



» PRODUCT BULLETIN

Thermoplastic Composite Innovation Cell Injection and Compression Overmolding

HARNESS THE VERSATILITY

Are you working on a project that would benefit from added reinforcement, reduced weight, material reduction or part consolidation? Our application development, engineering and industrial design teams can help you to:

- Increase stiffness
- Improve impact resistance
- Reduce weight through thin-walling and material reduction or replacement
- Add strength in high stress areas

Avient's thermoplastic composite innovation cell in Englewood, CO features injection and compression molding equipment as well as design and testing services, all under one roof. We invite you to collaborate with our team from concept to component to bring your project to life.

CAPABILITIES

- Prototype part sampling
- Tooling validation
- Process optimization
- Material configuration
- Application development support
- Laminate analysis
- Mechanical system analysis
- Resin flow with laminate inserts
- Finite Element Analysis

EQUIPMENT SPECIFICATIONS

Injection Molding

- Milacron-Fanuc Roboshot α-S150iA with 4-axis robot
- Maximum shot capability at 171 grams with a clamping for 198 tons
- Trial molds include a 4"x6" flat plaque and a 3"x10" hat stiffening member

Compression Molding

- 450 ton down acting press
- 39" x 39" platen size
- Features automatic shuttle table with IR preheat oven

Material Testing

- Instron Model 5982 Universal Testing System with 100 kN load capacity
- AVE2 non-contacting video extensometer with digital image correlation capability
- Environmental chamber that enables testing from -150° to 350° C



TESTING SERVICES

In-house testing capabilities allow for rapid material characterization and mechanical analysis according to the following standards:

- ASTM D790 3-Point Flex
- ASTM D7264 4-Point Flex
- ASTM D2344 Short Beam Shear
- ASTM C393 Core Compression
- ASTM D7078 V-Notch Shear
- ASTM D7249 4-Point Flex (Long Beam)
- ASTM D6641 CLC Compression

For more specialized resin and material analysis, additional testing capabilities are available through Polymer Diagnostics, Inc. (PDI) in Avon Lake, OH.

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PROCESSABILITY MEETS PERFORMANCE

Polystrand™ advanced thermoplastic composites combine high strength, unidirectional, continuous fibers with engineered thermoplastic resins to create continuous fiber reinforced thermoplastic (CFRTP) materials that feature exceptional strength-to-weight ratio and high impact resistance.

Through injection or compression overmolding, composite tapes and multiply laminates are integrated into traditional thermoplastic molding processes to create locally-reinforced, molded components.



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