

Carlisle 201LL Carbon-Carbon Composite

Category : Carbon

Material Notes:

Carbon-Carbon Composite manufactured as sheets from 4mm to 125mm thick this material is essentially a fracture tough, fiber reinforced graphite often referred to as a "CFC". Good for use in air to 750F (400C) and can be used to 3600F (2000C) when protected by an inert environment or vacuum. Key attributes include thermal shock resistance, fracture toughness, corrosion resistance, electrical conductivity, temperature stability, with a very low coefficient of thermal expansion. Machines quite well with intricate features possible for complex shapes. Common applications include hot glass handling tooling, powdered metal sintering trays, atmosphere and vacuum furnace racks and hardware, spark plasma sintering dies, high temperature nuts, bolts, fasteners, racing brakes and clutches, sputtering targets, and components used in energy production. Information provided by Carlisle Brake & Friction.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carlisle-201LL-Carbon-Carbon-Composite.php

Physical Properties	Metric	English	Comments
Apparent Bulk Density	1.65 g/cc	0.0596 lb/in ³	
Porosity	13 %	13 %	Total
Ash	0.70 %	0.70 %	

Mechanical Properties	Metric	English	Comments
Tensile Strength	68.9 MPa	10000 psi	in plane
Modulus of Elasticity	35.9 GPa	5200 ksi	
Flexural Strength	103 MPa	15000 psi	perpendicular
	138 MPa	20000 psi	in plane
Flexural Modulus	27.6 GPa	4000 ksi	
Compressive Strength	68.9 MPa	10000 psi	perpendicular
	172 MPa	25000 psi	in plane

Thermal Properties	Metric	English	Comments
CTE, linear	1.90 $\mu\text{m/m-}^{\circ}\text{C}$	1.06 $\mu\text{in/in-}^{\circ}\text{F}$	Secant Value
	@Temperature 23.0 - 1500 $^{\circ}\text{C}$	@Temperature 73.4 - 2730 $^{\circ}\text{F}$	
CTE, linear, Transverse to Flow	9.30 $\mu\text{m/m-}^{\circ}\text{C}$	5.17 $\mu\text{in/in-}^{\circ}\text{F}$	Secant Value
	@Temperature 23.0 - 1500 $^{\circ}\text{C}$	@Temperature 73.4 - 2730 $^{\circ}\text{F}$	

Thermal Properties	0.850 J/g-°C Metric	0.203 BTU/lb-°F English	Comments
	@Temperature 50.0 °C	@Temperature 122 °F	
	1.30 J/g-°C	0.311 BTU/lb-°F	
	@Temperature 250 °C	@Temperature 482 °F	
Thermal Conductivity	3.10 W/m-K	21.5 BTU-in/hr-ft²-°F	perpendicular
	7.00 W/m-K	48.6 BTU-in/hr-ft²-°F	in plane
Maximum Service Temperature, Air	1500 °C	2730 °F	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00387 ohm-cm	0.00387 ohm-cm	in plane
	@Temperature 17.0 °C	@Temperature 62.6 °F	

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