Quantum HTC 9593
Sheet Molding Compound

PRODUCT DESCRIPTION
Carbon Fiber reinforced Bismaleimide molding compound

GENERAL

Material Status	• Commercial: Active		
Availability	• North America	• Europe	• Asia Pacific
Filler/Reinforcement	• 3K PAN Carbon Fiber	• Nominal 53% w/w	• Nominal 1” (25 mm) Length
Features	• High stiffness • High strength	• Natural Color • Shelf Life 6 months @ 10°F or below	
Processing Method	• **HTC® 9593** can be molded at temperatures in the range of 260-350°F, with 300°F suggested as a starting point. Cure times will be dependent on molding temperature and part thickness and will typically be 25+ minutes. Detailed molding suggestions are available on request. Cool molded parts at ambient temperature. A cooling fixture may be needed depending on part thickness and geometry. Matched metal die molds. Post cure at 500F is recommended for best results		
Resin	• BMI Composite		

PHYSICAL	Typical	Unit	Test Method
Density	1.55	g/cm^3	ASTM D792
Shrinkage	<0.002	in/in	cold mold to cold part
CLTE, X-Y plane	6	ppm/°C	ASTM E831
CLTE, Z plane	45	ppm/°C	ASTM E831
Poisson’s Ratio	0.35	psi (MPa)	ASTM D638

MECHANICAL (Machined)	Typical	Unit	Test Method
Tensile Modulus	5.4E+6 (37,200)	psi (MPa)	ASTM D3039
Tensile Stress (Break)	21,700 (150)	psi (MPa)	ASTM D3039
Flexural Modulus	4.8E+6 (33,000)	psi (MPa)	ASTM D790
Flexural Stress (Break)	53,500 (369)	psi (MPa)	ASTM D790
Short Beam Shear	3,900 (26.9)	psi (MPa)	ASTM D2344

Machined Properties are determined using specimen machined from molded 12”x12” panels with 80% mold coverage, 1000 psi pressure, 325°F mold temperature for 25 minutes, 4 hr post cure at 500°F.

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MECHANICAL (As molded)	Typical	Unit	Test Method
Tensile Modulus	9.0E+6 (62,100)	psi (GPa)	ASTM D638
Tensile Strength	26,000 (179)	psi (MPa)	ASTM D638
Flexural Modulus (RT)	7.0E+6 (48,300)	psi (GPa)	ASTM D790
Flexural Strength	75,000 (517)	psi (MPa)	ASTM D790

IMPACT	Typical	Unit	Test Method
Izod Notched Impact Strength	27 (1442)	ft-lb/in (J/m)	ASTM D256

THERMAL	Typical	Unit	Test Method
Glass Transition T_t, TanDelta	379	(°C)	ASTM D7028
Glass Transition T_g, Storage Modulus	325	(°C)	ASTM D7028

Typical Process Parameters

Suggested Equipment needed:

Circulating Air / Convection Oven

1. Pre-weigh desired amount of molding compound and cut charge pattern.
2. Pre-stage molding compound at 200ºF ±5ºF in an oven for 16±0.5-hours.
3. Place in mold at 260-325ºF for 25 minute cure cycle depending on part thickness at 1000 PSI.
    a. Thicker parts may take longer to cure.
4. Post cure at temperature up to 500ºF±20ºF for a minimum of 4-hours, then allow to cool to room temperature.
5. For above data specimen were allowed to cool to room temperature out of mold then placed in oven and the temperature was ramped to 500ºF. After two hours the samples were taken out of the oven and allowed to cool to room temperature.

The carrier film may tend to cling to the ESC®. It is easiest to remove after the charge has been pre-staged in the oven.

For additional information, please contact:

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