Designation: C302 – 95(Reapproved 2007)

Standard Test Method for Density and Dimensions of Preformed Pipe-Covering-Type Thermal Insulation[1]

This standard is issued under the fixed designation C302; 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.

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

1. Scope

1.1 This test method covers the determination of the dimensions and density, after conditioning, of preformed pipe insulation.

1.1.1 Procedure A is applicable to sections of one-piece pipe covering or to sections of segmental pipe covering that can be joined together concentrically and measured as one-piece.

1.1.2 Procedure B is applicable to segmental pipe covering where each section of material is measured.

1.1.3 Procedure C is applicable to sections of one-piece pipe covering, such as soft foam or mineral wool materials, where it is possible to penetrate the material.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

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:*[2]

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

C168 Terminology Relating to Thermal Insulation

C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

C870 Practice for Conditioning of Thermal Insulating Materials

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

3. Terminology

3.1 *Definitions*—See Terminology C168.

4. Summary of Test Method

4.1 The material to be tested is conditioned to constant weight. The density of the pipe insulation is calculated from the conditioned mass and measured dimensions.

5. Significance and Use

5.1 Density measurements of preformed pipe 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; however, on a density basis, these properties are not directly comparable with those for other kinds of material.

5.2 The physical dimensions of preformed pipe insulation are important quantities not only for determining the density of the pipe insulation but also for determining the conformance to specifications. The use of multilayer insulations is common, and the dimensions are necessary to ensure proper nesting of the layers.

6. Apparatus

6.1 *Flexible Steel Rule,* graduated in 1/32-in. or 1.0-mm intervals.

6.2 *Scale,* with sufficient capacity to weigh the specimen to within 0.01 lb or 5 g.

6.3 *Pin Probe,* as defined in Test Methods C167.

6.4 *Steel Rule,* graduated in 1/32-in. or 1.0-mm intervals.

6.5 *Stainless Steel Shim Stock,* 2 in. (75 mm) wide, longer than the circumference of the pipe insulation, and 0.010 in. (0.25 mm) thick.

6.6 *Pi Tape,* graduated to read a diameter directly to the nearest 1/32 in. or 1.0 mm.

[1] 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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[2] 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.