



Designation: C303 – 10(Reapproved 2016)

# Standard Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insulation<sup>1</sup>

This standard is issued under the fixed designation C303; 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.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

## 1. Scope

1.1 This test method covers determination of the dimensions and density of block and board insulation as defined in Terminology C168.

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 and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

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

C167 Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations

C168 Terminology Relating to Thermal Insulation

C390 Practice for Sampling and Acceptance of Thermal Insulation Lots

C870 Practice for Conditioning of Thermal Insulating Materials

## 3. Terminology

3.1 *General*—Terminology C168 shall be considered as applicable to the terms used in this test method.

## 4. Summary of Test Method

4.1 The material shall be tested in the “dry” condition or in the “as manufactured and received” condition (see Note 1) but

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.32 on Mechanical Properties.

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

the procedure must be consistent with that as given in the material specification. If the material is to be tested in the “dry” condition it shall be dried to constant mass. If the material specification does not give conditioning instructions, a conditioning environment of 73°F  $\pm$  4°F (23°C  $\pm$  2°C) and 50  $\pm$  5 % relative humidity per Practice C870 shall be used. From the measured mass and measured dimensions, the density of the product is calculated.

NOTE 1—Some materials may contain volatiles such as moisture when manufactured or shipped, or both.

## 5. Significance and Use

5.1 Dimensional measurements of the product thermal insulation are essential in determining compliance of a product with specification limits. Dimensional measurements of various test specimens are also required by the specific test method.

5.2 Density measurements of the product insulation are useful in determining compliance of a product with specification limits, and in providing a relative gage of product weights. For any one kind of insulation, some important physical and mechanical properties, such as thermal conductivity, heat capacity, strength, etc., bear a specific relationship with its density. In order to design for equipment supports, check the material for the “as received density” where the moisture content of the product as received and then installed may consequential.

## 6. Apparatus

6.1 *Steel measure*, (ruler or tape), graduated in millimetres or better, suitable for measuring dimensions to  $\pm$  1.0 % (see Note 2).

6.2 *Instrument*, such as caliper, dial gage, or micrometer graduated in millimetres or better, with a minimum plate diameter of 6 mm, and a maximum plate of 1.0 by 1.0 in. (25 by 25 mm). This instrument shall be suitable for measuring the dimensions to  $\pm$  1.0 %. This instrument shall not cause deformation of the product when measuring it. The pressure exerted by this measuring plate should not exceed 0.040 psi or 5psf (0.245 kPa).