

Composites Testing Solutions



MTS MATERIALS TESTING SOLUTIONS

be certain.



Composites

are changing the way we move,
play and live.

In almost every industry, advanced lightweight composite materials are improving product design and creating sleeker and safer solutions. In the pursuit of more fuel-efficient cars, lighter aircraft, more durable biomaterials and stronger load-carrying structures, the search for better materials continues. As does the quest for more sophisticated materials testing to develop complex material and component models. Composites tests demand greater fidelity, more detailed measurement techniques, tighter integration with computer models and the ingenuity to deal with new materials and applications.



MTS Composites Testing Solutions



APPLICATIONS KNOWLEDGE

In addition to meeting international testing standards, many labs need to run new tests that have never been performed. New materials require new ways of looking at testing. MTS material scientists and systems integration engineers understand how to test to established standards and how to achieve reliable results with new test setups.



ADAPTABLE SOFTWARE

Industry-leading MTS TestSuite™ Software provides a powerful yet intuitive platform for everything from sophisticated R&D investigation to routine quality control tests based on international standards. Create complex test templates and data analysis output for R&D or automate procedures to minimize errors and increase throughput in QA/QC tests.



COMPREHENSIVE PORTFOLIO

Effective validation of complex models for anisotropic materials requires realistic simulation of diverse operating environments. With testing options ranging from static to dynamic; low- to high-force; uniaxial to multiaxial technologies; and accessories for use in ambient and non-ambient conditions; MTS can address a wide variety of composite materials testing applications.

HIGH-TEMPERATURE EXPERTISE

MTS engineers understand the nuances of high-temperature testing of composites up to 1500°C and work with researchers across the globe to develop accurate measurement techniques using grips, furnaces and extensometers designed for high-temperature applications.



Standards

Examples of the many composites testing standards.

Polymer Matrix Composites (PMCs) / Fibre Reinforced Plastics (FRPs)

LAMINA AND LAMINATES	STANDARD
In-plane tensile tests	ISO 527-1, ISO 527-4, ISO 527-5, ASTM D3039, EN 2561, EN 2597
In-plane compression tests	ISO 14126, ASTM D695, ASTM D3410, ASTM D6641, ASTM D5467, EN 2850
In-plane shear tests	ISO 14129, ISO 15310, ASTM D3518, ASTM D4255, ASTM D5379, ASTM D7078, EN 6031
Flexural tests (3-point and 4-point bend)	ISO 14125, ASTM D790, ASTM D6272, ASTM D7264, EN 2562, EN 2746
Interlaminar shear	ISO 14130, ASTM D2344, EN 2377, EN 2563
Fracture toughness (Mode I & II, Mixed Mode I & II)	ISO 15024, ISO 15114, ASTM D5528, ASTM D6115, ASTM D6671, ASTM D7905, EN 6033, EN 6034
In-plane tension / tension fatigue	ISO 13003, ASTM D3479

STRUCTURAL

Notched (open hole, filled hole) tension tests	ASTM D5766, ASTM D6742 , EN 6035
Notched (open hole, filled hole) compressive tests	ISO 12817, ASTM D6484, ASTM D6742 , EN 6036
Notched (open hole) fatigue test	ASTM D7615
Bolted joint (static, fatigue bypass) strength tests	ASTM D953, ASTM D5961, ASTM D6873, ASTM D7248, EN 5037, EN 13706
Compression after impact	ISO 18352, ASTM D7137, EN 6038

SANDWICH CONSTRUCTION

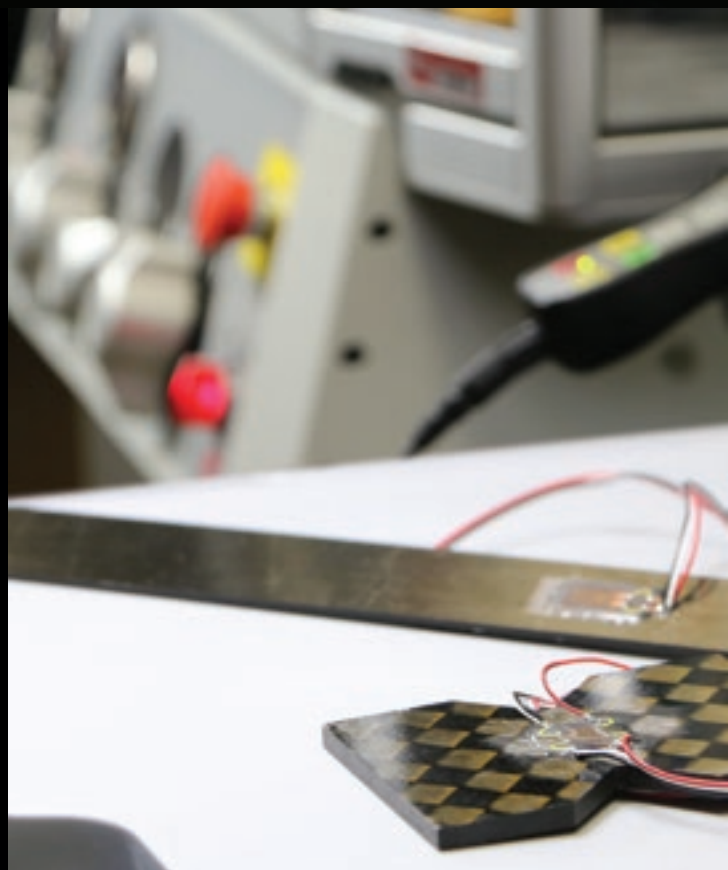
Tensile	ASTM C297
Compression	ASTM C364, ASTM C365
Shear	ISO 1922 (Rigid cellular plastics), ASTM C273, ASTM C393, ASTM C394
Flexural	ASTM D7250
Static energy absorption	ASTM D7336

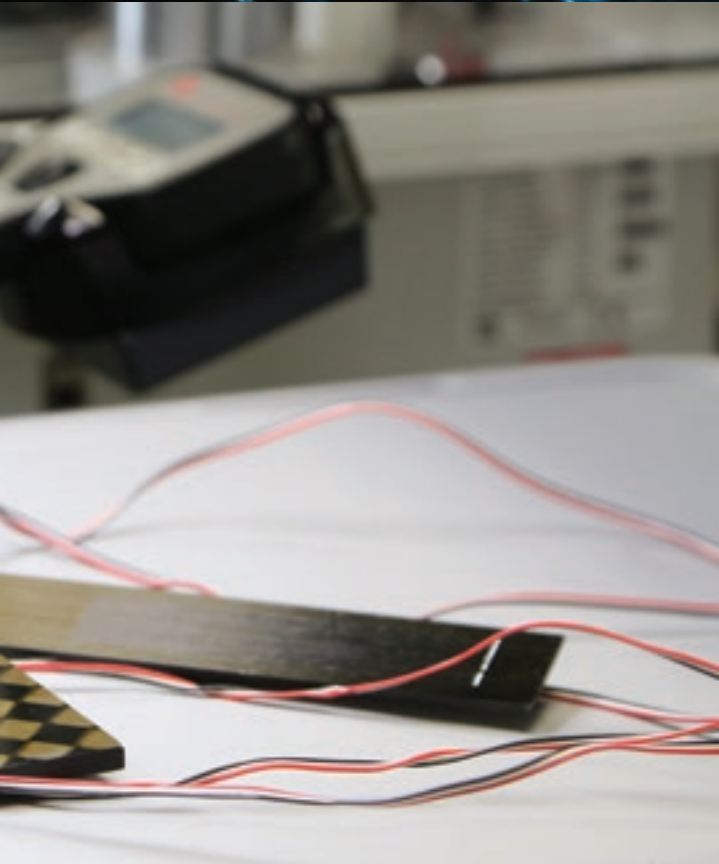
Ceramic Matrix Composites (CMCs)

Tensile strength	ISO 14574, ISO 15733, ASTM C1275, ASTM C1359, ASTM C1468
Compression strength	ISO 14544, ISO 20504, ASTM C1358, EN 658-2, EN 12290, EN 12291
Creep	ISO/AWI 19604, ASTM C1337, EN 13235
Shear strength	ISO 20506, ASTM C1292, EN 1894
Interlaminar shear strength	ISO 20505, ASTM C1425, EN 658-5
Flexural strength	ISO 17138, ASTM C1341, EN 658-3, EN 12788, EN 12789
Cyclic fatigue	ISO 17140, ISO 17142, ASTM C1360, EN 15156, EN 15157
Open-hole tension	ISO 14603
Notched tension	ISO/DIS 18608, EN 13234

Metal Matrix Composites (MMCs)

Tensile strength	ASTM D3552
In-plane compressive strength	ASTM D3410-87
In-plane shear strength	ASTM D5379
Cyclic fatigue	ASTM E466, ASTM E606, ISO 1099, ISO 12106
Thermomechanical fatigue (TMF)	ASTM E466 (with recommendations included in MIL-HDBK-17-4A)
Fatigue crack growth	ASTM E647, ISO 12108





Materials

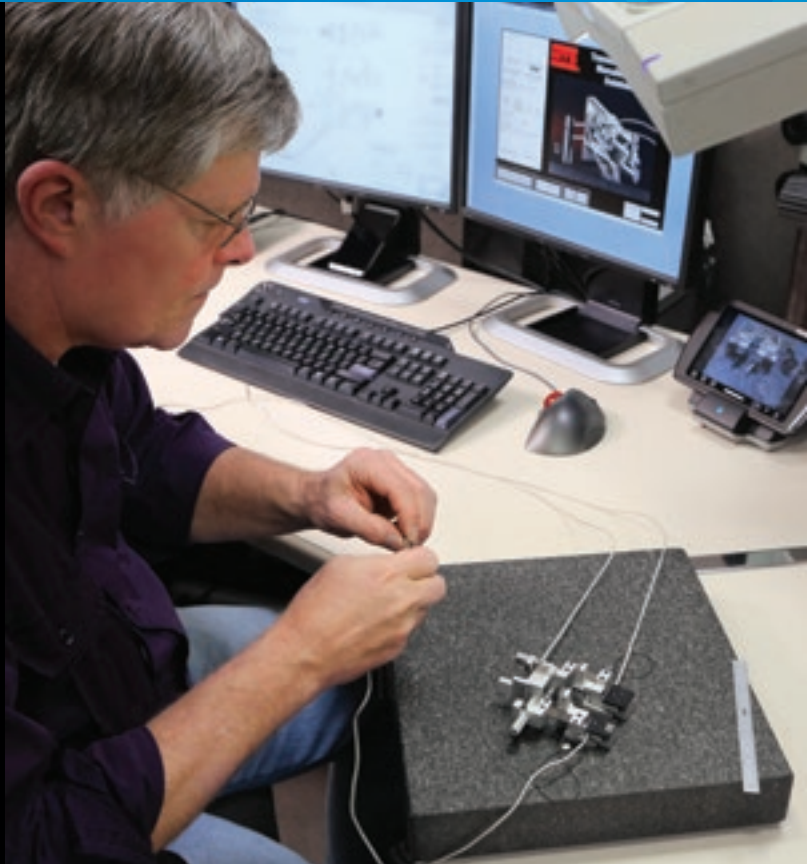
- » Polymer Matrix Composites (PMCs)
- » Fibre Reinforced Plastics (FRPs)
- » Ceramic Matrix Composites (CMCs)
- » Metal Matrix Composites (MMCs)
- » Advanced Metal Alloys



We've got you covered

Products & Services

- » MTS TestSuite™ Software
- » MTS Criterion® Universal Test Systems
- » MTS Landmark® Servohydraulic Test Systems
- » MTS Acumen® Electrodynamic Test Systems
- » MTS Planar Biaxial Test Systems
- » MTS High-Rate Test Systems
- » Grips and Fixtures
- » Extensometers
- » Environmental Chambers and Furnaces
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- » And more







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