



Standard Specification for Perlite Loose Fill Insulation¹

This standard is issued under the fixed designation C 549; 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 specification covers the composition and physical properties of expanded perlite loose fill insulation. The specification also includes the testing procedures by which the acceptability of the material may be determined. These testing procedures deal primarily with material performance in the temperature range associated with the thermal envelope of buildings; however, the commercially usable temperature range for this insulation is from – 459 to 1400°F (1 to 1033 K). For specialized applications, refer to the manufacturer's instructions.

1.2 The specification also covers the composition and properties of perlite that has been surface-treated to produce water repellency and dust suppression for installations where liquid moisture and dust may be a factor.

1.3 *When the installation or use of thermal insulation materials, accessories and systems, may pose safety or health problems, the manufacturer shall provide the user appropriate current information regarding any known problems associated with the recommended use of the company's products, and shall also recommend protective measures to be employed in their safe utilization. The user shall establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.* For additional precautionary statements, see Section 11.

1.4 The following precautionary caveat pertains to the test methods portion, Section 8, of this specification. *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:

- C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates²
 - C 168 Terminology Relating to Thermal Insulation³
 - C 177 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot Plate Apparatus³
 - C 390 Criteria for Sampling and Acceptance of Preformed Thermal Insulation Lots³
 - C 518 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus³
 - C 520 Test Methods for Density of Granular Loose Fill Insulations³
 - E 84 Test Method for Surface Burning Characteristics of Building Materials⁴
 - E 136 Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C⁴
 - E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods⁵
- 2.2 *Federal Specification:*
HH-I-515D Insulation Thermal (Loose Fill for Pneumatic or Poured Application) Cellulosic or Wood Fiber⁶

3. Classification

3.1 Perlite loose fill insulation shall be specified by four type designations as follows:

3.1.1 *Type I*—The product that results from the expanding of natural perlite ore by grading and heating to meet the requirements of this specification.

3.1.2 *Type II*—Expanded perlite that has been surface-treated to produce water repellency and limited absorption of moisture from both liquid and vapor phase.

3.1.3 *Type III*—Expanded perlite that has been surface-treated to limit the amount of dust generated during application.

¹ This specification is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.23 on Blanket and Loose Fill Insulation.

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² *Annual Book of ASTM Standards*, Vol 04.02.

³ *Annual Book of ASTM Standards*, Vol 04.06.

⁴ *Annual Book of ASTM Standards*, Vol 04.07.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.

⁶ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.