



# Standard Test Methods for Classifying the Flexibility or Rigidity of Mineral Fiber Blanket and Board Insulation<sup>1</sup>

This standard is issued under the fixed designation C1101/C1101M; 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 These test methods cover the procedures for the classification of mineral fiber insulation as flexible, resilient flexible, semirigid, or rigid.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the 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 and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

- 2.1 *ASTM Standards*:<sup>2</sup>  
**C168 Terminology Relating to Thermal Insulation**

## 3. Terminology

3.1 *Definitions*—Terminology **C168** shall be considered as applying to the terms used in these test methods.

## 4. Significance and Use

4.1 Classification of insulation relative to flexibility or rigidity is useful in establishing installation and application characteristics.

## 5. Apparatus

5.1 *Iron Pipe*, ½-in. NPS (outside diameter 0.840 in. [21.3 mm]) measuring at least 12 in. [305 mm] in length.

<sup>1</sup> These test methods are under the jurisdiction of ASTM Committee **C16** on Thermal Insulation and are the direct responsibility of Subcommittee **C16.32** on Mechanical Properties.

Current edition approved May 1, 2012. Published July 2012. Originally approved in 1988. Last previous edition approved in 2006 as C1101/C1101M – 06. DOI: 10.1520/C1101\_C1101M-06R12.

<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.

5.2 *Rigidity Tester*, consisting of two horizontal, parallel, ½-in. NPS iron pipe supports (outside diameter 0.840 in. [21.3 mm]) at least 24 in. [610 mm] long and spaced 30 in. [762 mm] apart and horizontally to each other.

## 6. Sampling

6.1 A test sample shall consist of one representative package of insulation. One test specimen measuring 12 in. by 12 in. [305 by 305 mm] and of full thickness shall be randomly cut from the sample for flexibility testing. If the rigidity portion of the procedure is to be performed, a test specimen measuring 32 in. [813 mm] long, and between 6 and 24 in. [152 and 610 mm] wide, and of full thickness shall be randomly cut from the sample.

## 7. Procedure

7.1 *Test for Flexibility*—Bend the 12 by 12-in. [305 by 305-mm] piece of insulation over the ½ in. NPS iron pipe through an angle of 90° and examine the outer surface for visible rupture.

7.2 *Test for Resilient Flexibility*—If no rupture occurs after undergoing the 90° bending in 7.1, release the bent insulation.

7.3 If the insulation is not classified as flexible or resilient flexible, it shall be tested in accordance with 7.4 to determine the degree of rigidity.

7.4 *Test for Semirigidity and Rigidity*—Place the 32 in. [813 mm] long piece of insulation on the two horizontal, parallel, ½-in. NPS iron pipe supports spaced 30 in. [762 mm] apart. After 5 min have elapsed, measure the sag of the insulation to the nearest 0.05 in. [1.3 mm] at the center of the span, from a straight line connecting two points on the insulation's surface directly above the supports.

## 8. Interpretation of Results

8.1 *Test for Flexibility*—If there is no visible rupture, classify the material as flexible.

8.2 *Test for Resilient Flexibility*—If the insulation is classified as flexible in accordance with 8.1 and it springs back to its original form when it is released, classify it as resilient flexible.

8.3 *Test for Semirigidity*: