



CENTER FOR COMPOSITE MATERIALS
AT THE UNIVERSITY OF DELAWARE

MECHANICAL TESTING SERVICES

2026

The Center for Composite Materials provides composite mechanical testing services to customers across the aerospace, automotive, infrastructure, manufacturing, medical, and materials industries with our world-leading facilities and experts. Testing services range from composite building blocks (fibers, resins, sizings, adhesives, and core materials) to thermoset and thermoplastic composites laminates, sub-components and full-scale components based on ASTM, SACMA or other composite industry standards. We also provide expertise and develop test methods for non-standard materials, geometries and configurations, as well as thermo-mechanical and cyclic loading tests. In parallel, we provide quality assessment services including non-destructive evaluation of samples, fiber volume fraction, void content, and optical microscopy and X-ray computer tomography (CT).

Mechanical Testing Capabilities

- High performance fiber tension and compression (filament level), sizing assessment (micro-droplet, fiber fragmentation) and polymer thermo-mechanical characterization.
- Tension and all varieties of compression tests, poisson's ratio, bearing, damage tolerance, compression after impact, v-notch shear/rail shear, lap shear, short beam shear, floating roller peel, climbing drum peel, etc.
- Elevated/Low Temperature Chamber for thermo-mechanical properties.
- Environmental Simulation/Conditioning for moisture and UV exposure.
- Large-scale drop tower for full-scale impact and damage tolerance tests.
- Test matrices to populate Finite Element Material Models for composites.
- Non-standard testing services – developing test methods for sub- component, component and full assembly structures, sensors and data acquisition systems, data reduction methods, and test reports.



Discovery Development Deployment

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Newark, DE 19716

MECHANICAL TESTING SERVICES

Equipment

Impact Towers

Dynatup 8250 Instrumented Impact Tester

Impact Energy: up to 300 Joules (gravity driven)
Impact Velocity: 1 to 5.5 m/sec (gravity driven)
Impact mass: up to 20 kg

Dynatup 8000 Instrumented Impact Tester

Impact Energy: up to 1000 Joules (gravity driven)
Impact Velocity: 1 to 4.9 m/sec (gravity driven)
Impact mass: up to 85 kg

Instron 9450 Instrumented Impact Tester

Impact Energy: up to 1800 Joules (gravity/spring driven)
Impact Velocity: 1 to 24 m/sec (gravity/spring driven)
Impact mass: up to 70 kg
Environmental chamber for testing at specific temperatures

Full-Scale High-Energy Drop Tower

Impact Energy: up to 40000 Joules (gravity driven)
Impact Velocity: 1 to 9 m/sec (gravity driven)
Impact mass: up to 1250 kg

Dynamic Loading Test Frames

Instron 1331

Servo-Hydraulic Actuation
Load Range: up to 100 kN

Instron 1332

Servo-Hydraulic Actuation
Load Range: up to 250 kN

Strength Testing Load Frames

Instron 4484

Motor Actuated Column Screws
Load Range: up to 150 kN

Instron 5565

Motor Actuated Column Screws
Load Range: up to 5 kN

Instron 5567

Motor Actuated Column
Load Range: up to 30 kN

Instron 5848

Motor Actuated
Capable of testing single fiber strength
Compatible load cells: 1N, 5N, 100N, 500N, 2kN

Instron 5944

Motor Actuated Column Screw
Compatible load cells: 5N, 100N, 500N, 2kN

Instron 5982

Motor Actuated Column Screws
Load Range: up to 100 kN

Instron 5985

Motor Actuated Column Screws
Load Range: up to 250 kN

Instron 8562

Motor Actuated Concentric Screw Static Loading Test Frame
Load Range: up to 100 kN

Instron 68TM10

Motor Actuated Column Screws
Load Range: up to 50 kN

Structure Testing System

MTS Servo-Hydraulic Test System

SilentFlo 505.30 Hydraulic Power Unit
4 Station Service Manifold
FlexTest 60 Controller
- 4 independent channels
- 4 stations
Many actuators available in the range of 20 to 150 kips
8 ft x 20 ft Reaction Floor
Fixtures to apply loads to vehicle size structures along any vector

Low and high Temperature Capabilities

Tenny BTRC Temperature and Humidity Test Chamber

Temperature Range -85 to 338 °F
Humidity Range 20 to 95%
Closed Cycle Cooling

Instron 3119 Series Environmental Chambers

Model 616

Temperature Range -80 to 350 °C

Model 609

Temperature Range -100 to 350 °C

Model 608

Temperature Range -150 to 600 °C

Model 615

Temperature Range -100 to 350 °C



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