

Data Sheet

Performance SiC

Description

Ultra Pure SiC (Silicon Carbide) is made via a chemical vapour deposition (CVD) process, a method that produces very uniform material. The combination of excellent thermal, electrical and chemical properties makes CVD SiC well suited to many semiconductor, LED, and optical applications.

Features:

- Ultra-pure 99.9995% (by GDMS)
- High thermal conductivity
- Low thermal expansion
- Excellent corrosion resistance in plasma applications
- Proven durability in high temperature ammonia environments
- Dimensional stability
- Non-porous, theoretically dense
- Fine grained microstructure

Two Grades Available:

- Performance HR SiC – (high resistivity)
- Performance ELR SiC – (extremely low resistivity)

Typical Applications:

- Rapid Thermal Process (RTP) components
- Plasma Etch components
- Susceptors and Heating elements
- LED wafer carriers and cover plates
- Sputtering Targets

Morgan Capabilities:

- High volume growth capacity
- Patented RMax Process (near-net shape process for high volume ring applications)
- CNC grinding and lapping to very tight tolerances
- Prototype, batch and volume production
- EDM and Ultrasonic machining option available

Physical Properties*:

		Units	Value	Testing Methods
Mechanical	Bulk density	g/cc	3.21	-
	Vickers Hardness	-	2800	ASTM C1327
	Flexural Strength	Psi (MPa)	20°C - 54,000 (370) 1300°C – 81,000 (560)	ASTM C1161
	Fracture Toughness	MPa·m ^{1/2}	2.94	Vickers Indentation
Thermal	Thermal Conductivity (20°C)	W/m·C	Performance SiC – 250 Performance ELR SiC - 220	ASTM E1461
	CTE (-40°C to 950°C)	ppm/°K	4.5	ASTM E228
Electrical	Electrical Resistivity (20°C)	ohm-cm	Performance SiC > 1 Performance ELR SiC < 0.1	Van der Pauw
	Specific Heat	J/g·K	0.66	-

*Please note that these are typical properties and may vary.

Morgan Advanced Materials is a global materials engineering company which designs and manufactures a wide range of high specification products with extraordinary properties, across multiple sectors and geographies.

From an extensive range of advanced materials we produce components, assemblies and systems that deliver significantly enhanced performance for our customers' products and processes. Our engineered solutions are produced to high tolerances and many are designed for use in extreme environments.

We design and manufacture products for demanding applications in a variety of markets using a comprehensive range of advanced ceramic, glass, precious metal, piezoelectric and dielectric materials. We utilise core competences of applications engineering and superior materials technology, together with state of the art fully integrated manufacturing processes to offer precision ceramic components, ceramic-to-metal assemblies and special coatings for use in a variety of applications.