

FAA William J. Hughes Technical Center

Materials Fire Test Facility, Building 203

The Materials Fire Test Facility is dedicated to small-scale fire testing of aircraft materials. The test equipment required to conduct all the regulatory tests for aircraft interior materials specified in Title 14 Code of Federal Regulations 25.853 is located in the Materials Fire Test Facility. This includes the Ohio State University rate of heat release apparatus, the National Bureau of Standards (NBS) smoke chamber, oil burners for the seat cushion and cargo liner tests, and Bunsen burners for the vertical, horizontal, and 45 and 60 degree flammability tests.



are used in some laboratories, a number of the NASA laboratories have adopted the dry-arc propagation test developed in the Materials Fire Test Facility, with a few minor modifications. A more realistic smoke test for aircraft wiring using the NBS smoke chamber was also developed in this facility.

This test duplicates the behavior of overheated wire insulation in an in-flight, hidden-fire scenario.

Blanket Flammability Test

As a result of a fire in a stowage bin aboard an aircraft and a recommendation from the National Transportation Safety Board, a new flammability test for aircraft blankets was developed. The blanket flammability test procedure is described in the "Aircraft Materials Fire Test Handbook," DOT/FAA/AR-00/12. The Handbook contains the most detailed description of all Federal Aviation Administration (FAA)-required and other aircraft material fire test methods in a consistent format.

Round-Robin Tests

The FAA sponsors round-robin tests that are conducted by laboratories in the United States and Europe during the standardization of new material fire tests. The test data are collected and analyzed by FAA personnel. This has led to improved flammability tests for aircraft materials, which produce more consistent data in terms of repeatability within a laboratory



Small-Scale Flammability Tests

The facility is used to develop nonrequired small-scale flammability tests such as the wet- and dry-arc propagation tests for aircraft wiring. While other test methods



and reproducibility between laboratories. Improvements in existing test standards and development of new tests are usually accomplished under the auspices of the International Aircraft Material Fire Tests Working Group, chaired and administered by the FAA William J. Hughes Technical Center Fire Safety Branch. The improved or new fire test methods are incorporated into the Aircraft Materials Fire Test Handbook, which is revised periodically.

Other Fire Test Capabilities

In support of the investigation of aircraft accidents where fire was a factor, the Materials Fire Test Facility was asked to test samples of materials to measure their fire flammability characteristics. In addition, other projects from the Aircraft Fire and Cabin Safety Program and the Fire-Resistant Materials Program are supported. For example, a cone calorimeter fire test supports the development of ultra-fire-resistant materials. This instrument fully characterizes the fire performance of advanced interior materials. Heat, smoke, and mass loss rates are routinely measured as are toxic gas emission rates using Fourier Transform Infrared analysis.

The Materials Fire Test Facility offers a wide range of material fire test capabilities to satisfy research, certification, and accident investigation needs.



To find out more about the Materials Fire Test Facility, contact:

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