

QUANTUM COMPOSITES

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Preliminary Data Sheet
HTC-9590 (127-51-3)
(High Temperature Composite) Molding Compound

HTC-9590 (127-51-3) is a 12K Pan Based Carbon Fiber reinforced Bismaleimide (BMI) ESC (Engineered Structural Composite) molding compound. It exhibits outstanding elevated temperature characteristics providing greatly extended service temperature range versus epoxy compounds for compression molding applications.

TYPICAL PROPERTIES -- UNCURED

| | | | |
|------------------------------|----------------------|--------------------------------|----------------|
| Form | Roll Sheet, 18" wide | Carbon Fiber Content | Nominal 55% |
| Colors | Natural (Black) | Carbon Fiber Length | Nominal 1 inch |
| Shelf Life: @ 10°F | 6 months | and @ 40°F | 1 month |

TYPICAL PROPERTIES -- CURED

| <u>Test</u> | <u>Procedure</u> | <u>Value</u> |
|---|------------------|-----------------------------|
| Specific Gravity | ASTM D-792 | 1.55 |
| Shrinkage, inch/inch (mm/mm) | ASTM D-570 | 0.0015 (0.038) |
| Flexural Strength, psi (MPa) ¹ | ASTM D-790 | 72,000 (496) |
| Flexural Modulus, psi (GPa) ¹ | ASTM D-790 | 7.0 x10 ⁶ (48.3) |
| Tensile Strength, psi (MPa) ¹ | ASTM D-638 | 19,000 (131) |
| Tensile Modulus, psi (GPa) ¹ | ASTM D-638 | 7.0x10 ⁶ (48.3) |
| Izod Impact, notched, ft.lb./in. (J/M) | ASTM D-256 | 27 (1441) |
| Glass Transition Temperature (T _g dry) | ASTM D-4065 | 714°F (379°C) |
| Glass Transition Temperature (T _g wet) | ASTM D-4065 | 646°F (341°C) |

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 212°F ±10°F in an oven for 20-24 hours.
3. Place in mold at 325°F for 25 minute cure cycle at 1000 PSI.
4. Post cure at desired temperature up to 700°F for 2-hours, then allow to cool to room temperature.

For above data specimen were allowed to cool to room temperature out of mold then placed in oven and the temperature was ramped to 500°F. 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 20-24 hours.

Precautions: For maximum shelf life, HTC-9590 must be stored cold. Storage for more than a few days at temperatures above 75°F may result in advancement of the material. HTC-9590 contains carbon fibers and should be handled carefully in order to minimize skin contact. Molding areas should be well-ventilated to minimize exposure to fumes. Presses and preheaters must be provided with local exhaust to remove vapors from work areas. If adequate ventilation is not available, a respirator approved for removing organic vapor must be used.

WARRANTY -- The above information is offered for your consideration, investigation, and verification. No warranty, expressed or implied, is given, nor is freedom from any patents owned by Quantum Composites, Inc. or others implied. Final determination of the suitability of this material is the sole responsibility of the buyer. Contact our sales representative for assistance in developing procedures to fit individual requirements.

This ESC product is generally intended to be compression molded in matched-metal die molds. **The values presented in this data sheet are typical values and are not to be interpreted as product specifications.**

¹Tensile and Flexural Properties are determined using net shape molded specimens. Values obtained on cut specimens will typically be lower.

