



Standard Practice for Selecting Temperatures for Evaluating and Reporting Thermal Properties of Thermal Insulation¹

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1. Scope

1.1 This practice covers standard mean temperatures for reporting thermal properties of thermal insulations, products, and materials, and of related systems and components, both insulated and uninsulated.

1.2 Thermal properties shall be determined as a function of temperature by standard test methods. (Test Methods C 177, C 201, C 236, C 335, C 518, C 745, C 976, C 1114, Guide C 653, and Practice C 687, all in combination with Practice C 1045.)

NOTE 1—Standard referenced materials are needed to span the temperature range of the tests.

1.3 This practice recommends standard conditions for use in testing and evaluating thermal properties as a function of temperature by standard test methods.

1.4 General applications of thermal insulations include:

- 1.4.1 Building envelopes,
- 1.4.2 Mechanical systems or processes, and
- 1.4.3 Building and industrial insulations.

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only. Approximate inch-pound units are provided in the tables.

1.6 *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 168 Terminology Relating to Thermal Insulation²

C 177 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus²

C 201 Test Method for Thermal Conductivity of Refractories³

C 335 Test Method for Steady-State Heat Transfer Properties of Horizontal Pipe Insulation²

C 518 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus²

C 653 Guide for Determination of the Thermal Resistance of Low-Density Blanket-Type Mineral Fiber Insulation²

C 687 Practice for Determination of the Thermal Resistance of Loose-Fill Building Insulation²

C 745 Test Method for Heat Flux Through Evacuated Insulations Using a Guarded Flat Plate Boiloff Calorimeter²

C 1045 Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements²

C 1114 Test Method for Steady State Thermal Transmission Properties by Means of the Thin-Heater Apparatus²

C 1363 Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus²

3. Terminology

3.1 *Definitions*—For definitions of terms and symbols used in this practice, refer to Terminology C 168.

4. Significance and Use

4.1 The various methods for measuring and calculating thermal properties provide data and information for manufacturer's published information, for comparison of related products, and for designers and users to evaluate insulation products for particular applications. For these purposes it is advisable to provide basic data and information produced under standard temperature conditions.

4.2 Thermal properties of a specimen may change with mean temperature, with temperature difference across the specimens, and with high temperature exposure. Data and information at standard temperatures are necessary for valid comparison of thermal properties.

4.3 The mean test temperatures to measure thermal properties shall be selected from those listed in Table 1. It is

¹ This practice is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.30 on Thermal Measurements.

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² *Annual Book of ASTM Standards*, Vol 04.06.

³ *Annual Book of ASTM Standards*, Vol 15.01.