



Designation: C1338 – 19 (Reapproved 2022)

# Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings<sup>1</sup>

This standard is issued under the fixed designation C1338; 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 (ε) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers the determination of the ability of new insulation materials and their facings to resist fungal growth.

1.2 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.

1.3 *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.*

1.4 *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. Significance and Use

2.1 The type of materials used in the manufacture of insulation products and the type of membrane used to face these products can sometimes affect fungi sustenance in the presence of high humidity.

2.2 This test method is used to determine the relative ability of an insulation and its facing to resist fungal growth under conditions favorable for their development.

2.3 This test method uses a comparative material to determine the relative ability of a material to resist fungal growth. In some specialized product areas, it is required that no growth take place. In such cases, the use of the comparative material is omitted and the pass/fail criterion is based upon growth.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.31 on Chemical and Physical Properties.

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## 3. Apparatus

3.1 *Glassware*—Sterile disposable petri dishes, 4 in. or 6 in. (100 mm or 150 mm) by 0.6 in. or 0.75 in. (15 mm or 20 mm) in size are preferred. For larger specimens, trays of borosilicate glass or baking dishes up to 16 in. by 20 in. (400 mm by 600 mm) in size may be used.

3.2 *Environmental Chamber or Cabinet*—Equipment for this test method shall maintain a temperature of 82.4 °F to 86 °F (28 °C to 30 °C) and a relative humidity of 95 % (±4 %). Provisions shall be made to prevent condensation from dripping on the test specimen. There shall be free circulation of air around the test chamber.

3.3 *Atomizer*—A chromatography atomizer capable of providing 100 000 spores/in.<sup>2</sup> ± 20 000 spores/in.<sup>2</sup> (15 000 spores/cm<sup>2</sup> ± 3000 spores/cm<sup>2</sup>) shall be used for inoculation.

3.4 *Autoclavable Biohazard Bags*, or metal pan able to withstand autoclaving.

## 4. Reagents and Materials

4.1 *Purity of Water*—Unless otherwise specified, references to water shall be understood to mean sterile distilled water or water of equal purity.

### 4.2 Inoculum:

| Fungi                   | ATCC <sup>2</sup> |
|-------------------------|-------------------|
| Aspergillus niger       | 9642              |
| Aspergillus versicolor  | 11 730            |
| Penicillium funiculosum | 11 797            |
| Chaetomium globosum     | 6205              |
| Aspergillus flavus      | 9643              |

4.3 *Cultures*—Maintain cultures of the Aspergillus fungi separately on Czapek Dox agar (see [Note 1](#)). Culture the Chaetomium globosum on strips of cellulose filter paper on the surface of Czapek Dox agar. Maintain the Penicillium fungi on Sabouraud Dextrose agar. The stock cultures may be kept for not more than 4 months at 43 °F ± 7 °F (6 °C ± 4 °C) at which time subcultures shall be made, and new stocks selected from

<sup>2</sup> The sole source of supply of the cultures known to the committee at this time is American Type Culture Collection (ATCC), 12301 Parklawn Drive, Rockville, MD 20852. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,<sup>1</sup> which you may attend.