



Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board¹

This standard is issued under the fixed designation C 1289; 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 the general requirements for faced thermal insulation boards composed of rigid cellular polyisocyanurate surfaced with other materials. The insulation boards are intended for use at temperatures between -40 and 200°F (-40 and 93°C). This specification does not cover cryogenic applications. Consult the manufacturer for specific recommendations and properties in cryogenic conditions. For specific applications, the actual temperature limits shall be agreed upon by the manufacturer and the purchaser.

1.2 This standard is intended to apply to rigid cellular polyurethane-modified polyisocyanurate thermal insulation board products that are commercially acceptable as non-structural panels useful in building construction. The term polyisocyanurate encompasses the term polyurethane. For engineering and design purposes, users should follow specific product information provided by board manufacturers regarding physical properties, system design considerations and installation recommendations.

1.3 The use of thermal insulation materials covered by this specification may be regulated by building codes, or other agencies that address fire performance, or both. The fire performance of the material should be addressed through standard fire test methods established by the appropriate governing documents.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only and may be approximate. For conversion to metric units other than those contained in this standard, refer to IEEE/ASTM SI 10.

1.5 The following safety hazards caveat pertains only to the test methods, Section 11, in 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 The following documents, of the issue in effect on the date of material purchase, form a part of this specification to the extent specified herein:

2.2 ASTM Standards:

- C 168 Terminology Relating to Thermal Insulating Materials²
- C 177 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus²
- C 203 Test Methods for Breaking Load and Flexural Properties of Block Type Thermal Insulation²
- C 208 Specification for Cellulosic Fiber Insulating Board²
- C 209 Test Methods for Cellulosic Fiber Insulating Board²
- C 236 Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box²
- C 303 Test Method for Density of Preformed Block-Type Thermal Insulation²
- C 390 Criteria for Sampling and Acceptance of Preformed Thermal Insulation Lots²
- C 518 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus²
- C 550 Practice for Measuring Trueness and Squareness of Rigid Block Thermal Insulation²
- C 728 Specification for Perlite Thermal Insulation Board²
- C 976 Test Method for Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box²
- C 1045 Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements²
- C 1058 Practice for Selecting Temperatures for Evaluating and Reporting Thermal Properties of Thermal Insulation²
- C 1114 Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus²
- D 226 Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing³
- D 1621 Test Method for Compressive Properties of Rigid Cellular Plastics⁴
- D 2126 Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging⁴

¹ This specification is under the jurisdiction of ASTM Committee C-16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.22 on Organic and Nonhomogeneous Inorganic Thermal Insulations.

Current edition approved March 10, 1998. Published June 1998. Originally published as C 1289 – 95. Last previous edition C 1289 – 95.

² Annual Book of ASTM Standards, Vol 04.06.

³ Annual Book of ASTM Standards, Vol 04.04.

⁴ Annual Book of ASTM Standards, Vol 08.01.

E 84 Test Method for Surface Burning Characteristics of Building Materials⁵

E 96 Test Method for Water Vapor Transmission of Materials²

IEEE/ASTM SI 10—Standard for Use of the International System of Units (SI): (The Modernized Metric System)⁶

2.3 *ANSI Standard:*

Voluntary Product Standard ANSI A 208.1 Wood Particle-board⁷

3. Terminology

3.1 For complete descriptions of terms used in this specification, refer to Terminology C 168.

3.2 The term polyisocyanurate encompasses the term polyurethane (see 1.2).

4. Classification

4.1 The faced thermal insulation boards composed of rigid cellular polyisocyanurate covered by this specification are classified as follows:

4.1.1 *Type I*—Faced with aluminum foil on both major surfaces of the core foam.

4.1.1.1 *Class 1*—Non-reinforced core foam.

4.1.1.2 *Class 2*—Glass fiber reinforced core foam.

4.1.2 *Type II*—Faced with organic/inorganic/asphalt-saturated/polymer-bonded/fibrous felt or uncoated/asphalt-coated/polymer-bonded/glass fiber mat membrane facer on both major surfaces of the core foam.

4.1.3 *Type III*—Faced with a perlite insulation board on one major surface of the core foam and an organic/inorganic/asphalt-saturated/polymer-bonded/fibrous felt or uncoated/asphalt-coated/polymer-bonded/glass fiber mat membrane facer on the other major surface of the core foam.

4.1.4 *Type IV*—Faced with a cellulosic fiber insulating board on one major surface of the core foam and an organic/inorganic/asphalt-saturated/polymer-bonded/fibrous felt or uncoated/asphalt-coated/polymer-bonded/glass fiber mat membrane facer on the other major surface of the core foam.

4.1.5 *Type V*—Faced with oriented strand board or wafer-board on one major surface of the foam and an organic/inorganic/asphalt-saturated/polymer-bonded/fibrous felt or uncoated/asphalt-coated/polymer-bonded/glass fiber mat membrane facer on the other major surface of the core foam.

4.1.6 *Type VI*—Faced with a perlite insulation board on both major surfaces of the core foam.

NOTE 1—These general statements refer to generic composition descriptions of facer materials, bonded fibrous felts, and mats that are currently commercially accepted in the marketplace for these products, using terms common to these competing products. Felts may contain organic fibers, inorganic fibers, or mixtures of organic and inorganic fibers and may be suitably bonded in one of several alternative ways using organic binders or conventional asphalt saturation to produce suitable membrane facers. Glass fiber mats can be used uncoated, or asphalt coated or otherwise polymer bonded to also produce suitable membrane facers.

⁵ *Annual Book of ASTM Standards*, Vol 04.07.

⁶ *Annual Book of ASTM Standards*, Vol 14.02.

⁷ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

5. Ordering Information

5.1 Orders shall include the following information:

5.1.1 Title, designation, and year of issue of C 1289,

5.1.2 Quantity of material being ordered,

5.1.3 Product name and manufacturer's name, address, and telephone number,

5.1.4 Type, Class, or both if Type 1, (see Section 4),

5.1.5 R-value and specific thickness, as required (see 7.2),

5.1.6 Tolerance if other than specified (see 8.1),

5.1.7 Size(s) required (see 8.6),

5.1.8 Type of edge (see 8.3 and 8.4),

5.1.9 Sampling, if different (see 10.1),

5.1.10 If a certificate of compliance is required (see 10.2, 10.3, 10.4, 11.1.3.1, Table 1 and Table 2),

5.1.11 If packaging is other than specified (see 13.1), and

5.1.12 If marking is other than specified (see 13.2).

6. Materials and Manufacture

6.1 *Cellular Material*—Rigid polyisocyanurate thermal insulation boards shall be based upon the reaction of an isocyanate with a polyol, or the reaction of an isocyanate with itself, or both, using a catalyst and blowing agents to form a rigid closed-cell-structured polyisocyanurate foam. The insulation foam core shall be homogeneous and of uniform density.

6.2 *Facing Materials*—The facing material incorporated into the design of the faced thermal insulation board shall be as follows:

6.2.1 *Aluminum Foil*—Aluminum foil is plain or coated aluminum foil, or foil laminated to a supporting membrane.

6.2.2 *Polymer-Bonded Organic/Inorganic Fibrous Felt*—This organic/inorganic fibrous felt shall consist of an organic fiber felt containing inorganic fibers, internally bonded with organic polymer binders.

6.2.3 *Asphalt-Saturated Organic Fibrous Felt*—The asphalt-saturated organic fibrous felt shall conform to the material and physical properties requirements specified in Specification D 226.

6.2.4 *Polymer-Bonded Organic Fibrous Felt*—The polymer-bonded organic fibrous felt shall consist of organic fiber felt bonded with organic polymer binders.

6.2.5 *Asphalt-Coated Glass Fiber Mat*—The asphalt-coated glass fiber mat shall consist of fibrous glass mats coated with asphalt or asphalt emulsion.

6.2.6 *Polymer-Bonded Glass Fiber Mat*—The polymer-bonded glass fiber mat shall consist of fibrous glass mats bonded with organic polymer binders.

6.2.7 *Perlite Insulation Board*—The perlite insulation board shall conform to the material and physical property requirements specified in Standard Specification C 728, either type 1 or type 2 may be used. The perlite insulation board may be either the ½-in. board listed in Specification C 728, which has a *higher* core density and *modified* formulation (as agreed upon between buyer and seller) than the thicker products, or may be a ½-in. thickness (available only to manufacturers of laminated rigid foam products) of the ¾ to 3 in. formulation perlite board listed in Specification C 728.

6.2.8 *Cellulosic Fiber Insulation Board*—The cellulosic fiber insulating board shall conform to the material and

TABLE 1 Physical Properties^A

Product Type	Type I Class 1	Type I Class 2	Type II	Type III	Type IV	Type V	Type VI
Facer covering one surface	Aluminum foil	Aluminum foil	Fibrous Felt or Glass Fiber Mat Membrane	Perlite Insulation Board	Cellulosic Fiber Insulating Board	Oriented Strand Board or Waferboard	Perlite Insulation Board
Facer covering opposite surface	Aluminum foil	Aluminum foil	Fibrous Felt or Glass Fiber Mat Membrane	Fibrous Felt or Glass Fiber Mat Membrane	Fibrous Felt or Glass Fiber Mat Membrane	Fibrous Felt or Glass Fiber Mat Membrane or Aluminum Foil	Perlite Insulation Board
Physical Property							
Compressive strength, psi (kPa), min ^B	16 (110)	16 (110)	16 (110)	16 (110)	16 (110)	16 (110)	16 (110)
Dimensional Stability^B							
Percent linear change, max							
-40°F (-40°C) amb, RH	2.0	1.5	2.0	2.0	2.0	2.0	2.0
158°F (70°C)/97 % RH	2.0	1.5	4.0	4.0	4.0	4.0	4.0
200°F (93°C)/amb RH	4.0	1.5	4.0	4.0	4.0	4.0	4.0
Flexural Strength (modulus of rupture)^B							
psi (kPa), min	40 (275)	40 (275)	40 (275)	40 (275)	40 (275)	40 (275)	50 (345)
(Break load) lbf (N), min	8 (35)	8 (35)	17 (75)	17 (75)	17 (75)	17 (75)	33 (147)
Tensile Strength, psf (kPa), min ^B	500 (24)	500 (24)	500 (24)	500 (24)	500 (24)	500 (24)	500 (24)
Perpendicular to board surface							
Water Absorption 2h percent by volume, max ^B	1.0	1.0	1.5	1.0	2.0	1.0	1.5
Water Vapor Transmission, Perm (ng/Pa·s·m ²), max	0.3 (17.2) ^B	0.3 (17.2) ^B	1.0 (57.2) ^B	c	c	c	c

^A Because core foam thickness and facer type, thickness, and permeability can all influence the magnitude of values measured for these physical properties, a nominal 1 in. foam core product has been described for referee purposes. Consult manufacturers regarding specific foam-facer composite products and other product thicknesses. When appropriate, physical property values as agreed between buyer and seller shall replace those listed in Table 1 as qualification requirements described in 10.3.

^B Nominal 1-in. (25.4-mm) core foam.

^C Not applicable.

physical properties requirements specified in Specification C 208.

6.2.9 *Oriented Strand Board and Waferboard*—The oriented strand board and waferboard shall conform to the material and physical properties requirements specified in ANSI A208.1.

7. Physical Properties

7.1 The thermal insulation board shall conform to the properties stated in Table 1.

7.1.1 The physical properties stated in Table 1 shall not be used as design or engineering values unless this recommendation is made in writing by the product manufacturer. It remains the buyer's responsibility to specify design requirements and obtain supporting physical properties documentation from each

product manufacturer and supplier.

7.2 *Thermal Resistance (R-value)*—When ordering, specify the R-value; thickness shall be specified if there is a specific thickness requirement and R-value is not specified. The values specified shall be for the faced insulation product only, and shall not include any additional thermal resistances from reflective facer surfaces and adjacent air spaces or from other components of the building system. The mean thermal resistance of the material tested shall not be less than the minimum relevant value prescribed in Table 2. The thermal resistances of individual specimens tested shall not be less than 90 % of the minimum value identified in Table 2.

NOTE 2—Thermal characteristics of cellular plastics may be significantly influenced by installation and service-related variables such as age,

TABLE 2 Thermal Resistance Properties^A

Product Type	Type I Class 1	Type I Class 2	Type II	Type III	Type IV	Type V	Type VI
Facer Covering One Surface	Aluminum Foil	Aluminum Foil	Fibrous Felt or Glass Fiber Mat Membrane	Perlite Insulation Board	Cellulosic Fiber Insulating Board	Oriented Strand Board, or Wafer- Board	Perlite Insulation Board
Facer Covering Opposite Surface	Aluminum Foil	Aluminum Foil	Fibrous Felt or Glass Fiber Mat Membrane	Fibrous Felt or Glass Fiber Mat Membrane	Fibrous Felt or Glass Fiber Mat Membrane	Fibrous Felt or Glass Fiber Mat Membrane or Aluminum Foil	Perlite Insulation Board
Minimum Thermal Resistance @ 40 ± 2°F (4 ± 1°C) mean temp. ^{°F} ft ² h/Btu (Km ² /W)							
1 in. (25.4 mm) product	7.2 (1.26) ^B	7.9 (1.39) ^B	6.2 (1.10) ^B				
1.5 in. (38.1 mm) product	10.8 (1.90) ^C	11.0 (1.94) ^C	9.2 (1.62) ^C	8.1 (1.42) ^B	8.0 (1.40) ^B	7.1 (1.25) ^B	
2 in. (50.8 mm) product	14.3 (2.52) ^D	15.8 (2.78) ^D	12.3 (2.17) ^D	12.5 (2.20) ^C	12.4 (2.18) ^C	11.5 (2.02) ^C	8.6 (1.52) ^C
Minimum Thermal Resistance @ 75 ± 2°F (24 ± 1°C) mean temp. ^{°F} ft ² h/Btu (Km ² /W)							
1 in. (25.4 mm) product	6.5 (1.14) ^B	7.2 (1.26) ^B	5.6 (0.97) ^B				
1.5 in. (38.1 mm) product	9.8 (1.72) ^C	10.0 (1.76) ^C	8.4 (1.48) ^C	7.4 (1.30) ^B	7.3 (1.28) ^B	6.5 (1.14) ^B	
2 in. (50.8 mm) product	13.0 (2.29) ^D	14.4 (2.54) ^D	11.2 (1.97) ^D	11.4 (2.00) ^C	11.3 (1.99) ^C	10.5 (1.85) ^C	7.5 (1.32) ^C
Minimum Thermal Resistance @ 110 ± 2°F (43 ± 1°C) mean temp. ^{°F} ft ² h/Btu (Km ² /W)							
1 in. (25.4 mm) product	5.9 (1.04) ^B	6.5 (1.14) ^B	5.0 (0.88) ^B				
1.5 in. (38.1 mm) product	8.8 (1.55) ^C	9.0 (1.58) ^C	7.6 (1.34) ^C	6.7 (1.18) ^B	6.6 (1.16) ^B	5.9 (1.04) ^B	
2 in. (50.8 mm) product	11.7 (2.06) ^D	13.0 (2.29) ^D	10.1 (1.78) ^D	10.3 (1.81) ^C	10.2 (1.80) ^C	9.5 (1.67) ^C	6.7 (1.18) ^C

^A Because core foam thickness and facer type, thickness, and permeability can all influence product R-values, three faced product thicknesses have been described for referee purposes. Consult manufacturers regarding specific foam-facer composite products and other thicknesses. When appropriate, thermal resistance values as agreed between buyer and seller shall replace those listed in Table 2 as qualification requirements described in 10.3.

^B Nominal 1-in. (25.4-mm) foam core.

^C Nominal 1.5-in. (38.1-mm) foam core.

^D Nominal 2.0-in. (50.8-mm) foam core.

encapsulation within gas barrier materials, environmental conditions, mechanical abuse, etc. and may be reduced from measured values after exposure to conditions of use. For specific design recommendations, consult the manufacturer or qualified professionals, such as architects or engineers.

7.3 Fire Characteristics—Polyisocyanurate thermal insulation boards are organic materials and are combustible. They should not be exposed to open flames or other ignition sources. The fire performance of the material should be addressed through fire test requirements established by the appropriate governing authority, which are specified to the end use and occupancy.

7.3.1 Surface Burning Characteristics—Determine, if required, in accordance with Test Method E 84.

8. Dimensions

8.1 Dimensional Tolerances—The length and width tolerances shall not exceed ±¼ in. (6.4 mm), the thickness

tolerance shall not exceed ⅛ in. (3.2 mm), and the thickness of any two boards shall not differ more than ⅛ in. (3.2 mm) when measured in accordance with Test Method C 303.

8.2 Board Squareness—The thermal insulation boards shall not be out of square more than ⅛ in./ft (5.2 mm/m) of width or length, when examined in accordance with Practice C 550.

8.3 Straight Edges—Unless otherwise specified, the thermal insulation board shall be furnished with straight edges and edges shall not deviate more than ⅛ in./ft (2.6 mm/m) when examined in accordance with Practice C 550.

8.4 Shiplap Edges—When specified, the insulation board shall be fabricated with shiplap edges along its longest dimensions.

8.4.1 The nominal depth of each shiplap shall be the sum of its thickest facer dimension plus one half the thickness of its core foam dimension.

8.4.2 For boards 2 in. (50.8 mm) or greater in nominal

thickness, the width of the shiplap shall be 1 in. (25.4 mm). For boards less than 2 in. (50.8 mm) in thickness, the nominal width of the shiplap shall be one half the thickness of the faced board product.

8.4.3 All fabrication tolerances shall provide for a dimensionally stable, smooth, and uniform shiplap joint in installation and in service.

8.5 *Flatness*—The thermal insulation boards shall not depart from absolute flatness more than $\frac{1}{8}$ in./ft (10 mm/m) of length or width when examined in accordance with Practice C 550.

8.6 *Available Sizes*—The thermal insulation boards are normally supplied in sizes of 2 by 8 ft (0.61 by 2.44 m), 3 by 4 ft (0.91 by 1.22 m), 4 by 4 ft (1.22 by 1.22 m), and 4 by 8 ft (1.22 by 2.44 m). Additional sizes may be available from the manufacturer or may be specified by the purchaser.

8.7 *Crushings and Depressions*—The thermal insulation boards shall have no crushed or depressed areas on any surface exceeding $\frac{1}{8}$ in. (3.2 mm) in depth on more than 10 % of the total surface area.

9. Workmanship

9.1 The thermal insulation boards shall have no defects that will adversely affect their service qualities. The boards shall be of uniform texture and facer integrity, free from the accumulation of unexpanded materials, foreign materials, broken edges and corners, slits, and objectionable odors.

10. Sampling

10.1 Unless otherwise specified, the product shall be sampled and inspected for acceptance of material in accordance with Criteria C 390.

10.2 The following physical requirements are defined as inspection requirements in accordance with Criteria C 390:

10.2.1 All dimension requirements as described in Section 8.

10.2.2 All workmanship, finish, and appearance requirements as described in Section 9.

10.3 The following physical properties are defined as qualification requirements in accordance with Criteria C 390.

10.3.1 Thermal resistance as described in Section 11.2 and Table 2.

10.3.2 Compressive strength as described in Section 11.3 and Table 1.

10.3.3 Dimensional stability as described in Section 11.4 and Table 1.

10.3.4 Flexural strength as described in Section 11.5 and Table 1.

10.3.5 Tensile strength perpendicular to board surface as described in Section 11.6 and Table 1.

10.3.6 Water absorption as described in Section 11.7 and Table 1.

10.3.7 Water vapor transmission as described in Section 11.8 and Table 1.

10.4 For lots of 150 units or less not subject to tightened inspection, the supplier's certificate of compliance or third-party's certificate of compliance shall be sufficient basis for acceptance of the lot. The certificate shall state that compliance to inspection requirements has been verified by actual inspection

of material of the same type, class, size, and thickness manufactured within the same production period as the material offered.

11. Test Methods

11.1 *Conditioning*:

11.1.1 Sample boards shall be conditioned at $73 \pm 4^\circ\text{F}$ ($23 \pm 2^\circ\text{C}$) and $50 \pm 5\%$ relative humidity for a minimum of 24 h prior to the start of tests or as specified in the applicable test procedure.

11.1.2 *Thermal Resistance Conditioning*:

11.1.2.1 *Time Conditioning Option*—Thermal insulation boards to be tested for thermal resistance shall be conditioned for 180 ± 5 days at $73 \pm 4^\circ\text{F}$ ($23 \pm 2^\circ\text{C}$) and $50 \pm 5\%$ relative humidity prior to testing.

11.1.2.2 *Thermal Conditioning Option*—Thermal insulation boards to be tested for thermal resistance may alternatively be conditioned for at least 90 days at $140 \pm 2^\circ\text{F}$ ($60 \pm 1^\circ\text{C}$) dry heat prior to testing.

11.1.3 *Waiver for Thermal Resistance Conditioning*—The requirements for thermal resistance conditioning may be waived provided that the following conditions are met:

11.1.3.1 The same type board offered must have been conditioned as specified within the past 2-year period, and there shall have been no changes in the manufacturing technique or the materials that would affect the physical properties of the board during or since the conditioning was performed.

11.1.3.2 Records that verify and support that the conditioning was performed as specified must be maintained and must be made available for review by the purchaser's representative.

11.1.3.3 Unless otherwise specified, a written statement from the supplier that the conditions for the waiver have been met will be acceptable evidence of compliance of the conditioning requirements.

11.2 *Thermal Resistance*—After conditioning in accordance with 11.1.2, insulation boards will be further conditioned in accordance with Test Method C 518 and shall be tested in accordance with Test Methods C 177, C 236, C 518, C 976, or C 1114 and Practices C 1045 and C 1058. The mean reference testing temperature shall be $75 \pm 2^\circ\text{F}$ ($24 \pm 1^\circ\text{C}$). In addition, thermal resistance values shall be provided at $40 \pm 2^\circ\text{F}$ ($4 \pm 1^\circ\text{C}$), or $110 \pm 2^\circ\text{F}$ ($43 \pm 1^\circ\text{C}$), or both, at the buyer's request. All thermal resistance testing shall be conducted with a minimum temperature differential of 40°F (22°C). Cut samples for testing after the conditioning period.

11.3 *Compressive Strength*—All material covered by this specification shall be conditioned and tested in accordance with the Cross-Head Motion procedure in Test Method D 1621 to 10 % thickness deformation or yield, whichever occurs first on a full-thickness faced specimen. Faced product compressive strength shall be determined across the thickness dimension of the board product.

11.4 *Dimensional Stability*—The thermal insulation boards shall be tested in accordance with Test Method D 2126 except that each specimen shall be 12 by 12 in. (300 by 300 mm) by the full-faced thickness.

11.4.1 The standard environmental schedule shall be as follows:

Temperature		Relative Humidity	Exposure Time, days
°F	°C		
+200 ± 4	(93 ± 2)	ambient	7
-40 ± 6	(-40 ± 3)	ambient	7
+158 ± 4	(70 ± 2)	97 ± 3 %	7

11.5 *Flexural Strength*—Insulation boards shall be tested in accordance with Test Method C 203, Method 1, Procedure B, at a moving head speed of 0.1 in./min/in. (2.5 mm/min/25.4 mm) of thickness with facings intact, on 3 by 12 in. (76.2 by 304.8 mm) by full thickness replicate specimens conditioned in accordance with 11.1.1.

11.6 *Tensile Strength Perpendicular to Board Surface*—Tensile strength perpendicular to the major board surfaces of the faced board product shall be tested in accordance with Test Method C 209, Tensile Strength Perpendicular to Surface, utilizing a 250°F (121°C) hot melt adhesive system for sample preparation. Molten adhesive⁸ shall be uniformly applied over each faced sample surface and allowed to cool in 73°F (23°C) laboratory air for 24 h before testing.

11.7 *Water Absorption*—Insulation boards shall be tested in accordance with Test Method C 209, Water Absorption.

11.8 *Water Vapor Transmission*—Insulation boards shall be tested in accordance with Test Method E 96, desiccant method

⁸ Cascomelt[®] hot melt adhesive manufactured by the Borden Chemical Co. and Bostik Glue Stix #6363-15[®] hot melt adhesive manufactured by the Bostik Co., Middleton, MA have been found suitable for use in this procedure.

at 73 ± 2°F (23 ± 1°C), with facings intact.

12. Rejection and Resubmittal

12.1 Failure to conform to the requirements in this specification shall constitute cause for rejection. Rejection shall be promptly reported to the manufacturer.

12.2 The manufacturer shall have the option to reinspect rejected shipments and resubmit the entire lot for inspection and resampling after the removal and replacement of nonconforming portions.

13. Packaging and Marking

13.1 *Packaging*—Unless otherwise specified, the insulation shall be supplied in the manufacturer's standard commercial packages.

13.2 *Marking*—Unless otherwise specified, each package or board shall be marked with the insulation specification number; type; manufacturer's name or trademark, address, and telephone number; lot number; and thermal resistance (R-value).

14. Keywords

14.1 cellular plastic insulation; cellulosic fiber insulating board; composite foam insulation board; faced foam board; foam plastic insulation; oriented strand board; perlite board; polyiso board; polyisocyanurate; polyisocyanurate foam; polyurethane; polyurethane foam; thermal insulation; waferboard

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