



Designation: C1511 – 15 (Reapproved 2021)

## Standard Test Method for Determining the Water Retention (Repellency) Characteristics of Fibrous Glass Insulation (Aircraft Type)<sup>1</sup>

This standard is issued under the fixed designation C1511; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers a laboratory procedure for evaluating the water absorption potential of blanket insulation for aircraft, thereby providing a measure of potential weight increase due to water retention in an aircraft.

1.2 The water repellency (or retention) characteristics of materials can be affected by conditions such as contamination or temperature of the water. Values obtained as a result of this test method does not adequately describe the water repellency characteristics of materials subject to these conditions.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**C168 Terminology Relating to Thermal Insulation**

**C390 Practice for Sampling and Acceptance of Thermal Insulation Lots**

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.33 on Insulation Finishes and Moisture.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

**C800 Specification for Fibrous Glass Blanket Insulation (Aircraft Type)**

**E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method**

### 3. Terminology

3.1 *Definitions*—Terminology **C168** shall be considered as applying to the terms used in this specification.

### 4. Summary of Test Method

4.1 The insulation is weighed then submerged in de-ionized (or distilled) water for 15 min; it is drained for 60 s and reweighed. The amount of water retained is the difference in specimen weights and is expressed in grams.

### 5. Significance and Use

5.1 The water retention of the insulation can result in an increase in weight and a resultant potential degradation in the properties of the insulation.

### 6. Apparatus

6.1 The water repellency test apparatus is shown in **Fig. 1**.

6.2 *Scale*, accurate to 0.1 g.

### 7. Sampling, Test Specimens, and Test Units

7.1 Three specimens shall be tested, taken from across the width of a representative package. Sampling techniques shall be in accordance with Practice **C390**.

7.2 The specimens shall be 10- by 10-in. (254- by 254-mm) by full sample thickness; samples shall be no thicker than 4-in. (100-mm)

7.3 The insulation shall be tested without facing or jacketing.

### 8. Conditioning

8.1 No conditioning of the specimen is required.

### 9. Procedure

9.1 Weigh each specimen to the nearest 0.1 g.

9.2 Float each specimen on the surface of a vat of de-ionized (or distilled) water at  $70 \pm 4^\circ\text{F}$  ( $21 \pm 2^\circ\text{C}$ ). Lay a