

Westmoreland mechanical testing

The WMT&R Analytical Chemistry department holds ISO and NADCAP certifications for various test methods that can analyze numerous material types. Our facility is equipped to process and prepare different metals such as iron, steel, aluminum, nickel, cobalt, titanium, copper, magnesium, and others with unique properties. We have a range of sample prep techniques that allow us to handle large traditional alloys as well as specialty materials, and control checks in all our methods. For bulk composition analysis, we employ Arc/Spark-OES and ICP-OES techniques, which utilize high-energy sources to excite the sample's atoms and detect emitted photons. The difference lies in sample introduction, with Arc/Spark ablating material directly from a solid sample and ICP using a liquid matrix. We also use XRF technology, which measures bulk chemistry by exciting the sample and detecting emitted fluorescent x-rays. These complementary methods enable us to provide bulk chemistry analysis for nearly any metallic material our customers require. We maintain accreditations to various ASTM standards for these techniques. In addition to bulk chemistry, we perform gas analyses (Carbon, Sulfur, Oxygen, Nitrogen, and Hydrogen) using IGF or Combustion techniques. Our methods are accredited to ASTM standards for these gases, allowing us to detect very precise and sensitive levels of gases trapped within the metallic sample(s). For trace element analysis, which is crucial for regulatory and guality needs, we offer capabilities in low concentration detection through ICP-MS and GFAA technologies. These tools provide sensitivities and specificities ideal for regulated material analysis and contaminant/quality checks. Whether you need metals analysis or Creep and Stress Rupture Test methods, the WMT&R Analytical Chemistry team has a solution. Backed by robust methods, quality systems, and industry accreditations, we look forward to supporting your goals with quality and speed. To fully comprehend how long-term stress impacts metallic and non-metallic materials, we offer expedited Creep and Stress Rupture Testing Services. Reach us today at 724-537-3131 for more information. Key accreditations include NADCAP since 1992 and A2LA, with a 500 machine capacity ensuring your project won't experience unnecessary delays. Our ability to test various specimen sizes and shapes allows flexibility in testing protocols. We record strain readings for accuracy. Tests can be conducted under different environmental conditions, including vacuum or inert atmospheric settings. Our lab is equipped with the capability of measuring strain on creep test specimens during testing. Cyclic rupture testing capacity ranges from room temperature to 2,200°F. These tests are crucial for products in industries such as aerospace, automotive, power generation, medical, oil & gas, and more. The Creep and Stress Rupture Testing we conduct is designed to determine the maximum stress a material can withstand before failure and elongation. Tests are conducted at temperatures up to +2200°F according to ASTM E139 (creep and smooth-bar stress rupture) or ASTM E292 (notch tests). Temperature and creep readings are continuously monitored by computers for utmost accuracy. Our lab is equipped with the capability of recording strain readings up to 120 times per hour, which helps in maintaining temperature tolerances during a test and accessing temperature history reports. can also be conducted in various environments under vacuum or inert atmospheric conditions. Reducing section of a creep test specimen can be strain-gaged for measuring amount of strain during testing. Our lab offers various services including Creep Rupture, Stress Rupture, Static Notch and Embrittlement Relief tests. Cyclic Rupture Testing is designed to load and unload a test sample at specified time intervals. The test temperatures range from room temperatures are attached to the test specimen to ensure bending strains are within specification requirements. Static Notch Test is performed at room temperatures under constant load for minimum 5 hours to determine notch sensitivity of material at room temperature. Embrittlement Relief Test is also performed at room temperature but for 200 hours under a load of some percentage of either yield strength or ultimate tensile strength. We offer additional services including Tensile, Impact, Hardness, and more at Westmoreland Mechanical Testing and Research. WMT&R offers an array of advanced testing capabilities for various specimen sizes and shapes. This includes evaluating prototype components and subassemblies in-house using on-site Mechanical Engineering laboratory staffed by specialists and engineers. The company's dedicated Machine Shop features state-of-the-art equipment within a clean, temperature-controlled environment. It provides custom-design and machining services for test specimens, odd shapes, and difficult materials. WMT&R has built a reputation for quality machining with swift turnaround times, attracting production work from other labs and mills. WMT&R conducts standard tests including ASTM E139, which measures deformation over time and rupture under constant tensile forces at constant te hydrogen embrittlement evaluation of plating/coating processes and service environments. This involves testing coating and plating processes that can cause steel embrittlement, as well as evaluating subsequent exposure to chemicals in service environments. WMT&R's on-site capabilities include machining all test specimens onsite, with the ability to machine sub-size specimens to precise tolerances. Their advanced in-house equipment, combined with substantial engineering experience, makes them specialists in low-stress grinding and machining. Specimens undergo a series of rigorous testing procedures, including plating/coating followed by baking if necessary, to ensure compliance with specific requirements. These specimens are then subjected to sustained loads while exposed to air to measure the time taken for rupture or completion of the test period. In addition, service environment testing involves exposing specimens to actual conditions as specified in detailed protocols. The facility, Westmoreland Mechanical Testing & Research, boasts extensive capabilities in testing procedures such as Creep and Stress Rupture lab. With a range of specialized equipment and expertise, they are well-equipped to handle large volumes of tests efficiently, offering quick turnaround times and ensuring on-time delivery. The team is composed of experienced professionals from various fields, including metallurgy, mechanical engineering, computer programming, and chemistry. Westmoreland Mechanical Testing & Research has gained international recognition for its high-volume testing capabilities within a single facility. proprietary software for test result analysis is designed in-house to provide accuracy and reliability. The company's flexibility allows it to accommodate unique testing, Fatigue Testing, Stress Rupture and Creep Testing, and more. In addition to standard testing procedures, Westmoreland Mechanical Testing & Research offers custom test design capabilities maintain the accreditations required by companies in fields like additive manufacturing, aerospace, automotive, oil and gas, and power generation. Mechanical Testing & Research, Inc., a leading provider of customized fatigue testing services, is accredited by A2LA ISO 17025 and NADCAP. The company offers a comprehensive range of testing services, including composite testing, machine shop testing, stress/creep rupture testing, product evaluation, chemical and analytical physical metallurgical fracture mechanics, and Westmoreland Mechanical Testing & Research performs customizable fatigue testing and analysis can prevent service interruption, failure, and its consequences including loss of revenue due to fatigue damage. Expedited Fatigue Testing Services Are Available- Contact Us Today! We offer extensive scope and comprehensive data unique to each test temperature ranges from 25grams to 1,000,000lbs high cycle low cycle fasteners and fatigue testing. A fatigue test analyzes the behavior of materials while under stress of variable loads. Typically, two loads apply to a material - a specified mass load (i.e., zero) and an alternating load. These loads cycle and measure until the material fails. This failure of a material fails. (ceramics, composites, aggregates, etc.) are susceptible to fatique damage. The strength of materials is a measure of its ability to resist deformation, such as being stretched, bent, etc. Customizable Fatique Testing & Research's substantial onsite capabilities allow us to customize each project to your materials and mechanical specifications. We provide unique customer advantages in fatigue testing, including custom analyzation, superior turnaround time, and an extensive scope of fatigue testing: Custom Analyzation - We design and write proprietary software to analyze your test results. Superior Turnaround Time - To ensure the best turnaround time on your projects, we design and machine specialized fixtures. Low cycle fatigue testing involves three stages: crack initiation, propagation life, and failure. The first stage detects cracks on a polished specimen, while the second stage occurs after initiation. The third stage detects cracks on a polished specimen, while the second stage occurs after initiation. condition. In contrast, high cycle fatigue tests are conducted on specimens in force control to determine the number of cycles to fracture and compile stress-life curves. Westmoreland Mechanical Testing & Research provides high cycle fatigue, and rotating beam fatigue, at various temperatures. The company also offers low cycle fatigue machining, grinding, and polishing, as well as fastener testing, which affects daily life through its impact on cars, planes, and microstructure analysis. The laboratories meet the requirements of the Fastener Quality Act and its Amendments. Additionally, the company designs and executes fatigue tests for full-size components or assemblies in various sectors, including railroad, aeronautic, automotive, and elastic and elastic strain. The company's machine shop can also handle machining samples from exotic materials. Overall, Westmoreland Mechanical Testing & Research provides comprehensive fatigue testing services to determine the strength of materials and components. Our testing services cover a wide range of applications, including rotor blades, coal mining equipment, and motorsports components. We can perform tests under computer data acquisition to optimize performance for your specific sector needs. You can access the results in tabular form or graphical representations, providing valuable insights into how materials respond to fatigue loading. Our team keeps you informed throughout the testing process. For a comprehensive list of our fatigue testing services, please contact us by requesting a guote or calling 724-537-3131. We are accredited to perform standardized tests, including: ASTM E399: Evaluating fracture toughness in metallic materials ASTM e466: Conducting force-controlled axial fatigue tests on metallic materials ASTM e399: Evaluating fracture toughness in metallic materials astro E468: Presenting constant amplitude fatigue test results for metallic materials ASTM E606: Strain-controlled fatigue testing of calcium phosphate and metallic metallic metallic metallic stemmed hip arthroplasty femoral components without torsion ASTM F1612: Cyclic fatigue testing of metallic stemmed hip arthroplasty femoral components with torsion ASTM F1800: Cyclic fatigue testing of metal tibial tray components in total knee joint replacements