



Designation: C 168 – 00

Standard Terminology Relating to Thermal Insulation¹

This standard is issued under the fixed designation C 168; 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 standard provides definitions, symbols, units, and abbreviations of terms used in ASTM standards pertaining to thermal insulating materials, and to materials associated with them.

2. Referenced Documents

2.1 ISO Standard:

ISO 7345 Thermal Insulation—Physical Quantities and Definitions²

3. Terminology

3.1 Definitions:

absorptance, n —the ratio of the radiant flux absorbed by a body to that incident upon it.

absorption, n —transformation of radiant energy to a different form of energy by interaction with matter.

apparent thermal conductivity, λ_a , k_a , n —a thermal conductivity assigned to a material that exhibits thermal transmission by several modes of heat transfer resulting in property variation with specimen thickness, or surface emittance. See **conductivity, thermal**.

DISCUSSION—Thermal conductivity and resistivity are normally considered to be intrinsic or specific properties of materials and, as such, should be independent of thickness. When nonconductive modes of heat transfer are present within the specimen (radiation, free convection) this may not be the case. To indicate the possible presence of this phenomena (for example, thickness effect) the modifier “apparent” is used, as in apparent thermal conductivity.

DISCUSSION—Test data using the “apparent” modifier must be quoted only for the conditions of the measurement. Values of thermal conductance (material C) and thermal resistance (material R) calculated from apparent thermal conductivity or resistivity, are valid only for the same conditions.

DISCUSSION—Test data labeled with “apparent” shall not include any equipment related measurement errors induced due to measurement attempts beyond an apparatus range or calibration.

DISCUSSION—Use of the “apparent” modifier with system C or system R measurements is not permitted.

apparent thermal resistivity, r_a , n —a thermal resistivity assigned to a material that exhibits thermal transmission by several modes of heat transfer resulting in property variation with specimen thickness, or surface emittance. See **resistivity, thermal**.

DISCUSSION—See entire discussion under **apparent thermal conductivity**.

blackbody, n —the ideal, perfect emitter and absorber of thermal radiation. It emits radiant energy at each wavelength at the maximum rate possible as a consequence of its temperature, and absorbs all incident radiance.

blanket insulation, n —a relatively flat and flexible insulation in coherent sheet form furnished in units of substantial area.

blanket insulation, metal mesh, n —blanket insulation covered by flexible metal-mesh facings attached on one or both sides.

block insulation, n —rigid insulation preformed into rectangular units.

board insulation, n —semirigid insulation preformed into rectangular units having a degree of suppleness particularly related to their geometrical dimensions.

calcium silicate, n —insulation composed principally of hydrous calcium silicate, and which usually contains reinforcing fibers.

cellular elastomeric, n —insulation composed principally of natural or synthetic elastomers, or both, processed to form a flexible, semirigid, or rigid foam which has a predominantly closed-cell structure.

cellular glass, n —insulation composed of glass processed to form a rigid foam having a predominantly closed-cell structure.

cellular polystyrene, n —insulation composed principally of polymerized styrene resin processed to form a rigid foam having a predominantly closed-cell structure.

cellular polyurethane, n —insulation composed principally of the catalyzed reaction product of polyisocyanate and polyhydroxy compounds, processed usually with fluorocarbon gas to form a rigid foam having a predominantly closed-cell structure.

cellulosic fiber, n —insulation composed principally of cellulose fibers usually derived from paper, paperboard stock, or wood, with or without binders.

cement, finishing, n —a mixture of dry fibrous or powdery materials, or both, that when mixed with water develops a

¹ This terminology is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.94 on Terminology.

Current edition approved June 10, 2000. Published September 2000. Originally published as C 168 – 41 T. Last previous edition C 168 – 97.

² Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.