Mechanical Properties Characterization

ENGINEERING

Southern Research has well-established testing and measurement capabilities and is widely recognized as the top laboratory in the U.S. for high temperature evaluation of advanced materials. Our engineers are experienced in materials behavior, analysis, and evaluation, and are supported by a contingent of thoroughly competent experimentalist technicians.

Material behaviors can be measured from cryogenic to over 5500°F. Materials evaluated include resin, metal and ceramic matrix composites, metals, graphites, carbon/carbons, monolithic ceramics, and others.

Basic material mechanical property tests include:

- Tension-uniaxial and hoop
- Compression-uniaxial and hoop
- Fatigue
- Shear-torsion, Iosipescu and double-notch
- Creep
- Fracture toughness

SOUTHERN RESEARCH

PLEASE CONTACT

Terry Barnett / Southern Research
tbarnett@southernresearch.org / **(205) 581-2378**

Jacques Cuneo / Southern Research
jcuneo@southernresearch.org / **(205) 581-2439**

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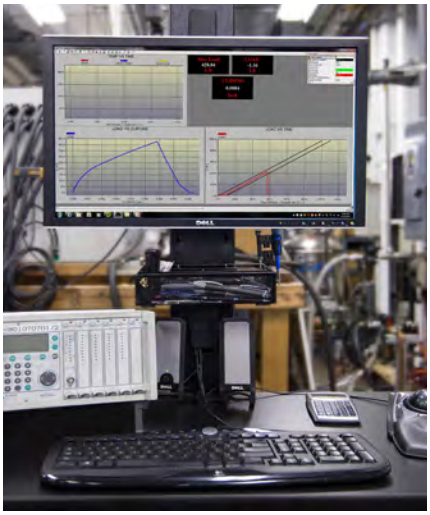
Test environments include inert (helium, argon and nitrogen), oxidizing/air and partial pressure oxygen/vacuum.

Material properties are typically determined by techniques more rigorous than requirements imposed by ASTM methods. If standard methodology is not established, unique tests tailored to the material or application are developed.

The mechanical testing laboratory contains 20 major, fully instrumented test stands, many having been developed by, and unique to, Southern Research. The testing machines are either mechanically or servo-hydraulically driven, and calibration is maintained with ASTM E4 load verification requirements. Instrumentation includes strain gages, extensometers, optical strain system, modal acoustic emission sensors, and full field strain visualization by DIC. Testing capabilities range from small filament specimens to structural components with dimensions greater than six feet.



SR

ABOUT SOUTHERN RESEARCH

Founded in 1941 in Birmingham, Alabama, Southern Research is a scientific and engineering research organization that conducts preclinical drug discovery and development, advanced engineering research in materials and systems development, and energy and environmental technologies research. SR supports clients and partners in the pharmaceutical, biotechnology, defense, aerospace, environmental, and energy industries.

We pursue entrepreneurial and collaborative initiatives to develop and maintain a pipeline of intellectual property and innovative technologies that contribute to the growth of the organization and positively impact real world problems.

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