

# Hexoloy® SE Silicon Carbide



## Technical Data

Hexoloy® SE SiC offers an excellent alternative material to metals, super-alloys and other ceramics for applications such as chemical processing, high temperature furnaces, and other demanding, severe environment applications. Hexoloy SE SiC provides a full range of exceptional properties in one package including:

- Extreme hardness
- High strength
- Virtually universal corrosion resistance
- High temperature stability
- High thermal conductivity

### Product Description

Hexoloy SE SiC is produced by pressureless sintering of submicron silicon carbide powder in a proprietary extruding process. The sintering process results in a self-bonded, fine grained (less than 10 $\mu$ m) SiC product which is 95% dense. Saint-Gobain can supply Hexoloy SE SiC extruded components to your specifications including :

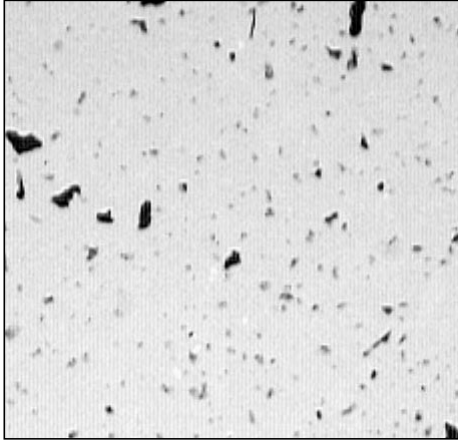
- Heat exchanger tubes in lengths in excess of 4 meters and in 12.7 mm, 14 mm, and 19 mm O.D.
- Rectangular kiln support beams in varying lengths and sizes
- Thermocouple protection tubes
- Rollers (for roller hearth furnaces)
- Cantilever support tubes
- Small diameter rods
- Custom components

### Extreme Hardness

Hexoloy SiC is one of the hardest high performance materials available and is 50% harder than tungsten carbide. Its density is in excess of 95% of theoretical and it is completely impervious without the use of any impregnants, which means no contamination in high purity applications.



Hexoloy® SE SiC Beams



Photomicrograph of Hexoloy® SE (200X).

### High Temperature Properties

The single phase composition of Hexoloy® SE SiC enables it to reliably perform in air at temperatures in excess of 1650°C (3000°F).

Where dimensional changes at high temperature are a concern, Hexoloy® SE SiC has a consistently low coefficient of thermal expansion. This feature allows design flexibility for shrink fit or leak-tight joint applications. Because of its high thermal conductivity and low coefficient of thermal expansion, it is very resistant to thermal shock and will survive rapid thermal cycling as compared to other materials.

### Typical Properties of Hexoloy SE SiC

Material	Hexoloy SE SiC
<b>Maximum Use Temperature</b>	1900°C
<b>Flexural Strength (MPa)</b> @ Room Temp @1450°C @1600°C	380 370 410
<b>Density (g/cc)</b>	3.07
<b>Apparent Porosity (%)</b>	0.6
<b>Modulus of Elasticity (GPa)</b> @20°C @1200°C	350 300
<b>Thermal Conductivity (W/mK) @ 1200°C</b>	30
<b>Coefficient of Thermal Expansion</b>	$4.02 \times 10^{-6}/^{\circ}\text{C}$

Call Saint-Gobain Ceramics today for assistance with your application.

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