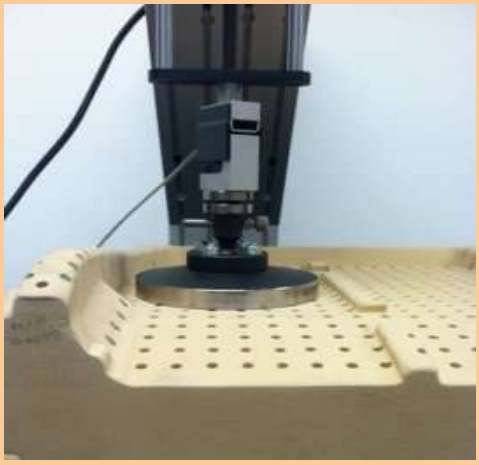
Materials Testing Machine

TestResources, Inc. is a materials test equipment manufacturer led by experienced engineers, focused on helping customers solve their mechanical testing problems for almost 20 years. Customers value our smart machine design with the delivery of tailored and responsive solutions for static and fatigue testing applications. As test engineers that develop and produce a wide range of systems and accessories, we solve challenges ranging from highly technical down to the basics.

Flexible Foam Testing



From automotive cushioning materials that take you to work to the pillows and mattresses you lay on, flexible polyurethane (FPU) foam is a part of our daily lives. The incredible diversity of FPU foam products are made possible by the ability of foam materials to be engineered to serve a wide range of performance requirements. The unique combination of load bearing and firmness makes FPU the perfect choice for a dazzling array of products but that same benefit makes it a challenge for a test engineer to confirm performance in specific application.

Oftentimes determining the best foam for a particular task is based on interpretation of test results and opinions. The inaccuracies and reproducibility's of some test methods leave the question open to subjective opinion. Not only that, but test reproducibility from machine to machine and lab to lab can vary quite a bit. Errors ranging up to thirty per cent* result from some test procedures which are compounded by poor test experiment planning and communication. IFD interlab tests often lead to varying results; Compression deflection and flex fatigue testing usually leads to wide differences in test results.

Tissue Engineering

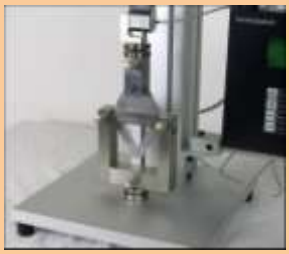
Soft tissue testing is a modern field of biomedical research focusing on the tissues that connect and support structures in the body. Continual advancements fuel highly specialized mechanical testing requirements to ensure that a wide range of biological specimens can withstand the stressors and ever-changing nature of the human body.

Tissues such as ligaments, tendons, muscle and cartilage, blood vessels, brain, esophagus, skin, pericardium, myocardium and bio-engineered replacement tissues have load bearing roles and so strength and stiffness tests are required.

Although they do not bear mechanical loads, mechanical properties of some especially soft tissues, such as brain, liver, kidney and prostate, are recent mainstream research topics in biomechanics. The interest in the biomechanics of these very soft tissues has been motivated by the developments in computer-integrated and robot-aided surgery—in particular, the emergence of automatic surgical tools—as well as advances in virtual reality techniques.

Soft tissue test equipment is specialized in several respects. Test equipment should be configured in consideration of environmental conditions, mechanical load capacity of the samples, elastic properties of the samples, and grip choices.

Food Testing

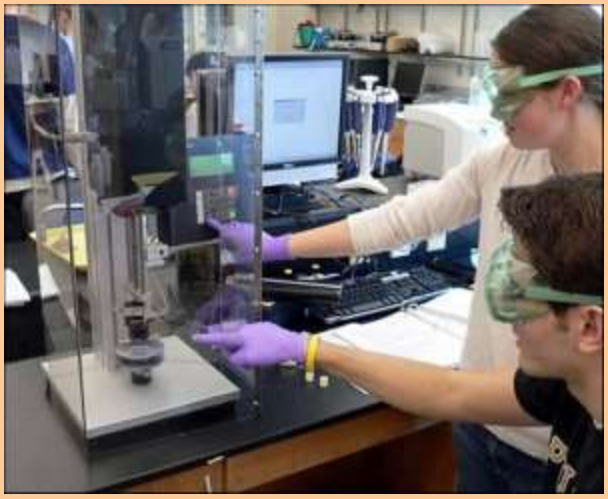


TestResources engineers provide guidance for the best test setup and equipment for your food testing application. We can supply test machines and specialized fixtures for texture testing, package testing, and more. With one of the largest varieties of fixtures in the industry, TestResources can configure the best solution for your application.

Texture Testing

Texture testing food is often used for research & development and quality control. Texture tests measure the consistency and structure of food as well as physical characteristics. This can include appearance, size, form, etc. Mechanical texture tests simulate how food items withstand everyday environments such as chewing. We provide test fixtures for numerous texture testing applications. We provide affordable test machines for texture testing, such as our 100 Family Universal Test Machines, modular to fit your application.

Educational Teaching Lab Test Equipment for Biomedical Students | Academic Spotlight



Weldon School of Biomedical Engineering (Purdue University) outfitted their biomedical teaching lab with multiple mechanical test stations to expose students to testing experience. Their focus was around integrating engineering and biological principles with key topics in biomaterials and biomechanics. Educational topics include evaluation and interpretation of experimental results, modeling and testing tissue and body mechanics, and biomaterial/tissue interactions.

Upon completion of the course each student is able to 1) implement bio-molecular and cellular experimental concepts towards biomechanics and biomaterials, 2) employ analytical tools and techniques used in the analysis of mechanical properties of tissue and biomaterials, cellular interactions with biomaterials, and finite element analysis, 3) collect, record, process, statistically analyze, and report experimental data related to the analysis of mechanical testing and cellular interactions with biomaterials, and 4) design a device/and or method to solve a biomechanical or medically relevant problem.

The 100 series product line has proven ideal for any engineering curriculum. Machines are configurable with several performance packages (load, speed) and used to conduct tensile, compression, shear, peel, stress relaxation, and creep tests on metals, plastics, muscles, tissues, bone, polymers, biomaterials and devices. The all-digital servocontroller is capable of load or speed rate control. Load and position (or optional strain) data is captured and exported to Excel for analysis. The system performs saw tooth load controlled cyclic tests.

Automotive

The automotive industry needs mechanical test data to verify its computer aided designs. Parameters of interest include design stiffness, materials rigidity, components testing, joining technology, fatigue and materials forming.

Engine & Drive Train Tests - clutch tests, chains, high temperature materials, crankshafts.
Chassis Tests - steering columns and linkages, springs and dampers, rims and wheels.
Body Tests - bumper impact and stiffness, door buckling, window and door seals.
Interior Design - seat belt tensile tests, headrests, car seat firmness and durability.
Electronic Component Design - buttons and switches, solder and PCB board reliability, wire tensile tests, insulation.

Metals Testing

Metals are hard, strong and tough and by their nature, are malleable, fusible and ductile which means that they can be formed into a vast array of desired shapes without cracking or breaking. Due to their nature they can be treated to alter characteristics and formed to meet the requirements of any number of applications.

Metal Testing Goal:

Testing the mechanical properties of metallic materials determines if it meets the requirements of a desired application. The most common characteristics measured during testing are the modulus of elasticity, yield strength, tensile and compressive strength, and elastic limit. Metals are also tested to measure modulus of rigidity, shear strength, bend strength, flexure strength and fatigue strength as well as the time dependent behavior such as creep and stress relaxation. These values provide an accurate depiction of the behavior that a metal material may be expected to exhibit during loading and the lifetime of its application.

E-VID Non Contacting Biaxial Video Extensometer

E-VID consists of digital camera, plug in board, and software that uses optimized 2-D algorithms to provide real-time displacement and strain data for mechanical testing. Think of E-VID as a set of virtual strain gauges: Data can be retrieved for multiple points and plotted live against analog load inputs. Results are saved for every analyzed point, and full images may be saved for full-field analysis. Real-time analog output is available for strain controlled tests with a completely noninvasive strain measurement method. Special strain control options are needed to conver this into a strain control application with our servocontroller.

TestResources, Inc. is led by experienced engineers who love to solve challenges ranging from highly technical down to the basics. From 510K medical device validation tests to peel testing labels, our engineers have performed thousands of tests for thousands of applications.

For more information please visit
http://www.testresources.net