

**45-DAY EXPRESS TERMS
FOR
PROPOSED BUILDING STANDARDS
OF THE
DEPARTMENT OF CONSUMER AFFAIRS
Bureau of Home Furnishings and Thermal Insulation**

**REGARDING PROPOSED CHANGES TO
STANDARD FOR INSULATING MATERIALS
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 12 CHAPTER 12-13
(See Part 6, Title 24, C.C.R.)**

(The State agency shall draft the regulations in plain, straightforward language, avoiding technical terms as much as possible and using a coherent and easily readable style. The agency shall draft the regulation in plain English. A notation shall follow the express terms of each regulation listing the specific statutes authorizing the adoption and listing specific statutes being implemented, interpreted, or made specific. (PART 1 – ADMINISTRATIVE CODE)

LEGEND FOR EXPRESS TERMS

1. Existing California amendments or code language being modified: All such language appears in italics, modified language is underlined.
2. Repealed text: All such language appears in ~~strikeout~~.

EXPRESS TERMS

**1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)**

Chapter 12-13

STANDARDS FOR INSULATING MATERIAL

(See Part 6, Title 24, C.C.R.)

**DEPARTMENT OF CONSUMER AFFAIRS
Bureau of Home Furnishings and Thermal Insulation**

Article 3. Standards for Insulating Material

Application and Scope

Sec. 12-13-1551.

(a) This article establishes standards governing the quality of insulation sold within the state after September 22, 1984, including those properties which affect the safety and thermal performance of insulation during application and in the use intended.

(b) The provisions of this article shall apply only to the following types forms of insulating material:

1. Aluminum foil (~~reflective foil~~); BLANKET OR BATT
2. Cellular glass (~~board form~~); BLOCK OR BOARD
3. Cellulose fiber (~~loose fill and spray applied~~); DUCTING
4. Mineral aggregate (~~board form~~); HIGH THERMAL INERTIA
5. Mineral fiber (~~blankets, board form, loose fill~~); INSULATION SYSTEMS
6. Perlite (~~loose fill~~); LOOSE FILL
7. Polystyrene (~~board form, molded and extruded~~); RADIANT BARRIER OR REFLECTIVE
8. Polyurethane (~~board form and field applied~~); SPRAY OR FIELD APPLIED
9. Polyisocyanurate (~~board form and field applied~~); PANELS
10. Urea-formaldehyde foam (~~field applies~~); TUBULAR
11. Vermiculite (~~loose fill~~); VACUUM PANELS

(c) The provisions of this article shall apply to the sale of insulating material within the state California. The provisions of this article shall not apply to insulating material manufactured in California, but sold outside the state, nor to

insulating material manufactured outside California and wholesaled in California for final retail sale outside the state. For the purpose of this article, the sale of a building or an appliance which contains installed insulating material is not considered the sale of the insulating material.

(d) Any type of insulating material not listed in subsection (b) may be sold within California notwithstanding any other provision of this article. For any insulating material not listed in subsection (b) the insulating material may not be sold in California unless it complies with testing and rating provisions determined by the Bureau on a case- by- case basis to those defined in section 12-13-1553 of this article.

Authority cited: Sections 25920 and 25922, Public Resources Code 19164, Business and Professions Code.

Reference: Sections 19164 25910, 25920, 25924 and 19165 25922, Public Resources Code Business and Professions Code.

HISTORY:

1. Repealer of Article 3 (Sections 1551-1561) filed 8-11-78; effective thirtieth day thereafter (Register 78, No. 32). For prior history, see Registers 76, No. 16; 78, Nos. 2 and 26.
2. New Article 3 (Sections 1551-1565) filed 1-16-79; effective thirtieth day thereafter (Register 79, No.3).
3. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

Definitions

Sec. 12-13-1552. For purposes of this article, the following definitions shall apply:

- (a) **"Approved laboratory"** means any testing facility including a facility owned or operated by a manufacturer which has been approved pursuant to Section 1554 of this article.
- (b) **"ANSI"** means the American National Standards Institute.
- (c) **"ASTM"** means the standard set by the American Society for Testing and Materials International.
- (d) **"Blackbody"** means 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.
- (e) **"Bureau"** means the Bureau of Home Furnishings and Thermal Insulation.
- (f) **"Building materials"** means materials used in walls, ceilings, roofs and floors of buildings.
- (g) **"Emittance, thermal"** means the ratio of the radiant heat flux emitted by a sample to that emitted by a blackbody radiator at the same temperature.
- (h) **"Exposed application"** means any interior application of the product in which it is not used in a construction assembly imposing a material which meets the requirements of Chapter 8 of the Uniform Building Code in substantial contact with the facing or membrane surface.
- (i) **"Installed design density"** means the proven density for loose fill insulation other than cellulose which has been determined by the manufacturer to constitute the density whereby settlement of no more than 2 percent shall occur over the first three years, or no more than 4 percent over the first 15 years of installation.
- (j) **"Insulating material" or "insulation"** means any material listed in Section 1551 of this article and placed within or contiguous to a wall, ceiling, roof, or floor of a room or building, or contiguous to the surface of any appliance or its intake or outtake mechanism, for the purpose of reducing heat transfer or reducing adverse temperature fluctuations of the building room or appliance.
- (k) **"ISO"** means the International Organization for Standardization.
- (l) **"Manufacturer"** means any person who either: meets the definition for "Insulation manufacturer" contained in Section 19022 of the Business and Professions Code.
1. Produces insulating material in the final composition either for use in the form sold or to be further dimensionally modified; or
 2. In the case of polyurethane, polyisocyanurate and urea formaldehyde foam formed at the installation site, produces the primary components of the material. "Manufacturer" shall not include any building contractor or any other person whose sole activity is to install insulation at the installation site.
- (m) **"Quality assurance program."** means a system of procedures as defined in Section 19021 of the Business and Professions Code. (Reserved)
- (n) **"Radiant barrier"** means a highly reflective, low emitting material installed at the underside surface of the roof

deck and the inside surface of gable ends or other exterior vertical surfaces in attics to reduce solar heat gain into the attic.

(j) (n) **"Recommended wall density"** means the density used for pressure fill retrofit wall applications to prevent settling.

(k) (o) **"Representative sample"** means a sample of insulating material with the same characteristics (other than thickness) and using the same facing imposed on the insulating material manufactured for final use.

(l) (p) **"Representative thickness"** means a thickness of insulating material at which the change in thermal performance per inch will vary no more than plus or minus 2 percent with increases in thickness.

(m) (q) **"TAPPI"** means the Technical Association of Pulp and Paper Industry.

(n) (r) **"Thermal performance"** means the tested thermal conductivity, thermal conductance or thermal resistance (R-value), as appropriate, of an insulating material.

(e) (s) **"Urea formaldehyde foam"** means a cellular plastic insulation material generated in a continuous stream by mixing the components which are a urea formaldehyde resin, air and a foaming agent.

(t) **"Water vapor retarder (barrier)"** means a material that has a permeance of one perm or less and that provides resistance to the transmission of water vapor.

Authority cited: Sections 25920 and 25922, Public Resources Code 19164, Business and Professions Code.

Reference: Sections 25915 (a), 25920, 25921 and 25922, Public Resources Code 19018, 19019, 19020, 19021, 19022, 19164, and 19165, Business and Professions Code.

HISTORY:

1. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

12-13-1553

1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)

Quality Standards

Sec. 12-13-1553. The manufacturer shall cause the testing of samples of insulating material for conformity with the quality Standards described in this section.

(a) **General Testing Provisions.** In testing any material pursuant to this section, the following general procedures shall be used.

1. All tests with the exception of the ANSI/ASTM E 84-79 07a "Standard Test Method for Surface Burning Characteristics of Building Materials" test shall be conducted using representative samples at the representative thickness of the insulation, except that when the final use of an insulating material entails a thickness less than the representative thickness, then the insulating material will be tested at the lesser thickness.

2. Where uniformity of product ensures consistency of test results across a product grouping, test results for one may be used for certification of other products within that product group. The manufacturer shall provide sufficient documentation to establish a valid basis for applying a particular test result to other products within the group.

The Executive Director-Bureau shall determine whether a valid basis exists for grouping products for testing pursuant to this subsection. If it is determined that a valid basis does not exist, the Bureau may order that individual tests be performed. A manufacturer may appeal the Executive Director's determination that a valid basis does not exist to the full Commission.

3. Thermal performance of building insulations shall be stated in R-value. Other insulations shall use thermal conductivity, conductance, or R-value or thermal emittance as appropriate.

4. All thermal performance tests shall be conducted on materials which have been conditioned at $73.4^{\circ} \pm 3.6^{\circ}\text{F}$ and a relative humidity of 50 ± 5 percent for 24 hours immediately preceding the tests. The average testing temperature shall be $75^{\circ} \pm 2^{\circ}\text{F}$ with at least a 40°F temperature difference.

5. All types of insulation and insulating systems except aluminum foil and other reflective insulations must be tested with ASTM C 177-04, "Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus;" ASTM C 518-04, "Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus;" ASTM C 1363-05, "Standard Test Method for the Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus" or ASTM C 1114-06, "Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus." The tests must be done at a mean temperature of 75 °F ± 2 °F and with a temperature differential of 50 °F ± 10 °F. The tests must be done on the insulation material alone (excluding any airspace). R-values ("thermal resistance") based upon heat flux measurements according to ASTM C 177-04 or ASTM C 518-04 must be reported only in accordance with the requirements and restrictions of ASTM C 1045-01, "Standard Practice for Calculating Thermal Transmission Properties under Steady-State Conditions." Building Assembly framing percentages shall be based on the values assumed in Appendix IV of Title 24 Part 6, or by a value determined by the California Energy Commission.

5. 6. Aluminum foil and other reflective insulations shall be tested according to ANSI/ASTM C 236-66 1363-05 to determine the thermal performance in horizontal, upward and downward directions. The tested thermal performance in the heat-flow direction or directions of the intended application shall be labeled on the material. The manufacturer shall test once in each direction of intended application, except that for products labeled with only one heat-flow direction, the manufacturer shall test two samples in that direction. Single sheet systems of aluminum foil and other reflective insulations claiming a thermal emittance value must be tested with ASTM E 408-71 (Reapproved 2002), "Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques," or ASTM C 1371-04a, "Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers."

6. 7. Insulation (other than aluminum foil insulation materials) for which additional value is claimed for facings and air spaces shall be tested for thermal performance as a material without the air space pursuant to this article. The manufacturer may elect to report additional thermal performance values of a given construction tested according to ANSI/ASTM C 236-66 for that construction as long as full details of that construction are also disclosed in the certification statement and pursuant to Section 1557 (e) of this article. If a manufacturer elects to report a thermal performance value for a material plus an air space (as supplemental information to the required material thermal performance), but not necessarily for a full construction, the manufacturer must also disclose the conditions of the test and the limitations to the attainment of that result.

7. 8. Except as provided in Items 5 6 and 6 7, the thermal performance test results certified under Section 1555 of this article shall be the average of the values obtained from at least three tests.

8. 9. The average measured thermal performance of the tests required by Items 5 6, 6 7 and 7 8 shall not be more than 5 percent below the value specified on the product. In addition, all insulation material sold within the state after September 22, 1981, shall have a measured thermal performance not more than 10 percent below the value specified on the product.

9. All numbered test descriptions shall be contained in the document "Test Descriptions for Insulating Material" dated February 27, 1981.

10. Facings on representative samples may be removed or modified by slitting for the ANSI/ASTM C 177-76 04 and ANSI/ASTM C 518-76 04 tests.

11. All thermal performance testing equipment used for testing insulating materials shall be calibrated with samples referenced to the United States National Bureau Institute of Standards and Technology.

12. Manufacturers of loose fill insulations for which no settled density test is required by this section shall be required to include the installed design density in the identifying information described in Section 1557. The manufacturer shall provide sufficient documentation to establish a valid basis for the determination of installed design density.

The Executive Director Bureau shall determine whether a valid basis exists for the installed design density claimed by the manufacturer. If it is determined that a valid basis does not exist, the director Bureau may order the manufacture to perform assign an appropriate installed design density or may require an appropriate test to determine the installed design density. The manufacturer may appeal the Executive Director's determination to the full Commission.

13. Within 180 days after the availability of appropriate representative thickness calibration samples from the National Bureau Institute of Standards and Technology, all insulating materials thicker than 1 inch, which have not previously been tested at the representative thickness of a representative sample, shall be tested at representative thickness and recertified. Test results and a revised certification statement will be submitted to the Executive Director Bureau. The Executive Director shall determine if and when an appropriate representative thickness calibration sample is available

from the National Bureau of Standards and Technology and shall publish a list of available representative thickness calibration samples. The manufacturer may appeal the Executive Director's determination to the full Commission.

14. All products which may be used for pressure fill retrofit wall application shall be separately tested for thermal performance using a sample prepared at the manufacturer's recommended wall density for such applications.

15. All water heater insulation kits and nonpreformed pipe insulation shall be tested for thermal performance thermal performance at the installed compressed thickness of a typical application. Installed compressed thickness shall be determined according to Test Description Number 6. All nonpreformed duct insulation shall be labeled, in accordance with Section 1557(c), with an installed R-value equal to the R-value of the uncompressed insulation times 0.75.

(b) Aluminum Foil. BLANKET OR BATT

This section covers the testing of the blanket and batt forms of materials such as but not limited to fiber glass, cellulose, mineral fiber, wool and ceramic fiber.

1. Composition. The insulation shall have uniform flat surfaces and shall not be crumpled, torn or punctured. Aluminum foil shall contain not less than 99 percent aluminum. Kraft paper and flangeboard shall meet the requirements of ANSI/TAPPI T400 0S75. Flangeboard used for more than two insulation layers shall be of 28 point grade minimum, if single sheet flangeboard is used or 14 point grade minimum if double sheet flangeboard is used.

12-13-1553

1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)

Adhesive used in bonding shall be waterproof and shall show no sign of bleeding when tested in accordance with the following test procedure. Bleeding at cut edges may be disregarded.

Specimens for tests shall consist of pieces of insulation cut to approximately 3 by 6 inches, suspended in a vertical position and heated to a temperature of $180^{\circ}\text{F} \pm 5^{\circ}\text{F}$ for at least five hours. At the end of heating period, examine the reflective surfaces to determine whether the adhesive has bled or extruded through the surface, or delamination has occurred.

2. Thermal performance. Thermal performance shall be determined according to ANSI/ASTM C 236-66. The test panel shall consist of a panel utilizing a wooden frame of 2 by 6 inches construction covered with 3/4 inch plywood on both sides. The resultant thermal performance shall be based on the insulation only.

3. Size. Layers of insulation composed of unsupported foil that is exposed shall have a minimum thickness of 0.0004 inch. Unsupported foil that is sandwiched in a multilayer sheet shall have a minimum thickness of 0.00035 inch. Foil bonded to kraft paper shall have a minimum thickness of 0.00025 inch. Minimum space between layers of a multilayer sheet shall conform with the United States General Services Administration insulation standard HH-1-1252B dated August 18, 1976.

4. Resistance to combustion. Surface burning characteristics shall be determined according to the ANSI/ASTM E 84-79, and shall not exceed the following values:

Flame spread	25
Smoke developed	50

5. Pliability. Foil shall be folded and the folded edge smoothed using a light finger pressure. The finished insulation shall not crack when folded to 180° bend at a temperature of $70^{\circ} \pm 2^{\circ}\text{F}$ and a relative humidity of 50 ± 5 percent.

1. Composition.

Mineral fiber/fiber glass-The basic material shall be fibers made from mineral substances such as rock, slag or glass processes from a molten state into fibrous form.

Cellulose batting-The basic material shall be an unfaced batt insulation consisting of a blend of recycled-cotton and polyester fibers treated to resist flame and smoke development and inhibit mold, mildew, bacteria and fungi growth.

Wool Batting- The basic material shall be wool fibers garneted into blanket or batt form.

Ceramic fiber batting- The basic material shall be lightweight, efficient high temperature alumina - silica insulations that offer stability at elevated temperatures with high resistance to thermal shock

2. Thermal performance.

Determination of the thermal performance shall be in accordance with ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option.

3. Size. (A) The thickness shall be determined according to ASTM C 167-98 (Reapproved 2003) "Standard Test Methods for

Thickness and Density of Blanket or Batt Thermal Insulations."

(B) For water Heater Insulation Kits, the Installed compressed thickness shall be determined as follows:

Apparatus: A depth gauge as described in ASTM C 167-98 (Reapproved 2003). Cylinders at least one foot in length, with the following diameters: 20 inches \pm 2 inches and 1 inch \pm 1/4 inch.

Procedure: Water heater jacket material shall be wrapped around the 20 inch cylinder; nonpreformed pipe insulation shall be wrapped around the 1 inch cylinder. All cylinders shall be vertically placed so that their bases rest on the flat surface of the work table. The specimens shall be held in place by the manufacturer's recommended attachment method.

In making the thickness measurements, force the penetrating pin of the depth gauge downward through the specimen, perpendicular to the surface of the cylinder. If necessary to prevent compression of the specimen by the depth gauge pin, first pierce the specimen. When the point of the pin touches the cylinder, lower the sliding disk to the point of contact with the top surface of the specimen. Withdraw the gauge and measure the distance from the point of the pin to the sliding disk within an accuracy of \pm 1/16 inch (or 1 mm). Repeat measurement procedure three times at random locations and average the thickness results.

4. **Resistance to combustion.** Surface-burning characteristics of materials with facings and membranes intended for exposed applications shall be determined according to ASTM E 84-07a and shall not exceed the following values:

<u>Flame spread</u>	<u>25</u>
<u>Smoke developed</u>	<u>450</u>

Facings and membranes of materials intended for exposed applications shall be exposed to the flame during the ASTM E 84-07a test.

Insulation blankets not intended for exposed applications shall comply with the United States General Services Administration insulation standard HH-I-521F dated September 4, 1980, for flammability and smoldering combustion testing.

5. **Corrosiveness.** Corrosiveness shall be determined according to ASTM C 665-06, "Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufacture Housing," Sec. 7.7.

6. **Resistance to Fungi.** Resistance to fungi shall be determined according to ASTM C 665-06, Sec. 7.8.

7. **Odor emission.** Odor emission shall be determined according to ASTM C 665-06, Sec. 7.6.

8. **Water vapor Permeance.** Water vapor Permeance shall be determined according to ASTM C 665-06, Sec. 7.4.

9. **Water vapor Sorption.** Water vapor Sorption shall be determined according to ASTM C 665-06, Sec. 7.5.

10. **Resistance to Vermin.** Resistance to Vermin for animal based materials such as wool shall be determined according to ISO 3998-07.

(c) **Cellular Glass in Board Form**—BLOCK OR BOARD

This section covers the testing of the block and board forms of materials such as, but not limited to, fiber glass, cellulose, mineral fiber, wool, ceramic fiber, cellular glass, mineral aggregate, polyisocyanurate, polystyrene, polyurethane, polyimide, calcium silicate, elastomeric (rubber) and phenolic foam.

1. **Composition.** The material shall consist of a glass composition which has been foamed or cellulated under molten conditions annealed and set to form a rigid material with hermetically sealed cells.

3. **Thermal performance.** Determination of the thermal performance shall be based on a representative sample and shall be in accordance with ANSI/ASTM C 177-76, ANSI/ASTM C 236-66 or ANSI/ASTM C 518-76 at the manufacturer's option.

3. **Resistance to combustion.** Surface-burning characteristics shall be determined according to ANSI/ASTM E 84-79, and shall not exceed the following values:

<u>Flame spread</u>	<u>25</u>
<u>Smoke developed</u>	<u>50</u>

1. **Composition.**

Cellular Glass Board—The material shall consist of a glass composition which has been foamed or cellulated under molten conditions, annealed and set to form a rigid material with hermetically sealed cells.

Mineral Aggregate Board-The basic material shall be mineral in nature, crushed, dried, and graded to the proper particle size and expanded by the application of heat to form a spherical, cellular type of aggregate. It shall be composed of spherical cellular beads of expanded aggregate and fibers formed into rigid, flat, rectangular units and shall have an integral water proofing treatment. It shall be clean, dry and free of extraneous material. Fibers shall be evenly distributed and insulation and facings shall be sufficiently coherent to be unaffected by handling and installation.

Mineral Fiber/Fiber glass board-The basic material shall be made from mineral substances such as rock, slag or glass processed from a molten state into a fibrous form. Insulation shall be composed of mineral fibers with water-resistant binder added and formed into flat, rectangular units. Insulation boards shall be uniform in quality and free from defects, such as broken edges, splits or loose materials which would impair its intended use.

Polystyrene board-Insulation board shall be formed by the expansion of polystyrene resin beads or granules in a mold or the insulation board shall be formed by the expansion of polystyrene base resin in an extrusion process. The insulation shall be uniformly fused, homogeneous, and essentially unicellular. Insulation board shall be uniform in physical properties and reasonably free of voids or accumulations of unexpanded material, foreign inclusions, broken corners and broken edges.

Polyisocyanurate and Polyurethane boards-The manufacture of the insulation shall be based mainly on the reaction of an organic polyisocyanate with a polyol resin. Board shall be of uniform texture, reasonably free from accumulation of unexpanded material and foreign inclusions, and reasonably free of broken edges and corners. It shall be reasonably free from holes, voids, depressions and objectionable odor. Laminated composite boards shall be included in this quality standard. The faces of laminated boards shall adhere firmly throughout to the foam, and shall show no excessive amounts of slits, voids or depressions.

Calcium Silicate board- Calcium Silicate Insulation board shall be composed of hydrated calcium silicate with natural or manmade fibers or fillers, or a combination thereof. Asbestos shall not be used as an ingredient or component.

Ceramic Fiber Board- The insulation shall be composed of lightweight, efficient high temperature alumina – silica insulations that offer stability at elevated temperatures with high resistance to thermal shock

Elastomeric sheet- cellular elastomeric foam—shall be composed of a closed-cell foam made of natural or synthetic rubber, or a mixture of the two, and containing other polymers, other chemicals, or both, which is permitted to be modified by organic or inorganic additives. These foams have properties similar to those of vulcanized rubber, namely, (1) the ability to be converted from a thermoplastic to a thermosetting state by cross-linking (vulcanization) and (2) the ability to recover substantially its original shape when strained or elongated.

Phenolic Board- Phenolic Foam is a rigid cellular foam insulation material with a substantially closed cell structure, whose polymer structure is made primarily from the poly-condensation of phenol, its homologues and/or derivatives with aldehydes and ketones.

Polymeric sheet- polyolefin—polymers made by the polymerization of olefins, such as ethylene or propylene or copolymerization of olefins with other monomers.

Cellular polyolefin—a cellular plastic composed primarily of olefin material, processed to form a flexible foam with a closed cell construction.

Polyimide board- polyimide foam—a cellular product in which the bonds formed between monomers during polymerization are imide or amide bonds. The theoretical mole fraction of imide bonds must be greater than the theoretical mole fraction of amide bonds.

2. Thermal performance. Determination of the thermal performance shall be based on a representative sample and shall be in accordance with ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option.

All foam insulation materials using materials other than air or pentane as an expanding agent shall either separately condition samples at $73.4^{\circ} \pm 3.6^{\circ}\text{F}$ and a relative humidity of 50 ± 5 percent, and at 140°F dry heat and test at 30-, 60- and 90-day intervals or shall test samples certified by an approved testing laboratory to have been aged while exposed to free air in a well ventilated room for at least two years at $70^{\circ} \pm 10^{\circ}\text{F}$.

3. Resistance to combustion. Surface-burning characteristics shall be determined according to ASTM E 84-07a, and shall

not exceed the following values:

Flame spread.....	25
Smoke developed	50

For Mineral fiber and Mineral aggregate boards-Surface-burning characteristics of materials with facings and membranes intended for exposed applications shall be determined according to ASTM E 84-07a and shall not exceed the following values:

Flame spread.....	25
Smoke developed	450

Facings and membranes of materials intended for exposed applications shall be exposed to the flame during the ASTM E 84-07a test.

Insulation boards exclusive of facings and membranes shall not exceed the following values:

Flame spread.....	25
Smoke developed	50

For foam insulation boards- The material shall be tested to meet the requirements of Sections 2602.1-2602.6 of the 2001 Uniform Building Code, with the additional provision that the surface-burning characteristics shall be determined according to ASTM E 84-07a and shall not exceed the following values:

Flame spread.....	75
Smoke developed	450

This subsection shall not apply to any product recognized by the International Conference of Building Officials as complying with Sections 2602.1-2602.6 of the 2001 Uniform Building Code based solely upon diversified testing. The manufacturer of any product which is recognized by the International Conference of Building Officials as complying with Sections 2602.1-2602.6 of the 2001 Uniform Building Code based solely upon diversified testing, shall be exempted from this subsection.

4. Dimensional stability. All foamed polystyrene insulation materials which are factory formed shall be tested for dimensional stability in accordance with Procedures E and G of ASTM D 2126-04 "Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging" with the following exceptions: (a) sample size shall be 12 inches by 12 inches \pm 1 inch, and (b) samples shall be tested as manufactured with or without facers.

The average percent change in length or width shall not exceed \pm 2 percent in 24 hours or \pm 4 percent in seven days. The average percent change in thickness shall not exceed \pm 10 percent in seven days. Samples shall be regarded as failing if: (1) delamination area of "faced" samples exceeds 25 percent or (2) warping or cupping exceeds 1/4 inch when checked by a straight edge across raised diagonal corners.

All foamed polyurethane and polyisocyanurate insulation materials which are factory formed shall be tested for dimensional stability in accordance with Procedures E and G of ASTM D 2126-04 with the following exceptions: (a) sample size shall be 12 inches by 12 inches \pm 1 inch and (b) samples shall be tested as manufactured with or without facers.

The average percent change in length or width shall not exceed \pm 2 percent in 24 hours or \pm 4 percent in seven days. The average percent change in thickness shall not exceed \pm 10 percent in seven days. Samples shall be regarded as failing if: (1) delamination area of "faced" samples exceeds 25 percent or (2) warping or cupping exceeds 1/4 inch when checked by a straight edge across raised diagonal corners.

5. Water Absorption - For foams follow Test Method A - 24 Hour-Immersion of ASTM C272-01(2007) "Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions".

(d) **Cellulose Fiber in Loose-Fill Form. DUCTING**

This section covers the testing of air Duct form of materials such as, but not limited to, fiber glass, mineral fiber, ceramic fiber and phenolic foam.

1. Composition. The basic material shall consist of virgin or recycled wood-based cellulosic fiber and may be made from related paper or paperboard stock, excluding contaminated materials and extraneous foreign materials such as metals and glass which may reasonably be expected to be retained in the finished product. Suitable chemicals may be introduced to improve flame resistance, processing and handling characteristics. The particles shall not be so fine as to create a dust hazard, and the added chemicals shall not create a health hazard. The materials used must be capable of proper adhesion to the additive chemicals.

2. Thermal performance. Determination of the thermal performance shall be in accordance with ANSI/ASTM C 177-76, ANSI/ASTM C 236-66 or ANSI/ASTM C 518-76 at the manufacturer's option.

~~3. **Density.** The density shall be determined according to the United States General Services Administration insulation standard HH-I-515D dated June 15, 1975, or as amended October 11, 1979, at the manufacturer's option. Cellulose insulation made from newsprint may use a 13 percent settling percentage along with the drop box procedure in place of the humidity cycling procedure described in HH-I-515D dated June 15, 1978. All other tests for loose fill cellulose fiber insulation prescribed by this section shall be conducted at the settled density as determined herein.~~

~~4. **Resistance to combustion.** Flammability characteristics shall comply with the standard for flammability and smoldering combustion in 44 Fed. Reg. pages 39966-39973.~~

~~5. **Resistance to fungi.** Resistance to fungi shall be determined according to Method 508 of the March 10, 1975, edition of the Military Standard for Environmental Test Methods known as MIL-STD-810C, except the spore suspensions shall be prepared using distilled water. The core of gypsum wall board shall be used as the control. After the test exposure, the test samples shall show no more fungal growth than the control material when examined at 40 times magnification.~~

~~6. **Corrosiveness.** The product shall comply with the standard for corrosiveness set forth in 44 Fed. Reg. pages 39966-39973.~~

~~7. **Odor emission.** Odor emission shall be determined according to Test Description Number 3. A detectable odor of objectionable nature observed by two or more of the panel members shall be cause for rejection.~~

~~8. **Identification.** Each insulation container shall be marked with the type (pouring or pneumatic), net weight and the manufacturer's recommendations for installation including minimum thickness, maximum coverage and settled density to provide the levels of thermal performance shown. Manufacturer's installation recommendations shall include precautions according to the National Electrical Code Section 410-66.~~

~~Insulation which may be used for pressure fill retrofit wall application shall be marked with the recommended wall density to prevent settling and separately marked with the tested thermal performance for such applications.~~

1. Composition.

Flexible air duct -Flexible ducts, known as flex, have a variety of configurations. For HVAC applications, a "flex duct" typically consist of the following: (A) a flexible plastic over a metal wire coil to make a round flexible duct; (B) a layer of fiberglass insulation that covers the duct, and (C) a thin plastic layer that protects the insulation.

2. Thermal performance.

All duct insulation product R-values shall be based on insulation only and tested C-values at 75°F mean temperature at the installed thickness, in accordance with ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option. The R-values for air films, vapor barriers, or other duct components shall be excluded from this requirements.

3. Size.

The installed thickness of duct insulation used to determine its R-value shall be determined as follows:

A. For duct board, duct liner, and factory-made rigid ducts not normally subjected to compression, the nominal insulation thickness shall be used.

B. For duct wrap, installed thickness shall be assumed to be 75 percent (25 percent compression) of nominal thickness.

C. For factory-made flexible air ducts, the installed thickness shall be determined by dividing the difference between the actual outside diameter and nominal inside diameter by two.

4. Resistance to combustion. Surface-burning characteristics shall be determined according to ASTM E 84-07, and shall not exceed the following values:

<u>Flame spread</u>	<u>25</u>
<u>Smoke developed</u>	<u>50</u>

(e) Cellulose Fiber Spray Applied. HIGH THERMAL INERTIA (reserved)

This section covers the testing of the high thermal inertia forms of materials such as but not limited to air core concrete and polystyrene aggregate concrete.

~~1. **Composition.** The basic material shall consist of virgin or recycled wood-based cellulosic fiber and may be made from related paper or paperboard stock, excluding contaminated materials and extraneous foreign materials such as metals and glass which may reasonably be expected to be retained in the finished product. Suitable chemicals may be introduced to improve flame resistance, processing, adhesive and cohesive qualities, and handling characteristics. The added chemicals shall not create a health hazard.~~

~~The basic material shall be processed into a form suitable for installation by pneumatic conveying equipment and simultaneous mixing with water and/or adhesive at the spray nozzle.~~

2. **Thermal performance.** Determination of the thermal performance shall be in accordance with ANSI/ASTM C-177-76, ANSI/ASTM C-236-66, or ANSI/ASTM C-518-76 at the manufacturer's option.

3. **Resistance to combustion.** Flammability characteristics shall comply with the standard for flammability and smoldering combustion in 44 Fed. Reg. pages 39966-39973.

4. **Corrosiveness.** The product shall comply with the standard for corrosiveness set forth in 44 Fed. Reg. pages 39966-39973.

12-13-1553 ————— 1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)

5. **Bond strength.** The bond strength shall be determined by Test Description Number 3 and the bond shall support a force five times the weight of the sample for one minute.

6. **Bond deflection.** The bond deflection shall be determined by Test Description Number 4 and shall be greater than 1/60th of the length of the sample.

7. **Air erosion.** The air erosion shall be determined by Test Description Number 5 and shall withstand an air velocity of 800 ft./min.

8. **Odor emission.** Odor emissions shall be determined by Test Description Number 1. A detectable odor of objectionable nature observed by two or more panel members shall be cause for rejection.

9. **Fungi resistance.** Resistance to fungi shall be determined according to Method 508 of the March 10, 1975, edition of the Military Standard for Environmental Test Methods known as MIL-STD-810C, except the spore suspensions shall be prepared using distilled water, and observations shall be made at seven-day intervals during the 28-day cycle to determine the minimum length of time required for fungal growth to appear. Viability of the spore organisms shall be determined by injecting or inoculating a separate bottle of culture medium with the spore preparation for each organism and observing for growth and individual viability. The back side of 1/2-inch standard commercial grade gypsum wall board grayback paper surface shall be used as the control. After the test exposure, the test samples shall be examined at 40 times magnification for evidence of fungal growth. The material shall show no more fungal growth than the control material.

10. Test procedures described in Items 5, 6 and 7 are not required of products which are installed in such a manner that physical restrictions imposed by the construction elements preclude any possibility of subsequent delamination, erosion, or dusting and the product is identified only for such installations.

(f) **Mineral Aggregate in Board Form. INSULATION SYSTEMS**

This section covers the testing of the insulation systems form of materials such as, but not limited to, concrete blocks with polystyrene inserts and large scale metal frames with thermal breaks.

1. **Composition.** The basic material shall be mineral in nature, crushed, dried, and graded to the proper particle size and expanded by the application of heat to form a spherical, cellular type of aggregate. It shall be composed of spherical cellular beads of expanded aggregate and fibers formed into rigid, flat, rectangular units and shall have an integral water proofing treatment. It shall be clean, dry and free of extraneous material. Fibers shall be evenly distributed and insulation and facings shall be sufficiently coherent to be unaffected by handling and installation.

2. **Thermal Performance.** Determination of the thermal performance shall be in accordance with ANSI/ASTM C-177-76, ANSI/ASTM C-236-66, or ANSI/ASTM C-518-76 at the manufacturer's option.

3. **Resistance to combustion.** Surface burning characteristics of materials with facings and membranes intended for exposed applications shall be determined according to ANSI/ASTM E-84-79 and shall not exceed the following values:

Flame spread	25
Smoke developed	450

Facings and membranes of materials intended for exposed applications shall be exposed to the flame during the ANSI/ASTM E-84-79 test.

Insulation boards exclusive of facings and membranes shall not exceed the following values:

Flame spread	25
Smoke developed	50

Thermal performance.

For any insulation systems that are not listed in appendix IV of Title 24 Part 6 Tables, the manufacturer shall perform large scale ASTM C1363-05 tests for metal frame with thermal breaks.

(g) **Mineral Fiber in Blanket Form. LOOSE FILL**

This section covers the testing of the loose fill form of materials such as but not limited to fiber glass, cellulose, mineral fiber, wool and polyester fiber.

1. **Composition.** The basic material shall be fibers made from mineral substances such as rock, slag or glass processes from a molten state into fibrous form.

For loose-fill cellulose, the tests must be done at the settled density determined under paragraph 8 of ASTM C 739-05be1, "Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation."

For loose-fill mineral wool, the tests must be done on samples that fully reflect the effect of settling on the product's R-value.

For loose-fill insulations, the initial installed thickness for the product must be determined pursuant to ASTM C 1374-03, "Standard Test Method for Determination of Installed Thickness of Pneumatically Applied Loose-Fill Building Insulation," for R-values of 13, 19, 22, 30, 38, 49 and any other R-values provided on the product's label.

2. **Thermal performance.** Determination of the thermal performance shall be in accordance with ANSI/ASTM C-177-76, ANSI/ASTM C-236-66, or ANSI/ASTM C-518-76 at the manufacturer's option.

3. **Size.** The thickness shall be determined according to ANSI/ASTM C 167-64.

4. **Resistance to combustion.** Surface burning characteristics of materials with facings and membranes intended for exposed applications shall be determined according to ANSI/ASTM E 84-79 and shall not exceed the following values:

Flame spread.....	25
Smoke developed	450

Facings and membranes of materials intended for exposed applications shall be exposed to the flame during the ANSI/ASTM E-84-79 test.

Insulation blankets not intended for exposed applications shall comply with the United States General Services Administration insulation standard HHI-521F dated September 4, 1980, for flammability and smoldering combustion testing.

5. **Corrosiveness.** Corrosiveness shall be determined according to Test Description Number 2. The steel test plate in contact with the insulation shall show no greater corrosion than a steel plate in contact with sterile cotton.

6. **Resistance to Fungi.** Resistance to fungi shall be determined according to Method 508 of the March 10, 1975, edition of the Military Standard for Environmental Test Methods known as MIL-STD-810C except the spore suspensions shall be prepared using distilled water. The core of gypsum wall board shall be used as the control. After the test exposure, the test samples shall show no more fungal growth than the control material when examined at 40 times magnification.

7. **Odor emission.** Odor emission shall be determined according to Test Description Number 1. A detectable odor of objectionable nature observed by two or more of the panel members shall be cause for rejection.

1. **Composition.**

Cellulose-The basic material shall consist of virgin or recycled wood-based cellulosic fiber and may be made from related paper or paperboard stock, excluding contaminated materials and extraneous foreign materials such as metals and glass which may reasonably be expected to be retained in the finished product. Suitable chemicals may be introduced to improve flame resistance, processing and handling characteristics. The particles shall not be so fine as to create a dust hazard, and the added chemicals shall not create a health hazard. The materials used must be capable of proper adhesion to the additive chemicals.

Mineral fiber - Mineral fiber insulation shall be made from mineral substances such as rock, slag or glass processed from a molten state into fibrous form. The insulation shall be mechanically processed to produce a mineral fiber suitable for pneumatic or poured application.

Perlite - Expanded perlite loose fill insulation shall be produced by the expanding of natural perlite or by heating.

Vermiculite - Vermiculite loose fill insulation shall be produced by the expanding or exfoliating of natural vermiculate or by grading and heating.

Wool - Wool loose fill insulation is made from sheep's wool. The insulation shall be mechanically processed to produce a fiber suitable for pneumatic application.

Polyester - Polyester loose fill insulation is made from 100% recycled polyester. The insulation shall be mechanically

processed to produce a fiber suitable for pneumatic application.

2. Thermal performance.

For loose-fill cellulose, the manufacturer shall test according to paragraph 15 of ASTM C 739-05be1 for thermal performance.

For loose-fill mineral fiber, test according to paragraph 12.2 of ASTM C 764-06a for thermal performance.

For Perlite loose fill Determination of the thermal performance shall be in accordance with ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option.

For vermiculite loose fill -Determination of the thermal performance shall be in accordance with ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 or ASTM C 615-03 at the manufacturer's option.

For other loose-fill insulation, test according using ASTM C 687-03 with ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option.

3. Density.

For loose-fill cellulose, the tests must be done at the settled density determined under paragraph 8 of ASTM C 739-05be1. All other tests for loose fill cellulose fiber insulation prescribed by this section shall be conducted at the settled density as determined herein.

For loose-fill mineral fiber- The density shall be determined according to installed design density. All tests shall be conducted at the installed design density.

For Perlite loose fill and vermiculite loose fill - Density shall be determined according to installed design density. All tests except the ASTM E 84-07 test shall be conducted at the installed design density.

4. Resistance to combustion.

For loose-fill cellulose, test according to paragraph 10 of ASTM C 739-05be1 for flammability and paragraph 14 of ASTM C 739-05be1 smoldering combustion.

For loose-fill mineral fiber- Loose fill insulation shall comply with the United States General Services Administration insulation standard HH-I-1030B dated August 12, 1980, for flammability and smoldering combustion testing.

For Perlite loose fill- Resistance to combustion shall be determined by the use of the Attic Floor Radiant Panel Test, as described in the United States General Services Administration insulation standard HH-I-515D Section 3.1.9 as amended October 11, 1979.

For vermiculite loose fill - Resistance to combustion shall be determined by the use of the Attic Floor Radiant Panel Test, as described in the United States General Services Administration insulation standard HH-I-515D as amended October 11, 1979.

5. Resistance to fungi.

For loose-fill cellulose, test according to paragraph 11 of ASTM C 739-05be1 for fungi resistance.

For loose-fill mineral fiber, test according to paragraph 12.8 of ASTM C 764-06a for fungi resistance.

6. Corrosiveness.

For loose-fill cellulose, test according to paragraph 9 of ASTM C 739-05be1 for corrosiveness.

For loose-fill mineral fiber, test according to paragraph 12.7 of ASTM C 764-06a for corrosiveness.

7. Odor emission.

For loose-fill cellulose, test according to paragraph 13 of ASTM C 739-05be1 for odor emissions.

For loose-fill mineral fiber, test according to paragraph 12.6 of ASTM C 764-06a for odor emission.

8. Identification.

For loose-fill cellulose -Each insulation container shall be marked with the type (pouring or pneumatic), net weight and the manufacturer's recommendations for installation including minimum thickness, maximum coverage and settled density to provide the levels of thermal performance shown. Manufacturer's installation recommendations shall include precautions according to the 2005 National Electrical Code Section 410-66.

Insulation which may be used for pressure fill retrofit wall application shall be marked with the recommended wall density to prevent settling and separately marked with the tested thermal performance for such applications.

For loose-fill mineral fiber- Each insulation container shall be marked with the type (pouring or pneumatic), the net weight and the manufacturer's recommendations for installation including minimum thickness, maximum coverage and installed design density to provide the levels of thermal performance shown. Manufacturer's installation recommendations shall include precautions according to the 2005 National Electrical Code Section 410-66.

Products which may be used for pressure fill retrofit wall application shall be marked with the recommended wall density to prevent settling and separately marked with the tested thermal performance for such applications.

For Perlite loose fill- Each insulation container shall be marked with the type (pouring or pneumatic), the net weight and the manufacturer's recommendations for installation including minimum thickness, maximum coverage and installed design density to provide the levels of thermal performance shown. Manufacturer's installation recommendations shall include precautions according to the 2005 National Electrical Code Section 410-66.

Products which may be used for pressure fill retrofit wall application shall be marked with the recommended wall density to prevent settling and separately marked with the tested thermal performance for such applications.

For vermiculite loose fill - Containers of vermiculite shall be marked with the type (pouring or pneumatic), the net weight and the manufacturer's recommendations for installation including minimum thickness, maximum coverage and installed design density to provide the levels of thermal performance shown. Manufacturer's installation recommendations shall include precautions according to the 2005 National Electrical Code Section 410-66.

Products which may be used for pressure fill retrofit wall application shall be marked with the recommended wall density to prevent settling and separately marked with the tested thermal performance for such applications.

(h) Mineral Fiber in Board Form. RADIANT BARRIER OR REFLECTIVE

This section covers the testing of the radiant barrier and reflective surface forms of materials such as, but not limited to, aluminum foil reflective insulating ceramic coatings, low emittance paint and paint additives.

To test the emissivity of foil or its power to radiate heat, single sheet systems of aluminum foil must be tested with ASTM E 408-71 (Reapproved 2002), "Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques," or ASTM C 1371-04a, "Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers."

Aluminum foil systems with more than one sheet, and single sheet systems of aluminum foil that are intended for applications that do not meet the conditions specified in the tables in the most recent edition of the ASHRAE Fundamentals Handbook, must be tested with ASTM C 1363-05, "Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus," in a test panel constructed according to ASTM C 1224-03, "Standard Specification for Reflective Insulation for Building Applications," and under the test conditions specified in ASTM C 1224-03. To get the R-value from the results of those tests, the manufacturer shall use the formula specified in ASTM C 1224-03.

1. Composition. The basic material shall be made from mineral substances such as rock, slag or glass processed from a molten state into a fibrous form. Insulation shall be composed of mineral fibers with water resistant binder added and formed into flat, rectangular

units. Insulation boards shall be uniform in quality, free from defects, such as broken edges, splits or loose materials which would impair its intended use.

Roof insulation boards shall have either integral waterproofing treatment or a waterproof coating on one surface. The coating shall be flush with the edges of the sides and may be flush with or extend over both ends.

2. Thermal performance. Determination of the thermal performance shall be in accordance with ANSI/ASTM C 177-76, ANSI/ASTM C 236-66, or ANSI/ASTM C 518-76 at the manufacturer's option.

3. Resistance to combustion. Surface burning characteristics of materials with facings and membranes intended for exposed applications shall be determined according to ANSI/ASTM E 84-79 and shall not exceed the following values:

Flame spread.....	25
Smoke developed	450

42-13-1553 1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)

Facings and membranes of materials intended for exposed applications shall be exposed to the flame during the ANSI/ASTM E 84-79 test.

Insulation boards exclusive of facings and membranes shall not exceed the following values:

Flame spread.....	25
Smoke developed	50

1. Composition. Aluminum foil insulation shall have uniform flat surfaces and shall not be crumpled, torn or punctured.



flangeboard is used or 14 point grade minimum if double sheet flangeboard is used.

Adhesive used in bonding shall be waterproof and shall show no sign of bleeding when tested in accordance with the following test procedure. Bleeding at cut edges may be disregarded.

Specimens for tests shall consist of pieces of insulation cut to approximately 3 by 6 inches, suspended in a vertical position and heated to a temperature of 180°F ± 5°F for at least five hours. At the end of heating period, examine the reflective surfaces to determine whether the adhesive has bled or extruded through the surface, or delamination has occurred.

4. **Thermal performance.** Thermal performance shall be determined according to ANSI/ASTM C 236-66. The test panel shall consist of a panel utilizing a wooden frame of 2 by 6 inches construction covered with 3/4-inch plywood on both sides. The resultant thermal performance shall be based on the insulation only.

For radiant barriers the thermal emittance and R-value are determined as follows:

Emittance:

Single sheet systems of aluminum foil and other reflective insulations must be tested with ASTM E 408-71 (Reapproved 2002), "Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques," or ASTM C 1371-04a, "Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers."

R-value:

Aluminum foil systems with more than one sheet, and single sheet systems of aluminum foil that are intended for applications that do not meet the conditions specified in the tables in the most recent edition of the ASHRAE Fundamentals Handbook, must be tested with ASTM C 1363-05 "Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus," in a test panel constructed according to ASTM C 1224-03, "Standard Specification for Reflective Insulation for Building Applications," and under the test conditions specified in ASTM C 1224-03. To get the R-value from the results of those tests, the manufacturer shall use the formula specified in ASTM C 1224-03.

3. **Size.** Layers of insulation composed of unsupported foil that is exposed shall have a minimum thickness of 0.0004 inch. Unsupported foil that is sandwiched in a multilayer sheet shall have a minimum thickness of 0.00035 inch. Foil bonded to kraft paper shall have a minimum thickness of 0.00025 inch. Minimum space between layers of a multilayer sheet shall conform with the United States General Services Administration insulation standard HH-I-1252B dated August 18, 1976.

4. **Resistance to combustion.** Surface-burning characteristics shall be determined according to the ASTM E 84-07a, and shall not exceed the following values:

Flame spread	25
Smoke developed	50

5. **Pliability.** Foil shall be folded and the folded edge smoothed using a light finger pressure. The finished insulation shall not crack when folded to 180° bend at a temperature of 70° ± 2°F and a relative humidity of 50 ± 5 percent.

(i) **Mineral Fiber in Loose Fill Form. SPRAY OR FIELD APPLIED**

This section covers the testing of the spray and field applied forms of materials such as, but not limited to, fiber glass, cellulose, mineral fiber, polyisocyanurate, polystyrene, polyurethane, polyimide, and phenolic foam.

Urea Formaldehyde Foam shall not be sold in California.

For self-supported spray-applied cellulose, the tests must be done at the density determined pursuant to ASTM C 1149-06e1, "Standard Specification for Self-Supported Spray Applied Cellulosic Thermal Insulation."

For self-supported, spray-applied cellulose, and stabilized cellulose, the tests must be done on samples that fully reflect the effect of settling on the product's R-value.

Test for R-value following Sec. 12-13-1553 paragraph 5.

1. **Composition.** Mineral fiber insulation shall be made from mineral substances such as rock, slag or glass processed from a molten state into fibrous form. The insulation shall be mechanically processed to produce a mineral fiber suitable for pneumatic or poured application.

~~2. **Thermal performance.** Determination of the thermal performance shall be in accordance with ANSI/ASTM C 177-76, ANSI/ASTM C 236-66, or ANSI/ASTM C 518-76 at the manufacturer's option.~~

~~3. **Density.** The density shall be determined according to installed design density. All tests shall be conducted at the installed design density.~~

~~4. **Resistance to combustion.** Loose fill insulation shall comply with the United States General Services Administration insulation standard HH-1-1030B dated August 12, 1980, for flammability and smoldering combustion testing.~~

~~5. **Corrosiveness.** Corrosiveness shall be determined according to Test Description Number 2. The steel plate in contact with the insulation shall show no greater corrosion than a steel plate in contact with sterile cotton.~~

~~6. **Resistance to fungi.** Resistance to fungi shall be determined according to Method 508 of the March 10, 1975, edition of the Military Standard for Environmental Test Methods known as MIL-STD-810C, except the spore suspensions shall be prepared using distilled water. The core of gypsum wall board shall be used as the control. After the test exposure, the test samples shall show no more fungal growth than the control material when examined at 40 times magnification.~~

~~7. **Odor emission.** Odor emission shall be determined according to Test Description Number 1. A detectable odor of objectionable nature observed by two or more of the panel members shall be cause for rejection.~~

~~8. **Identification.** Each insulation container shall be marked with the type (pouring or pneumatic), the net weight and the manufacturer's recommendations for installation including minimum thickness, maximum coverage and installed design density to provide the levels of thermal performance shown. Manufacturer's installation recommendations shall include precautions according to the 1993 National Electrical Code® Section 410-66.~~

~~Products which may be used for pressure fill retrofit wall application shall be marked with the recommended wall density to prevent settling and separately marked with the tested thermal performance for such applications.~~

1. **Composition.**

Cellulose-The basic material shall consist of virgin or recycled wood-based cellulosic fiber and may be made from related paper or paperboard stock, excluding contaminated materials and extraneous foreign materials such as metals and glass which may reasonably be expected to be retained in the finished product. Suitable chemicals may be introduced to improve flame resistance, processing, adhesive and cohesive qualities, and handling characteristics. The added chemicals shall not create a health hazard.

The basic material shall be processed into a form suitable for installation by pneumatic conveying equipment and simultaneous mixing with water and/or adhesive at the spray nozzle.

Foam -The manufacture of the insulation shall be based mainly on the reaction of an organic polyisocyanate with a polyol resin.

Board shall be of uniform texture, reasonably free from accumulation of unexpanded material and foreign inclusions, and reasonably free of broken edges and corners. It shall be reasonably free from holes, voids, depressions and objectionable odor. Laminated composite boards shall be included in this quality standard. The faces of laminated boards shall adhere firmly throughout to the foam, and shall show no excessive amounts of slits, voids or depressions.

2. **Thermal performance.**

Stabilized Spray Applied Cellulose- test according to ASTM C 1497-04 Sec.5.8 using ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option.

Self-Supported Spray Applied insulation -the manufacturer shall test according ASTM C 1149-06e1 Sec.4.3 using ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option.

Foam-Determination of the thermal performance shall be in accordance with ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option. All foam insulation materials using materials other than air or pentane as an expanding agent shall either separately condition samples at 73.4° ± 3.6°F and a relative humidity of 50 ± 5 percent, and at 140°F dry heat and test at 30-, 60- and 90-day intervals or shall test samples certified by an approved testing laboratory to have been aged while exposed to free air in a well ventilated room for at least two years at 70° ± 10°F.

Notwithstanding any other provision of this article, this thermal performance standard shall not take effect until 250 days after adoption. If the certification statement submitted pursuant to Section 1555 of these regulations does not include test results for thermal performance, the manufacturer shall submit a new certification statement which includes such test results prior to 250 days after adoption. If the latest certification statement is based on the six-month aging test, a new statement, based

upon the two-year aging test or the accelerated aging test shall be submitted by 2 1/2 years after the adoption date.

2. Resistance to combustion

Stabilized Spray Applied Cellulose- test according ASTM C 1497-04 Sec.5.3 for flammability and ASTM C 1497-04 Sec.5.7 for smoldering combustion.

Self-Supported Spray Applied insulation - test according ASTM 1149-06e1 Sec.4.4 for flammability and ASTM C 1149-06e1 Sec.4.6 for smoldering combustion.

Foam – A. The material shall be tested to meet the requirements of Sections 2602.1-2602.6 of the 2001 Uniform Building Code, with the additional provision that the surface-burning characteristics shall be determined according to ASTM E 84-07 and shall not exceed the following values:

Flame spread.....	75
Smoke developed	450

B. This subsection shall not apply to any product recognized by the International Conference of Building Officials as complying with Sections 2602.1-2602.6 of the 2001 Uniform Building Code based solely upon diversified testing. The manufacturer of any product which is recognized by the International Conference of Building Officials, as complying with Sections 2602.1-2602.6 of the 2001 Uniform Building Code based solely upon diversified testing, shall be exempt from this subsection.

4. Corrosiveness. For self-supported spray applied cellulose, test according ASTM C 1149-06e1 Sec.4.80

For stabilized spray applied cellulose, test according ASTM C 1497-04 Sec.5.2.

5. Bond strength. For self-supported spray applied cellulose, the bond strength shall be determined by C1149-06e1 Sec. 4.5.

6. Bond deflection. For self-supported spray applied cellulose, the bond deflection shall be determined by C1149-06e1 Sec. 4.12.1.

7. Air erosion. For self-supported spray applied cellulose, the air erosion shall be determined by C1149-06e1 Sec. 4.12.2.

8. Odor emission. For self-supported spray applied cellulose, test according to ASTM C 1149-06e1 Sec.4.10.

For stabilized spray applied cellulose, test according ASTM C 1497-04 Sec.5.6.

9. Fungi resistance. For self-supported spray applied cellulose, test according to ASTM C 1149-06e1 Sec.4.11.

For stabilized spray applied cellulose, test according ASTM C 1497-04 Sec.5.4.

Test procedures described in Items 5, 6 and 7 are not required of products which are installed in such a manner that physical restrictions imposed by the construction elements preclude any possibility of subsequent delamination, erosion, or dusting and the product is identified only for such installations.

5. Identification. Foam containers shall state the conditions of proper storage.

~~3. Severability of Provisions. If any provision of Section 1553 (m) (1) or (2), or the application thereof to any person or circumstances, is held invalid, the remaining provisions, or the application of such provisions to other persons or circumstances, shall not be affected thereby.~~

(j) Perlite in Loose-Fill Form. PANELS

This section covers the testing of the panels form of materials such as, but not limited to, Structurally Insulated Panels and insulated metal panels.

~~1. Composition. Expanded perlite loose-fill insulation shall be produced by the expanding of natural perlite or by heating.~~

~~2. Thermal performance. Determination of the thermal performance shall be in accordance with ANSI/ASTM C-177-76, ANSI/ASTM C-236-66, or ANSI/ASTM C-518-76 at the manufacturer's option.~~

~~3. Density. Density shall be determined according to installed design density. All tests except the ANSI/ASTM E-84-79 test shall be conducted at the installed design density.~~

~~4. Resistance to combustion. Resistance to combustion shall be determined by the use of the Attic-Floor-Radiant-Panel Test, as described in the United States General Services Administration insulation standard H-1-515D Section 3.1.9 as amended October 11, 1979.~~

~~5. Identification. Each insulation container shall be marked with the type (pouring or pneumatic), the net weight and the manufacturer's recommendations for installation including minimum thickness, maximum coverage and installed design density to provide the levels of thermal performance shown. Manufacturer's installation recommendations shall include precautions according to the 1993 National Electrical Code Section 410-66.~~

~~Products which may be used for pressure-fill retrofit wall application shall be marked with the recommended wall density to prevent settling and separately marked with the tested thermal performance for such applications.~~

1. Composition.

Structurally Insulated Panels (SIPS)-This is construction system that consists of rigid foam insulation sandwiched between two layers of plywood or oriented strand board (OSB).

Insulated metal panels-This construction uses liquid polyurethane or polyisocyanurate injected between metals skins in individual molds or on fully automated production lines. An r-value of 5.9 per inch is required for the insulation.

2. Thermal performance.

For SIPS and Insulated metal panels having the construction described above the core insulation R-value will be certified for use in the tables in Appendix IV of Title 24 Part 6. Determination of the thermal performance shall be in accordance with ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option.

If the panel is of a different construction than specified in Appendix IV of Title 24 Part 6, the overall U-factor will be determined using ASTM C1373 connected with screws and other actually used fasteners.

3. Resistance to combustion.

Surface-burning characteristics of panel insulation shall be determined according to ASTM E 84-07 and shall not exceed the following values:

Flame spread.....	25
Smoke developed.....	450

(k) Polystyrene in Board Form. TUBULAR

This section covers the testing of the tubular (pipe) form of materials such as, but not limited to, fiber glass, mineral fiber, ceramic fiber, polyimide, calcium silicate, and elastomeric (rubber).

~~1. Composition. Insulation board shall be formed by the expansion of polystyrene resin beads or granules in a mold or the insulation board shall be formed by the expansion of polystyrene base resin in an extrusion process. The insulation shall be uniformly fused, homogeneous, and essentially unicellular. Insulation board shall be uniform in physical properties and~~

reasonably free of voids or accumulations of unexpanded material, foreign inclusions, broken corners and broken edges.

2. Thermal performance. Determination of the thermal performance shall be in accordance with ANSI/ASTM C 177-76, ANSI/ASTM C 236-66, or ANSI/ASTM C 518-76 at the manufacturer's option. All foam insulation materials using materials other than air or pentane as an expanding agent shall either separately condition samples at $73.4^{\circ} \pm 3.6^{\circ}\text{F}$ and a relative humidity of 50 ± 5 percent, and at 140°F dry heat and test at 30-, 60- and 90-day intervals or shall test samples certified by an approved testing laboratory to have been aged while exposed to free air in a well-ventilated room for at least two years at $70^{\circ} \pm 10^{\circ}\text{F}$, provided, however, that until 2 1/2 years after the adoption of these quality standards by the Commission, test samples may be aged for six months for certification of the material.

Notwithstanding any other provision of this article, this thermal performance standard shall not take effect until 250 days after adoption. If the certification statement submitted pursuant to Section 1555 of this article does not include test results for thermal performance, the manufacturer shall submit a new certification statement which includes such test results prior to 250 days after adoption. If the latest certification statement is based on the six-month aging test, a new statement, based upon the two-year aging test or the accelerated aging test shall be submitted by 2 1/2 years after the adoption date.

3. A. Resistance to combustion. The material shall be tested to meet the requirements of Sections 2602.1-2602.6 of the 1994 Uniform Building Code, with the additional provision that the surface-burning characteristics shall be determined according to ANSI/ASTM E 84-79 and shall not exceed the following values:

Flame spread.....	75
Smoke developed.....	450

B. This subsection shall not apply to any product recognized by the International Conference of Building Officials, as of the date of adoption of these regulations, as complying with Sections 2602.1-2602.6 of the 1994 Uniform Building Code based solely upon diversified testing. The manufacturer of any product which is recognized by the International Conference of Building Officials,

12-13-1553 ————— 1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)

subsequent to the date of approval of these regulations, as complying with Sections 2602.1-2602.6 of the 1994 Uniform Building Code based solely upon diversified testing, may petition the Commission for an exemption, of that product from the provisions of this subsection.

4. Dimensional stability. All foamed polystyrene insulation materials which are factory formed shall be tested for dimensional stability in accordance with Procedures E and G of ASTM D 2126-75 with the following exceptions: (a) sample size shall be 12 inches by 12 inches ± 1 inch, and (b) samples shall be tested as manufactured with or without facers

The average percent change in length or width shall not exceed ± 2 percent in 24 hours or ± 4 percent in seven days. The average percent change in thickness shall not exceed ± 10 percent in seven days. Samples shall be regarded as failing if: (1) delamination area of "faced" samples exceeds 25 percent or (2) warping or cupping exceeds 1/4 inch when checked by a straight edge across raised diagonal corners.

1. Thermal performance.

Insulation conductivity shall be determined in accordance with ASTM C 335-05ae1 at the mean temperature listed in the ASTM C335 TABLE PIPE INSULATION CONDUCTIVITY RANGE TABLE, and shall be rounded to the nearest 1/100 Btu-inch per hour per square foot per °F.

ASTM C335 TABLE PIPE INSULATION CONDUCTIVITY RANGE

<u>FLUID TEMPERATURE RANGE (°F)</u>	<u>INSULATION MEAN RATING TEMPERATURE (°F)</u>	<u>CONDUCTIVITY RANGE (Btu-inch per hour per square foot per °F)</u>
201 – 250	150	0.27 – 0.30
105 – 201	100	0.24 – 0.28
below 105	75	0.23 – 0.27

2. Resistance to combustion

Surface-burning characteristics of pipe insulation shall be determined according to ASTM E 84-07 and shall not exceed the following values:

Flame spread..... 25

Smoke developed 450

3. **Size.** The thickness shall be determined according to ASTM C 302-95 (reapproved 2007).

4. **Water vapor Sorption.** Water vapor Sorption shall be determined according to ASTM C 1104/C 1104M-00(reapproved 2006).

(f) Polyurethane and Polyisocyanurate in Board Form and Field Applied. VACUUM PANELS

This section covers the testing of vacuum panels form of materials such as, but not limited to, panels with an evacuated core.

1. **Composition.** The manufacture of the insulation shall be based mainly on the reaction of an organic polyisocyanate with a polyol resin.

Board shall be of uniform texture, reasonably free from accumulation of unexpanded material and foreign inclusions, and reasonably free of broken edges and corners. It shall be reasonably free from holes, voids, depressions and objectionable odor. Laminated composite boards shall be included in this quality standard. The faces of laminated boards shall adhere firmly throughout to the foam, and shall show no excessive amounts of slits, voids or depressions.

2. **Thermal performance.** Determination of the thermal performance shall be in accordance with ANSI/ASTM C 177-76, ANSI/ASTM C 236-66, or ANSI/ASTM C 518-76 at the manufacturer's option. All foam insulation materials using materials other than air or pentane as an expanding agent shall either separately condition samples at $73.4 \pm 3.6^\circ\text{F}$ and a relative humidity of 50 ± 5 percent, and at 140°F dry heat and test at 30-, 60- and 90-day intervals or shall test samples certified by an approved testing laboratory to have been aged while exposed to free air in a well ventilated room for at least two years at $70 \pm 10^\circ\text{F}$, provided, however, that until 2 1/2 years after the adoption of these quality standards by the Commission, test samples may be aged for six months for certification of the material.

Notwithstanding any other provision of this article, this thermal performance standard shall not take effect until 250 days after adoption. If the certification statement submitted pursuant to Section 1555 of these regulations does not include test results for thermal performance, the manufacturer shall submit a new certification statement which includes such test results prior to 250 days after adoption. If the latest certification statement is based on the six-month aging test, a new statement, based upon the two-year aging test or the accelerated aging test shall be submitted by 2 1/2 years after the adoption date.

3. **Dimensional stability.** All foamed polyurethane and polyisocyanurate insulation materials which are factory formed shall be tested for dimensional stability in accordance with Procedures E and G of ASTM D 2126-75 with the following exceptions: (a) sample size shall be 12 inches by 12 inches \pm 1 inch and (b) samples shall be tested as manufactured with or without facers.

The average percent change in length or width shall not exceed ± 2 percent in 24 hours or ± 4 percent in seven days. The average percent change in thickness shall not exceed ± 10 percent in seven days. Samples shall be regarded as failing if: (1) delamination area of

"faced" samples exceeds 25 percent or (2) warping or cupping exceeds 1/4 inch when checked by a straight edge across raised diagonal corners.

4. **Resistance to combustion.**

A. The material shall be tested to meet the requirements of Sections 2602.1-2602.6 of the 1994 Uniform Building Code, with the additional provision that the surface-burning characteristics shall be determined according to ANSI/ASTM E 84-79 and shall not exceed the following values:

Flame spread..... 75

Smoke developed 450

B. This subsection shall not apply to any product recognized by the International Conference of Building Officials, as of the date of adoption of this article, as complying with Sections 2602.1-2602.6 of the 1994 Uniform Building Code based solely upon diversified testing. The manufacturer of any product which is recognized by the International Conference of Building Officials, subsequent to the date of approval of these regulations, as complying with Sections 2602.1-2602.6 of the 1994 Uniform Building Code based solely upon diversified testing, may petition the Commission for an exemption of that product from the provisions of this subsection.

5. **Identification.** Foam containers shall state the conditions of proper storage.

The vacuum panel shall consist of a gas barrier layer(s), as described in 5.2, and an evacuated core material or system as described in 5.3. See Fig. 1. An engineered quantity of gas adsorbent may be included. It is not necessary that the panel design be symmetrical, depending upon end-use requirements.

Thermal performance.

Determination of the thermal performance shall be in accordance with ASTM C1484-07 sec. 11.4 using ASTM C 177-04, ASTM C 1363-05, ASTM C 518-04, or ASTM C 1114-06 at the manufacturer's option.

(m) Urea Formaldehyde Foam Field-Applied.

1. **Limitation on sale.** Urea formaldehyde foam is unsafe for use as insulation. Sale within the State of California of urea formaldehyde foam insulation is prohibited.

2. **Exemption.** Notwithstanding any other provision of this article, a manufacturer of the primary components of urea formaldehyde foam insulation may apply for certification as provided in Section 1555 of this article. Such certification statement shall indicate compliance with the following standards:

A. **Composition.** The material shall consist of cellular plastic generated in a continuous stream by mixing the components which are a urea formaldehyde resin, air and a foaming agent. The material shall be suitable for filling closed cavities through small holes and suitable also for filling open cavities by trowelling during foaming prior to enclosure.

B. **Thermal performance.** The effective thermal performance, incorporating a derating value, shall be determined according to the method described in 42 Fed. Reg. pages 55143-55148.

C. **Resistance to combustion.** Surface burning characteristics shall be determined according to the ANSI/ASTM E 84-79 and shall not exceed the following values:

Flame spread.....	25
Smoke developed.....	450

Test specimens shall be aged for 45 days at 70°F ± 5°F and 35 to 40 percent relative humidity before testing.

D. **Free formaldehyde content of dry foam.** The free formaldehyde content of the dry foam shall be less than 0.01 percent formaldehyde by weight when tested as specified in paragraph (f) (8), published in 45 Fed. Reg. page 63801, except that the specimens to be tested shall also be aged for 56 days at 24 ± 5°C (75 ± 10°F) and 50 ± 10 percent relative humidity in an uncovered beaker.

12-13-1553 1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)

E. **Corrosiveness.** The material shall be tested and shall meet the criteria for corrosiveness as specified in 45 Fed. Reg. pages 63786-63810.

F. **Density.** The material shall be tested and shall meet the criteria for density as specified in 45 Fed. Reg. pages 63786-63810.

G. **Shrinkage.** The material shall be tested and meet the criteria for shrinkage as specified in 45 Fed. Reg. pages 63786-63810, except that the material shall not shrink more than 2.0 percent in any direction.

H. **Volume resistivity.** The material shall be tested and meet the criteria for volume resistivity as specified in 45 Fed. Reg. pages 63786-63810.

I. **Identification.** Resin and foaming agent containers shall be marked with conditions of proper storage and the derated R-value and shrinkage of the prepared foam as certified by the manufacturer.

J. **Safety information.** Installers of urea formaldehyde foam insulation shall present the following safety notice to the purchasers of the foam prior to the signing of the contract for installation. The notice shall be printed in a minimum of 8-point type size. One copy of the notice signed by the purchaser shall be immediately given to the purchaser, one copy shall be retained by the installer and one copy shall be mailed by the installer to the Executive Director of the Energy Commission within 48 hours after installation of the insulation is completed.

Manufacturers shall make all sales of urea foam insulation components expressly subject to the application restrictions listed in the notice described below.

UREA-FORMALDEHYDE FOAM INSULATION SAFETY NOTICE

The Federal Panel on Formaldehyde has concluded that formaldehyde should be presumed to pose a carcinogenic (cancer) risk for humans. Formaldehyde gas may also cause eye, nose, and throat irritation, coughing, shortness of breath, skin irritation, nausea, headaches, and dizziness. People with respiratory problems or allergies may suffer more serious reactions, especially people allergic to formaldehyde. Women who are pregnant or planning to become pregnant should not be exposed to this product.

The symptoms may appear immediately or not until months after installation.

This product may release formaldehyde gas into your home or building over a long period of time. In some instances the formaldehyde gas cannot be controlled by ventilation or other means.

Application of this product is restricted to exterior sidewalls in both residential and commercial/industrial buildings. A 4-mil thickness plastic polyethylene vapor barrier, or equivalent plastic sheathing vapor barrier, shall be installed between the urea

formaldehyde foam insulation and the interior space of the home or building in all applications.

If you have health concerns, call your doctor. Also, call the installer or manufacturer of the material.

DRAFT

(PLEASE PRINT OR WRITE LEGIBLY)

PURCHASER NAME OR NAMES _____

PURCHASER ADDRESS _____ CITY _____

ZIP _____

PURCHASER PHONE NUMBER: Home (____) _____ Work (____) _____

LOCATION OF INSTASLLATION IF DIFFERENT FROM ABOVE

LOCATION ADDRESS _____ CITY _____ ZIP _____

The purchaser acknowledges he or she has read and understand this notice.

____ Signed X _____ Date _____

____ Signed X _____ Date _____

THE FOLLOWING INFORMATION IS TO BE COMPLETED BY THE INSTALLING CONTRACTOR

CONTRACTOR'S NAME _____

CONTRACTOR'S ADDRESS _____ CITY _____

ZIP _____

CONTRACTOR'S STATE LICENSE NUMBER _____

NAME OF MANUFACTURER _____

MANUFACTURER'S ADDRESS _____ CITY _____ ZIP _____

MANUFACTURER'S PHONE NUMBER (____) _____

TEMPERATURE OF OUTSIDE AIR AT START OF INSTALLATION _____ °F

	BATCH NUMBER	EXPIRATION DATE	TEMPERATURE (START OF INSTALLATION) °F
RESIN			°F
FOAMING AGENT			°F

STEPS THE INSTALLING CONTRACTOR MUST FOLLOW

1. The installing contractor is responsible for mailing this completed notice to the following address within 48 hours after completion of installation. Mail copy to:

Executive Director
Energy Resources, Conservation and Development Commission
1516 9th Street
Sacramento, CA 95814

2. Give one copy to the Purchaser.

3. The installing contractor shall keep one copy of this completed notice for a period of not less than three years.

12-13-1555 1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)

~~3. Severability of Provisions. If any provision of Section 1553 (m) (1) or (2), or the application thereof to any person or circumstances, is held invalid, the remaining provisions, or the application of such provisions to other persons or circumstances, shall not be affected thereby.~~

~~(n) Vermiculite in Loose Fill Form.~~

~~1. Composition. Vermiculite loose fill insulation shall be produced by the expanding or exfoliating of natural vermiculate or by grading and heating.~~

~~2. Thermal performance. Determination of the thermal performance shall be in accordance with ANSI/ASTM C 177-76, ANSI/ASTM C 236-66, or ANSI/ASTM C 615-76 at the manufacturer's option.~~

~~3. Density. Density shall be determined according to installed design density. All tests except the ANSI/ASTM E 84-79 test shall be conducted at the installed design density.~~

~~4. Resistance to combustion. Resistance to combustion shall be determined by the use of the Attic Floor Radiant Panel Test, as described in the United States General Services Administration insulation standard HH-1-515D as amended October 11, 1979.~~

~~5. Identification. Containers of vermiculite shall be marked with the type (pouring or pneumatic), the net weight and the manufacturer's recommendations for installation including minimum thickness, maximum coverage and installed design density to provide the levels of thermal performance shown. Manufacturer's installation recommendations shall include precautions according to the 1993 National Electric Code® Section 410-66.~~

~~Products which may be used for pressure fill retrofit wall application shall be marked with the recommended wall density to prevent settling and separately marked with the tested thermal performance for such applications.~~

Authority cited: Sections 25402(a) and 25920, Public Resources Code, 19164, Business and Professions Code.

Reference: Sections 25920-25922, Public Resources Code, 19164 and 19165, Business and Professions Code.

HISTORY:

1. Amendment of subsection (a) (9) filed 4-2-79; effective thirtieth day thereafter (Register 79, No. 14).
2. Editorial correction of subsection designations with subsection (l) (4) (Register 79, No. 17).
3. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).
4. New subsection (m) (2) (J) filed 9-11-81, effective thirtieth day thereafter (Register 81, No. 37).
5. Editorial correction of subsection (k) (3) (B) filed 1-13-82 (Register 82, No. 3).
6. Amendment of subsections (a) (5) and (a) (8) filed 5-5-82; effective thirtieth day thereafter (Register 82, No. 19).
7. Editorial correction of subsection (m) printing error (Register 82, No. 44).

Approval of Testing Laboratories

Sec. 12-13-1554.

~~(a) Except as provided in subsection (b), laboratories shall be approved using the procedures described in the Criteria for the Approval of Testing Laboratories, dated October 27, 1978. The Executive Director shall approve any laboratory that meets the standards described in the Criteria for the Approval of Testing Laboratories, dated October 27, 1978. A testing laboratory shall have the right to appeal to the full Commission any denial of approval by the Executive Director.~~

~~(b) Up to and including September 30, 1982, laboratories shall be approved either upon accreditation by the United States Department of Commerce National Voluntary Laboratory Accreditation Program or as stated in the preceding paragraph, at the manufacturer's option. After September 30, 1982, Laboratories shall only be approved upon accreditation by the United States Department of Commerce National Voluntary Laboratory Accreditation Program and its MRA signatories.~~

Authority cited: Section 25218(e), Public Resources Code, 19034, Business and Professions Code.

Reference: Sections 25915(a) and 25921, Public Resources Code, 19018, 19019, and 19020, Business and Professions Code.

HISTORY:

1. Amendment filed 8-10-81, designated effective 9-22-81 (Register 81, No. 33).

Certification

Sec. 12.13-1555.

(a) ~~No insulating material shall be sold or installed in California on or after September 22, 1981, unless the manufacturer has certified that the material complies with the provisions of this article.~~

(b) ~~The manufacturer shall submit a certification statement to the Executive Director Bureau for each type of insulating material. Such statement shall contain the following information:~~

1. ~~Name of the manufacturer.~~

2. ~~A description of the type of insulating material being certified in sufficient detail to permit its identification. The description may include information sheets, brochures, and a sample label for the product or similar information.~~

3. ~~Test results from an approved laboratory.~~

4. ~~A description of the basis for ensuring that all the insulating material of the type being certified complies with the requirements of this article. Such description shall include, but not be limited to a description of the frequency of testing of the material, the quality assurance program, and any third-party inspections or testing used by the manufacturer.~~

5. ~~A declaration that the insulating material complies with the requirements of this article.~~

6. ~~The wording of the certification seal, if such seal consists of a statement pursuant to Section 1557 (b) (2) of this article.~~

(c) ~~Every certification statement shall be dated and signed by the manufacturer attesting to its truth and accuracy. Where the manufacturer is either a corporation or a business association, the certification statement shall be dated, signed and attested to by a responsible official thereof.~~

(d) ~~Within 45 days after receipt of a certification statement, the Executive Director shall forward, to the manufacturer, an acknowledgment that the statement has been received and that it is complete and accurate on its face.~~

(e) ~~Certification of the insulation material shall be deemed to occur upon forwarding of the acknowledgement by the Executive Director. If acknowledgment is not forwarded in a timely manner, certification shall be deemed to occur on the 45th day after receipt of the certification statement.~~

(f) ~~The statement of test results required in the certification may be based upon tests conducted prior to the adoptive date of this article if: (1) the same test was conducted within two years of the date of adoption, (2) the laboratory at which the tests were conducted has been approved for those tests as of the date of the certification statement, and (3) the laboratory certifies that the test and product are the same as the test and product referred to in the statement of test results.~~

Authority cited: Section 25218(e), Public Resources Code 19034, Business and Professions Code.

Reference: Sections 25921 and 25921.1, Public Resources Code, 19165, Business and Professions Code.

HISTORY:

1. Amendment of subsections (a), (b) (4), (b) (6) and (f) filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

12-13-1556 1998 CALIFORNIA REFERENCED STANDARDS CODE
(Part 12, Title 24, C.C.R.)

Quality Assurance. (Reserved)

Sec. 12-13-1556.

Authority cited: Section 25218 (e), Public Resources Code.

Reference: Section 25921.1, Public Resources Code.

HISTORY:

1. Repealer filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

Identification

Sec. 12-13-1557.

(a) ~~Except as specified in subsection (b), Item 3, of this section, no insulation shall be sold in California on or after September 22, 1981, unless the insulating material, container, bundle or similar packaging material bears a visible Bureau Commission~~

approved statement certifying that a representative sample of the insulation material has been tested and approved by an approved laboratory and complies with the requirements of this article.

(b) The Bureau Commission-approved statement shall consist of either:

1. A design or statement approved by the Executive Director-Bureau,

or

2. An identification of the manufacturer and any statement that the material meets the quality standards of the State of California.

3. A statement that the material meets the quality standards of the State of California included in the bill of lading shall meet the requirements of this section only if the product is being shipped in bulk, or the container or product is not otherwise labeled by the manufacturer and the product is being sold to its ultimate user.

(c) Any representation of thermal performance which appear on any label, literature, advertising or any other writing intended for the public shall be consistent with the certification testing results and derating required by this article.

(d) Any insulation with facings and membranes for which the flame spread exceeds 25 when tested with facings and membranes exposed to the flame during the ANSI/ASTM E 84-79 07 test must be clearly labeled with a statement that the product may be highly combustible if used in an exposed application. This subsection shall not apply to any product meeting the requirements of Sections 2602.1-2602.6 of the 1994 2001 Uniform Building Code.

1557.10 General labeling requirements.

The label for all packages of insulation must contain, at a minimum, the following:

(1) The type of insulation.

(2) The registry number assigned or approved by the Bureau.

(3) All of the disclosures required by Section 460.12 of Title 16 of the Code of Federal Regulations.

Authority cited: Sections 19034 and 19164, Business and Professions Code 25218(e), Public Resources Code.

Reference: Section 25921, Public Resources Code. 19165, Business and Professions Code.

HISTORY:

1. Amendment of subsections (a) and (c) filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

Inspections

Sec. 12-13-1558.

~~After September 22, 1981, the Commission Bureau may, upon the consent of the owner or lessee, or upon securing a search warrant, have access, during normal working hours, to the premises of manufacturers, distributors and retailers of insulating material sold for installation within the state for the purpose of determining compliance with the standards promulgated pursuant to Chapter 10.5 of the California Public Resources Code. Such access shall be for the purposes of obtaining representative samples of subject insulation and inspecting records and documents pertaining to tests by approved testing labs.~~

Authority cited: Section 25218 (e), Public Resources Code. 19034 and 19164, Business and Professions Code.

Reference: Section 25926, Public Resources Code. 19164, Business and Professions Code.

HISTORY:

1. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

Performance Tests.

Sec. 12-13-1559.

~~The Commission Bureau may conduct, or may contract with others to conduct, independent performance tests of representative samples of insulation sold in the state to determine compliance with standards adopted pursuant to Chapter 10.5 of the California Public Resources Code. Such tests shall form the basis for instituting enforcement proceedings.~~

Authority cited: Sections 19034 and 19164, Business and Professions Code 25218 (e), Public Resources Code.

Reference: Section 19213, Business and Professions Code 25926, Public Resources Code.

HISTORY:

1. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

Costs of Inspection and Testing. (Reserved)

Sec. 12-13-1560.

The Bureau may require manufactures, distributors, or retailers that are inspected and found not in compliance with this article to pay fees to cover the costs of inspections and testing necessary to investigate and enforce compliance. These fees shall be fixed to a minimum of \$200.00 and a maximum of \$500.00 per inspection.

Authority cited: Sections 19034 and 19213, Business and Professions Code, 25218 (e), Public Resources Code.

Reference: Section 19213, Business and Professions Code 25926, Public Resources Code.

HISTORY:

1. Repealer filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

Enforcement. (Reserved)

Sec. 12-13-1561.

(a) Failure to comply with any provisions of this chapter shall constitute grounds for discipline pursuant to Section 19210 of the Business and Professions Code.

(b) The Bureau chief or his or her designee may issue an order requiring the manufacturer to withhold from sale or destroy, statewide, any article or articles found to be in violation of this chapter.

Sec. 12-13-1561.10

Citation.

The chief of the bureau is authorized to determine when and against whom a citation will be issued and to issue citations containing orders of abatement and/or fines for violations of this chapter. The citations that contain fines shall not exceed two thousand five hundred dollars (\$2,500) for each investigation. Each citation shall be in writing and shall describe with particularity the nature and facts of each violation, including a reference to the statute(s) or regulation(s) alleged to have been violated. The citation shall inform the cited person of the right to contest the citation, that hearing shall be requested by written notice to the bureau within 30 days of the issuance of the citation. The citation shall be served upon the cited person personally or by certified mail.

Sec. 12-13-1561.20

Citation Factors.

In assessing an administrative fine or issuing an order of abatement, the chief shall give due consideration to the following factors:

- (a) The nature and severity of the violation.
- (b) The good or bad faith exhibited by the cited person.
- (c) The history of previous violations of the same or similar nature.
- (d) Evidence that the violation was or was not willful.
- (e) The extent to which the cited person has cooperated with the board's investigation.
- (f) The extent to which the cited person has mitigated or attempted to mitigate any damage or injury caused by the violation.
- (g) Any other factors as justice may require.

Sec. 12-13-1561.30

COMPLIANCE WITH CITATION/ORDER OF ABATEMENT

(a) If a cited person who has been issued an order of abatement is unable to complete the correction within the time set forth in the citation because of conditions beyond his or her control after the exercise of reasonable diligence, the cited person may request an extension of time in which to complete the correction from the bureau chief. Such a request shall be in writing and shall be made within the time set forth for abatement.

(b) If a citation is not contested, or if the citation is contested and the cited person does not prevail, failure to abate the violation or to pay the assessed fine within the time allowed shall constitute a violation and a failure to comply with the citation or order of abatement.

(c) Failure to timely comply with an order of abatement or pay an assessed fine may result in disciplinary action being taken by the bureau or other appropriate judicial action being taken against the cited person.

Sec. 12-13-1561.40

CONTESTED CITATIONS AND REQUEST FOR A HEARING OR INFORMAL CITATION CONFERENCE

(a) If a cited person wishes to contest the citation, assessment of the administrative fine, or order of abatement, the cited person shall, within thirty (30) days after service of the citation, file in writing a request for an administrative hearing to the bureau chief regarding the acts charged in the citation.

(b) In addition to or instead of requesting an administrative hearing, the cited person may, within 30 days after service of the citation, contest the citation by submitting a written request for an informal citation conference to the bureau chief or his/her designee.

(c) Upon receipt of a written request for an informal citation conference, the bureau chief or his/her designee shall, within 30 days, hold an informal citation conference with the cited person. The cited person may be accompanied and represented at the informal citation conference by an attorney or other authorized representative.

(d) If an informal citation conference is held, the request for an administrative hearing shall be deemed to be withdrawn and the bureau chief or his/her designee may affirm, modify or dismiss the citation, including any fine levied or order of abatement issued, at the conclusion of the informal citation conference. If affirmed or modified, the citation originally issued shall be considered withdrawn and an affirmed or modified citation, including reasons for the decision, shall be issued. The affirmed or modified citation shall be mailed to the cited person and his/her counsel, if any, within 10 days from the date of the informal citation conference.

(e) If a cited person wishes to contest an affirmed or modified citation, the cited person shall, within 30 days after service of the citation, contest the affirmed or modified citation by submitting a written request for an administrative hearing, to the bureau chief or his or her designee. An informal citation conference shall not be held on affirmed or modified citations.

Authority cited: Sections 19034, 19164, and 19214, Business and Professions Code 25218(e), Public Resources Code.

Reference: Section 19214, Business and Professions Code 25931, Public Resources Code.

HISTORY:

1. Repealer filed 6-26-79; effective thirtieth day thereafter (Register 79, No. 26).

Release of Information

Sec. 12-13-1562.

~~Persons submitting information to the Commission Bureau who wish information to be kept confidential shall comply with the provisions of Sections 2501-2511 of the Public Resources Code.~~

~~**Authority cited:** Section 25218(e), Public Resources Code.~~

~~**Reference:** Sections 25223 and 25921.1, Public Resources Code.~~

~~**HISTORY:**~~

- ~~1. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).~~

Liability

Sec. 12-13-1563.

~~Nothing in this article shall be construed as imposing responsibility on manufacturers for misuse of properly labeled insulation.~~

~~**Authority cited:** Section 25218(e), Public Resources Code.~~

~~**Reference:** Sections 25926 and 25931, Public Resources Code.~~

~~**HISTORY:**~~

- ~~1. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).~~

Insulating Existing Buildings

Sec. 12-13-1564.

(a) On or after March 25, 1982, if insulating material is installed in an existing building, in any of the applications specified in California Code of Regulations, Title 24, Part 6, Section 118, the installing contractor shall certify that the amount of insulation installed meets or exceeds the requirements of Part 6, Section 118 for that application. Such certification shall be made on completion of the installation by posting in a conspicuous location a certificate signed under penalty of perjury. The certificate shall state the manufacturer's name and material identification, the thermal resistance (R-value) of the newly installed insulation, the estimated R-value of the original insulation, the total R-value, and (in application of loose-fill insulation) the minimum contractor installed weight per square foot. This installed weight per square foot shall conform with the manufacturer's installed design density per square foot at the manufacturer's labeled R-value.

(b) Water Heater Insulation Kits. No water heater insulation kit shall be sold, on or after March 25, 1982, unless it has a thermal resistance of at least R-6 and is so identified.

Each water heater insulation kit sold shall include instructions which are equivalent to the Department of Energy standard practice for the installation of insulation on gas-fired, oil-fired and electric resistance water heaters, 44 Fed. Reg. pages 64703-64705.

Authority cited: Section 25922, Public Resources Code.

Reference: Section 25922, Public Resources Code.

HISTORY:

1. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).

2. Editorial correction of subsection (a) filed 1-13-82 (Register 82, No. 2).

Interpretation

Sec. 12-13-1565.

The General Counsel of the Commission shall make a determination as to the application or interpretation of any provision of this article to any person requesting such a determination. Any such request shall be submitted in writing to the Commission. The Commission shall make written replies to such inquiries and shall widely publish interpretations that have broad application or interest.

Authority cited: Section 25218 (e), Public Resources Code.

Reference: Sections 25920 and 25922, Public Resources Code.

HISTORY:

1. Amendment filed 8-10-81; designated effective 9-22-81 (Register 81, No. 33).