



Designation: **C552 – 21** **C552 – 21a**

Standard Specification for Cellular Glass Thermal Insulation¹

This standard is issued under the fixed designation C552; 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 U.S. Department of Defense.

1. Scope

1.1 This specification covers the composition, sizes, dimensions, and physical properties of cellular glass thermal insulation intended for use on surfaces operating at temperatures between –450 and 800°F (–268 and 427°C). It is possible that special fabrication or techniques for pipe insulation, or both, will be required for application in the temperature range from 250 to 800°F (121 to 427°C). Contact the manufacturer for recommendations regarding fabrication and application procedures for use in this temperature range. For specific applications, the actual temperature limits shall be agreed upon between the manufacturer and the purchaser.

1.2 Cellular glass insulation has the potential to exhibit stress cracks if the rate of temperature change exceeds 200°F (112°C) per hour.

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:²

C165 Test Method for Measuring Compressive Properties of Thermal Insulations

C168 Terminology Relating to Thermal Insulation

C177 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus

C203 Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation

C240 Test Methods for Testing Cellular Glass Insulation Block

C302 Test Method for Density and Dimensions of Preformed Pipe-Covering-Type Thermal Insulation

¹ This specification is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.20 on Homogeneous Inorganic Thermal Insulations.

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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.

C303 Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insulation
C335/C335M Test Method for Steady-State Heat Transfer Properties of Pipe Insulation
C390 Practice for Sampling and Acceptance of Thermal Insulation Lots
C411 Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
C450 Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging
C518 Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
C585 Practice for Inner and Outer Diameters of Thermal Insulation for Nominal Sizes of Pipe and Tubing
C692 Test Method for Evaluating the Influence of Thermal Insulations on External Stress Corrosion Cracking Tendency of Austenitic Stainless Steel
C795 Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel
C871 Test Methods for Chemical Analysis of Thermal Insulation Materials for Leachable Chloride, Fluoride, Silicate, and Sodium Ions
C1045 Practice for Calculating Thermal Transmission Properties Under Steady-State Conditions
C1058/C1058M Practice for Selecting Temperatures for Evaluating and Reporting Thermal Properties of Thermal Insulation
C1114 Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus
C1617 Practice for Quantitative Accelerated Laboratory Evaluation of Extraction Solutions Containing Ions Leached from Thermal Insulation on Aqueous Corrosion of Metals
C1639 Specification for Fabrication Of Cellular Glass Pipe And Tubing Insulation
E84 Test Method for Surface Burning Characteristics of Building Materials
E96/E96M Test Methods for Water Vapor Transmission of Materials
 2.2 *ISO Documents*.³
ISO 3951 Sampling Procedure and Charts for Inspection by Variables for Percent Defective
ISO 8497 Determination of steady-state thermal transmission properties of thermal insulation for circular pipes

3. Terminology

3.1 For definitions used in this specification, see Terminology **C168**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *board*—fabricated sections of cellular glass adhered and together covered with a facing such as a laminated kraft paper adhered to both faces.

4. Classification⁴

4.1 Cellular glass insulation covered by this specification shall be classified in the seven grades shown in **Table 1**. Grades vary in compressive strength, density, thermal conductivity, and flexural strength. Cellular glass insulation is furnished in the following types:

4.1.1 *Type I*—Flat block manufactured,

4.1.2 *Type II*—Pipe and tubing insulation fabricated from Type I,

4.1.3 *Type III*—Special shapes fabricated from Type I,

4.1.4 *Type IV*—Board fabricated from Type I,

NOTE 1—Types not listed here may not be commercially available. These would be considered special order items.

5. Ordering Information

5.1 Purchase orders for cellular glass insulation furnished to this specification shall include the following information:

5.1.1 Type designation (see **4.1**),

5.1.2 Dimensions according to type (see Section **9**), and

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁴ Type and grade designations are in accordance with *Form and Style for ASTM Standards*, Part B, Section B8, March 2002.