

TECHNICAL DATA SHEET

Lytex® 4181 Engineered Structural Composite® (ESC®) Molding Compound

Lytex® 4181 is a chopped carbon fiber reinforced ESC® molding compound. It is easily moldable and provides parts that are high strength, fatigue resistant, with high heat resistance and a low density. The carbon fiber is standard modulus PAN based 12K tow.

TYPICAL PROPERTIES | UNCURED

Form and Color	Sheet, Black or Natural	Fiber Length	Nominal 1.0-inch
Carbon Fiber Content	Nominal-55% w/w	Shelf Life: @ 0°F	6 months
Resin Content	Nominal-45% w/w		

TYPICAL PROPERTIES | CURED | “Net Shape” Specimen

<u>Test</u>	<u>Procedure</u>	<u>Value</u>
Specific Gravity, g/cc	ASTM D-792	1.48
Molding Shrinkage, inch/inch (mm/mm)	ASTM D-955	<0.000 (<0.000)
Flexural Strength, psi (MPa) ¹	ASTM D-790	70,500 (486)
Flexural Modulus, psi (GPa) ¹	ASTM D-790	5.5 x10 ⁶ (37.9)
Tensile Strength, psi (MPa) ¹	ASTM D-638	25,000 (172)
Tensile Modulus, psi (GPa) ¹	ASTM D-638	7.8 x10 ⁶ (53.8)
Izod Impact (notched) ft.lb./in. (J/M)	ASTM D-256	29 (1549)

¹ Tensile and Flexural Properties are determined using net shape molded specimens.

TYPICAL PROPERTIES | CURED | “Machined” Specimen

<u>Test</u>	<u>Procedure</u>	<u>Value</u>
Flexural Strength, psi (MPa) ²	ASTM D-790	53,000 (365)
Flexural Modulus, psi (GPa) ²	ASTM D-790	4.3 x10 ⁶ (29.6)
Tensile Strength, psi (MPa) ²	ASTM D-3039	17,000 (117)
Tensile Modulus, psi (GPa) ²	ASTM D-3039	4.6 x10 ⁶ (31.7)
Short Beam Shear, psi (MPa) ²	ASTM D-2344	5,200 (35.8)
Glass Transition Temp. °F (°C) TanDelta	ASTM D-7028	329 (165)

² Machined Properties are determined using specimen machined from molded 12"x12" panels with 80% mold coverage.

Note: The above cured properties are for both “Net Shape” and “Machined” specimens to respective test methods. Net shape specimens produce higher mechanical properties than machined specimens due to favorable fiber orientation in net shape molding. Established engineering practices use machined specimen data for structural analysis. Net shape specimen data represent best case, pristine properties.

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Data Sheet Continued

Technical Data Sheet Lytex® 4181

Molding Suggestions – Lytex® 4181 can be molded at temperatures in the range of 280-330°F, with 310°F suggested as a starting point. Cure times will be dependent on molding temperature and part thickness and will typically be 5-10 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.

Precautions – Lytex® 4181 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 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. Care must be taken to prevent contact of carbon fibers with electrical equipment.

Typical Uncured and Cured Properties tested each lot of – Lytex® 4181:

- Fiber Content/Resin Content
- Specific Gravity
- Molding Shrinkage
- Mat Weight, (Areal Density)

Additional technical information and data on this material is available from Quantum Composites, Inc. Please contact us via phone, local representative, web site www.quantumcomposites.com or email info@quantumcomposites.com

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This ESC® product is generally intended to be compression molded in matched-metal die molds. Strength values may be affected by the molding process. **The values presented in this data sheet are typical values and are not to be interpreted as product specifications.**