

# Materials and Components facts

**The White Sands Test Facility (WSTF)** Materials and Components Laboratories Office has unique and comprehensive test capabilities to evaluate material and component behaviors in hazardous environments. Tests performed routinely include materials properties determination, materials compatibility and toxicity analyses, detonation studies, flight article outgassing characterization, systems analysis, orbital debris impact simulation testing and propellant characterization. The Laboratories Office provides test, evaluation and tailored training in five core areas:

## Oxygen Systems

The Oxygen Systems Engineering Group specializes in all aspects of the performance and safety of oxygen systems. Through comprehensive analysis, modeling and materials testing in actual environments, WSTF assists in the design and optimization of systems for spacecraft, aircraft, military and medical applications. Services include materials, components and systems compatibility assessment, systems safety analysis, failure investigation, design assistance and advanced training in oxygen system buildup, operations and maintenance.

## Propellant Systems

WSTF focuses on the safety and performance of hazardous propellant systems including Hypergolics and Hydrogen. We support on-site propulsion testing as well as remote assistance to end users in aerospace and industry. The WSTF propellants group provides analysis of systems and operational safety, Propellant spec analysis, personal protective equipment assessment and detection technologies for both industrial and flight applications. A comprehensive materials and components testing capability enables design assistance and problem resolution. WSTF conducts laboratory micro-analysis to full-scale field explosion tests. WSTF experts also provide training to the aerospace industry in the safe handling of various propellants.

## Hypervelocity Impact Testing

WSTF's Remote Hypervelocity Test Laboratory is an access-controlled hazardous test area capable of simulating micrometeoroid and orbital-debris impacts on spacecraft materials and components. Processes allow for the safe handling of hazardous (hypergolic, pressurized or energized) targets or for unique flight hardware.

## Composite Overwrapped Pressure Vessels

WSTF offers leading expertise in the testing, nondestructive evaluation (NDE), and analysis of composite material structures. A training course is offered to train aerospace visual inspectors of flight composite pressure vessels. WSTF performs age-life tests, accelerated aging, hydraulic and pneumatic burst tests and environmental effects studies on pressurized systems.

## Standard Materials Testing

Testing is designed to better understand, improve, and verify the systems, capabilities, and materials used in space flight, and to ensure safety during manned space flights. WSTF performs standard materials assessment for application certification as well as quality assurance in hazardous environments. Additionally, materials off-gas and out-gas testing as well as materials toxicity testing is performed.

