



Designation: ~~C1639~~—~~16~~ **C1639** – 17

Standard Specification for Fabrication Of Cellular Glass Pipe And Tubing Insulation¹

This standard is issued under the fixed designation C1639; 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 specification covers fabrication techniques for cellular glass block into billets to fabricate pipe and tubing insulation. All materials shall be in accordance with Specification **C552**.

1.2 The purpose of this specification is to optimize the thermal performance of installed cellular glass insulation systems. This is best achieved by limiting the number of joints, in particular through joints.

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 and health 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

C168 Terminology Relating to Thermal Insulation

C450 Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging

C552 Specification for Cellular Glass Thermal Insulation

C585 Practice for Inner and Outer Diameters of Thermal Insulation for Nominal Sizes of Pipe and Tubing

D312 Specification for Asphalt Used in Roofing

2.2 *ASTM Adjuncts:*³

ADJC0450A ASTM Recommended Dimensional Standards for Fabrication of Thermal Insulation Fitting Covers ~~39-17~~

3. Terminology

3.1 Terminology **C168** shall be considered as applying to the terms in this specification.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *billet / bun*—a single piece of insulation made up from a number of smaller blocks held together with an adhesive.

3.2.2 *lags*—pieces of insulation typically curved or tapered used for insulating pipes, tanks and other cylindrical equipment.

3.2.3 *precision cut V-grooved pipe insulation, n*—rigid insulation pieces cut into 4-sided polygons, of two parallel surfaces and two non-parallel surfaces of equal angles = $180^\circ / N$, such that when N number of these sections are assembled, they form an approximate circle and can be installed around a pipe.

¹ This specification is under the jurisdiction of ASTM Committee **C16** on Thermal Insulation and is the direct responsibility of Subcommittee **C16.40** on Insulation Systems.

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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.

³ Available from ASTM International Headquarters. Order Adjunct No. **ADJC0450A**.

3.2.3.1 *Discussion*—

The adjective precision refers to the fact that when these *N* sections are installed onto a pipe, they fit exactly with no appreciable gaps between sections.

3.2.4 *bond joint, n*—the joint formed by the adhered mating surfaces of several thicknesses of cellular glass block or fabricated cellular glass insulation pieces that are used to create a cellular glass insulation billet, bun, or pipe and tubing insulation segments. See Fig. 1.

3.2.4.1 *Discussion*—

A bond joint is created during the fabrication of cellular glass pipe and tubing insulation and is made with a full depth (100 % coverage) of an approved adhesive. (See 3.2.1 and 8.4).

3.2.5 *fabrication joints* – see *bond joint, n*—the joint between adhered mating surfaces of cellular glass pipe and tubing insulation segments formed by fabricated segments or sections of cellular glass insulation that are assembled in the fabrication shop, facility, or jobsite, to produce the cellular glass pipe and tubing insulation. See Figs. 2-4.

3.2.5.1 *Discussion*—

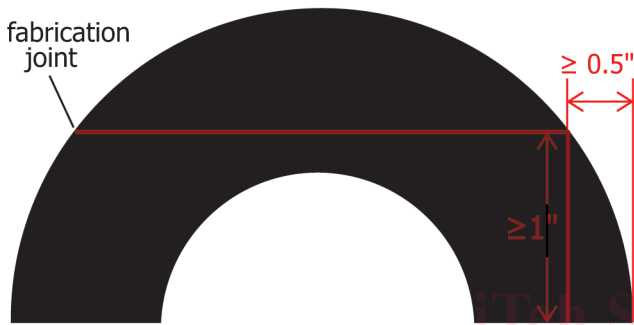


FIG. 2 Non-through Joints

A fabrication joint is created at a fabrication shop or facility and is made with a full depth (100 % coverage) of an approved adhesive.

3.2.6 *field joints, n*—mating surfaces of cellular glass insulation created during the installation process.

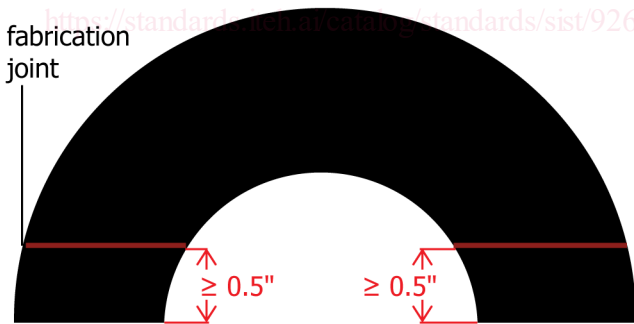


FIG. 3 Through Joints

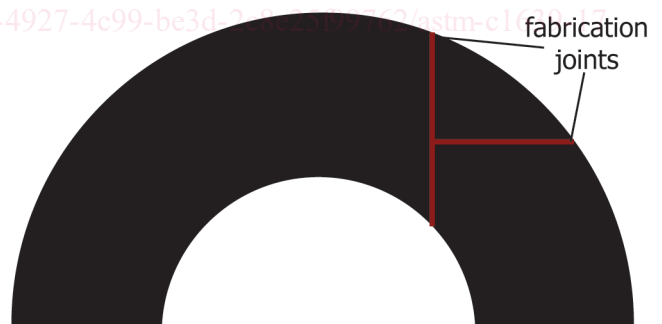


FIG. 4 90° Joint Intersection

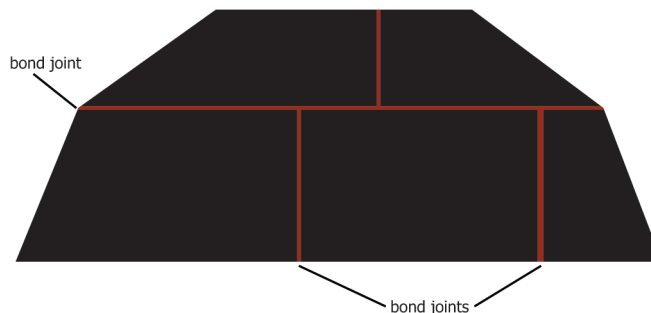


FIG. 1 Cellular Glass Insulation Billet