

## UBE Tyrannohex® Heat Resistant Composite

Category : Ceramic , Ceramic Matrix Composite , Other Engineering Material , Composite Fibers

### Material Notes:

Description: Tyrannohex is a fiber assembled ceramic with both toughness like a shell or wood and excellent heat-resistance in air. Very high volume fraction (Vf) of the thin (~ 10m), continuous fiber. Vf= > 90 vol%. Tyrannohex is produced by the use of only Tyranno fiber without other matrix materials using a high-pressure machine. Very high fracture energy. Tyrannohex shows a very high fracture energy (~ 9000J/m<sup>2</sup>) which is about 100 times as large as Si<sub>3</sub>N<sub>4</sub> sintered body. Excellent oxidation resistance up to 1500°C in air. Almost initial strength could be maintained up to 1500°C in air. And, the initial strength was also maintained after heat-treatment at 1500°C for 1000 hours in air. (Effective formation of a protective oxide layer on the surface during early heat-treatment.) Very good creep-resistance in air compared with usual SiC/SiC composites. Difficulty of a crack formation Self-healing eject around the interphase Densified structure Information provided by UBE.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_UBE-Tyrannohex-Heat-Resistant-Composite.php](http://www.lookpolymers.com/polymer_UBE-Tyrannohex-Heat-Resistant-Composite.php)

Physical Properties	Metric	English	Comments
Specific Gravity	2.54 g/cc	2.54 g/cc	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	190 - 210 MPa	27600 - 30500 psi	
	@Temperature 23.0 - 1500 °C	@Temperature 73.4 - 2730 °F	
Modulus of Elasticity	450 - 550 MPa	65300 - 79800 psi	
	@Temperature 23.0 - 1500 °C	@Temperature 73.4 - 2730 °F	
Flexural Strength	300 - 400 MPa	43500 - 58000 psi	
	@Temperature 23.0 - 1500 °C	@Temperature 73.4 - 2730 °F	
Shear Strength	700 - 900 MPa	102000 - 131000 psi	
	@Temperature 23.0 - 1500 °C	@Temperature 73.4 - 2730 °F	
Charpy Impact, Notched	40.0 - 60.0 MPa	5800 - 8700 psi	2D
	60.0 - 100 MPa	8700 - 14500 psi	UD
	0.900 J/cm <sup>2</sup>	4.28 ft-lb/in <sup>2</sup>	Fracture energy (Chevron-notch method), J/m <sup>2</sup>

Thermal Properties	Metric	English	Comments
Thermal Conductivity	3.90 W/m-K	27.1 BTU-in/hr-ft <sup>2</sup> -°F	2D
	4.50 W/m-K	31.2 BTU-in/hr-ft <sup>2</sup> -°F	UD

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.100 - 0.500 ohm-cm	0.100 - 0.500 ohm-cm	Specific resistance

## Contact Songhan Plastic Technology Co.,Ltd.

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