sup>	3900 560
Modulus of Elasticity @ RT	GPa x10 <sup>6</sup> lb/in <sup>2</sup>	410 59
Weibull Modulus (2 parameter)		8
Poisson Ratio		0.14
Fracture Toughness @ RT Double Torsion & SENB	MPa x m <sup>1/2</sup> x10 <sup>3</sup> lb/in <sup>2</sup> x in <sup>1/2</sup>	4.60 4.20
Coefficient of Thermal Expansion RT to 700°C	x10 <sup>-6</sup> mm/mmK x10 <sup>-6</sup> in/in °F	4.02 2.20
Maximum Service Temp. Air	°C °F	1900 3450
Mean Specific Heat @ RT	J/gmK	0.67
Thermal Conductivity @ RT	W/mK Btu/ft h °F	125.6 72.6
@ 200°C	W/mK Btu/ft h °F	102.6 59.3
@ 400°C	W/m°K Btu/ft h °F	77.5 44.8
Permeability @ RT to 1000°C		Impervious to gases over 31 MPa
Electrical Resistivity @ RT **** @ 1000°C	ohm-cm ohm-cm	10 <sup>2</sup> -10 <sup>8</sup> 0.01-0.2
Emissivity		0.9

\*Composition code: Si = free silicon metal;  
C = free graphite; SiC = silicon carbide

\*\*Knoop 0.1 kg load

\*\*\*Test Bar Size: 3 x 4 x 45 mm  
(0.118" x 0.157" x 1.772")

\*\*\*\*Dependent upon dopants in Hexoloy® SA  
SiC which will decrease electrical resistivity



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