

## ERG Aerospace Duocel® Silicon Carbide Foam

Category : Ceramic , Carbide

### Material Notes:

Silicon Carbide (SiC) foam is a porous, open-celled structure made from an interconnected lattice of ceramic ligaments. The pattern of cells and ligaments repeats regularly throughout the entirety of the foam, providing uniform material characteristics throughout. The standard Duocel ceramic material is solid, fine grained, Beta phase cubic close packed Silicon Carbide. Other ceramic materials such as Silicon Nitride or Boron Carbide are available on special order. The resulting foam structure has a high void volume, large surface area, and low flow resistance. It is also lightweight, strong, fracture and thermal shock resistant, and both electrically and thermally conductive. This contrasts strongly with other ceramic foams which are usually relatively fragile and non-conductive. ERG has been supplying Duocel SiC foam for aerospace, defense, and industrial applications since 1980 and has experience with a wide variety of foam applications. Duocel Silicon Carbide can operate effectively up to 2200°C, which makes it suitable for a number of high temperature applications including but not limited to heat exchangers, filters, composite panels, and heat shielding. SiC can endure the extreme conditions that one would expect from solid ceramic materials but at a fraction of the weight. SiC foam can be used for its fluid flow properties in the etching and deposition stage of semiconductor manufacturing. Much like RVC foam, Silicon Carbide can be used in electrochemical processes that require low electrical and fluid flow resistance. SiC supplements its strength in this type of application with its increased ability to withstand extreme conditions. SiC foam can be used in rockets in a multitude of ways, including in the nozzle component where it will be subjected to the exhaust gases that emerge from the motor. As with many other applications, the foam serves two functions, both filtering particulate matter from the exhaust and cooling it as it leaves the rocket. Silicon Carbide can be used in composite panels and heat shielding elements in many of the same applications that one could expect solid ceramic material to be used.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_ERG-Aerospace-Duocel-Silicon-Carbide-Foam.php](http://www.lookpolymers.com/polymer_ERG-Aerospace-Duocel-Silicon-Carbide-Foam.php)

Physical Properties	Metric	English	Comments
Density	0.161 - 0.385 g/cc	0.00582 - 0.0139 lb/in <sup>3</sup>	Typical production range 5 - 12% relative density

Mechanical Properties	Metric	English	Comments
Modulus of Elasticity	2.76 - 6.89 GPa	400 - 999 ksi	
Compressive Yield Strength	1.38 - 5.52 MPa	200 - 801 psi	Varies directly with relative density (8-16%)
Poissons Ratio	0.22	0.22	
Shear Modulus	1.13 GPa	164 ksi	

Thermal Properties	Metric	English	Comments
Specific Heat Capacity	0.200 J/g-°C	0.0478 BTU/lb-°F	Varies directly with temperature
	@Temperature -150 °C	@Temperature -238 °F	
	1.40 J/g-°C	0.335 BTU/lb-°F	Varies directly with temperature

Thermal Properties	@Temperature 1450 °C Metric	@Temperature 2640 °F English	Comments
Thermal Conductivity	1.34 - 2.87 W/m-K  @Temperature 1450 °C	9.30 - 19.9 BTU-in/hr- ft <sup>2</sup> -°F  @Temperature 2640 °F	Varies directly with relative density (8-16%)
Melting Point	2700 °C	4890 °F	

## Contact Songhan Plastic Technology Co.,Ltd.

Website : [www.lookpolymers.com](http://www.lookpolymers.com)

Email : [sales@lookpolymers.com](mailto:sales@lookpolymers.com)

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China