

Minnesota Attorney General: Administrative Rules Proceedings

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Version 3
August 20, 2018

ATTORNEY GENERAL

August 18, 1988

BRUCE NELSON
Public Service, Energy Division

JULIE A. LEPPINK
Special Assistant
Attorney General

6-9422

In the Matter of the Adopted Rule Relating to
Thermal Insulation Standards

The above-refernced rule has been approved as to its legality by the Attorney General on August 11, 1988.

Enclosed is the agency's copy of the approved rule. This office has already filed two copies with the Secretary of State who will forward one copy to the Revisor of Statutes. The fourth is being retained by this division of the Attorney General's Office for its records.

Also enclosed are any petitions, requests, submission or comments received by the agency and any extra copies of documents which the agency submitted to the Attorney General.

In order for a permanent rule without a hearing to become effective, your agency must publish a notice of adoption in the State Register in accoradance with Minn. Stat. §14.27. An emergency rule becomes effective five working days after approval by the Attorney General; however, the agency must publish a notice in the State Register in accordance with Minn. Stat. §14.34.

If you have any questions in this regard, please contact me.

JAL:rer

Enclosures

cc: Maryanne Hruby
Executive Director
Legislative Commission to Review
Administrative Rules

Duane Harves
Chief Administrative Law Judge
Office of Administrative Hearings

~~MJC~~ JAL

RULE REVIEW CHECKLIST

File No. 1507 Docket No. 05-0009-0731

DATE RECEIVED 7-28-88 ADOPTED W/O HEARING X

REVIEW DATE ~~8-6~~ 8-8-88 EMERGENCY RULE _____

DUE DATE 8-11-88 REVISOR APPROVED X

APPROVED 8/11/88 REVISOR DISAPPROVED _____

DISAPPROVED _____ FILED W/SEC. OF STATE _____

WITHDRAWN _____ RETURNED TO AGENCY _____

✓ Rule as adopted (4 copies)

✓ Notice to Solicit Outside Information/Opinion (if applicable)

3/30/87 Date published in State Register
2 Comments

_____ ~~Petition for Adoption of a Rule (if applicable)~~

_____ ~~Board's Authorizing Resolution~~

_____ Date adopted

✓ Proposed Rule

Yes Revisor's Certificate

✓ Notice of Intent to Adopt Rule

325F.20, 325F.21 Statutory Authority
Yes Small Business Statement
Yes Expenditure of public money statement
Yes Signature

✓ Statement of Need and Reasonableness (if applicable)

Yes Small Business Statement
N/A Fees - § 16A.128

_____ Affidavit of Mailing Notice of Intent to Adopt Rule

_____ Date 30/25 days before adoption
_____ Notice attached
_____ Copy of rule or summary attached

✓ Publication in State Register

5/2/88 Date (30)/25 days before adoption

_____ 180-day deadline from:

5/18/88 end of comment period (§ 14.26) (rules without hearing)
_____ ~~effective date of statutory authority (§ 14.29) (emergency rules)~~

_____ ~~Resolution Adopting~~

_____ ~~Date adopted~~

✓ Findings of Fact, Conclusions & Order Adopting

7/17/88 Date

✓ Written requests, submissions or comments (19)

✓ Declaration of attorney

Maryjo Hendrikson Name of SAAG representing agency

_____ ~~Notice of Submission to Atty. Gen. (if applicable)~~

_____ ~~Aff. of Mailing Notice to Atty. Gen. (if applicable)~~

Department of Public Service

Proposed Permanent Rules Relating to Thermal Insulation Standards

Rules as Proposed

4155.0100 AUTHORITY AND PURPOSE.

The commissioner is authorized by Minnesota Statutes, sections 325F.20, subdivision 1, and 325F.21, subdivisions 1 and 2, to establish standards for the product quality, safety, installation, and labeling of thermal insulation products, and to establish test programs and procedures to ensure that standards established by this chapter ~~shall be~~ are met.

4155.0110 APPLICABILITY.

Subpart 1. **Types of residential insulation products covered.** This chapter applies to ~~the following thermal insulation materials:~~

~~A. cellulose fiber (loose fill and spray applied);~~

~~B. mineral fiber (blankets, loose fill, board and spray applied);~~

~~C. perlite (loose fill);~~

~~D. polystyrene (board form, expanded and extruded);~~

~~E. polyurethane and polyisocyanurate (board form and field applied);~~

~~F. reflective foil;~~

~~G. urea formaldehyde foam (field applied);~~

~~H. vermiculite (loose fill); and~~

~~I. other products advertising thermal resistance/R values for use in residential buildings~~ insulation products for use in residential buildings. These include insulation for walls, ceilings, floors, foundation walls, pipe insulation, duct insulation, and retrofit water heater blanket insulation.

Not included are insulation used in manufactured appliances, windows, and doors, and insulation used in new

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manufactured homes assembled outside Minnesota.

Subp. 2. [Unchanged.]

Subp. 3. **Affected parties.** This chapter applies to ~~all members of the insulation industry including:~~

~~A. those who engage in the production and supply of materials from which insulation is made;~~

~~B. those who promote the sale or use of insulation;~~

~~C. manufacturers of insulation materials or component materials;~~

~~D. jobbers, wholesalers, and retailers of insulation;~~

~~E. contractors and applicators who sell and install residential insulation; and~~

~~F. those engaged in the marketing of insulation who are, or who purport to act as, agents of manufacturers or suppliers of insulation~~ industry members, as defined in part 4155.0120.

Subp. 4. **Prohibitions.** The prohibitions in this subpart apply to the installation and application of insulation.

A. Industry members may not install insulation in residential structures unless it conforms to the product quality standards in this chapter.

B. Industry members and other persons may not engage in the mobile manufacture of cellulose insulation, which means, the simultaneous on-site production and installation of cellulose insulation as an integral mechanical and manufacturing process.

C. Urea-formaldehyde foam or precured forms may not be used in attics or ceilings.

D. Polystyrene loose-fill may not be used in attics unless it complies with the state building code.

Subp. 5. **Installation, generally.** Industry members installing insulation shall follow manufacturers' written application instructions.

When installing insulation in attic areas, the installer shall locate flush and recessed light fixtures, and other heat producing appurtenances, and shall comply with the safety

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procedures in items A and B.

A. In accordance with section 410-66 of the National Electrical Code (1984), insulation must not be installed closer than three inches to the sides of recessed light fixtures. Rigid nonflammable blocking must be installed to maintain a three-inch minimum clearance from the sides of the fixture. This requirement must be waived if the fixture is approved for coverage with thermal insulation in accordance with section 410-66 of the National Electrical Code (1984).

B. A three-inch minimum air space must be maintained around other heat-producing appurtenances, such as motors, fans, and heaters, unless the fixture is specifically approved for coverage with thermal insulation materials. If the fixture is designated by the manufacturer to require a larger air space than three inches, the larger air space must be maintained. Rigid nonflammable blocking must be installed to maintain the designated clearances.

4155.0120 DEFINITIONS.

Subpart 1. and 2. [Unchanged.]

Subp. 3. **Approved laboratory.** "Approved laboratory" means any testing facility, including a facility owned or operated by a manufacturer, that has been ~~approved~~ accredited by ~~NVLAP~~ one or more of the following agencies to perform the required test~~:~~:

A. United States Department of Commerce, National Voluntary Laboratory Accreditation Program (NVLAP), Gaithersburg, Maryland; or

B. American Association for Laboratory Accreditation, Gaithersburg, Maryland.

Exception: In the event that an approved laboratory program is temporarily delayed or is not capable of accrediting a test or tests, a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel to perform the required testing is an approved laboratory.

Subp. 4. to 7. [Unchanged.]

Subp. 8. [See repealer.]

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Subp. 9. **Department.** "Department" means the Minnesota Department of ~~Energy-and-Economic-Development~~ Public Service.

Subp. 10. to 13. [Unchanged.]

Subp. 14. **Insulation.** "Insulation" means thermal insulation~~,~~ which is a material or assembly of materials designed to provide resistance to heat flow in residential building structures, including but not limited to mineral fibrous, mineral cellular, organic fibrous, organic and plastic cellular and reflective materials, whether in loose-fill, flexible, rigid, or semirigid form. Any material advertised for use in residential buildings as having ~~a-thermal-resistance R-value~~ energy saving value by virtue of its thermal resistance or emmissivity properties (R-value), except windows and doors, shall be considered as insulation for purposes of this chapter.

Subp. 15. to 19. [Unchanged.]

Subp. 20. [See repealer.]

Subp. 21. [Unchanged.]

Subp. 22. **R or R-value.** "R" or "R-value" means the measure of resistance to heat flow through a material or assembly of materials. It may be stated as the reciprocal of the heat flow through a material expressed in British thermal units per hour, per square foot, per degree Fahrenheit. R-value indicates "thermal performance."

Subp. 23. to 28. [Unchanged.]

4155.0130 INSULATION MATERIALS STANDARDS.

Subpart 1. **Scope.** This part sets forth standards for the product quality and safety of thermal insulation materials specified herein, as well as minimum procedures for the testing ~~and-reporting~~ of insulation materials under these standards. Regulated thermal insulation materials that do not demonstrate by tests conformance to these standards shall not be sold, used, distributed, or installed in Minnesota by an industry member. Performance tests for insulation materials must meet or exceed the requirements of this part.

Subp. 2. **General testing ~~and-reporting~~ requirements.**

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General testing ~~and-reporting~~ requirements for regulated thermal insulation materials in this part are as follows:

A. When ASTM amends, reorganizes, or modifies a standard test method and the manufacturer or testing laboratory desires to use the new version, the department may be petitioned to adopt the new test method version. Until the department adopts or decides not to adopt the new version, the petitioner may request a temporary variance to use the new test method version. Criteria or factors in granting a variance are:

(1) whether the new test method version amounts to a substantial change over the old version;

(2) whether the amendment to the test version was controversial within the ASTM decision making body;

(3) whether the department sees the new test version as an improvement in testing quality control;

(4) whether the new version adversely affects consumers or manufacturers; and

(5) whether there is strong opposition outside of the ASTM organization to the new test version.

B. All regulated thermal insulation materials ~~shall~~ must be tested for compliance with the standards in this part by April 2, 1986. Testing procedures are as follows:

(1) ~~Testing-must-be-performed-at-least-every other-year.--The-testing-must-be-completed-by-June-1-of-every even-numbered-year.~~

~~(2)~~ Until April 2, 1986, testing ~~shall~~ must be performed only at a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel necessary to perform testing required by parts 4155.0130 to 4155.0150. Tests performed in the 1985 calendar year are acceptable.

~~(3)~~ (2) After 120 days following adoption of this chapter, all testing ~~shall~~ must be performed by ~~laboratories~~ an approved ~~and-accredited-by-NVLAP~~ laboratory to perform the required tests. ~~In-the-event-that-the-NVLAP-program-is temporarily-delayed-in-accrediting-a-laboratory-or-is-not~~

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~~capable-of-accrediting-a-test-or-tests,-a-testing-laboratory possessing-the-appropriate-equipment,-facilities,-and-qualified personnel-to-perform-the-required-testing-is-acceptable.~~

~~(4)~~ (3) The thermal insulation material chosen for testing ~~shall~~ must be representative of material produced by the manufacturer during normal production runs.

~~(5)~~ (4) Manufacturers without ~~NVLAP~~ approved laboratory testing facilities shall contract with an approved laboratory to conduct an annual surprise on-site inspection of the manufacturer's production facilities for the following two purposes:

(a) to take random samples of insulation from the manufacturer's assembly or process system for testing under this chapter; and

(b) to evaluate testing techniques and make recommendations for improvement if the insulation fails to meet the assigned testing standards.

~~(6)~~ (5) Testing for each type of insulation ~~shall~~ must be performed in accordance with the methods specified in subparts 3 to ~~15~~ 8.

~~B.--Each-manufacturer-of-insulation-must-submit-an annual-report-to-the-department-on-or-before-June-1-of-each-year. The-report-must-be-addressed-to-the-Energy-Division,-Department of-Energy-and-Economic-Development,-Attention:--Insulation Standards-Program,-900-American-Center-Building,-150-East Kellogg-Boulevard,-Saint-Paul,-MN-55101.--The-report-must contain-the-following-information:~~

~~(1)-the-name-and-address-of-the-testing laboratory;~~

~~(2)-the-name-and-address-of-the-manufacturer;~~

~~(3)-the-nature-of-the-business-relationship between-the-manufacturer-and-the-testing-laboratory,-for example,-contractual-for-the-purpose-of-testing,-subsidiary,-or in-house;~~

~~(4)-the-specific-tests-performed-by-the laboratory;~~

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~~(5) the date of testing;~~

~~(6) a list of uniform product groups tested together;~~

~~(7) a statement that each product meets or exceeds the test standards required by parts 4155.0100 to 4155.0180; and~~

~~(8) the testing laboratory's NVLAP certification history.~~

~~C. Additional testing information shall be made available as follows:~~

~~(1) Upon the request of the commissioner, the manufacturer, a representative of the manufacturer, or the testing laboratory shall provide all applicable information pertaining to the testing program. The information shall include test procedures and protocols, test equipment specifications and calibrations, the qualifications of test laboratory personnel exclusive of personal identifiers, full test data, and proof of NVLAP certification.~~

~~(2) Upon the written request of intermediate and ultimate consumers of insulation the manufacturer shall make available a current certification of conformance to applicable test standards.~~

(6) Insulation must have maximum flammability characteristics in accordance with the Uniform Building Code, 1985 Edition, sections 1712 and 1713, for its intended uses.

~~D.~~ C. All thermal performance tests ~~shall~~ must be conducted in accordance with this item, unless additional requirements are imposed within the body of a materials standard. ~~All~~ Insulation's thermal performance ~~shall~~ must be stated in R-value.

(1) The following ASTM test methods ~~shall~~ must be used: ASTM C ~~177-76~~ 177-85, ASTM C ~~236-80~~ 236-87, ASTM C ~~518-76~~ 518-85, or ASTM C 976-82. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification.

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(2) R-value testing ~~shall~~ must be performed at the insulation's representative thickness, and be consistent with the requirements of the United States Federal Trade Commission.

(3) Unit R per inch ~~shall~~ must be derived from R-value testing performed to its representative thickness, as specified in subitem (2).

(4) Except as otherwise provided within a materials standard, the thermal performance test results ~~shall~~ must be the average of the values obtained from at least three tests.

(5) Thermal performance as measured by test ~~shall~~ must not be more than ten percent below the stated or claimed thermal performance of the insulation material.

(6) Foil facings on insulation material must comply with Federal Trade Commission requirements in section 460.5 of Federal Register, Volume 44, page 50242 (August 27, 1979).

Subp. 3. **Cellulose ~~fiber in loose fill form~~ insulation.**

A. ~~The following requirements apply to~~ Cellulose fiber in loose-fill form must meet the following requirements:

~~A.~~ (1) The product ~~shall~~ must comply with ASTM C 739-84, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation ~~in conjunction with~~ or the ~~CPSC~~ United States Consumer Product Safety Commission Interim Safety Standard for Cellulose Insulation, Federal Register, volume 44, pages 39966-39982 (July 6, 1979). ~~When a CPSC test is performed, the ASTM C 739-84 test need not be repeated.~~

~~B.~~ (2) All manufacturers shall contract with an ~~independent NVLAP~~ approved laboratory for a follow-up agreement for the following two purposes:

~~(1)~~ (a) The laboratory shall pick up three unopened bags of manufacturer's cellulose ~~from the marketplace~~ for testing under this chapter.

~~(2)~~ (b) The laboratory shall conduct a minimum of one in-plant inspection every two months. The

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inspection ~~shall~~ must be unannounced, and the inspector shall conduct tests in the plant laboratory, on a sample ~~taken from the marketplace,~~ for settled density, smoldering combustion, critical radiant flux, corrosiveness (ph), and starch.

~~C.~~ (3) The department shall be immediately notified by the manufacturer of any failure to meet test standards.

~~Subp. 4. Cellulose fiber spray applied. The following requirements apply to~~ B. Cellulose fiber ~~spray~~ spray-applied must meet the following requirements:

~~A.~~ (1) The basic material ~~shall~~ must consist of virgin or recycled wood-based cellulosic fiber. It may be made from related paper or paperboard stock, stock that does not contain contaminated materials and extraneous foreign materials, such as metals and glass, that could 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~~ must not create a health hazard.

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

~~B.~~ (2) All testing ~~shall~~ must be performed on applied spray cellulose.

~~C.~~ (3) Determination of thermal performance ~~shall~~ must be in accordance with ASTM C ~~177-76~~ 177-85, ASTM C ~~236-80~~ 236-87, ASTM C ~~518-76~~ 518-85 or ASTM C 976-82 at the manufacturer's option, at the test-defined density of the material. R-value testing ~~shall~~ must be performed at a thickness of material of two inches, unless the material is designed for use at a lesser maximum thickness and the material is so designated on the label or label notice by the manufacturer. It ~~shall~~ must then be tested at the maximum thickness of suggested use.

~~D.~~ (4) Density ~~shall~~ must be determined in accordance with section 7 of ASTM E 605-77 reapproved 1982. The

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density established by this test ~~shall~~ must be used in the preparation of manufacturer's installation guidelines and in the determination of thermal performance.

~~E.~~ (5) Critical radiant flux and smoldering combustion ~~shall~~ must be tested for in accordance with the CPSC Interim Safety Standard for Cellulose Insulation, Federal Register volume 44, pages 39966-39982 (July 6, 1979) [or the ASTM equivalent in C ~~739-84~~ 739-86]. Values achieved ~~shall~~ must not exceed those established by the CPSC.

~~F.~~ (6) Moisture absorption ~~shall~~ must be determined in accordance with section 15 of ASTM C 553-70 reapproved 1977. Moisture absorption ~~shall~~ must not exceed 15 percent by weight.

~~G.~~ (7) The product ~~shall~~ must comply with test standards for air erosion, bond strength, and bond deflection that have been accepted by the ASTM or a federal or state government agency.

~~H.~~ (8) Test procedures in ~~item F~~ subitem (7) are not required of products that are installed ~~in such a manner~~ so 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~~ those installations.

Subp. ~~5.~~ 4. **Mineral fiber ~~in loose fill form~~ insulation.**

A. ~~The product shall~~ Mineral fiber in loose-fill form must comply with ASTM C 764-84, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

~~Subp. 6. Mineral fiber in batts and blankets form. The product shall~~ B. Mineral fiber in batts and blankets form must comply with ASTM C ~~665-84~~ 665-86, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~Subp. 7.~~ C. ~~Mineral fiber in board form. The following requirements apply to~~ Mineral fiber in board form must meet the following requirements:

~~A.~~ (1) The basic material shall be made from

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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.

(2) Thermal performance and surface burning characteristics shall be determined in accordance with subpart 1.

~~B.-Determination-of-the-thermal-performance-shall-be-in-accordance-with-ASTM-C-177-76,-ASTM-C-236-80,-ASTM-C-518-76,-or-ASTM-C-976-82-at-the-manufacturer's-option.~~

~~C.-Surface-burning-characteristics-of-materials-with-facings-and-membranes-intended-for-exposed-applications-shall-be-determined-according-to-ASTM-E-84-84-and-shall-not-exceed-the-following-values:--flame-spread,-25,-and-smoke-developed,-450.--Facings-and-membranes-of-materials-intended-for-exposed-applications-shall-be-exposed-to-the-flame-during-the-ASTM-E-84-84-test.--Insulation-boards-exclusive-of-facings-and-membranes-shall-not-exceed-the-following-values:--flame-spread,-25,-and-smoke-developed,-50.~~

~~Subp.-8.--Mineral-fiber-Spray-applied.--The-product-shall~~ D. Spray-applied mineral fiber must comply with ASTM C 1014-84, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

Subp. 9. [See repealer.]

Subp. ~~10~~ 5. **~~Polystyrene-in-board-form~~ Foam plastic insulation**.

~~A. The-product-shall~~ Molded expanded polystyrene insulation must comply with ~~ASTM-C-578-83,~~ ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

B. Extruded Polystyrene must comply with ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

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~~Subp. 11.~~ C. ~~**Polyurethane-and-polyisocyanurate-in board-form.**~~ Unfaced polyurethane and polyisocyanurate ~~shall~~ in board form must comply with ASTM C 591-83, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

D. Faced polyurethane and polyisocyanurate ~~shall~~ in board form must comply with Federal Specification HH-I-1972, dated August 21, 1981, Insulation Board Thermal Faced Polyurethane or Polyisocyanurate.

Subp. 12. [See repealer.]

~~Subp. 13. Urea-formaldehyde-foam-field-applied. The following requirements apply to urea-formaldehyde~~ E. Field-applied urea-formaldehyde foam must meet the following requirements:

~~A.~~ (1) The product ~~shall~~ must comply with ~~ASTM C 951-83~~ ASTM C 951-85, Standard Specification for Urea-Formaldehyde-Based, Foam-in-Place Insulation.

~~B.~~ (2) Resin and foaming agent containers ~~shall~~ must be marked with conditions of proper storage and the derated R-value and shrinkage of the prepared foam as certified by the manufacturer.

~~C.~~ (3) Manufacturers and installers of urea formaldehyde foam insulation shall ~~present a 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 eight 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 Director of the Office of Energy Conservation and Development, Department of Energy and Economic Development within 24 hours after the contract for installment is completed with the purchaser~~ comply with statutes and rules, including parts 4620.1600 to 4620.2100, and Minnesota Statutes, section 325F.18.

~~Manufacturers shall make all sales of urea-formaldehyde foam insulation components expressly subject to the application~~

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~~restrictions listed in the notice described in subpart 14.~~

F. Spray-applied urethane must comply with ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Polyurethane Thermal Insulation.

Subp. 14. [See repealer.]

Subp. 15. [See repealer.]

Subp. 6. **Perlite and vermiculite insulation.**

A. Perlite loose-fill insulation must meet the following requirements:

(1) The product must comply with ASTM C 549-81 (reapproved 1986), Standard Specification for Perlite Loose-Fill Insulation.

(2) The manufacturer shall disclose to the department any chemical treatment of the perlite material and the purpose of the treatment.

B. Vermiculite in loose-fill form must meet the following requirements:

(1) The product must comply with ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

(2) The manufacturer shall disclose to the department any chemical treatment of the vermiculite material and the purpose of the treatment.

Subp. 7. **Reflective foil insulation.** The following requirements apply to reflective foil:

A. Specimens for tests must consist of pieces of insulation cut to approximately three by six inches, suspended in a vertical position and heated to a temperature of 180 degrees Fahrenheit (plus or minus five degrees Fahrenheit) for at least five hours. At the end of the heating period, the tester shall examine the reflective surfaces to determine whether the adhesive has bled through the surface or whether delamination has occurred.

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

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B. Reflective foil insulation must be tested according to ASTM C 976-82 or ASTM C 236-87 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 must 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.

Thermal performance for single or multiple sheet sections must be determined according to ASTM C 976-82 or ASTM C 236-87. The test panel must consist of a panel using a wooden frame of two-by-six inch boards 16 inches apart and at least 24 inches long, covered with a minimum of 1/2-inch gypsum wallboard or 1/2-inch plywood on each side. For tests in the vertical position, the test panel must be at least seven feet high at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit. The resultant thermal performance must be based upon the insulation only.

Thermal performance for single sheet radiant barrier reflective insulation products shall meet, as an alternative to this requirement, a reasonable substantiation and basis of the energy savings claim.

C. Layers of insulation composed of unsupported foil that is exposed must have a minimum thickness of 0.0004 inch. Unsupported foil that is sandwiched in multilayer sheet must have a minimum thickness of 0.00035 inch. Foil bonded to kraft paper must have a minimum thickness of 0.00025 inch. Minimum space between layers of a multilayer sheet must conform with Federal Specification HH-I-1252B dated August 18, 1976.

D. Foil must be folded in accordance with TAPPI Standard No. 512-OM86, and the folded edge smoothed using a light finger pressure. The finished insulation must not crack when folded to 180 degree bend at a temperature of 70 degrees Fahrenheit (plus or minus two degrees Fahrenheit) and a relative humidity of 50 percent (plus or minus five percent).

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E. Reflective foil insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Reflective Foil Insulation, June 1987 (with the exception that thermal performance shall be tested with a temperature differential of 30 degrees Fahrenheit), meets the Minnesota testing standards in this subpart.

Subp. 8. **Other insulation.** Insulation other than insulation specified in subparts 1 to 7, to be sold, marketed, or advertised for use in residential structures in Minnesota must comply with the following requirements:

A. thermal performance and surface burning characteristics must be determined in accordance with subpart 1;

B. results of the water absorption test must be reported;

C. if the material is foam-in-place, a test of the shrinkage using ASTM C 591-85, section 8.5 must be used;

D. if the material contains formaldehyde, a urea-formaldehyde content test is necessary; and

E. the initial report as required by part 4155.0145, subpart 2, must include a description of other tests applied to the product.

Before insulation is sold, marketed, or advertised for use in residential structures in Minnesota, the manufacturer shall test the insulation with an approved laboratory and submit a certification of compliance with a federal, state, or ASTM standard specification that addresses all of the performance characteristics of the product. When no federal, state, or ASTM standard specification has been developed, the manufacturer shall present test data from an approved laboratory that shows the insulation and its intended uses are safe and effective and does not pose a threat to human health.

4155.0135 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. **Application testing requirements for exterior, underground insulation.**

A. Insulation by itself or as part of a system must

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be in-service tested in a testing facility designed to duplicate actual underground conditions. The testing environment must reflect the extremes of weather, moisture, and soil conditions. The purpose of the testing must be to determine aged R-value performance, giving consideration to the conditions listed in item C. A summary of the test results must be submitted to the department.

B. As an alternative to item A, the testing initiator may elect to have an insulation tested by an approved laboratory and listed for underground use, with consideration given to the conditions listed in item C.

C. The listing of the product for underground use must be based on the most recent applicable ASTM tests or any other tests that are available that give consideration to each of the following conditions:

(1) moisture absorption;

(2) mechanical durability under freeze-thaw cycling conditions;

(3) soil compatibility;

(4) flexural strength or compression; and

(5) vapor drives due to high-low pressure gradients.

D. The initiator seeking the listing shall select the appropriate tests that best address the conditions stated in item C.

E. An association or trade representative may initiate a product's listing on behalf of its constituency. The association shall submit representative samples for testing and certify to the department which manufacturers within its constituency the samples are representative of. The association must have an internal certification procedure to determine constituency conformity to the representative samples submitted for testing.

F. A summary of test results for item B must be submitted to the department.

Subp. 2. **Installation instructions for underground use.**

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Written instructions on underground use of insulation must, at a minimum, contain instructions or information regarding:

A. optimal application techniques;

B. drainage, as specified in section R-305 of the One & Two Family Dwelling Code by CABO (1983 Edition);

C. waterproofing and dampproofing, as specified in section R-306 of the One & Two Family Dwelling Code by CABO (1983 Edition);

D. varying soil and soil moisture conditions;

E. temperature effects on application;

F. optimal backfill techniques for protection from physical damage; and

G. the manufacturers' warranty, if any. The manufacturer shall state whether it warrants the insulation for underground use and, if applicable, the conditions of warranty and the length of warranty, including a statement of the number of years for which the product is warranted to maintain 80 percent of its advertised R-value.

Manufacturers that recommend a product for underground use in the vertical or horizontal position shall provide complete instructions for its respective applications.

Subp. 3. **Practice of insulation use for exterior underground installation.** The following requirements apply to the exterior installation or application of insulation below the ground:

A. The installation or application of insulation in the vertical and horizontal position must conform to the manufacturers' instructions and recommendations.

B. Insulation extending above the ground line must be covered with an exterior wall finish to protect the insulation from ultraviolet sunlight, moisture absorption, freeze-thaw durability, air erosion, and general weather conditions.

C. Polyurethane or polyisocyanurate spray-applied application must meet the following conditions:

(1) Manufacturers shall recommend the type of urethane systems to be used for underground use and applicators

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shall only use a recommended system.

(2) Polyurethane or polyisocyanurate spray-applied application must have a protective coating applied to its exterior surface above and below ground. The type of protective coating and method of application must be in accordance with the insulation manufacturer's instructions and recommendations.

D. Mineral fiber foundation insulation and drainage boards must meet the following conditions:

(1) The board must be manufactured to facilitate proper downward drainage, or in the alternative, manufactured in such a manner that moisture will not substantially penetrate horizontally toward the foundation wall.

(2) The board must not be used without exterior drainage, as defined in part 4155.0120.

Subp. 4. **Pipe insulation, duct wrap insulation, and water heater blanket insulation.** Pipe insulation, duct wrap insulation, and water heater blanket insulation must meet the standards of part 4155.0130, including the flammability requirements for insulation in part 4155.0130, subpart 2, item B, clause (5). Water heater blanket standards must meet the requirements of pipe insulation.

4155.0145 REPORTING REQUIREMENTS.

Subpart 1. **Applicability.** This subpart identifies all industry members to whom subparts 2 and 3 apply.

A. Manufacturers of insulation materials, components, or products shall file an initial report as required by subpart 2.

B. A reseller, repackager, or industry member who alters the physical properties of an insulation product manufactured by another industry member shall file an initial report as required by subpart 2.

C. An industry member that intends to sell an insulation product manufactured by another industry member under its own trade or brand name, desires to be listed as the

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manufacturer, and does not alter physical properties of the insulation product, shall file an initial report. The filing insulation member can comply with subpart 2, item B, by certifying that the product is the same as when it was previously filed.

Subp. 2. **Initial report.** An industry member shall file an initial report at least 30 days before offering for sale in the state any new products, significant changes to a product already filed, or changes to product installation instructions to a product already filed.

The initial report must include the following:

A. the manufacturer's name, address, phone number, and contact person;

B. product names, including any and all generic, trade, and brand names the product may be identified by;

C. type of product;

D. product literature, including installation instructions, a copy of the label affixed to the product, and a list of the intended uses of the product;

E. a fact sheet as required by FTC R-value rule, identified in Code of Federal Regulations, title 16, part 460;

F. results of initial tests, as required by part 4155.0130, identifying tests performed, name of laboratory, testing dates, and test results;

G. a statement that each product meets or exceeds the test standards required by this chapter;

H. if follow-up agreement is required by part 4155.0130, the:

(1) scope of material characteristics of the product encompassed by this agreement; and

(2) frequency of unannounced inspections; and

I. a description of the quality assurance program.

Subp. 3. **Annual filing requirement.**

A. Industry members who have made initial filings shall file by June 1 of each year.

B. For each product, the report must include:

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(1) the manufacturer's name, address, phone number, and contact person;

(2) product names, including all generic, trade, and brand names by which the product may be identified;

(3) certification that the product has not undergone significant changes since the initial report was filed; and

(4) identification of and changes in information that may have changed from the initial or previous annual report, including product brand names, product literature, Federal Trade Commission fact sheet, product usage, or discontinuation of manufacture.

C. Additional testing information must be made available as follows:

(1) Upon the request of the commissioner, the manufacturer, a representative of the manufacturer, or the testing laboratory shall provide all applicable information pertaining to the testing program. The information must include test procedures and protocols, test equipment specifications and calibrations, the qualifications of test laboratory personnel exclusive of personal identifiers, full test data, and proof of an approved laboratory's certification.

(2) Upon the written request of intermediate and ultimate consumers of insulation the manufacturer shall make available a current certification of conformance to applicable test standards.

4155.0155 APPLICATION AND INSTALLATION STANDARDS.

Subpart 1. **Applicability.** Industry members who offer insulation installation services for residential buildings shall comply with the application standards in this part.

The application standards in this part do not apply to nonresidential buildings or construction.

This part applies to new residential construction and retrofit applications.

Subp. 2. **Application and inspection.** Industry members

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installing insulation shall follow manufacturer's written application instructions.

In attic areas where insulation is to be installed, the installer shall locate all flush and recessed light fixtures, and other heat-producing appurtenances, and shall comply with the following safety procedures:

A. In accordance with section 410-66 of the National Electrical Code (1984), insulation must not be installed closer than three inches to the sides of recessed light fixtures. Rigid nonflammable blocking must be installed to maintain a three-inch minimum clearance from the sides of the fixture. This requirement must be waived if the fixture is approved for coverage with thermal insulation in accordance with section 410-66 of the National Electrical Code (1984).

B. A three-inch minimum air space must be maintained around other heat-producing appurtenances, such as motors, fans, and heaters, unless the fixture is specifically approved for coverage with thermal insulation materials. If the fixture is designated by the manufacturer to require a larger air space than three inches, the larger air space must be maintained. Rigid nonflammable blocking must be installed to maintain the designated clearances.

Subp. 3. **Manufacturer's installation or application instructions.** Manufacturers shall provide installation and application instructions that comply with this subpart:

A. The manufacturer's written instructions describing areas of recommended use, the proper methods of application, and required or recommended safety measures must be provided to each intermediate consumer and installer of all insulation sold for use in Minnesota within ten days of the sale.

B. Intermediate consumers and installers shall provide or make available all written instructions to ultimate consumers.

C. Urea-formaldehyde foam insulation installation must conform with Minnesota Statutes, section 325F.18 and Minnesota Rules, part 4620.2100.

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4155.0160 LABELING.

~~All insulations~~ Insulation used or offered for sale in Minnesota ~~shall~~ must be labeled according to ~~applicable federal requirements such as~~ the United States Consumer ~~Products~~ Product Safety Commission requirements ~~set forth~~ in Federal Register, volume 44, pages 39966-39982 (July 6, 1979), or the United States Federal Trade Commission requirements ~~set forth~~ in Federal Register, volume 44, pages 50242-50245 (August 27, 1979)~~, and any other applicable state or federal law~~.

4155.0170 INCORPORATIONS BY REFERENCE AND CITATIONS.

Subpart 1. **Generally.** Portions of the following standards listed in subparts 2 and 3 which are found throughout this chapter are incorporated by reference; most of the material is subject to frequent change, and all of the standards listed are available to the public at the public libraries ~~and the organizations~~ listed in subpart 4.

The standards and tests selected are all an integral part of current insulation industry testing procedures. All manufacturers and testing laboratories presently possess or have access to each referenced incorporation.

Subp. 2. **ASTM.** The following ~~apply to incorporations by reference of~~ ASTM standards are incorporated by reference:

~~A. ASTM is the American Society of Testing and Materials, a scientific and technical organization responsible for the development and authoring of the tests and standards listed. The incorporated references are published by the organization in the "Annual Book of ASTM Standards." All but one of the standards are published in the annual book of 1984, volumes 04.06 and 04.07. Test Standard ASTM C 764 84 will be published in the annual book of 1985, volume 04.06 (released October 1985), but it is available immediately for order from ASTM.~~

~~The last two digits of each test standard number indicate the year of publication and version incorporated by reference.~~

~~B. ASTM Quick Reference.~~

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~~(1) C 168-80a~~
~~(2) C 177-76~~
~~(3) C 236-80~~
~~(4) C 516-80~~
~~(5) C 518-76~~
~~(6) C 549-81~~
~~(7) C 553-70~~
~~(8) C 578-83~~
~~(9) C 591-83~~
~~(10) C 665-84~~
~~(11) C 739-84~~
~~(12) C 764-84~~
~~(13) C 951-83~~
~~(14) C 976-82~~
~~(15) C 1014-84~~
~~(16) E 84-84~~
~~(17) E 605-77~~

~~(1)~~ A. ASTM C 168-80a, Standard Definitions of Terms Relating to Thermal Insulation Materials.

~~(2)~~ B. ASTM C ~~177-76~~ 177-85, Steady-State Thermal Transmission Properties by means of the Guarded Hot Plate.

~~(3)~~ C. ASTM C ~~236-80~~ 236-87, Steady-State Thermal Performance of Building Assemblies by means of a Guarded Hot Box.

~~(4)~~ D. ASTM C 516-80 (reapproved 85), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

~~(5)~~ E. ASTM C ~~518-76~~ 518-85, Steady-State Thermal Transmission Properties by means of the Heat Flow Meter.

~~(6)~~ F. ASTM C 549-81 (reapproved 86), Standard Specification for Perlite Loose Fill Insulation.

~~(7)~~ G. ASTM C 553-70 (reapproved 77), Standard Specification for Mineral Fiber Blanket and Felt Insulation.

~~(8)~~ H. ~~ASTM C 578-83~~ ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation.

~~(9)~~ I. ~~ASTM C 591-83~~ ASTM C 591-85, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

~~(10)~~ J. ~~ASTM C 665-84~~ ASTM C 665-86, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~(11)~~ K. ~~ASTM C 739-84~~ ASTM C 739-86, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

~~(12)~~ L. ASTM C 764-84, Standard Specification for

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Mineral Fiber Loose-Fill Thermal Insulation.

~~(13)~~ M. ASTM C ~~951-83~~ 951-85, Standard Specification for Urea-Formaldehyde-Based, Foam-in-Place Insulation.

~~(14)~~ N. ASTM C 976-82, Thermal Performance of Building Assemblies by means of a Calibrated Hot Box.

~~(15)~~ O. ASTM C 1014-84, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

~~(16)~~ P. ~~ASTM E 84-84~~ ASTM E 84-84 Revision A, Surface Burning Characteristics of Building Materials.

~~(17)~~ Q. ASTM E 605-77 reapproved 1982, Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members.

R. ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.

Subp. 3. **Other incorporation and citations.** The following non-ASTM standards are also incorporated by reference:

A. ASHRAE Handbook of Fundamentals, (1981 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (Technical Reference Book).

B. CABO, sections R-305 and R-306 of the One & Two Family Dwelling Code, by the Council of American Building Officials (1983 Edition).

C. Federal Specification (FS) HH-I-1252B (August 18, 1976) by the General Services Administration.

D. Federal Trade Commission (FTC) requirements in Code of Federal Regulations, title 16, part 460, (Federal Register, volume 44, page 50242, August 27, 1979).

E. National Electrical Code, section 410-66 (1984 Edition), by the National Fire Protection Association.

F. Consumer Products Safety Commission (CPSC) Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209 (Federal Register, volume 44, pages 39966-39993, July 6, 1979).

G. Uniform Building Code (~~1982~~ 1985 Edition), by the International Conference of Building Officials.

H. Federal Specification (FS) HH-I-1972 by the

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General Services Administration.

I. TAPPI Standard No. 512-OM86 by the Technical Association of the Pulp and Paper Industry.

Subp. 4. **Availability.** The standards incorporated by reference are available for public inspection as follows:

A. All documents incorporated by reference in this chapter are available at the following locations:

(1) Minnesota State Law Library; and

(2) James J. Hill Reference Library.

B. All ASTM test standards are available through the following additional locations:

(1) Minneapolis Public Library;

(2) University of Minnesota Engineering Library; and

(3) American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

~~C.--General-Services-Administration-Federal Specifications-are-available-by:~~

~~(1)-Mail:--GSA-Federal-Specification-Request, Superintendent-of-Documents,-Government-Printing-Office, Washington,-D.C.-20402,~~

~~(2)-Phone:--GSA,-Chicago-Documents-Ordering-line: (1)-(312)-353-5383.~~

~~D.--CABO,-the-One-&-Two-Family-Dwelling-Code,-by-the Council-of-American-Building-Officials-(1983-Edition),-is available-at:--(CABO)-Building-Officials-and-Code-Administrators International,-Inc.,-17926-South-Halsted-Street,-Homewood, Illinois-60430.~~

REPEALER. Minnesota Rules, parts 4155.0120, subparts 8 and 20; 4155.0130, subparts 9, 12, and 14; 4155.0140; and 4155.0180, are repealed.

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ASTM E 84-84 Revision A, Surface Burning Characteristics of Building Materials.

ASTM E 605-77 reapproved 1982, Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members.

ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.

Uniform Building Code (1985 Edition), by the International Conference of Building Officials.

TAPPI Standard No. 512-OM86 by the Technical Association of the Pulp and Paper Industry.

The attached rules are approved for publication
in the State Register

Craig E. Lindeke
Senior Assistant Revisor

Office of the Revisor of Statutes

Administrative Rules

TITLE: Proposed Permanent Rules Relating to Thermal Insulation Standards

AGENCY: Department of Public Service

MINNESOTA RULES: Chapter 4155

INCORPORATIONS BY REFERENCE:

Rule 4155.0170, subparts 2 and 3

ASTM C 168-80a, Standard Definitions of Terms Relating to Thermal Insulation Materials.

ASTM C 177-85, Steady-State Thermal Transmission Properties by means of the Guarded Hot Plate.

ASTM C 236-87, Steady-State Thermal Performance of Building Assemblies by means of a Guarded Hot Box.

ASTM C 516-80 (reapproved 85), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

ASTM C 518-85, Steady-State Thermal Transmission Properties by means of the Heat Flow Meter.

ASTM C 549-81 (reapproved 86), Standard Specification for Perlite Loose Fill Insulation.

ASTM C 553-70 (reapproved 77), Standard Specification for Mineral Fiber Blanket and Felt Insulation.

ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation.

ASTM C 591-85, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

ASTM C 665-86, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

ASTM C 739-86, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

ASTM C 951-85, Standard Specification for Urea-Formaldehyde-Based, Foam-in-Place Insulation.

Department of Public Service

Adopted Permanent Rules Relating to Thermal Insulation Standards

Rules as Adopted

4155.0100 AUTHORITY AND PURPOSE.

The commissioner is authorized by Minnesota Statutes, sections 325F.20, subdivision 1, and 325F.21, subdivisions 1 and 2, to establish standards for the product quality, safety, installation, and labeling of thermal insulation products, and to establish test programs and procedures to ensure that standards established by this chapter are met.

4155.0110 APPLICABILITY.

Subpart 1. **Types of residential insulation products covered.** This chapter applies to insulation products for use in residential buildings. These include insulation for walls, ceilings, floors, foundation walls, pipe insulation, duct insulation, and retrofit water heater blanket insulation.

Not included are insulation used in manufactured appliances, windows, and doors, and insulation used in new manufactured homes assembled outside Minnesota.

Subp. 2. [Unchanged.]

Subp. 3. **Affected parties.** This chapter applies to industry members, as defined in part 4155.0120.

Subp. 4. **Prohibitions.** The prohibitions in this subpart apply to the installation and application of insulation.

A. Industry members may not install insulation in residential structures unless it conforms to the product quality standards in this chapter.

B. Industry members and other persons may not engage in the mobile manufacture of cellulose insulation, which means, the simultaneous on-site production and installation of cellulose insulation as an integral mechanical and manufacturing process.

C. Urea-formaldehyde foam or precured forms may not

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be used in attics or ceilings.

D. Polystyrene loose-fill may not be used in attics unless it complies with the state building code.

Subp. 5. **Installation, generally.** Industry members installing insulation shall follow manufacturers' written application instructions.

When installing insulation in attic areas, the installer shall locate flush and recessed light fixtures, and other heat producing appurtenances, and shall comply with ~~the safety procedures in items A and B.~~

~~A. In accordance with section 410-66 of the National Electrical Code (1984), insulation must not be installed closer than three inches to the sides of recessed light fixtures. Rigid nonflammable blocking must be installed to maintain a three inch minimum clearance from the sides of the fixture. This requirement must be waived if the fixture is approved for coverage with thermal insulation in accordance with section 410-66 of the National Electrical Code (1984).~~

~~B. A three inch minimum air space must be maintained around other heat producing appurtenances, such as motors, fans, and heaters, unless the fixture is specifically approved for coverage with thermal insulation materials. If the fixture is designated by the manufacturer to require a larger air space than three inches, the larger air space must be maintained. Rigid nonflammable blocking must be installed to maintain the designated clearances~~ National Electrical Code (1987), section 410-66, subsections A. and B.

4155.0120 DEFINITIONS.

Subpart 1. and 2. [Unchanged.]

Subp. 3. **Approved laboratory.** "Approved laboratory" means any testing facility, including a facility owned or operated by a manufacturer, that has been accredited by one or more of the following agencies to perform the required test:

A. United States Department of Commerce, National Voluntary Laboratory Accreditation Program (NVLAP),

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Gaithersburg, Maryland; or

B. American Association for Laboratory Accreditation, Gaithersburg, Maryland.

Exception: In the event that an approved laboratory program is temporarily delayed or is not capable of ~~accrediting~~ being accredited to perform a test or tests, a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel to perform the required testing is an approved laboratory.

Subp. 4. to 7. [Unchanged.]

Subp. 8. [See Repealer.]

Subp. 9. **Department.** "Department" means the Minnesota Department of Public Service.

Subp. 10. to 13. [Unchanged.]

Subp. 14. **Insulation.** "Insulation" means thermal insulation which is a material or assembly of materials designed to provide resistance to heat flow in residential building structures, including but not limited to mineral fibrous, mineral cellular, organic fibrous, organic and plastic cellular and reflective materials, whether in loose-fill, flexible, rigid, or semirigid form. Any material advertised for use in residential buildings as having energy saving value by virtue of its thermal resistance (R-value) or emmissivity properties ~~(R-value)~~, except windows and doors, shall be considered as insulation for purposes of this chapter.

Subp. 15. to 19. [Unchanged.]

Subp. 20. [See Repealer.]

Subp. 21. [Unchanged.]

Subp. 22. **R or R-value.** "R" or "R-value" means the measure of resistance to heat flow through a material or assembly of materials. It may be stated as the reciprocal of the heat flow through a material expressed in British thermal units per hour, per square foot, per degree Fahrenheit. R-value indicates "thermal performance."

Subp. 23. to 28. [Unchanged.]

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4155.0130 INSULATION MATERIALS STANDARDS.

Subpart 1. **Scope.** This part sets forth standards for the product quality and safety of thermal insulation materials specified herein, as well as minimum procedures for the testing of insulation materials under these standards. Regulated thermal insulation materials that do not demonstrate by tests conformance to these standards shall not be sold, used, distributed, or installed in Minnesota by an industry member. Performance tests for insulation materials must meet or exceed the requirements of this part.

Subp. 2. **General testing requirements.** General testing requirements for regulated thermal insulation materials in this part are as follows:

A. When ASTM amends, reorganizes, or modifies a standard test method and the manufacturer or testing laboratory desires to use the new version, the department may be petitioned to adopt the new test method version. Until the department adopts or decides not to adopt the new version, the petitioner may request a temporary variance to use the new test method version. Criteria or factors in granting a variance are:

(1) whether the new test method version amounts to a substantial change over the old version;

(2) whether the amendment to the test version was controversial within the ASTM decision making body;

(3) whether the department sees the new test version as an improvement in testing quality control;

(4) whether the new version adversely affects consumers or manufacturers; and

(5) whether there is strong opposition outside of the ASTM organization to the new test version.

B. All regulated thermal insulation materials must be tested for compliance with the standards in this part by April 2, 1986. Testing procedures are as follows:

(1) Until April 2, 1986, testing must be performed only at a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel

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necessary to perform testing required by parts 4155.0130 to 4155.0150. Tests performed in the 1985 calendar year are acceptable.

(2) After 120 days following adoption of this chapter, all required testing must be performed by an approved laboratory ~~to perform the required tests~~.

(3) The thermal insulation material chosen for testing must be representative of material produced by the manufacturer during normal production runs.

(4) Manufacturers without approved laboratory testing facilities shall contract with an approved laboratory to conduct an annual surprise on-site inspection of the manufacturer's production facilities for the following two purposes:

(a) to take random samples of insulation from the manufacturer's assembly or process system for testing under this chapter; and

(b) to evaluate testing techniques and make recommendations for improvement if the insulation fails to meet the assigned testing standards.

(5) Testing for each type of insulation must be performed in accordance with the methods specified in subparts 3 to 8.

(6) Insulation must have ~~maximum~~ flammability characteristics in accordance with the Uniform Building Code, 1985 Edition, sections 1712 and 1713, for its intended uses.

C. All thermal performance tests must be conducted in accordance with this item, unless additional requirements are imposed within the body of a materials standard. Insulation's thermal performance must be stated in R-value.

(1) The following ASTM test methods must be used: ASTM C 177-85, ASTM C 236-87, ASTM C 518-85, or ASTM C 976-82. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification.

(2) R-value testing must be performed at the

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insulation's representative thickness, and be consistent with the requirements of the United States Federal Trade Commission.

(3) Unit R per inch must be derived from R-value testing performed to its representative thickness, as specified in subitem (2).

(4) Except as otherwise provided within a materials standard, the thermal **performance** R-value test results must be the average of the values obtained from at least three tests.

(5) Thermal **performance** R-value as measured by test must not be more than ten percent below the stated or claimed thermal performance of the insulation material.

(6) If insulation with foil facings ~~on~~ claim a "system R-value," the insulation material must comply with Federal Trade Commission requirements in ~~section 460.5 of Federal Register, Volume 44, page 50242 (August 27, 1979)~~ sections 460.12(b)(6) and 460.5(D), Code of Federal Regulations, title 16, part 460.

Subp. 3. **Cellulose insulation.**

A. Cellulose fiber in loose-fill form must meet the following requirements:

(1) The product must comply with ASTM C 739-84, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation or the United States Consumer Product Safety Commission Interim Safety Standard for Cellulose Insulation, ~~Federal Register, volume 44, pages 39966-39982 (July 6, 1979)~~ Code of Federal Regulations, title 16, part 1209.

(2) All manufacturers shall contract with an approved laboratory for a follow-up agreement for the following two purposes:

(a) The laboratory shall pick up three randomly selected unopened bags of manufacturer's cellulose for testing under this chapter.

(b) The laboratory shall conduct a minimum of one in-plant inspection every two months. The inspection must be unannounced, and the inspector shall conduct tests in

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the plant laboratory, on a sample for settled density, smoldering combustion, critical radiant flux, corrosiveness (ph), and starch.

(3) The department shall be immediately notified by the manufacturer of any failure to meet test standards.

B. Cellulose fiber spray-applied must meet the following requirements:

(1) The basic material must consist of virgin or recycled wood-based cellulosic fiber. It may be made from related paper or paperboard stock, stock that does not contain contaminated materials and extraneous foreign materials, such as metals and glass, that could 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 must not create a health hazard.

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

(2) All testing must be performed on spray applied ~~spray~~ cellulose.

(3) Determination of thermal performance must be in accordance with ASTM C 177-85, ASTM C 236-87, ASTM C 518-85 or ASTM C 976-82 at the manufacturer's option, at the test-defined density of the material. R-value testing must be performed at a thickness of material of two inches, unless the material is designed for use at a lesser maximum thickness and the material is so designated on the label or label notice by the manufacturer. It must then be tested at the maximum thickness of suggested use.

(4) Density must be determined in accordance with section 7 of ASTM E 605-77 reapproved 1982. The density established by this test must be used in the preparation of manufacturer's installation guidelines and in the determination of thermal performance.

(5) Critical radiant flux and smoldering

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combustion must be tested for in accordance with the CPSC Interim Safety Standard for Cellulose Insulation, ~~Federal Register volume 44, pages 39966-39982 (July 6, 1979)~~ Code of Federal Regulations, title 16, part 1209 [or the ASTM equivalent in C 739-86]. Values achieved must not exceed those established by the CPSC.

(6) Moisture absorption must be determined in accordance with section 15 of ASTM C 553-70 reapproved 1977. Moisture absorption must not exceed 15 percent by weight.

(7) The product must comply with test standards for air erosion, bond strength, and bond deflection that have been accepted by the ASTM or a federal or state government agency.

(8) Test procedures in subitem (7) are not required of products that are installed so that physical restrictions imposed by the construction elements preclude any possibility of subsequent delamination, erosion, or dusting, and the product is identified only for those installations.

Subp. 4. **Mineral fiber insulation.**

A. Mineral fiber in loose-fill form must comply with ASTM C 764-84, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

B. Mineral fiber in batts and blankets form must comply with ASTM C 665-86, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

C. Mineral fiber in board form must meet the following requirements:

(1) 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.

(2) Thermal performance and surface burning

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characteristics shall be determined in accordance with subpart ~~1~~ 2.

D. Spray-applied mineral fiber must comply with ASTM C 1014-84, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

Subp. 9. [See Repealer.]

Subp. 5. **Foam plastic insulation.**

A. Molded expanded polystyrene insulation must comply with ASTM C ~~578-85~~ 578-87A, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

B. Extruded Polystyrene must comply with ASTM C ~~578-85~~ 578-87A, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

C. Unfaced polyurethane and polyisocyanurate in board form must comply with ASTM C 591-83, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

D. Faced polyurethane and polyisocyanurate in board form must comply with Federal Specification HH-I-1972, dated August 21, 1981, Insulation Board Thermal Faced Polyurethane or Polyisocyanurate.

Subp. 12. [See Repealer.]

E. Field-applied urea-formaldehyde foam must meet the following requirements:

(1) The product must comply with ASTM C 951-85, Standard Specification for Urea-Formaldehyde-Based, Foam-in-Place Insulation.

(2) Resin and foaming agent containers must be marked with conditions of proper storage and the derated R-value and shrinkage of the prepared foam as certified by the manufacturer.

(3) Manufacturers and installers of urea formaldehyde foam insulation shall comply with statutes and rules, including parts 4620.1600 to 4620.2100, and Minnesota Statutes, section 325F.18.

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F. Spray-applied urethane must comply with ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Polyurethane Thermal Insulation.

Subp. 14. [See Repealer.]

Subp. 15. [See Repealer.]

Subp. 6. **Perlite and vermiculite insulation.**

A. Perlite loose-fill insulation must meet the following requirements:

(1) The product must comply with ASTM C 549-81 (reapproved 1986), Standard Specification for Perlite Loose-Fill Insulation.

(2) The manufacturer shall disclose to the department any chemical treatment of the perlite material and the purpose of the treatment.

B. Vermiculite in loose-fill form must meet the following requirements:

(1) The product must comply with ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

(2) The manufacturer shall disclose to the department any chemical treatment of the vermiculite material and the purpose of the treatment.

Subp. 7. **Reflective foil insulation.** The following requirements apply to reflective foil:

A. Specimens for tests must consist of pieces of insulation cut to approximately three by six inches, suspended in a vertical position and heated to a temperature of 180 degrees Fahrenheit (plus or minus five degrees Fahrenheit) for at least five hours. At the end of the heating period, the tester shall examine the reflective surfaces to determine whether the adhesive has bled through the surface or whether delamination has occurred.

Adhesive used in bonding must be waterproof and show no sign of bleeding when tested in accordance with the test procedure identified in ~~item~~ B section V, part A, of the ICBO Evaluation Service Acceptance Criteria for Reflective Foil

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Insulation, June 1987, section V, part A, for adhesive bleeding requirements. Bleeding at cut edges may be disregarded.

B. Reflective foil insulation must be tested according to ASTM C 976-82 or ASTM C 236-87 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 must 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.

Thermal performance for single or multiple sheet sections must be determined according to ASTM C 976-82 or ASTM C 236-87. The test panel must consist of a panel using a wooden frame of two-by-six inch boards 16 inches apart and at least 24 inches long, covered with a minimum of 1/2-inch gypsum wallboard or 1/2-inch plywood on each side. For tests in the vertical position, the test panel must be at least seven feet high at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit. The resultant thermal performance must be based upon the insulation ~~only~~ and the associated air spaces.

~~Thermal performance for single sheet radiant barrier reflective insulation products shall meet, as an alternative to this requirement, a reasonable substantiation and basis of the energy savings claim.~~

C. Layers of insulation composed of unsupported foil that is exposed must have a minimum thickness of 0.0004 inch. Unsupported foil that is sandwiched in multilayer sheet must have a minimum thickness of 0.00035 inch. Foil bonded to kraft paper must have a minimum thickness of 0.00025 inch. ~~Minimum space between layers of a multilayer sheet must conform with Federal Specification HH-I-1252B dated August 18, 1976.~~

D. Foil must be folded in accordance with TAPPI Standard No. 512-OM86, and the folded edge smoothed using a light finger pressure. The finished insulation must not crack

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when folded to 180 degree bend at a temperature of 70 degrees Fahrenheit (plus or minus two degrees Fahrenheit) and a relative humidity of 50 percent (plus or minus five percent).

E. Reflective foil insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Reflective Foil Insulation, June 1987 (with the exception that thermal performance shall be tested with a temperature differential of 30 degrees Fahrenheit between the inside surfaces of the test panel), meets the Minnesota testing standards in this subpart.

Subp. 8. **Other insulation.** Insulation other than insulation specified in subparts 1 to 7, to be sold, marketed, or advertised for use in residential structures in Minnesota must comply with the following requirements:

A. thermal performance and surface burning characteristics must be determined in accordance with subpart ~~1~~ 2;

B. results of the water absorption test must be reported;

C. if the material is foam-in-place, a test of the shrinkage using ASTM C 591-85, section 8.5 must be used;

D. if the material contains formaldehyde, a ~~urea-formaldehyde~~ formaldehyde content test is necessary; and

E. the initial report as required by part 4155.0145, subpart 2, must include a description of other tests applied to the product.

Before insulation is sold, marketed, or advertised for use in residential structures in Minnesota, the manufacturer shall test the insulation with an approved laboratory and submit a certification of compliance with a federal, state, or ASTM standard specification that addresses all of the performance characteristics of the product. When no federal, state, or ASTM standard specification has been developed, the manufacturer shall present test data from an approved laboratory that shows the insulation and its intended uses are safe and effective and does not pose a threat to human health.

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4155.0135 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. **Application testing requirements for exterior, underground insulation.**

A. Insulation by itself or as part of a system must be in-service tested in a testing facility designed to duplicate actual underground conditions. The testing environment must reflect the extremes of weather, moisture, and soil conditions. The purpose of the testing must be to determine aged R-value performance, giving consideration to the conditions listed in item C. A summary of the test results must be submitted to the department.

B. As an alternative to item A, the testing initiator may elect to have an insulation tested by an approved laboratory and listed for underground use, with consideration given to the conditions listed in item C.

C. The listing of the product for underground use must be based on the most recent applicable ASTM tests or any other tests that are available that give consideration to each of the following conditions:

(1) moisture absorption;

(2) mechanical durability under freeze-thaw cycling conditions;

(3) soil compatibility;

(4) flexural strength or compression; and

(5) vapor drives due to high-low pressure gradients.

D. The initiator seeking the listing shall select the appropriate tests that best address the conditions stated in item C.

E. An association or trade representative may initiate a product's listing on behalf of its constituency. The association shall submit representative samples for testing and certify to the department which manufacturers within its constituency the samples are representative of. The association must have an internal certification procedure to determine

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constituency conformity to the representative samples submitted for testing.

F. A summary of test results for item B must be submitted to the department.

Subp. 2. **Installation instructions for underground use.** Written instructions on underground use of insulation must, at a minimum, contain instructions or information regarding:

A. optimal application techniques;

B. drainage, as specified in section R-305 of the One & Two Family Dwelling Code by CABO (1983 Edition);

C. waterproofing and dampproofing, as specified in section R-306 of the One & Two Family Dwelling Code by CABO (1983 Edition);

D. varying soil and soil moisture conditions;

E. temperature effects on application;

F. optimal backfill techniques for protection from physical damage; and

G. the manufacturers' warranty, if any. The manufacturer shall state whether it warrants the insulation for underground use and, if applicable, the conditions of warranty and the length of warranty, including a statement of the number of years for which the product is warranted to maintain 80 percent of its advertised R-value.

Manufacturers that recommend a product for underground use in the vertical or horizontal position shall provide complete instructions for its respective applications.

Subp. 3. **Practice of insulation use for exterior underground installation.** The following requirements apply to the exterior installation or application of insulation below the ground:

A. The installation or application of insulation in the vertical and horizontal position must conform to the manufacturers' instructions and recommendations.

B. Insulation extending above the ground line must be covered with an exterior wall finish to protect the insulation from ultraviolet sunlight, moisture absorption, freeze-thaw

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durability, air erosion, and general weather conditions.

C. Polyurethane or polyisocyanurate spray-applied application must meet the following conditions:

(1) Manufacturers shall recommend the type of urethane systems to be used for underground use and applicators shall only use a recommended system.

(2) Polyurethane or polyisocyanurate spray-applied application must have a protective coating applied to its exterior surface above and below ground. The type of protective coating and method of application must be in accordance with the insulation manufacturer's instructions and recommendations.

D. Mineral fiber foundation insulation and drainage boards must meet the following conditions:

(1) The board must be manufactured to facilitate proper downward drainage, or in the alternative, manufactured in such a manner that moisture will not substantially penetrate horizontally toward the foundation wall.

(2) The board must not be used without exterior drainage, as defined in part 4155.0120.

Subp. 4. **Pipe insulation, duct wrap insulation, and water heater blanket insulation.** Pipe insulation, duct wrap insulation, and water heater blanket insulation must meet the standards of part 4155.0130, including the flammability requirements for insulation in part 4155.0130, subpart 2, item B, clause ~~(5)~~ (6). Water heater blanket ~~standards~~ products must meet the flammability requirements of ~~pipe insulation~~ flame-spread 50 and smoke-developed 100, when tested in accordance with ASTM standard E84-84, Revision A, Surface Burning Characteristics of Building Materials.

4155.0145 REPORTING REQUIREMENTS.

Subpart 1. **Applicability.** This subpart identifies all industry members to whom subparts 2 and 3 apply.

A. Manufacturers of insulation materials, components, or products shall file an initial report as required by subpart

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2.

B. A reseller, repackager, or industry member who alters the physical properties of an insulation product manufactured by another industry member shall file an initial report as required by subpart 2.

C. An industry member that intends to sell an insulation product manufactured by another industry member under its own trade or brand name, desires to be listed as the manufacturer, and does not alter physical properties of the insulation product, shall file an initial report. The filing insulation member can comply with subpart 2, item B, by certifying that the product is the same as when it was previously filed.

Subp. 2. **Initial report.** An industry member shall file an initial report at least 30 days before offering for sale in the state any new products, significant changes to a product already filed, or changes to product installation instructions to a product already filed.

The initial report must include the following:

A. the manufacturer's name, address, phone number, and contact person;

B. product names, including any and all generic, trade, and brand names the product may be identified by;

C. type of product;

D. product literature, including installation instructions, a copy of the label affixed to the product, and a list of the intended uses of the product;

E. a fact sheet as required by FTC R-value rule, identified in Code of Federal Regulations, title 16, part 460;

F. results of initial tests, as required by part 4155.0130, identifying tests performed, name of laboratory, testing dates, and test results;

G. a statement that each product meets or exceeds the test standards required by this chapter;

H. if follow-up agreement is required by part 4155.0130, the:

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(1) scope of material characteristics of the product encompassed by this agreement; and

(2) frequency of unannounced inspections; and

I. a description of the quality assurance program.

Subp. 3. **Annual filing requirement.**

A. Industry members who have made initial filings shall file by June 1 of each year.

B. For each product, the report must include:

(1) the manufacturer's name, address, phone number, and contact person;

(2) product names, including all generic, trade, and brand names by which the product may be identified;

(3) certification that the product has not undergone significant changes since the initial report was filed; and

(4) identification of and changes in information that may have changed from the initial or previous annual report, including product brand names, product literature, Federal Trade Commission fact sheet, product usage, or discontinuation of manufacture.

C. Additional testing information must be made available as follows:

(1) Upon the request of the commissioner, the manufacturer, a representative of the manufacturer, or the testing laboratory shall provide all applicable information pertaining to the testing program. The information must include test procedures and protocols, test equipment specifications and calibrations, the qualifications of test laboratory personnel exclusive of personal identifiers, full test data, and proof of an approved laboratory's certification.

(2) Upon the written request of intermediate and ultimate consumers of insulation the manufacturer shall make available a current certification of conformance to applicable test standards.

4155.0155 APPLICATION AND INSTALLATION STANDARDS.

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Subpart 1. **Applicability.** Industry members who offer insulation installation services for residential buildings shall comply with the application standards in this part.

The application standards in this part do not apply to nonresidential buildings or construction.

This part applies to new residential construction and retrofit applications.

Subp. 2. **Application and inspection.** Industry members installing insulation shall follow manufacturer's written application instructions.

In attic areas where insulation is to be installed, the installer shall ~~locate all flush and recessed light fixtures, and other heat producing appurtenances, and shall~~ comply with ~~the following safety procedures:~~

~~A. In accordance with section 410 66 of the National Electrical Code (1984), insulation must not be installed closer than three inches to the sides of recessed light fixtures. Rigid nonflammable blocking must be installed to maintain a three inch minimum clearance from the sides of the fixture. This requirement must be waived if the fixture is approved for coverage with thermal insulation in accordance with section 410 66 of the National Electrical Code (1984).~~

~~B. A three inch minimum air space must be maintained around other heat producing appurtenances, such as motors, fans, and heaters, unless the fixture is specifically approved for coverage with thermal insulation materials. If the fixture is designated by the manufacturer to require a larger air space than three inches, the larger air space must be maintained. Rigid nonflammable blocking must be installed to maintain the designated clearances~~ part 4155.0110, subpart 5.

Subp. 3. **Manufacturer's installation or application instructions.** Manufacturers shall provide installation and application instructions that comply with this subpart:

A. The manufacturer's written instructions describing areas of recommended use, the proper methods of application, and required or recommended safety measures must be provided to each

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intermediate consumer and installer of all insulation sold for use in Minnesota within ten days of the sale.

B. Intermediate consumers and installers shall provide or make available all written instructions to ultimate consumers.

C. Urea-formaldehyde foam insulation installation must conform with Minnesota Statutes, section 325F.18 and Minnesota Rules, part 4620.2100.

4155.0160 LABELING.

Insulation used or offered for sale in Minnesota must be labeled according to the ~~United States Consumer Product Safety Commission requirements in Federal Register, volume 44, pages 39966-39982 (July 6, 1979), or the United States~~ Federal Trade Commission requirements in ~~Federal Register, volume 44, pages 50242-50245 (August 27, 1979)~~ Code of Federal Regulations, title 16, part 460. All cellulose insulation products must also comply with the United States Consumer Product Safety Commission requirements in Code of Federal Regulations, title 16, part 1209.

4155.0170 INCORPORATIONS BY REFERENCE AND CITATIONS.

Subpart 1. **Generally.** Portions of the following standards listed in subparts 2 and 3 which are found throughout this chapter are incorporated by reference; most of the material is subject to frequent change, and all of the standards listed are available to the public at the public libraries listed in subpart 4.

The standards and tests selected are all an integral part of current insulation industry testing procedures. All manufacturers and testing laboratories presently possess or have access to each referenced incorporation.

Subp. 2. **ASTM.** The following ASTM standards are incorporated by reference:

A. ASTM C 168-80a, Standard Definitions of Terms Relating to Thermal Insulation Materials.

B. ASTM C 177-85, Steady-State Thermal Transmission Properties by means of the Guarded Hot Plate.

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C. ASTM C 236-87, Steady-State Thermal Performance of Building Assemblies by means of a Guarded Hot Box.

D. ASTM C 516-80 (reapproved 85), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

E. ASTM C 518-85, Steady-State Thermal Transmission Properties by means of the Heat Flow Meter.

F. ASTM C 549-81 (reapproved 86), Standard Specification for Perlite Loose Fill Insulation.

G. ASTM C 553-70 (reapproved 77), Standard Specification for Mineral Fiber Blanket and Felt Insulation.

H. ASTM C ~~578-85~~ 578-87A, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation.

I. ASTM C 591-85, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

J. ASTM C 665-86, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

K. ASTM C 739-86, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

L. ASTM C 764-84, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

M. ASTM C 951-85, Standard Specification for Urea-Formaldehyde-Based, Foam-in-Place Insulation.

N. ASTM C 976-82, Thermal Performance of Building Assemblies by means of a Calibrated Hot Box.

O. ASTM C 1014-84, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

P. ASTM E 84-84 Revision A, Surface Burning Characteristics of Building Materials.

Q. ASTM E 605-77 reapproved 1982, Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members.

R. ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.

Subp. 3. **Other incorporation and citations.** The following non-ASTM standards are also incorporated by reference:

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A. ASHRAE Handbook of Fundamentals, (1981 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (Technical Reference Book).

B. CABO, sections R-305 and R-306 of the One & Two Family Dwelling Code, by the Council of American Building Officials (1983 Edition).

~~C. Federal Specification (FS) HH-I-1252B (August 18, 1976) by the General Services Administration.~~

~~D.~~ Federal Trade Commission ~~(FTC)~~ requirements in Code of Federal Regulations, title 16, part 460~~,~~ ~~(Federal Register, volume 44, page 50242, August 27, 1979)~~.

~~E.~~ D. National Electrical Code, section 410-66 (~~1984 Edition~~ 1987), by the National Fire Protection Association.

~~F.~~ E. Consumer Products Safety Commission (CPSC) Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209 ~~(Federal Register, volume 44, pages 39966-39993, July 6, 1979)~~.

~~G.~~ F. Uniform Building Code (1985 Edition), by the International Conference of Building Officials.

~~H.~~ G. Federal Specification ~~(FS)~~ HH-I-1972 by the General Services Administration.

H. ICBO Evaluation Service Acceptance Criteria for Reflective Foil Insulation (June 1987), of the International Conference of Building Officials.

I. TAPPI Standard No. 512-OM86 by the Technical Association of the Pulp and Paper Industry.

Subp. 4. **Availability.** The standards incorporated by reference are available for public inspection as follows:

A. All documents incorporated by reference in this chapter are available at the following locations:

(1) Minnesota State Law Library; and

(2) James J. Hill Reference Library.

B. All ASTM test standards are available through the following additional locations:

(1) Minneapolis Public Library;

(2) University of Minnesota Engineering Library;

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and

(3) American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

REPEALER. Minnesota Rules, parts 4155.0120, subparts 8 and 20; 4155.0130, subparts 9, 12, and 14; 4155.0140; and 4155.0180, are repealed.

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED
AUG 1 0 1988
Secretary of State

Approved
by Revisor _____

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED

AUG1 8 1988

Joan Anderson Growe
Secretary of State

10:30 AM

APPROVED AS TO FORM AND LEGALITY

Aug. 11 19 88

HUBERT H. HUMPHREY, III
ATTORNEY GENERAL

BY
SPECIAL ASSISTANT ATTORNEY GENERAL

AFFIDAVIT OF MAILING THE NOTICE OF INTENT TO ADOPT A RULE WITHOUT A PUBLIC HEARING

In the Matter of the Proposed Adoption of the Rule of the Minnesota Department of Public Service, Energy Division, Governing Residential Thermal Insulation Standards

AFFIDAVIT OF MAILING THE NOTICE OF INTENT TO ADOPT A RULE WITHOUT A PUBLIC HEARING AND TO THE ATTORNEY GENERAL

STATE OF MINNESOTA)
) ss.
COUNTY OF RAMSEY)

MARLENE ODEEN, being first duly sworn deposes and says:

That on the 28th day of APRIL, 1988, in the City of St. Paul, County of Ramsey, State of Minnesota, I mailed the attached Notice of Submission to the Attorney General by depositing in the State of Minnesota Central Mail System for United States mailing, a copy thereof, with postage prepaid, to all persons and associations who requested notice that the rule in the above-entitled matter has been submitted to the Attorney General.

Marlene Odeen
(name)

Secretary - C/PE
(title)

Subscribed and sworn to before me this 28th day of April, 1988.

Brooke L Manley
Notary Public

BROOKE L. MANLEY
NOTARY PUBLIC-MINNESOTA
RAMSEY COUNTY
My Comm. Expires June 28, 1993

Department of Public Service, Energy Division

In the matter of the Proposed Amendment of the Rule of the State Department of Public Service, Energy Division Governing Residential Thermal Insulation Standards

STATEMENT OF NEED AND REASONABLENESS
April, 1988

The Commissioner of the Minnesota Department of Public Service proposes to adopt amendments to Minnesota Rules Chapter 4155 without a public hearing. The Commissioner has determined that the proposed amendment of these rules will be non-controversial in nature and has elected to follow the procedures set forth in Minnesota Statutes sections 14.22 to 14.28. The above-captioned proposed rules are amendments to the existing Minnesota Residential Thermal Insulation Standards.

Authority

The Commissioner is authorized by Minnesota Statutes sections 325F.20, subdivision 1, and 325F.21, subdivisions 1 and 2, to establish standards for the quality, safety, installation, and labeling of thermal insulation products, and to establish test programs and procedures to ensure that standards established by this chapter will be met.

History

Minnesota Rules 4155.0100 through 4155.0180 were adopted on November 30, 1985, and amended on June 30, 1987.

Summary

The proposed rule amendment is a comprehensive revision to Minnesota Residential Thermal Insulation Standards: clarifying and simplifying existing language, definitions, and applications; updating testing standards and procedures; and eliminating the requirement for biennial comprehensive testing of all insulation products. The proposed amendment reorganizes the rules to be easier to follow. In addition, several editorial changes are proposed by the Revisor of Statutes to conform with current style regulations.

Small Business

The adoption of these amendments will affect small businesses in Minnesota. The Department has evaluated the effect of the proposed rules on small businesses and has considered each of the methods prescribed by Minnesota Statutes Section 14.155, subd. 2, for reducing the impact of the rules on small businesses. Small businesses would benefit from the proposed rule, since the required frequency of testing is reduced, resulting in less stringent compliance, schedules, and deadlines in conformance with Minnesota Statutes section 14.115, subd. 2(a) and (b). The proposed rule will simplify reporting requirements addressed by Minnesota Statutes section 14.115, subd. 2(a), (b), or (c). The Department is taking steps to simplify all reporting requirements. Minn. Rules Chap. 4155 already requires performance standards for all insulation product types in conformance with Minnesota Statutes section 14.115, subd. 2(d). Minnesota Statutes section 14.115, subd. 2(e) requires the Department to consider exempting small businesses from any or all requirements of the rules. To assure that insulation products sold or installed in the state are safe and effective, it is essential that all manufacturers of insulation be subject to the requirements of these rules. To exempt some businesses from these

requirements would raise the possibility that insulation products could be sold and installed in Minnesota which were neither safe nor effective. Thus, the Department concludes that small businesses cannot be exempted from any or all requirements of these rules.

Public Monies

The implementation of these amendments will not require the expenditure of public monies in excess of $100,000 by local bodies in either of the two years following their adoption and meets the test of the exceptions to fiscal notes as provided by Minnesota Statutes 3.983 subpart 2. The proposed amendments would not have any impact on agricultural land.

If a public hearing is required, Bruce Nelson, Senior Engineer and Narv Somdahl, Manager of the Conservation Programs section of the Energy Division will appear on behalf of the proposed rules at the hearing. They will testify regarding the need for and reasonableness of the proposed rules.

Background

The Department is currently engaged in an effort to develop a proposed comprehensive revision. The intent of these rules is to insure that insulation products sold in Minnesota meet the necessary standards and specifications. It is important to identify what quality assurance measures are currently in use by industry members, so that when a problem does arise, those quality assurance measures can be addressed. Eventually, those quality assurance programs will be evaluated.

STATEMENT OF NEED AND REASONABLENESS

INTRODUCTION

The Department of Public Service, Energy Division proposes to modify the rules governing the Minnesota Residential Thermal Insulation Program. There are three reasons for these proposed modifications. First, to modify the manufacturer test requirements to more closely mirror the testing procedures used by manufacturers and accredited laboratories. Second, to update the ASTM tests required to the most current standards. And third, to make several minor modifications that are necessary based on experience working with the program.

The goal of the suggested revisions is to assure quality control in the manufacture of insulation products sold in Minnesota. The means being proposed to achieve this goal in these rule revisions is to identify the current quality assurance and testing standards currently in use by industry members.

HISTORY

The administrative rules establishing standards governing the manufacture of all thermal insulation for residential buildings that is offered for sale in Minnesota were adapted on November 30, 1985. Since that time date, approximately 70 manufacturers have filed with the Department of Public Service.

The Department began the rule modification process in May 1986 by printing a notice in the State Register soliciting comments from industry members concerning the rules governing this program. Several notices were also sent directly to industry members requesting suggestions for improving the program. In November 1986, the Department contracted with the Consulting Engineering firm of Sam Stewart & Associates. This work will be helpful for the development of quality assurance guidelines in future rule-making. This current revised version of Minn. Chap. 4155 is non-controversial in nature and primarily will clarify and simplify existing language, and reorganize these rules for ease of use. Several standards and specifications have either been updated or amended as per changes in the industry as well.

Statement of Need and Reasonableness for Reorganization

Throughout this proposed revision of Minn. Rules Chap. 4155, various sections and subparts have been relocated to other sites within this document. The purpose is to facilitate the use of these rules by industry members. Through simplification, consolidation, and ease of use, these rules will be of greater assistance to those parties manufacturing and/or selling insulation materials in Minnesota.

Some grammatical and editorial changes found hereinafter are proposed by the Revisor of Statutes to conform with current style regulations.
Minn. Rules Chap. 14 requires that all rules and regulations do not repeat existing rules and regulations in order to avoid redundancy and repetitiveness.

Attached to this statement of Need & Reasonableness (Attachment # 7) is an outline of the proposed rule (Minn. Rules Chap. 4155).

Statement of Need and Reasonableness for Replacement of ASTM Standards

All requested and suggested ASTM testing standards that were formerly within these rules have been updated to conform with the most recent versions. Once ASTM tests are updated, the previous standards are no longer in existence. It is reasonable to identify the latest standards because all testing laboratories use only the most recent ASTM standards.

Chap. 4155.0110 Applicability

Subp. 1 - definitions of specific products deleted, substituted with broader industry-related terms.

Subp. 3 - definition of "affected parties" replaced with term of "industry members."

subparts 1 & 3:
Need - Initially, the broad language of these definitions was confusing and complex. These revised terms recognized by the industry have been simplified and clarified.
Reasonableness - Use of these rules will be made easier. These changes are not substantial and add no burden to the industry.

Subp. 4 - Cellulose fiber reference (sub. sec. D) deleted.

Need - This language may imply that cellulose can not be used as insulation on the interior foundation walls. The department recognizes that interior insulation would be valid. Removal of this term would prevent discrimination of any industry member who wished to use this product.
Reasonableness - If a cellulose product is to be used for an an exterior application, it would have to meet the same tests as those within proposed Minn. Rule Chap. 4155.0135. Attachment # 1 shows an example of such an application which won a national award for energy innovation.

Subp. 4 and Subp. 5 include material moved from former Minn. Rules Chap. 4155.0150.

The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

Chap. 4255.0120 Definitions

Subp. 3 - "Approved Laboratory" - definition broadened to include other than "NVLAP" (United States Department of Commerce National Voluntary Laboratory Accreditation Program) facilities. Throughout the proposed amendments to Minn. Rules Chap. 4155, the term "NVLAP" has been replaced with "approved laboratory."

Need - The aim is to expand the choice of approved testing facilities beyond just NVLAP-accredited laboratories.
Reasonableness - The AALA accreditation is equivalent to NVLAP accreditation and will give industry members another option with which to conduct need testing services. Equivalency is identified in AALA document (Attachment # 2) "A2LA Conformance to ASTM Guide for Laboratory Accreditation Systems."

Subp. 7 - Term of "Commissioner" replaced with "Director."

Subp. 8 - "Department of Energy and Economic Development" replaced with "Department of Public Service."

subparts 7 & 8:
Need and Reasonableness - These terms have been updated to reflect the Departmental reorganization implemented since Minn. Rules Chap. 4155 were first adopted on November 30, 1985, and amended on June 30, 1987. The name of the Department has been changed, and subsequently, the title of the chief administrator of the Department has been re-titled.

Subp.9 - CPSC definition deleted.

Need and Reasonableness - "CPSC" (United States Consumer Products Safety Commission or a standard issues for thermal insulation materials by that commission), occurs exclusively in Minn. Rules Chap. 4155.0130 subpart 3, and is identified in that subpart.

Subp. 14 - Insulation definition amended for clarity.

Need - The current rules state that any product listing an R - value qualifies as insulation. Certain products which are in fact thermal insulation might be confused as not being included within this definition. The proposed amended rule addresses this issue by identifying the products as those which are advertised as providing energy savings by means of either low conductivity or low emissivity.

Two examples of the need for this change follow. The first example may be found where some insulation products are advertised as providing energy savings and yet do not advertise an R - value. The foremost examples of this are the "radient barrier" products whose energy saving qualities are derived by virtue of their low emissivity properties. The FTC R - value rule sec. 460.18, 460.19, and 460.20 are attached for additional information (see Attachment # 3). If an industry member states or implies that an insulation product maximizes energy savings, there must be a reasonable basis for the claim. Manufacturers are liable if they do not have a reasonable basis for their savings claim.

The second example may be found when products listing an R-value are not necessarily thermal insulation. Products which derive their energy saving qualities by virtue of their draft stopping capabilities, such as foam sealant and weather stripping, should not be considered thermal insulation. Other products have their R - value listed only for purposes of information, such as siding backer board. The intent of the proposed rule amendment is to cover products not discussed in this second example.

Reasonableness - The amendment will clarify which products are covered by Minn. Rules Chap. 4155. It will be easier for industry members and the Department of Public Service to determine whether these regulations pertain to a particular product. The scope of Chapter 4155 is not expanded.

Subp. 20- NVLAP definition deleted.

Need and Reasonableness - "NVLAP" acronym has been deleted wherever it appears in Minn. Rules Chap. 4155. The purpose for this has been identified in section 4155.0120, Definitions, subpart 3, on page 4 of this document.

Subp. 2 General testing requirements: no longer includes reporting.

A. Test versions subsection moved as is from 4155.0180. Former "A" section now labelled "B".

Need and Reasonableness - For clarity and ease of use by industry members, all reporting information has been consolidated in Minn. Rules Chap. 4155.0140. The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

B. Testing procedure, formerly labelled "A".
Subsection 1. Biennial testing requirement deleted.

Need - When Minn. Rules Chap. 4155 was first promulgated, the Department argued (Attachment # 4, DEED Exhibit N. 3, page 14, attached, Statement of Need and Reasonableness) that an annual complete retest of the physical properties of a product sample would be an essential element of product quality assurance. It was further argued that "None of the tests required have an affixed laboratory cost substantially out of proportion to present industry practices." It has since been learned by the Department that both of these assertions were incorrect.

Extensive discussions with manufacturers has found that not a single manufacturer includes a complete repeat test of a product's physical properties as part of a quality assurance program. In most quality assurance programs, a complete test is only performed once. Unless a significant change is made in the product, quality assurance consists of regular testing (usually several times daily) of several (but not all) of the physical characteristics. This is true for insulation manufacturers ranging from the giant Owens Corning Fiberglas to the 5-person crew cellulose plant. The Department has learned that a complete test is simply unnecessary to achieve quality assurance.

Additional information provided to the Department shows that a complete repeat test of one product's physical properties is exceedingly expensive, ranging from one to ten thousand dollars. If a repeat test would be required, this expense would be added to the product price paid by the consumer.

The proposed rule revision is needed to eliminate this repeat testing which would be very expensive as well as unnecessary.

Reasonableness - The proposed amendment recognizes the reality that a complete repeat test of a product's physical properties is both expensive and unnecessary. Manufacturers will be relieved of this needless expense by the proposed amendment.

Most importantly, from the standpoint of consumer protection, elimination of repeat testing will not result in reduced product quality. The proposed amendment (at Ch. 4155.0135, Subp. 2.B.9) requires manufacturers to submit a description of the product quality assurance program. The Department has initiated a product sampling and testing project pursuant to Minn. Stat. 325F.21, subp. 2. This project is serving as a check on manufacturers' quality assurance programs.

Subp. 2 (cont.)

Subsection 2. Now labelled subsection 1; no change.

The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within proposed rules Minn. Rules Chap. 4155.

Subsection 3. Now labelled subsection 2: the change is deletion of "NVLAP laboratory only" requirement.

Need and Reasonableness - "NVLAP" acronym has been deleted wherever it appears in Minn. Rules Chap. 4155. The purpose for this has been identified in section 4155.0120, Definitions, subpart 3, on Page 4 of this document.

Subsection 4. Now labelled subsection 3: no change.
Subsection 6. Now labelled subsection 4: no change.

The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

New subsection 6. Flammability requirements added.

Need - Flammability requirements vary depending on the specific use. The State Building Code specifies less stringent flame retardant characteristics for insulation covered by a "15 minute" rated fire barrier than for one which is left exposed. The proposed amendments delete several overly-restrictive flammability requirements from the rules and replace them with the requirement that flame retardant characteristics be consistent with the State Building Code for the intended use of the product.

Sometimes, insulation products are purchased and installed by homeowners without the need for a building permit. This is especially true for water heater blanket, pipe, and duct insulations. In these cases, the State Building Code would probably not be consulted to determine the proper flammability requirements. This amendment is needed to assure that products meet the appropriate flame retardant characteristics for the intended use.

Reasonableness - These rules impose requirements identical to the current requirements of the State Building Code. Flammability requirements would be as follows:

Insulation	Maximum flammability requirement(1)	
	flame spread	smoke developed
Insulation, general (2)	25	450
Foam plastic insulation (3)	75	450
Pipe insulation	25	450
Duct insulation (4)	25	50
Duct insulation (5)	50	100

Subp. 2 (cont.)

Notes for flammability requirements table:
(1) When tested in accordance with ASTM Standard E 84-84 Revision A.
(2) Insulation, including facings, installed within floor-ceiling assemblies, roof-ceiling assemblies, walls, crawl spaces or attics.
(3) Separated from the interior of the building by an approved thermal barrier.
(4) For all duct systems except as noted in Note (5) below.
(5) For duct systems serving not more than one dwelling unit.

Former "B" section "Reporting Requirement" moved to, and consolidated in Minn. Rules Chap. 4155.0140.

Former "C" section "Additional Reporting Information" moved to, and consolidated in Minn. Rules Chap. 4155.0140.

Former "D" section now labelled "C" - "ASTM testing requirements in general"; no change.

Former sections B - D:
The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

Subps. 3 - 15: reorganized for ease of use.

The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

Subps. 3 & 4: Cellulose type insulations grouped together into new subpart 3.

The term "from the marketplace" has been deleted.

Need - Product samples can be obtained directly from the manufacturer. In practice, follow-up laboratories (Underwriter Laboratories and U.S. Testing) which have been included as part of completed filing, have bags picked up at the plant. This procedure has been approved by the Department.
Reasonableness - Laboratory testing procedures do not require to go only to the retail source. The practice of getting testing samples from the manufacturer is sufficient and no problems have been reported.

Reference to the ASTM test in conjunction with the CPSC test has been deleted.

Need and Reasonableness - There is no implication to require industry members to do both and this requirement can be confusing.

Subps. 5 - 8: Mineral fiber type insulation grouped together into new subp. 4.

Need - Surface-burning criteria have been deleted. These criteria have already been identified in Minn. Rules Chap. 4155, subp. 1.
Reasonableness - Minn. Rules Chap. 14.07 subd. 3, requires that duplication of statutory language be minimized for efficiency and avoiding redundancy.

Subps. 10,11,13,14: Foam plastic type insulation, including urea-formaldehyde, grouped together into new subpart 5.

The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

Extruded polystyrene and molded expanded polystyrene have been segregated into two distinct subsections.

Need - These two insulation products have distinct manufacturing processes. It will be clearer that both products are to be covered independently. In future rule making, when quality assurance standards are proposed, these two products will be treated independently.
Reasonableness - The separation of these two products will result in easier use of Minn. Rules Chap. 4155.

Urea-formaldehyde foam requirement of notice and the specific notice form have been deleted due to redundancy.

Need and Reasonableness - This requirement has been replaced with existing Health Department rules and Minnesota statutes. In addition, Minn. Rules Chap. 14.07 subd. 3, requires that duplication of statutory language be minimized for efficiency and avoiding redundancy.

A testing standard for spray applied urethane has been added.

Need and Reasonableness - This new standard has been established subsequent to the implementation of the previous version of Minn. Rules Chap. 4155. This will simplify compliance for industry members because it will not be necessary for them to petition per Minn. Rules Chap. 4155.0130 subp.2(A). [Proposed rule address]

Subps. 9 & 15: Perlite and vermiculite, grouped into new subpart 6.

Need and Reasonableness - The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules. These two insulation products are very similar in physical and chemical nature as well as manufacturing processes, therefore facilitating their treatment in Minn. Rules Chap. 4155 under the same sub-heading.

Subp. 12: Reflective foil, contained in new subpart 7.

Need - The minimal changes in this subpart are for the purpose of standardizing Minn. Rules Chap. 4155 with the International Conference of Building Officials Evaluation Service (ICBO) criteria. Specified temperature differential for testing is different. Use of the "minimum 40°F in ICBO criteria would overrate the R-value of the reflective insulation product. Specification of 30°F is consistent with the existing Ch. 4155 and FTC rule 460.5 (see Attachment # 3).
Reasonableness - ICBO criteria are currently in use within the reflective foil insulation industry and are being applied. Conformity of standards would simplify application and use for industry members.

Reflective foil (cont.)
Criteria for radient barrier insulation products identified independently from other reflective insulation products.

Need and Reasonableness - Radient barrier insulation products are commonly not rated by a measure of R-value. Treating them independently would ensure that their testing criteria will be applied fairly and accurately.

B - Test standard amended to add ASTM C 236 as an alternative to calculating thermal performance.

Need and Reasonableness - The standards now available are ASTM C 236 as well as ASTM C 976. Both standards are equally applicable. The original rules mistakenly referenced only ASTM C 976. It was assumed that only the calibrated hot box standard was acceptable. The FTC rule (Attachment # 3) at 460.5 (b) allows for reflective insulation products to be tested at either C 236 or the calabrated hot box (C 976).

D - Flammability and surface burning requirement is referred to generally.

Need and Reasonableness - The existing rule is too restrictive and only pertains to exposed insulation materials. The proposed amendment changes the flammability criteria for reflective insulations to be the same as for all other insulations.

E - ICBO criteria is added as an alternate standard for meeting required specifications. International Conference of Building Officials Evaluation Service criteria (ICBO) (Attachment # 5) is identical to these rules as proposed and amended. An exception was added to change the temperature rule differential to conform with the FTC R value rule, part 460.5(b) (see Attachment # 3).

new subpart 8: **"Other Insulation" moved from section 4155.0140 subps. 1 & 2.**

Need and Reasonableness - A separate reporting requirement here was redundant and its elimination would simplify use of these rules. Minn. Rules Chap. 14.07 subd. 3, requires that duplication of statutory language be minimized for efficiency and avoiding redundancy.

B - Addition of other necessary criteria to examine:
- **shrinkage: in case insulation material has a tendency to shrink which can severely compromise the thermal characteristics of the material.**
- **the existence of urea-formaldehyde foam insulation: because of potential hazards, any material content must be identified to assure proper materials handling.**

Chap. 4155.0135 Requirements for Insulation for Special Applications
[Newly created section]

Subp. 1 - formerly 4155.0150, subp. 8: "Application testing requirements for insulation used exterior below ground" moved as is.

Subp. 2 - formerly 4155.0150, subp. 6, C & D: "Insulation instructions for below ground use" moved as is.

Subp. 3 - formerly 4155.0150, subp. 7: "Practice of insulation use for exterior below ground installation" moved as is.

subparts 1 -3:
Need - This section identifies a specific process of insulation installation. The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.
Reasonableness - These insulation materials have additional provisions listed in the existing rules. There are no changes from the present rules.

Subps. 4 - Newly created subpart for application requirements for pipe insulation, duct wrap insulation, and water heater blanket insulation.

Need and Reasonableness - The exposure of water heater blanket insulation is the same as for pipe insulation, therefore, both need to meet the same requirements. There is no reason to duplicate the language. The purpose here is to simplify use of these rules for industry members.

Chap. 4155.0145 Reporting Requirements

Subp. 1 - Newly defined subpart identifies all relevant industry members. Cites original manufacturers; repackagers who alter the physical properties of the product; and resellers who intend to sell the product, without any changes, under their own trade or brand name.

Need: This section clearly defines the classes of manufacturers, repackagers, and resellers who are covered by these rules.
Reasonableness: Identifying the industry members affected by these rules will be simplified and clarified.

Subp. 2 - Initial report requires some additional information.

Need - With both an initial report and annual report requested, sufficient information will be available, so that each report alone need not be as comprehensive.
Reasonableness - Removal of duplication of effort will facilitate compliance of these rules by industry members.

B. 2 - Any names that the insulation product may go by.

B. 5 - A fact sheet required by the FTC R - value rule.

(subp. 2 cont.)

B. 8 - The scope of the materia characteristics of the product and, the frequency of unannounced inspections, if a follow-up agreement is required.

B. 9 - A description of the quality assurance program.

Need - As discussed on page 7 of this Statement of Need and Reasonableness, the Department has initiated a product sampling and testing project as authorized by Minn. Stat. 325F.21, subp. 2. If the Department finds that a product fails to meet the specified standards, the Department intends to review the manufacturer's quality assurance program. This report of the manufacturer's quality assurance program is needed to enable such a review.

A second reason that this description is needed is that the Department is considering future rule making for Ch. 4155 which may include minimum standards for quality assurance programs. These descriptions will assist the Department to understand thermal insulation industry quality assurance programs.

Reasonableness - Under the Standards for Insulating Material sec. 1555 (b) (4), promulgated by the California Energy Commission, Conservation Division (Attachment # 6), that State requires manufacturers to provide descriptions of quality assurance programs. According to the office which administers that program (Mr. Ray Hillier tel. 916/920-7005), this information has been very helpful in determining the reasons for product quality failures found by the State.

A report of quality assurance programs by industry members will not impose a burden. All manufacturers currently have some kind of in-house quality assurance program in operation, and there is no intent that the content of the quality assurance description will be used by the Department under these proposed rules as a criteria for judging the completeness of a product filing.

Subp. 3, A & B moved from 4155.0130, subp. 2 B.

The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

Subpart 3 Additional information has been required.

B. 2 - Any names that the insulation product may be identified by.

B. 3 - Certification that there were no significant changes in the product.

B. 4 - Update on any information that has changed.

(subp. 2 cont.)

C. Moved as is from 4155.0130, subp. 2 C.

The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

Chap. 4155.0150 Application & Installation Standards

All subparts within this section have either been moved from other sections or transferred over to other sections within Minn. Rules Chap. 4155. The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

Subp. 1 - includes previous subps. 3 & 4.

Subp. 2 - moved to 4155.0140 subp. 1.

New subp. 2, previously subp. 6 A & B, also includes "UFFI Standard for urea-formaldehyde"

Subp. 5 - moved to 4155.0110 subp. 4.

Subp. 6 - sections C & D moved to 4155.0135 subp. 2.

Subp. 7 - moved to 4155.0135 subp. 3.

Subp. 8 - moved to 4155.0135 subp. 1.

Chap. 4155.0160 Labelling

Language clarified and specified to refer to the United States Consumer Products Safety Commission requirements.

Need - To clearly identify the United States Consumer Products Safety Commission requirements as a labelling authority.
Reasonableness - Clearer language will make use of these rules easier for industry members.

Chap. 4155.0170 Incorporations by Reference

Subp. 2 A - ASTM general definition deleted because it is identified in Minn. Rules Chap. 4155.0120.

Need and Reasonableness - Minn. Rules Chap. 14.07 subd. 3, requires that duplication of statutory language be minimized for efficiency and avoiding redundancy.

Subp. 2 B - Quick Reference section deleted; specific tests identification dates updated; ASTM C 1029 - 85 added.

Need and Reasonableness - There is no useful purpose to repeat the testing standards addressed in Minn. Rules Chap. 4155. Also, Minn. Rules Chap. 14.07 subd. 3, requires that duplication of statutory language be minimized for efficiency and avoiding re dancy.

Subp. 4 - "Availability" sect modified.

Need - The general sour f information from libraries has been maintained. Specific industry source ve been deleted because it it to difficult to keep the information of curr addresses up to date.
Reasonableness - Manufacturers already know where to get most of the information and it would be misleading to include out of date information.

Chap. 4155.0180 Test Versions

moved to 4155.0130 subp. 2 A.

The Statement of Need and Reasonableness for reorganization on page 3 of this document identifies the purpose of structural changes within these proposed rules.

DOE/CE-0155

Attachment #1

National Awards Program For Energy Innovation 1985

Project Descriptions

U.S. Department of Energy
Office of Conservation and Renewable Energy
Washington, DC 20585

May 1986

FOUNDATION INSULATION METHOD

National Awards Program
For Energy Innovation 1985

Economic Opportunity Corporation of Greater St. Joseph
P.O. Box 1246
St. Joseph, Missouri 64502

Contact: Duane Foster
816 233-8281

The Economic Opportunity Corporation of greater St. Joseph (EOC) is a private, nonprofit organization that assists the low-income, handicapped, and elderly in becoming self-sufficient. EOC provides services to eligible participants in a variety of areas including crisis assistance, employment and training, information and referral, Head Start, and weatherization. One of EOC's weatherization projects is the development of a cost-effective, energy-efficient foundation insulation.

Over 50 percent of the St. Joseph housing stock was built before 1940. Age and the elements have damaged foundations, resulting in significant heat loss. EOC's insulating sealing process is designed mainly to stem this heat loss and protect against moisture, rodents, insects, age, and nature. It also creates a more appealing appearance leading to an increase in the community's housing stock value.

EOC's foundation insulation method includes the following steps: (1) foundation preparation by cleaning away all the dirt and loose material; (2) drilling and installation of special fasteners which provide a depth gauge for the cellulose and a holder for the metal lath; (3) spraying on waterproof paint to create a vapor barrier; (4) application of a mixture of cellulose insulation and glue, building it to the desired R-value using the fasteners as a depth gauge; (5) application of galvanized metal lath over the cellulose, providing the form for the sure wall application; and (6) application of the sure wall, creating a complete seal around the cellulose. Workshops, seminars, brochures and outreach offices are planned to publicize this insulation method.

The estimated annual energy savings per house is 38.4 heating units. This translates to about $1.19 per heating unit in the St. Joseph area. The material cost is about $1.00 per square foot with an average payback period of 2.04 years.

Attachment #2

American Association For Laboratory Accreditation

A2LA CONFORMANCE TO ASTM GUIDE FOR LABORATORY ACCREDITATION SYSTEMS

The **AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION** (A2LA) is a nonprofit, scientific, membership organization dedicated to the formal recognition of competent testing laboratories. Accreditation is available to any type of testing laboratory, be it private (independent or in-house) or government. Accreditation is based on internationally accepted criteria for competence for testing laboratories (ISO Guide 25).

A2LA was formed in 1978 by a group of concerned individuals as a practical and efficient organization to develop and manage a system to verify and recognize qualified testing laboratories. Accreditation is available for all types of tests, measurements and observations which are properly documented and publicly available.

Membership in A2LA is open to any individual, institution or corporation interested in the recognition of competent testing services. Members pay dues, receive a periodic newsletter, attend annual meetings and symposia sponsored by the Association, and automatically receive the Association's publications such as the periodic newsletter, A2LA News, and the A2LA Directory of Accredited Laboratories.

This summary compares the current operations of A2LA with the important features which laboratory accreditation systems should have as presented in ASTM Standard E 994 - 84 "Guide for Laboratory Accreditation Systems."

4. Laboratory Accreditation System Features.

4.1.1 The A2LA Board of Directors adopted a revised set of bylaws at its meeting in August, 1987. The rules and operations of the system are presented in the A2LA document "General Requirements for Accreditation" which is provided to every laboratory applying for accreditation.

4.1.2 A2LA uses ISO Guide 25 as its accreditation criteria and sends a copy of it to every laboratory which applies for accreditation. The evaluation procedures and associated fees are also sent to applicants with the criteria.

4.1.3 A2LA has a document entitled "Advertising Policy for Accredited Laboratories" which is given to each accredited laboratory upon its accreditation and reaccreditation that explicitly states "...each testing laboratory desiring to participate in this program must,...agree to avoid reference by itself in a manner which would imply certification of products or services by A2LA" and "must inform others using its services that they must also avoid referencing those services in a manner which would imply certification of products..."

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4.1.4 Each laboratory which is newly accredited or reaccredited is provided a "Scope of Accreditation" in terms of specific tests, types of tests, products, etc., for which it is accredited.

4.1.5 A2LA accredits laboratories using appropriate specific criteria for each field of testing and when the test methods themselves lack specificity.

4.1.6 The document, General Requirements for Accreditation, describes the evaluation procedures and the required response to deficiencies.

4.1.7 On-site assessments by assessors with expertise in the area of testing for which accreditation is requested is performed on all laboratories seeking accreditation and on laboratories seeking reaccreditation after two years. Written reports by the assessors are required.

4.1.8 Laboratories are required to report their experience in proficiency testing programs and in some cases are required to become participants in certain designated proficiency testing programs.

4.1.9 A2LA produces a Directory of Accredited Laboratories at the beginning of each year. Supplements and updates are published periodically throughout the year.

4.1.10 The A2LA procedures for revoking accreditation are described under the section on "Accreditation Procedures" in the General Requirements for Accreditation.

4.1.11 The A2LA General Requirements for Accreditation booklet outlines the appeal procedures, including appeal to the A2LA Board of Directors. The A2LA Bylaws describes in detail the appeals procedures and the laboratory's right to a hearing.

4.1.12 An accredited laboratory must provide A2LA with yearly updates on its organizational status, proficiency testing performance, and internal quality audits. Laboratories are frequently contacted for feedback on the Association's operations, either individually or as a group in locations where participants can conveniently gather.

5. Assessors.

Only technically competent assessors are used by A2LA. Each assessor is supplied with an A2LA Assessor Guide, an "Instructions For Assessor" document, and assessor checklists and forms to guide each assessment. Records of all assessors, including educational experience and work experience are maintained. The Board of Directors annually reviews the records of the assessors to verify their fitness for duty. When an assessor is accepted, he receives a letter including the contractual arrangements.

An assessor's services may be canceled at any time. Retraining may be provided if deemed desirable.

6. On-Site Assessments.

6.2 The assessors' responsibilities are described in the A2LA Assessor Guide and in the "Instructions for Assessor" document.

6.3 The A2LA Headquarters staff assembles the application information about the laboratory, provides the required checklists, and includes other relevant background material such as calibration data and proficiency test data for use by the assessor.

6.4 The assessors are provided with work sheets for each laboratory assessed. A comprehensive checklist for the general criteria has been developed and is provided for each laboratory. Checklists for specific test methods are also supplied in certain fields of testing.

6.5 The assessor is responsible for preparing a report identifying all deficiencies and reviewing these with laboratory management before leaving the laboratory. Recommendations as to the scope of a laboratory's accreditation are included.

6.6 Full reassessment of the laboratories is required every two years. Partial reassessment may be required at any time.

7. Proficiency Testing.

The laboratories are required to participate in existing proficiency testing in a number of testing areas. To date, A2LA is not administering its own proficiency testing system, but is using programs conforming to the procedures described in ASTM E994 and evolving proficiency testing standards.

8. Questionnaires.

A2LA uses questionnaires to obtain updating information yearly and to obtain information about the laboratory in preparation for its reaccreditation. The data provided by the laboratory are used to determine if reassessments are needed, and if needed the data are provided to the assessor to prepare for his visit.

9. Evaluation of Laboratories.

The A2LA Accreditation Council is made up of technical peers who judge the competence of the laboratory based on assessor reports, proficiency testing, application information, questionnaire information, and communications from the laboratory. The A2LA staff acts as secretary to the Council. Assessors are not members of the Council.

10. Deciding on Accreditation.

The Accreditation Council decides on granting or withholding accreditation. The President of the Association informs the laboratory of the Council's decision and if accreditation is denied, informs the laboratory of its right of appeal and describes the appeal procedures.

11. Awarding Accreditation.

Upon granting accreditation, a formal accreditation certificate signed by the President is prepared and sent to the laboratory along with a formal Scope of Accreditation which list the testing services for which accreditation is granted.

12. Notification of Accreditation.

A2LA prepares and distributes a Directory of Accredited Laboratories yearly with supplements and updates periodically throughout the year. Accreditation actions are published in A2LA News. The A2LA "Advertising Policy for Accredited Laboratories" specifies the limitations imposed on how the accredited laboratory may publicize its accredited status and display the A2LA logo.

13. Significance of Accreditation.

A2LA has provided the attached information updating its status. This information has been supplied to the International Laboratory Accreditation Conference Editorial Committee and to The Marley Organization which updates the information on laboratory accreditation systems in the United States on a regular basis.

PART 460—LABELING AND ADVERTISING OF HOME INSULATION

Sec.

460.1 What this regulation does.
460.2 What is home insulation.
460.3 Who is covered.
460.4 When the rules apply.
460.5 R-value tests.
460.6 "Representative thickness" testing.
460.7 Which test version to use.
460.8 R-value tolerances.
460.9 What test records you must keep.
460.10 How statements must be made.
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460.12 Labels.
460.13 Fact sheets.
460.14 How retailers must handle fact sheets.
460.15 How installers must handle fact sheets.
460.16 What new home sellers must tell new home buyers.
460.17 What installers must tell their customers.
460.18 Insulation ads.
460.19 Savings claims.
460.20 R-value per inch claims.
460.21 Government claims.
460.22 Tax claims.
460.23 Other laws, rules, and orders.
460.24 Stayed or invalid parts.
Appendix A—Enforcement Policy Statement for Foreign Language Advertising.
Appendix B—Enforcement Policy Statement for Clear and Conspicuous Disclosures in Television Advertising.

Authority: 38 Stat. 717, as amended. 15 U.S.C. 41 et seq.

§ 460.1 What this regulation does.

This regulation deals with home insulation labels, fact sheets, ads, and other promotional materials in or affecting commerce, as "commerce" is defined in the Federal Trade Commission Act. If you are covered by this regulation, breaking any of its rules is an unfair and deceptive act or practice or an unfair method of competition under section 5 of that Act. You can be fined heavily (up to $10,000) each time you break a rule.

§ 460.2 What is home insulation.

Insulation is any material mainly used to slow down heat flow. It may be mineral or organic, fibrous, cellular, or reflective (aluminum foil). It may be in rigid, semirigid, flexible, or loose-fill form. Home insulation is for use in old or new homes, condominiums, cooperatives, apartments, modular homes, or mobile homes. It does not include pipe insulation. It does not include any kind of duct insulation except for duct wrap.

§ 460.3 Who is covered.

You are covered by this regulation if you are a member of the home insulation industry. This includes individuals, firms, partnerships, and corporations. It includes manufacturers, distributors, franchisors, installers, retailers, utility companies, and trade associations. Advertisers and advertising agencies are also covered. So are labs doing tests for industry members. If you sell new homes to consumers, you are covered.

§ 460.4 When the rules apply.

You must follow these rules each time you import, manufacture, distribute, sell, install, promote, or label home insulation. You must follow them each time you prepare, approve, place, or pay for home insulation labels, fact sheets, ads, or other promotional materials for consumer use. You must also follow them each time you supply anyone covered by this regulation with written information that is to be used in labels, fact sheets, ads, or other promotional materials for consumer use. Testing labs must follow the rules unless the industry members tells them, in writing, that labels, fact sheets, ads, or other promotional materials for home insulation will not be based on the test results.

§ 460.5 R-value tests.

R-values measure resistance to heat flow. R-values given in labels, fact sheets, ads, or other promotional materials must be based on tests done under the methods listed below. They were designed by the American Society of Testing and Materials (ASTM).

The test methods are:

(a) All types of insulation except aluminum foil must be tested with ASTM C177, C518, or C236. If the "calibrated hot box" becomes an ASTM standard test method, it can also be used. The tests must be done on the insulation material alone (excluding any air spaces). The tests must be done at a mean temperature of 75° Fahrenheit.

(1) For polyurethane, polyisocyanurate, and extruded polystyrene, the tests must be done on samples that fully reflect the effect of aging on the product's R-value. To age the sample, follow the procedure in paragraph 4.6.4 of GSA Specification HH–I–530A, or another reliable procedure.

(2) For cellulose, the tests must be done at the settled density determined under GSA Specification HH–I–515D.

(3) 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. When a settled density procedure becomes part of a final GSA Specification for loose-fill mineral wool, the tests must be done at the settled density determined under the GSA Specification.

(b) Aluminum foil systems with more than one sheet must be tested with ASTM C236 (or the calibrated hot box). The tests must be done at a mean temperature of 75° Fahrenheit, with a temperature differential of 30° Fahrenheit.

(c) Single sheet systems of aluminum foil must be tested with ASTM E408 or another test method that provides comparable results. This tests the emissivity of the foil—its power to radiate heat. To get the R-value for a specific emissivity level, air space, and direction of heat flow, use the tables in the most recent edition of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers' (ASHRAE) Handbook. You must use the R-value shown for 50° Fahrenheit, with a temperature differential of 30° Fahrenheit.

(d) For insulation materials with foil facings, you must test the R-value of the material alone (excluding any air spaces) under the methods listed in subsection (a). You can also determine the R-value of the material in conjunction with an air space. You can use one of two methods to do this:

(1) You can test the system, with its air space, under ASTM C236 (or the calibrated hot box). If you do this, you must follow the rules in subsection (a) on temperature, aging, and settled density.

(2) You can add up the tested R-value of the material and the R-value of the air space. To get the R-value for the air space, you must follow the rules in subsection (c).

§ 460.6 "Representative thickness" testing.

All tests except aluminum foil tests must be done at a representative thickness for every thickness shown in a label, fact sheet, ad, or other promotional material. "Representative thickness" means a thickness at which the R-value per unit will vary no more than plus or minus 2% with increases in thickness. However, if the thickness shown in your label, fact sheet, ad, or promotional material is less than the representative thickness, then you can test the insulation at the thickness shown.

§ 460.7 Which test version to use.

Use the version of the ASTM test method that was in effect when this regulation was promulgated. If ASTM changes a test method, the new version will automatically replace the old one in these rules 90 days after ASTM first publishes the change. However, the Commission's staff or a person affected by the change can petition the

Commission during the 90-day period not to adopt the change or to reopen the proceeding to consider it further.

§ 460.8 R-value tolerances.

If you are an industry member, the R-value of any insulation you sell cannot be more than 10% below the R-value shown in a label, fact sheet, ad, or other promotional material for that insulation. However, if you are not a manufacturer, you can rely on the R-value data given to you by the manufacturer, unless you know or should know that the data is false or not based on the proper tests.

§ 460.9 What test records you must keep.

Manufacturers and testing labs must keep records of each item of information in the "Report" section of the ASTM test method that is used for a test. They must also keep the following records:

(a) The name and address of the testing lab that did each test.

(b) The date of each test.

(c) For manufacturers, the date each test report was received from a lab. For labs, the date each test report was sent to a manufacturer.

(d) For extruded polystyrene, polyurethane, and polyisocyanurate, the age (in days) of the specimen that was tested.

(e) For aluminum foil, the emissivity level that was found in the test.

Manufacturers who own their own testing labs need not keep records of the information in subsection (c).

Keep these records for at least three years. If the documents show proof for your claims, the three years will begin again each time you make the claim. Federal Trade Commission staff members can check these records at any time, but they must give you reasonable notice first.

§ 460.10 How statements must be made.

All statements called for by this regulation must be made clearly and conspicuously. Among other things, you must follow the Commission's Enforcement Policy Statement for Foreign Language Advertising (July 24, 1973) (Appendix A). For TV ads, you must follow the Commission's Enforcement Policy Statement for Clear and Conspicuous Disclosures in Television Advertising (October 21, 1970) (Appendix B). However, only the quoted statements required by §§ 460.18(a) and 460.19(b) must be made in a voice-over. Both of the above documents are in the Appendix to this regulation.

§ 460.11 Rounding off R-values.

R-values shown in labels, fact sheets, ads, or other promotional materials must be rounded to the nearest tenth. However, R-values of 10 or more may be rounded to the nearest whole number.

§ 460.12 Labels.

If you are a manufacturer, you must label all packages of your insulation. The labels must contain:

(a) The type of insulation.

(b) A chart showing these items:

(1) For mineral fiber batts and blankets: the R-value, length, width, thickness, and square feet of insulation in the package.

(2) For all loose-fill insulation except cellulose: the minimum thickness, maximum net coverage area, and minimum weight per square foot at R-values of 11, 19, and 22. You must also give this information for any additional R-values you list on the chart. Labels for these products must state the minimum net weight of the insulation in the package.

(3) For loose-fill cellulose insulation: the minimum thickness, maximum net coverage area, number of bags per 1,000 square feet, and minimum weight per square foot at R-values of 13, 19, 24, 32, and 40. You must also give this information for any additional R-values you list on the chart. Labels for this product must state the minimum net weight of the insulation in the package.

(4) For boardstock: the R-value, length, width, and thickness of the boards in the package, and the square feet of insulation in the package.

(5) For aluminum foil: the number of foil sheets; the number and thickness of the air spaces; and the R-value provided by that system when the direction of heat flow is up, down, and horizontal. You can show the R-value for only one direction of heat flow if you clearly and conspicuously state that the foil can only be used in that application.

(6) For insulation materials with foil facings, you must follow the rule that applies to the material itself. For example, if you manufacture boardstock with a foil facing, follow subsection (4). You can also show the R-value of the insulation when it is installed in conjunction with an air space. This is its "system R-value." If you do this, you must clearly and conspicuously state the conditions under which the system R-value can be attained.

(7) For air duct insulation: the R-value, length, width, thickness, and square feet of insulation in the package.

(c) The following statement: "R means resistance to heat flow. The higher the R-value, the greater the insulating power."

(d) If installation instructions are included on the label or with the package, add this statement: "To get the marked R-value, it is essential that this insulation be installed properly. If you do it yourself, follow the instructions carefully."

(e) If no instructions are included, add this statement: "To get the marked R-value, it is essential that this insulation be installed properly. If you do it yourself, get instructions and follow them carefully. Instructions do not come with this package."

§ 460.13 Fact sheets.

If you are a manufacturer, you must give retailers and installers fact sheets for the insulation products you sell to them. Each sheet must contain what is listed here. You can add any disclosures that are required by state or local laws, rules, and orders, unless they are inconsistent with the provisions of this regulation. Do not add anything else.

Each fact sheet must contain these items:

(a) The name and address of the manufacturer. It can also include a logo or other symbol that the manufacturer uses.

(b) A heading: "This is _____ insulation." Fill in the blank with the type and form of your insulation.

(c) The heading must be followed by a chart:

(1) If section 460.12(b) requires a chart for your product's label, you must use that chart. For foamed-in-place insulations, you must show the R-value of your product at 3½ inches. You can also show R-values at other thicknesses.

(2) You can put the charts for similar products on the same fact sheet. For example, if you sell insulation boards or batts in three different thicknesses, you can put the label charts for all three products on one fact sheet. If you sell loose-fill insulation in two different bag sizes, you can put both coverage charts on one fact sheet, as long as you state which coverage chart applies to each bag size.

(d) For urea-based foam insulation, the chart must be followed by this paragraph:

"Foam insulation shrinks after it is installed. This shrinkage may significantly reduce the R-value you get."

However, you can lower your product's R-value to account for shrinkage. To do this, you must have reliable scientific proof of the extent of shrinkage for your product and of its effect on R-value. If you lower your product's R-value, you need not make the above statement.

(e) For air duct insulation, the chart must be followed by this statement:

"The R-value of this insulation varies depending on how much it is compressed during installation."

(f) After the chart and any statement dealing with the specific type of insulation, ALL fact sheets must carry this statement, boxed, in 12-point type:

Read This Before You Buy

What You Should Know About R-values

The chart shows the R-value of this insulation. R means resistance to heat flow. The higher the R-value, the greater the insulating power. Compare insulation R-values before you buy.

There are other factors to consider. The amount of insulation you need depends mainly on the climate you live in. Also, your fuel savings from insulation will depend upon the climate, the type and size of your house, the amount of insulation already in your house, and your fuel use patterns and family size. If you buy too much insulation, it will cost you more than what you'll save on fuel.

To get the marked R-value, it is essential that this insulation be installed properly.

§ 460.14 How retailers must handle fact sheets.

If you sell insulation to do-it-yourself customers, you must have fact sheets for the insulation products you sell. You must make the fact sheets available to your customers. You can decide how to do this, as long as your insulation customers are likely to notice them. For example, you can put them in a display, and let customers take copies of them. You can keep them in a binder at a counter or service desk, and have a sign telling customers where the fact sheets are.

§ 460.15 How installers must handle fact sheets.

If you are an installer, you must have fact sheets for the insulation products you sell. Before customers agree to buy insulation from you, you must show them the fact sheet(s) for the type(s) of insulation they want. You can decide how to do this. For example, you can give each customer a copy of the fact sheet(s). You can keep the fact sheets in a binder, and show customers the binder before they agree to buy.

§ 460.16 What new home sellers must tell new home buyers.

If you are a new home seller, you must put the following information in every sales contract: the type, thickness, and R-value of the insulation that will be installed in each part of the house. There is an exception to this rule. If the buyer signs a sales contract before you know what type of insulation will be put in the house, or if there is a change in the contract, you can give the buyer a receipt stating this information as soon as you find out.

§ 460.17 What installers must tell their customers.

If you are an installer, you must give your customers a contract or receipt for the insulation you install. For all insulation except loose-fill and aluminum foil, the receipt must show the coverage area, thickness, and R-value of the insulation you installed. For loose-fill, the receipt must show those three items plus the number of bags used. For aluminum foil, the receipt must show the number and thickness of the air spaces, the direction of heat flow, and the R-value. The receipt must be dated and signed by the installer. To figure out the R-value of the insulation, use the data that the manufacturer gives you. Do not multiply the R-value for one inch by the number of inches you installed. If you put insulation in more than one part of the house, put the data for each part on the receipt. You can do this on one receipt, as long as you do not add up the coverage areas or R-values for different parts of the house.

§ 460.18 Insulation ads.

(a) If your ad gives an R-value, you must give the type of insulation and the thickness needed to get that R-value. Also, add this statement explaining R-values: "The higher the R-value, the greater the insulating power. Ask your seller for the fact sheet on R-values."

(b) If your ad gives a price, you must give the type of insulation, the R-value at a specific thickness, the statement explaining R-values in subsection (a), and the coverage area for that thickness. If you give the price per square foot, you do not have to give the coverage area.

(c) If your ad gives the thickness of your insulation, you must give its R-value at that thickness and the statement explaining R-values in subsection (a).

(d) If your ad compares one type of insulation to another, the comparison must be based on the same coverage areas. You must give the R-value at a specific thickness for each insulation, and the statement explaining R-values in subsection (a). If you give the price of each insulation, you must also give the coverage area for the price and thickness shown. However, if you give the price per square foot, you do not have to give the coverage area.

(e) If your ad gives the R-value of urea-based foam insulation, you must add this statement: "Foam insulation shrinks after it is installed. This shrinkage may significantly reduce the R-value you get." However, you can lower your product's R-value to account for shrinkage. To do this, you must have reliable scientific proof of the extent of shrinkage for your product and of its effect on R-value. If you lower your product's R-value, you need not make the above statement.

§ 460.19 Savings claims.

(a) If you say or imply in your ads, labels, or other promotional materials that insulation can cut fuel bills or fuel use, you must have a reasonable basis for the claim. For example, if you say that insulation can "slash" or "lower" fuel bills, or that insulation "saves money," you must have a reasonable basis for the claim. Also, if you say that insulation can "cut fuel use in half," or "lower fuel bills by 30%," you must have a reasonable basis for the claim.

(b) If you say or imply in your ads, labels, or other promotional materials that insulation can cut fuel bills or fuel use, you must make this statement about savings: "Savings vary. Find out why in the seller's fact sheet on R-values. Higher R-values mean greater insulating power."

(c) If you say or imply that a combination of products can cut fuel bills or use, you must have a reasonable basis for the claim. You must make the statement about savings in subsection (b). Also, you must list the combination of products used. They may be two or more types of insulation; one or more types of insulation and one or more other insulating products, like storm windows or siding; or insulation for two or more parts of the house, like the attic and walls. You must say how much of the savings came from each product or location. If you cannot give exact or approximate figures, you must give a ranking. For instance, if your ad says that insulation and storm doors combined to cut fuel use by 50%, you must say which one saved more.

(d) If your ad or other promotional material is covered by section 460.18(a), (b), (c), or (d), and also makes a savings claim, you must follow the rules in §§ 460.18 and 460.19. However, you need not make the statement explaining R-value in § 460.18(a).

(e) Manufacturers are liable if they do not have a reasonable basis for their savings claims before the claim is made. If you are not a manufacturer, you are liable only if you know or should know that the manufacturer does not have a reasonable basis for the claim.

(f) Keep records of all data on savings claims for at least three years. For the records showing proof for claims, the three years will begin again each time you make the claim. Federal Trade Commission staff members can check these records at any time, but they must give you reasonable notice first.

§ 460.20 R-value per inch claims.

In labels, fact sheets, ads, or other promotional materials, do not give the R-value for one inch or the "R-value per inch" of your product. There are two exceptions:

(1) You can do this if you suggest using your product at a one-inch thickness.

(2) You can do this if actual test results prove that the R-values per inch of your product does not drop as it gets thicker.

You can list a range of R-value per inch. If you do, you must say exactly how much the R-value drops with greater thickness. You must also add this statement: "The R-value per inch of this insulation varies with thickness. The thicker the insulation, the lower the R-value per inch."

§ 460.21 Government claims.

Do not say or imply that a government agency uses, certifies, recommends, or otherwise favors your product unless it is true. Do not say or imply that your insulation complies with a governmental standard or specification unless it is true.

§ 460.22 Tax claims.

Do not say or imply that your product qualifies for a tax benefit unless it is true.

§ 460.23 Other laws, rules, and orders.

(a) If an outstanding FTC Cease and Desist Order applies to you but differs from the rules given here, you can petition to amend to order.

(b) State and local laws and regulations that are inconsistent with, or frustrate the purposes of, the provisions of this regulation are preempted. However, a state or local government may petition the Commission, for good cause, to permit the enforcement of any part of a state or local law or regulation that would be preempted by this section.

(c) The Commission's three-day cooling-off rule stays in force.

§ 460.24 Stayed or invalid parts.

If any part of this regulation is stayed or held invalid, the rest of it will stay in force.

Appendix A—Enforcement Policy Statement for Foreign Language Advertising

Title 16—Commercial Practices

Chapter I—Federal Trade Commission

PART 14—ADMINISTRATIVE INTERPRETATIONS, GENERAL POLICY STATEMENTS, AND ENFORCEMENT POLICY STATEMENTS

§ 14.9 Requirements concerning clear and conspicuous disclosures in foreign language advertising and sales materials.

The Federal Trade Commission has noted that, with increasing intensity, advertisers are making special efforts to reach foreign language-speaking consumers. As part of this special effort, advertisements, brochures and sales documents are being printed in foreign languages. In recent years the Commission has issued various cease-and-desist orders as well as rules, guides and other statements, which require affirmative disclosures in connection with certain kinds of representations and business activities. Generally, these disclosures are required to be "clear and conspicuous." Because questions have arisen as to the meaning and application of the phrase "clear and conspicuous" with respect to foreign language advertisements and sales materials, the Commission deems it appropriate to set forth the following enforcement policy statement:

(a) Where cease-and-desist orders as well as rules, guides and other statements require "clear and conspicuous" disclosure of certain information, that disclosure must be in the same language as that principally used in the advertisements and sales materials involved.

(b) Any respondent who fails to comply with this requirement may be the subject of a civil penalty proceeding for violating the terms of a Commission cease-and-desist order.

(Sec. 5, 38 Stat. 719, as amended; 15 U.S.C. 45)

[38 FR 21494, Aug. 9, 1973]

Appendix B—Enforcement Policy Statement for Clear and Conspicuous Disclosures in Television Advertising

.09 "Clear and conspicuous" disclosure.—The FTC issued an enforcement policy statement setting forth the standards it considers in determining whether, in fact, an affirmative disclosure in a television commercial is "clear and conspicuous." The FTC explained that in recent years it has issued various opinions, orders and trade regulation rules concerned with the need for affirmative disclosures in connection with various kinds of representations. In making a determination, the FTC said that it will take into consideration all the technical factors, such as the size of letters and the duration of disclosure, used in presenting the disclosure to a television audience, as well as the substance of the individual disclosure. The following standards should be met for a television disclosure to be deemed "clear and conspicuous": (a) the disclosure should be presented simultaneously in both the audio and video portions of the television advertisement; (b) the video portion of the disclosure must contain letters of sufficient size so that it can be easily seen and read on all television sets, regardless of picture tube size; (c) the video portion of the disclosure should contain letters of a color or shade that readily contrast with the background, and the background should consist of only one color or shade; (d) no other sounds, including music, should occur during the audio portion of the disclosure; (e) the video portion of the disclosure should appear on the screen for a sufficient duration to enable it to be completely read by the viewer; and (f) the audio and video portions of the disclosure should immediately follow the specific sales representations to which they relate and should occur each time the representation is presented during the advertisement; in cases where a disclosure is required, but is not linked to a specific representation, it should appear in immediate conjunction with the major sales theme of the advertisement. Television advertisers should also consider the audience to whom the disclosure is directed in order to assure that persons (such as children) can understand the full meaning of the disclosure. If securing this understanding is impractical, then the advertisements containing such representations should not be used on television. *FTC Statement of Enforcement Policy*, October 21, 1970.

Trade Regulation Reports, Volume 2, ¶7569 at 12, 166 (1971)

By direction of the Commission dated August 10, 1979.

Loretta Johnson,

Acting Secretary.

[FR Doc. 79-26592 Filed 8-24-79; 8:45 am]

BILLING CODE 6750-01-M

Attachment #4

STATE OF MINNESOTA
Department of Energy and Economic Development
Energy Division

DEED Exhibit No. 3
File No.
Date

In the Matter of the Proposed Adoption of Rules of the Minnesota Department of Energy and Economic Development Establishing Materials, Installation and Labeling Standards for Thermal Insulation Products, Minn. Rule Chapter 4155.

STATEMENT OF NEED AND REASONABLENESS

The above-captioned rules are being proposed for initial adoption: they are not amendments to existing rules of the Minnesota Department of Energy and Economic Development. The general and specific need for and reasonableness of these rules will be discussed for each rule proposed.

STATUTORY AUTHORITY

The authority for adopting rules governing the manufacture, labeling and installation of thermal insulation materials arises directly from legislative mandate. Minn. Stat. § 325F.20, subd. 1 (1984) provides in part:

> The commissioner shall adopt rules pursuant to chapter 14 regarding quality, information and product safety specifications for the manufacture, labeling, installation and thermography of insulation.

The legislature also mandated that:

> Upon the adoption of specifications under section 325F.20, subd. 1, all insulation used or offered for sale in Minnesota shall be tested in accordance with testing procedures required under those specifications by a laboratory qualified to test thermal insulation.
> Minn. Stat § 325F.21, subdivision 1 (1984).

In addition, general rulemaking authority arises from Minn. Stat. §116J.035, subd. 2, and §116J.10 (1984).

History

The original legislation requiring rules on insulation was adopted in 1978. Pursuant to this legislation, the Agency in 1978 and 1979 developed rules, prepared a Statement of Need and Reasonableness, held a hearing, but then withheld from adopting the rules due to a simultaneous burst of regulatory activity on insulation at the federal government level. Since that time, most federal standards concerning the manufacture and installation of insulation have disappeared or fallen into disuse. The erosion of federal control in this area continues today.

In 1984 the Minnesota Legislature renewed its interest in state insulation standards in light of local insulation quality control problems and lack of federal action in this area. The Legislature appropriated special funding to complete the program which began 6 years previously. Although not used, Emergency Rulemaking authority was also given to the

(b) To evaluate manufacturing techniques and make recommendations for improvement if the insulation fails to meet the assigned testing standards.

(6) Testing for each type of insulation shall be performed in accordance with the methods specified in subparts 3 to 15.

Item A establishes minimum testing requirements and deadlines. The purpose is to assure that laboratory testing is performed in a manner that will provide reliable results in a timely fashion which will demonstrate that tested thermal insulation materials comply with the Minnesota standards.

This item requires testing to be performed within 120 days of the effective date of these rules. The rule is necessary because it implements the legislative order that such testing be performed. Minn. Stat. § 325F.21, subd. 1 (1984). The time limit is necessary because it provides a deadline for such testing to be performed.

The 120-day time limit is reasonable in view of, 1) existing industry practices to self-test, 2) the opportunities provided by the rules to use existing test data, and 3) the short turn-around period for laboratories to perform most tests.

The vast majority of the test methods utilized in the rules are commonly used by both industry and government. The ASTM standards are set up based on the consensus of insulation industry members themselves, including testing laboratories. The insulation industry is familiar with both laboratory testing of products and government regulation. The insulation industry has been well aware of, and has participated in, the process of promulgating state, federal and private standards.

Following the initial reporting requirement, testing is required on an annual basis. Testing for quality control is necessarily a continuous requirement. Most manufacturers already run continuous in-house testing. The rules only require one full set of tests to be run per year. The cost to perform a full set of tests varies depending on the type of insulation. Testing costs, however, are an established part of manufacturing insulation. For example, FTC requirements include density and thermal performance tests. Compliance with building codes requires flammability tests. The industry itself has selected the majority of the test procedures, which determines the cost. Tests in this part of the rule were chosen based on current industry testing practices. Manufacturers representing the various industries that have been in communication with the Department Staff are well familiar with the tests required. None of the tests required have an affixed laboratory cost substantially out of proportion to present industry practices.

Sub item A (3) requires that after 120 days following final enactment all testing must be performed at a NVLAP approved laboratory. The NVLAP program accredits testing laboratories to perform specific tests, in a standardized manner. NVLAP was established in 1976 and is a part of the National Bureau of Standards (NBS) under the United States Department of Commerce. Testing laboratories join the program on a voluntary basis. NVLAP assists laboratories, for a reasonable fee, in improving the measurement capabilities and providing data to improve test methods and standards.

The need for the NVLAP requirement is to provide meaningful and reliable test data to the Department. The program assures that participating laboratories are performing identical tests with identical equipment under identical conditions. Without this standardization,

Attachment #5

ICBO Evaluation Service, Inc.

A subsidiary corporation of the International Conference of Building Officials

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CHIEF FINANCIAL OFFICER
ARLENE HARRIS

August 21, 1987

TO: PROPONENTS OF EVALUATION REPORTS ON INSULATION MATERIALS, TESTING LABORATORIES AND OTHER INTERESTED PARTIES

Gentlemen:

Enclosed is a copy of the ICBO Evaluation Service, Inc. Acceptance Criteria for Reflective Foil Insulation, dated June, 1987. All sections of the criteria are now in effect.

If you have any questions concerning this, please feel free to contact us.

Yours very truly,

C P Ramani

C. P. Ramani, P.E.
Vice-President

CPR:nl

Enclosure

cc: Evaluation Committee

ICBO Evaluation Service, Inc.
A subsidiary corporation of the International Conference of Building Officials
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ACCEPTANCE CRITERIA FOR REFLECTIVE FOIL INSULATION

~~November, 1986*~~
June, 1987

PREFACE

Evaluation reports issued by the ICBO Evaluation Service, Inc. (ICBOES), are based upon performance features of the Uniform Building Code, Uniform Mechanical Code, Uniform Plumbing Code and related codes. Section 105 of the Uniform Building Code is the primary charging section upon which evaluation reports are issued. Section 105 reads as follows:

> The provisions of this code are not intended to prevent the use of any material or method of construction not specifically prescribed by this code, provided any alternate has been approved and its use authorized by the building official.
>
> The building official may approve any such alternate, provided he finds that the proposed design is satisfactory and complies with the provisions of this code and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in suitability, strength, effectiveness, fire resistance, durability, safety and sanitation.
>
> The building official shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use. The details of any action granting approval of an alternate shall be recorded and entered in the files of the code enforcement agency.

The attached acceptance criteria for the general code sections noted have been issued to provide all interested parties with guidelines on implementing performance features of the codes. The attached acceptance criteria were developed and adopted following public hearings conducted by the Evaluation Committee. These criteria may be revised from time to time as the need dictates.

The ICBOES may consider alternate criteria, provided the proponent submits valid data demonstrating that the alternate criteria are at least equivalent to the attached criteria and otherwise meet the applicable performance requirements of the codes. Notwithstanding that a material, type or method of construction, or equipment, meets the attached acceptance criteria, or it can be demonstrated that valid alternate criteria are equivalent and otherwise meet the applicable performance requirements of the codes, if the material, product, system or equipment is such that either unusual care with its installation or use must be exercised for satisfactory performance, or malfunctioning is apt to cause unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use thereof, the ICBOES retains the right to refuse to issue or renew an evaluation report.

Published by the

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~~*Reissued April, 1986, with current technical references.~~

I. SCOPE

The purpose of these criteria is to establish requirements for recognition of reflective foil insulation by the ICBO Evaluation Service, Inc. (ICBO ES).

II. DEFINITIONS

For definitions of terms not covered herein, see ASTM C-168 and Trade Regulation Rule No. 16 C.F.R., Part 460, dated August 29, 1979 of the Federal Trade Commission.

Bubble Packs are one or more layers of polyethelene, incorporating premanufactured bubbles, laminated between two layers of foil.

Reflective Capsheets are single layers of laminated product typically attached to the bottom facings of roof sub-purlins or the facings of wall studs.

Core Materials are materials laminated to or between one or more layers of foil to produce a finished product.

Flangeboards are heavy duty paper products used as both nailing flanges and dividers of air spaces in multi-layer products.

Laminates are products resulting from bonding one or both sides of a core material to layer(s) of foil.

III. BASIC INFORMATION AND REPORT OF TESTS

The following basic information is necessary:

A. Complete information on the manufacturing process.

B. Dimensioned scale drawings and details noting all thicknesses, size and location of fasteners and installation details.

C. Method of packaging and identification of components.

D. Method of field cutting, trimming or forming and treatment of cut edges.

E. The test report must be in sufficient detail to identify specimen properties that may affect performance. The required tests are to be conducted by a testing agency recognized by the ICBO ES.

A qualified representative of the testing agency must witness the manufacture and installation of test specimens. The testing agency must verify and report dimensions, weight, density,

labeled R-Values and other relevant physical properties of the major components and the manner of installation, including a description of fastening elements and details of repair procedure. Photographs must be included in the report.

F. Information indicating compliance with Section 1713 (c) of the code.

IV. MATERIAL REQUIREMENTS

A. Aluminum Foil 1. Foil must be 99 percent pure aluminum with an emittance, after lamination, of no greater than 0.10 when measured in accordance with ASTM Method E-408.

2. Exposed, unsupported foil, shall have a minimum thickness of 0.0004 inch. Unsupported foil, that is sandwiched in a multi-layer sheet, shall have a minimum thickness of 0.00035 inch. Foil bonded to kraft paper, polyethelene, mylar or other plastic films shall have a minimum thickness of 0.00025 inch. Minimum space between layers of multi-layer insulations shall be 3/4 inch for up to four layers and 1/2 inch for five-layer insulation.

B. Paper and Flangeboard Kraft paper and flangeboard shall comply with ANSI/TAPPI T400 0M85. Flangeboard used for more than two insulation layers shall be 28-point grade minimum, for single-sheet flangeboard or 14-point grade minimum, for plies

of double-sheet flangeboard.

C. Laminates Laminates shall have a minimum tensile strength of 20 pounds per inch when tested in accordance with U.B.C. Standard No. 17-1 and Federal Specification No. UU-B-790A, Test Method No. 171.

Exception: 35 pound single side foil/kraft laminate shall have a minimum tensile strength of 9 pounds per inch.

D. Adhesives Adhesive used in bonding shall be compatible for its intended use and show no sign of bleeding when tested in accordance with the test procedure outlined in Section V A. (Bleeding at cut edges may be disregarded.)

V. TEST PROCEDURES:

A. Adhesive bleeding: A minimum of three test specimens, approximately 3 by 6 inches, are suspended in a vertical position and heated to a temperature of 180°F.+5°F. with a 50+5 percent relative humidity, for at least 5 hours. At the end of the exposure period, reflective surfaces shall be examined under 5 X magnification to determine whether the adhesive has bled or extruded through the surface or delamination has occurred.

B. Pliability: A minimum of three samples in each set shall be used with at least one sample having a factory produced edge. Foil laminate shall be folded in accordance with TAPPI Standard No. 512-0M86, and the folded edge smoothed, using a light-finger pressure. Sample specimens shall be conditioned for at least 24 hours immediately prior to the test. The first three samples of finished laminate shall be folded to a 180-degree bend after conditioning, at a temperature of 70°F. + 2°F. and a relative humidity of 50+5 percent. The test shall be repeated on a second set of three samples, conditioned at 32°F. ± 2°F. When the specimens are tested in the above manner, there shall be no cracking or delamination.

C. Mold (Fungus) Test: Mold and mildew (fungus) resistance in accordance with MIL-STD-810B. Samples are examined visually under 5 X magnification after exposure to determine extent of mold growth and deterioration. Mold growth must be confined to the innoculated area, with no significant growth within. No delamination is permitted.

D. Water Vapor Transmission Tests: Representative samples of each type of laminate shall be subjected to this test in accordance with ASTM Method E-96-1980, Desiccant method. Water vapor transmission rate obtained from the tests shall be included in the evaluation report on the product.

E. Thermal Performance: All products and assemblies must be tested in accordance with ASTM C236 with the insulation installed in a manner representative of end use. Thermal performance may also be established by comparative testing in accordance with ASTM C236 as set forth below:

Products must be installed in identical assemblies in a manner representative of field installation. Details of the proposed testing should be submitted to ICBO ES for evaluation prior to testing.

1. Test Assemblies

a. Horizontal Assemblies

(i) Minimum 2 x 4 or 2 x 6 inch cavity with 16 or 24-inch spacing of wood members. Larger framing members may be used, depending on end use conditions.

(ii) Minimum 1/2-inch gypsum wallboard or 1/2-inch plywood is required on side.

b. Walls (must include obstructed and unobstructed assemblies):

(i) Must be 2 x 4 or 2 x 6 inch cavity with 16 or 24-inch on center spacing of members.

(ii) Interior facing must be 1/2-inch gypsum wallboard.

(iii) Covering on exterior side must be 1/2-inch plywood.

2. Test Method

a. All specimens for thermal performance tests shall be conditioned at 73.4°F.± 3.6°F. at a relative humidity of 50±5 percent for 24 hours, immediately preceeding the tests. The average testing temperature shall be 75°F.±2°F. with at least a 40°F. temperature difference.

b. Test frame shall be a minimum 8 x 8 feet.

c. Metering box area shall be a minimum 4 x 4 feet.

d. Assembly shall be tested with heat flow in the direction

of intended use.

e. Results to be shown as overall thermal transmittance, air-to-air (U-Value), for the complete assembly.

3. Miscellaneous Requirements

a. Insulation installation and completed assembly must be representative of typical assemblies in field.

b. Dimensional cross-sectional drawings and photographic records must be made of each assembly tested.

c. Representative samples of actual insulation products compared must be retained by the testing laboratory for a period of one year from date of test.

F. Flammability Characteristics

1. Flame-spread Testing: Surface-burning characteristics shall be determined in accordance with U.B.C. Standard No. 42-1* and shall not exceed the following values:

* Same as ASTM E84-80

Flame Spread 25 Smoke Developed 450

Exception: For Bubble Pack insulation products, a flame spread of up to 200 and smoke density up to 450 is accepted for the plastic core, provided a thermal barrier having an index of 15 when tested in accordance with U.B.C. Standard No. 17-3 is applied on the interior side.

2. Test Procedures

a. Single layer foil products, of foil-kraft-foil-laminate shall be tested at least once in a continuous length.

b. Multi-layer foil insulations, comprised of two or more layers, separated by an airspace, shall be tested at least twice and an average taken (within the same flame-spread classification) of the results to indicate the flame spread. Material may be in either eight foot section or continuous lengths.

c. Bubble Pack products shall be tested at least once in continuous length, at least once with a geometrically centered longitudinal joint sealed in accordance with

manufacturer's instructions; and at least once with the plastic core exposed to the tunnel flame. This will require a minimum 1/8-inch-wide slit in the facing material to a depth necessary to expose the core material to the tunnel flame. The slit must be geometrically centered between the tunnel sides and must extend its full length.

3. Burning

a. Paper products used as laminates, spacers, etc., in conjunction with reflective foil insulation, must comply with U.S. Department of Commerce Voluntary Product Standard PS 46-71 as a Type I material.

Exception: Not required on kraft paper in reflective capsheet insulation where the kraft paper is sandwiched between layers of aluminum foil.

b. For products designed for installation in areas subject to high humidity, compliance as a Type II material is required.

Attachment #6

California Energy Commission

Conservation Division

STANDARDS FOR INSULATING MATERIAL

June 1982

P400-82-053

1554. Approval of Testing Laboratories. (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.

NOTE: Authority cited: Section 25218(e), Public Resources Code.
Reference: Sections 25915(a), 25921, Public Resources Code.

1555. Certification. (a) No insulating material shall be sold 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 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, a sample label for the product, or similar information.

(3) Test results from an approved laboratory.

(4) A description of the basis for assuring that all of 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.

CHAPTER 4155 - MINNESOTA INSULATION STANDARDS
RULES AS PROPOSED
OUTLINE*

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* This outline is not part of the rules.

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AFFIDAVIT OF CERTIFICATE OF MAILING LIST

In the Matter of the Proposed Adoption of the Rule of the Minnesota Department of Public Service, Energy Division, Governing Residential Thermal Insulation Standards

AFFIDAVIT OF CERTIFICATE OF MAILING LIST FOR NOTICE OF INTENT TO ADOPT A RULE WITHOUT A PUBLIC HEARING

STATE OF MINNESOTA)
) ss.
COUNTY OF RAMSEY)

DENNIS M. DEVEREAUX, being first duly sworn deposes and says:

I hereby certify that the list of persons and associations who have requested, pursuant to Minnesota Statutes, sections 14.14, subdivision 1a and 14.22 or 14.30, that their names be placed on the state Department of Public Service, Energy Division, rulemaking list is accurate, complete, and current as of this 28 day of APRIL, 1988.

Dennis M. Devereaux
(name)

Special Asst to the Commissioner
(title)

Subscribed and sworn to before me this 11th day of May, 1988.

Brooke L Manley
Notary Public

BROOKE L. MANLEY
NOTARY PUBLIC-MINNESOTA
RAMSEY COUNTY
My Comm. Expires June 28, 1988

RECEIVED

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ATTORNEY GENERAL'S OFFICE
515 TRANSPORTATION BLDG.
ST. PAUL, MN 55155

State of Minnesota

STATE REGISTER

Department of Administration—Documents Division



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...OPMENT

150 E. KELLOGG BLVD
ST. PAUL MN 55101

Unless 25 or more persons submit a written request for a public hearing on the proposed rule within 30 days comment period, a public hearing will not be held. In the event a public hearing is required, the agency will proceed according to the provisions of *Minnesota Statutes* section 14.13 through 14.20.

Persons who wish to submit comments or a written request for a public hearing should submit such comments or requests to:

Robert G. Pyle
State Board of Animal Health
90 West Plato Blvd.
160 Agriculture Building
St. Paul, Mn 55107
Telephone: (612) 296-2941

A Statement of Need and Reasonableness that describes the need for and reasonableness of each provision of the proposed rules and identifies the data and information supporting the proposed rules has been prepared and is available from Robert G. Pyle upon request.

Upon adoption of the final rules without a public hearing, the proposed rules, this notice, the Statement of Need and Reasonableness, all written comments received, and Rules as Adopted will be delivered to the Attorney General for review as to form and legality, including the issue of substantial change. Persons who wish to be advised of the submission of this material to the Attorney General, or who wish to receive a copy of the final rules as adopted should submit a written statement of such request to Robert G. Pyle at the address listed above.

The rules proposed for adoption relate to the following matters: The Importation of Swine into Minnesota, and State Federal Markets for Swine.

A copy of the proposed rule is attached to this notice.

Dated: 21 April 1988

T. J. Hagerty, DVM
Executive Secretary
Board of Animal Health

Rules as Proposed

1700.2700 REQUIREMENT FOR CERTIFICATE OF VETERINARY INSPECTION.

All domestic and feral swine imported into Minnesota must be accompanied by a certificate issued by an accredited veterinarian, except: slaughter swine consigned to a public stockyard; slaughter swine consigned to a market operating under a permit from the board; feeder swine consigned to a state-federal approved swine market as defined in part 1715.0590, subpart 10, from a farm of origin in an adjacent state; and swine going directly to slaughter at a slaughtering establishment having federal inspection.

1715.0760 MOVEMENTS INTO MARKETS.

Subpart 1. to 4a. [Unchanged.]

Subp. 4b. **Feeder pigs from markets in other states.** Feeder pigs originating from other states may only enter the market if there is a certificate of veterinary inspection and a permit meeting the requirements of part 1715.0705, subpart 3.

Subp. 4c. **Feeder pigs from farms of origin in other states.** Feeder pigs originating from farms of origin in adjacent states may enter if the seller presents an official pseudorabies monitored herd test record or feeder pig monitoring herd card.

Subp. 4d. **Feeder pigs from farm of origin in low prevalence states.** Feeder pigs originating from a farm of origin in a low prevalence state may enter the market if the consigner furnishes proof of residence and proof of origin of the feeder pigs.

Subp. 5. [Unchanged.]

Department of Public Service

Proposed Permanent Rules Relating to Thermal Insulation Standards

Notice of Intent to Amend Rules Without a Public Hearing

Notice is hereby given that the Minnesota Department of Public Service proposes to adopt amendments to *Minnesota Rules*, Chapter 4155.0130, subpart 2.A.(1), without a public hearing. The Commissioner has determined that the proposed amendment of these rules will be noncontroversial in nature and has elected to follow the procedures set forth in the *Minnesota Statutes*, sections

14.22 to 14.28. Authority for the adoption of these rules is contained in *Minnesota Statutes*, sections 325E.20, subd. 1 and 325E.21, subd. 1 and 2.

Minnesota Rules, Chapter 4155 apply to manufacturers of all residential thermal insulation products sold or installed in Minnesota.

All persons have 30 days in which to submit comment in support of or in opposition to any part of the proposed amendments. Comment is encouraged. Each comment should identify the proposed amendment addressed, the reason for the comment, and any change proposed.

All persons may make a written request for a public hearing on the proposed amendments within the 30-day comment period. If 25 or more persons submit a written request for a public hearing within the 30-day comment period, a public hearing will be held unless a sufficient number withdraw their requests in writing. Any person requesting a public hearing must state his or her name and address and is encouraged to identify the portion of the proposed amendment addressed, the reason for the request, and any change proposed. If a public hearing is required, the agency will proceed pursuant to *Minnesota Statutes*, sections 14.131 to 14.20.

Persons who wish to submit comments or a written request for a public hearing should submit such comments or requests to: Bruce D. Nelson, Department of Public Service, Energy Division, 900 American Center Building, 150 East Kellogg Boulevard, St. Paul, Minnesota 55101 (612) 297-2313.

Comments or requests for a public hearing must be received by the Department of Public Service, Energy Division by 4:00 p.m., May 31, 1988. The proposed amendments may be modified if the modifications are supported by the data and views submitted to the Department and do not result in a substantial change in the proposed amendments as noticed.

A Copy of the proposed rule amendment is attached to this notice.

A Statement of Need and Reasonableness that describes the need for and reasonableness of each provision of the proposed amendments and identifies the data and information relied upon to support the proposed amendments has been prepared and is available by requesting a copy from Mr. Nelson at the address listed above.

The implementation of these amendments will not require the expenditure of public money in excess of $100,000 by local bodies in either of the two years following their adoption, nor do the rules have any impact on agricultural land.

The adoption of these amendments will affect small businesses in Minnesota. The Department has evaluated the effect of the proposed rules on small businesses and has considered each of the methods prescribed by *Minnesota Statutes*, Section 14.155, subd. 2, for reducing the impact of the rules on small businesses. Small businesses would benefit from the proposed rule, since the required frequency of testing is reduced, resulting in less stringent compliance, schedules and deadlines in conformance with *Minnesota Statutes*, Section 14.155, subd. 2(a) and (b). The proposed rule would have no effect on reporting requirements addressed by *Minnesota Statutes* Section 14.155, subd. 2(a), (b) or (c). The requirements of Chapter 4155 are already performance standards for all insulation types in conformance with *Minnesota Statutes* Section 14.155, subd. 2(d). The Department has determined that small businesses cannot be exempted from any or all requirements of the rules in conformance with *Minnesota Statutes* Section 14.155, subd. 2(e).

If no hearing is required, upon adoption of the rule, the rule and the required supporting documents will be submitted to the Attorney General for review as to legality and form to the extent that form relates to legality. Any person may request notification of the date of submission to the Attorney General. Persons who wish to be advised of the submission of this material to the Attorney General, or who wish to receive a copy of the adopted rules, must submit a written request for such to Mr. Nelson at the above address.

Dated: 18 April 1988

Tony Perpich, Commissioner
Department of Public Service

Rules as Proposed

4155.0100 AUTHORITY AND PURPOSE.

The commissioner is authorized by Minnesota Statutes, sections 325E.20, subdivision 1, and 325E.21, subdivisions 1 and 2, to establish standards for the product quality, safety, installation, and labeling of thermal insulation products, and to establish test programs and procedures to ensure that standards established by this chapter ~~shall be~~ are met.

KEY: PROPOSED RULES SECTION — Underlining indicates additions to existing rule language. ~~Strike outs~~ indicate deletions from existing rule language. If a proposed rule is totally new, it is designated "all new material." ADOPTED RULES SECTION — Underlining indicates additions to proposed rule language. ~~Strike outs~~ indicate deletions from proposed rule language.

4155.0110 APPLICABILITY.

Subpart 1. **Types of residential insulation products covered.** This chapter applies to ~~the following thermal insulation materials:~~

~~A. cellulose fiber (loose fill and spray applied);~~

~~B. mineral fiber (blankets, loose fill, board and spray applied);~~

~~C. perlite (loose fill);~~

~~D. polystyrene (board form, expanded and extruded);~~

~~E. polyurethane and polyisocyanurate (board form and field applied);~~

~~F. reflective foil;~~

~~G. urea formaldehyde foam (field applied);~~

~~H. vermiculite (loose fill); and~~

~~I. other products advertising thermal resistance/R-values for use in residential buildings~~ insulation products for use in residential buildings. These include insulation for walls, ceilings, floors, foundation walls, pipe insulation, duct insulation, and retrofit water heater blanket insulation.

Not included are insulation used in manufactured appliances, windows, and doors, and insulation used in new manufactured homes assembled outside Minnesota.

Subp. 2. [Unchanged.]

Subp. 3. **Affected parties.** This chapter applies to ~~all members of the insulation industry including:~~

~~A. those who engage in the production and supply of materials from which insulation is made;~~

~~B. those who promote the sale or use of insulation;~~

~~C. manufacturers of insulation materials or component materials;~~

~~D. jobbers, wholesalers, and retailers of insulation;~~

~~E. contractors and applicators who sell and install residential insulation; and~~

~~F. those engaged in the marketing of insulation who are, or who purport to act as, agents of manufacturers or suppliers of insulation~~ industry members, as defined in part 4155.0120.

Subp. 4. **Prohibitions.** The prohibitions in this subpart apply to the installation and application of insulation.

A. Industry members may not install insulation in residential structures unless it conforms to the product quality standards in this chapter.

B. Industry members and other persons may not engage in the mobile manufacture of cellulose insulation, which means the simultaneous on-site production and installation of cellulose insulation as an integral mechanical and manufacturing process.

C. Urea-formaldehyde foam or precured forms may not be used in attics or ceilings.

D. Polystyrene loose-fill may not be used in attics unless it complies with the state building code.

Subp. 5. **Installation, generally.** Industry members installing insulation shall follow manufacturers' written application instructions.

When installing insulation in attic areas, the installer shall locate flush and recessed light fixtures, and other heat producing appurtenances, and shall comply with the safety procedures in items A and B.

A. In accordance with section 410-66 of the National Electrical Code (1984), insulation must not be installed closer than three inches to the sides of recessed light fixtures. Rigid nonflammable blocking must be installed to maintain a three-inch minimum clearance from the sides of the fixture. This requirement must be waived if the fixture is approved for coverage with thermal insulation in accordance with section 410-66 of the National Electrical Code (1984).

B. A three-inch minimum air space must be maintained around other heat-producing appurtenances, such as motors, fans, and heaters, unless the fixture is specifically approved for coverage with thermal insulation materials. If the fixture is designated by the manufacturer to require a larger air space than three inches, the larger air space must be maintained. Rigid nonflammable blocking must be installed to maintain the designated clearances.

4155.0120 DEFINITIONS.

Subpart 1. and 2. [Unchanged.]

Subp. 3. **Approved laboratory.** "Approved laboratory" means any testing facility, including a facility owned or operated by a manufacturer, that has been ~~approved~~ accredited by ~~NVLAP~~ one or more of the following agencies to perform the required test~~.~~:

A. United States Department of Commerce, National Voluntary Laboratory Accreditation Program (NVLAP), Gaithersburg, Maryland; or

B. American Association for Laboratory Accreditation, Gaithersburg, Maryland.

Exception: In the event that an approved laboratory program is temporarily delayed or is not capable of accrediting a test or tests, a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel to perform the required testing is an approved laboratory.

Subp. 4. to 7. [Unchanged.]

Subp. 8. [See repealer.]

Subp. 9. **Department.** "Department" means the Minnesota Department of ~~Energy and Economic Development~~ Public Service.

Subp. 10. to 13. [Unchanged.]

Subp. 14. **Insulation.** "Insulation" means thermal insulation~~,~~ which is a material or assembly of materials designed to provide resistance to heat flow in residential building structures, including but not limited to mineral fibrous, mineral cellular, organic fibrous, organic and plastic cellular and reflective materials, whether in loose-fill, flexible, rigid, or semirigid form. Any material advertised for use in residential buildings as having a ~~thermal resistance R-value~~ energy saving value by virtue of its thermal resistance or emmissivity properties (R-value), except windows and doors, shall be considered as insulation for purposes of this chapter.

Subp. 15. to 19. [Unchanged.]

Subp. 20. [See repealer.]

Subp. 21. [Unchanged.]

Subp. 22. **R or R-value.** "R" or "R-value" means the measure of resistance to heat flow through a material or assembly of materials. It may be stated as the reciprocal of the heat flow through a material expressed in British thermal units per hour, per square foot, per degree Fahrenheit. R-value indicates "thermal performance."

Subp. 23. to 28. [Unchanged.]

4155.0130 INSULATION MATERIALS STANDARDS.

Subpart 1. **Scope.** This part sets forth standards for the product quality and safety of thermal insulation materials specified herein, as well as minimum procedures for the testing ~~and reporting~~ of insulation materials under these standards. Regulated thermal insulation materials that do not demonstrate by tests conformance to these standards shall not be sold, used, distributed, or installed in Minnesota by an industry member. Performance tests for insulation materials must meet or exceed the requirements of this part.

Subp. 2. **General testing ~~and reporting~~ requirements.** General testing ~~and reporting~~ requirements for regulated thermal insulation materials in this part are as follows:

A. When ASTM amends, reorganizes, or modifies a standard test method and the manufacturer or testing laboratory desires to use the new version, the department may be petitioned to adopt the new test method version. Until the department adopts or decides not to adopt the new version, the petitioner may request a temporary variance to use the new test method version. Criteria or factors in granting a variance are:

(1) whether the new test method version amounts to a substantial change over the old version;

(2) whether the amendment to the test version was controversial within the ASTM decision making body;

(3) whether the department sees the new test version as an improvement in testing quality control;

(4) whether the new version adversely affects consumers or manufacturers; and

(5) whether there is strong opposition outside of the ASTM organization to the new test version.

B. All regulated thermal insulation materials ~~shall~~ must be tested for compliance with the standards in this part by April 2, 1986. Testing procedures are as follows:

(1) ~~Testing must be performed at least every other year. The testing must be completed by June 1 of every even-numbered year.~~

KEY: PROPOSED RULES SECTION — Underlining indicates additions to existing rule language. ~~Strike outs~~ indicate deletions from existing rule language. If a proposed rule is totally new, it is designated "all new material." ADOPTED RULES SECTION — Underlining indicates additions to proposed rule language. ~~Strike outs~~ indicate deletions from proposed rule language.

~~(2)~~ Until April 2, 1986, testing ~~shall~~ must be performed only at a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel necessary to perform testing required by parts 4155.0130 to 4155.0150. Tests performed in the 1985 calendar year are acceptable.

~~(3)~~ (2) After 120 days following adoption of this chapter, all testing ~~shall~~ must be performed by ~~laboratories~~ an approved ~~and accredited by NVLAP~~ laboratory to perform the required tests. ~~In the event that the NVLAP program is temporarily delayed in accrediting a laboratory or is not capable of accrediting a test or tests, a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel to perform the required testing is acceptable.~~

~~(4)~~ (3) The thermal insulation material chosen for testing ~~shall~~ must be representative of material produced by the manufacturer during normal production runs.

~~(5)~~ (4) Manufacturers without ~~NVLAP~~ approved laboratory testing facilities shall contract with an approved laboratory to conduct an annual surprise on-site inspection of the manufacturer's production facilities for the following two purposes:

(a) to take random samples of insulation from the manufacturer's assembly or process system for testing under this chapter; and

(b) to evaluate testing techniques and make recommendations for improvement if the insulation fails to meet the assigned testing standards.

~~(6)~~ (5) Testing for each type of insulation ~~shall~~ must be performed in accordance with the methods specified in subparts 3 to ~~15~~ 8.

~~B. Each manufacturer of insulation must submit an annual report to the department on or before June 1 of each year. The report must be addressed to the Energy Division, Department of Energy and Economic Development, Attention: Insulation Standards Program, 900 American Center Building, 150 East Kellogg Boulevard, Saint Paul, MN 55101. The report must contain the following information:~~

~~(1) the name and address of the testing laboratory;~~

~~(2) the name and address of the manufacturer;~~

~~(3) the nature of the business relationship between the manufacturer and the testing laboratory; for example, contractual for the purpose of testing, subsidiary, or in-house;~~

~~(4) the specific tests performed by the laboratory;~~

~~(5) the date of testing;~~

~~(6) a list of uniform product groups tested together;~~

~~(7) a statement that each product meets or exceeds the test standards required by parts 4155.0100 to 4155.0180; and~~

~~(8) the testing laboratory's NVLAP certification history.~~

~~C. Additional testing information shall be made available as follows:~~

~~(1) Upon the request of the commissioner, the manufacturer, a representative of the manufacturer, or the testing laboratory shall provide all applicable information pertaining to the testing program. The information shall include test procedures and protocols, test equipment specifications and calibrations, the qualifications of test laboratory personnel exclusive of personal identifiers, full test data, and proof of NVLAP certification.~~

~~(2) Upon the written request of intermediate and ultimate consumers of insulation the manufacturer shall make available a current certification of conformance to applicable test standards.~~

(6) Insulation must have maximum flammability characteristics in accordance with the Uniform Building Code, 1985 Edition, sections 1712 and 1713, for its intended uses.

~~D.~~ C. All thermal performance tests ~~shall~~ must be conducted in accordance with this item, unless additional requirements are imposed within the body of a materials standard. ~~All~~ Insulation's thermal performance ~~shall~~ must be stated in R-value.

(1) The following ASTM test methods ~~shall~~ must be used: ASTM C ~~177-76~~ 177-85, ASTM C ~~236-80~~ 236-87, ASTM C ~~518-76~~ 518-85, or ASTM C 976-82. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification.

(2) R-value testing ~~shall~~ must be performed at the insulation's representative thickness, and be consistent with the requirements of the United States Federal Trade Commission.

(3) Unit R per inch ~~shall~~ must be derived from R-value testing performed to its representative thickness, as specified in subitem (2).

(4) Except as otherwise provided within a materials standard, the thermal performance test results ~~shall~~ must be the average of the values obtained from at least three tests.

(5) Thermal performance as measured by test ~~shall~~ must not be more than ten percent below the stated or claimed thermal performance of the insulation material.

(6) Foil facings on insulation material must comply with Federal Trade Commission requirements in section ~~460.5~~ of Federal Register, Volume ~~44~~, page 50242 (August 27, 1979).

Subp. 3. **Cellulose ~~fiber in loose-fill form~~ insulation.**

A. ~~The following requirements apply to~~ Cellulose fiber in loose-fill form must meet the following requirements:

~~A.~~ (1) The product ~~shall~~ must comply with ASTM C 739-84, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation ~~in conjunction with~~ or the ~~CPSC~~ United States Consumer Product Safety Commission Interim Safety Standard for Cellulose Insulation, Federal Register, volume 44, pages 39966-39982 (July 6, 1979). ~~When a CPSC test is performed, the ASTM C 739-84 test need not be repeated.~~

~~B.~~ (2) All manufacturers shall contract with an ~~independent~~ ~~NVLAP~~ approved laboratory for a follow-up agreement for the following two purposes:

~~(1)~~ (a) The laboratory shall pick up three unopened bags of manufacturer's cellulose ~~from the marketplace~~ for testing under this chapter.

~~(2)~~ (b) The laboratory shall conduct a minimum of one in-plant inspection every two months. The inspection ~~shall~~ must be unannounced, and the inspector shall conduct tests in the plant laboratory, on a sample ~~taken from the marketplace,~~ for settled density, smoldering combustion, critical radiant flux, corrosiveness (ph), and starch.

~~C.~~ (3) The department shall be immediately notified by the manufacturer of any failure to meet test standards.

~~Subp. 4. Cellulose fiber spray applied. The following requirements apply to~~ B. Cellulose fiber ~~spray~~ spray-applied must meet the following requirements:

~~A.~~ (1) The basic material ~~shall~~ must consist of virgin or recycled wood-based cellulosic fiber. It may be made from related paper or paperboard stock, stock that does not contain contaminated materials and extraneous foreign materials, such as metals and glass, that could 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~~ must not create a health hazard.

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

~~B.~~ (2) All testing ~~shall~~ must be performed on applied spray cellulose.

~~C.~~ (3) Determination of thermal performance ~~shall~~ must be in accordance with ASTM C ~~177-76~~ 177-85, ASTM C ~~236-80~~ 236-87, ASTM C ~~518-76~~ 518-85 or ASTM C 976-82 at the manufacturer's option, at the test-defined density of the material. R-value testing ~~shall~~ must be performed at a thickness of material of two inches, unless the material is designed for use at a lesser maximum thickness and the material is so designated on the label or label notice by the manufacturer. It ~~shall~~ must then be tested at the maximum thickness of suggested use.

~~D.~~ (4) Density ~~shall~~ must be determined in accordance with section 7 of ASTM E 605-77 reapproved 1982. The density established by this test ~~shall~~ must be used in the preparation of manufacturer's installation guidelines and in the determination of thermal performance.

~~E.~~ (5) Critical radiant flux and smoldering combustion ~~shall~~ must be tested for in accordance with the CPSC Interim Safety Standard for Cellulose Insulation, Federal Register volume ~~44~~, pages 39966-39982 (July 6, 1979) [or the ASTM equivalent in C ~~739-84~~ 739-86]. Values achieved ~~shall~~ must not exceed those established by the CPSC.

~~F.~~ (6) Moisture absorption ~~shall~~ must be determined in accordance with section 15 of ASTM C 553-70 reapproved 1977. Moisture absorption ~~shall~~ must not exceed 15 percent by weight.

~~G.~~ (7) The product ~~shall~~ must comply with test standards for air erosion, bond strength, and bond deflection that have been accepted by the ASTM or a federal or state government agency.

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~~H.~~ (8) Test procedures in ~~item F~~ subitem (7) are not required of products that are installed ~~in such a manner~~ so 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~~ those installations.

Subp. ~~5.~~ 4. **Mineral fiber ~~in loose fill form~~ insulation.**

A. ~~The product shall~~ Mineral fiber in loose-fill form must comply with ASTM C 764-84, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

~~Subp. 6. **Mineral fiber in batts and blankets form.** The product shall~~ B. Mineral fiber in batts and blankets form must comply with ASTM C ~~665-84~~ 665-86, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~Subp. 7.~~ C. ~~**Mineral fiber in board form.** The following requirements apply to~~ Mineral fiber in board form must meet the following requirements:

~~A.~~ (1) 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.

(2) Thermal performance and surface burning characteristics shall be determined in accordance with subpart 1.

~~B. Determination of the thermal performance shall be in accordance with ASTM C 177-76, ASTM C 236-80, ASTM C 518-76, or ASTM C 976-82 at the manufacturer's option.~~

~~C. Surface burning characteristics of materials with facings and membranes intended for exposed applications shall be determined according to ASTM E 84-84 and shall not exceed the following values: flame spread, 25; and smoke developed, 450. Facings and membranes of materials intended for exposed applications shall be exposed to the flame during the ASTM E 84-84 test. Insulation boards exclusive of facings and membranes shall not exceed the following values: flame spread, 25; and smoke developed, 50.~~

~~Subp. 8. **Mineral fiber Spray-applied.** The product shall~~ D. Spray-applied mineral fiber must comply with ASTM C 1014-84, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

Subp. 9. [See repealer.]

Subp. ~~10~~ 5. **~~Polystyrene in board form~~ Foam plastic insulation.**

A. ~~The product shall~~ Molded expanded polystyrene insulation must comply with ~~ASTM C 578-83,~~ ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

B. Extruded Polystyrene must comply with ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

~~Subp. 11.~~ C. ~~**Polyurethane and polyisocyanurate in board form.**~~ Unfaced polyurethane and polyisocyanurate ~~shall~~ in board form must comply with ASTM C 591-83, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

D. Faced polyurethane and polyisocyanurate ~~shall~~ in board form must comply with Federal Specification HH-I-1972, dated August 21, 1981, Insulation Board Thermal Faced Polyurethane or Polyisocyanurate.

Subp. 12. [See repealer.]

~~Subp. 13. **Urea formaldehyde foam field applied.** The following requirements apply to urea formaldehyde~~ E. Field-applied urea-formaldehyde foam must meet the following requirements:

~~A.~~ (1) The product ~~shall~~ must comply with ~~ASTM C 951-83~~ ASTM C 951-85, Standard Specification for Urea-Formaldehyde-Based, Foam-in-Place Insulation.

~~B.~~ (2) Resin and foaming agent containers ~~shall~~ must be marked with conditions of proper storage and the derated R-value and shrinkage of the prepared foam as certified by the manufacturer.

~~C.~~ (3) Manufacturers and installers of urea formaldehyde foam insulation shall ~~present a 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 eight 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 Director of the Office of Energy Conservation and Development, Department of Energy and Economic Development within 24 hours after the contract for installment is completed with the purchaser~~ comply with statutes and rules, including parts 4620.1600 to 4620.2100, and Minnesota Statutes, section 325F.18.

~~Manufacturers shall make all sales of urea formaldehyde foam insulation components expressly subject to the application restrictions listed in the notice described in subpart 14.~~

F. Spray-applied urethane must comply with ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Polyurethane Thermal Insulation.

Subp. 14. [See repealer.]

Subp. 15. [See repealer.]

Subp. 6. **Perlite and vermiculite insulation.**

A. Perlite loose-fill insulation must meet the following requirements:

(1) The product must comply with ASTM C 549-81 (reapproved 1986), Standard Specification for Perlite Loose-Fill Insulation.

(2) The manufacturer shall disclose to the department any chemical treatment of the perlite material and the purpose of the treatment.

B. Vermiculite in loose-fill form must meet the following requirements:

(1) The product must comply with ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

(2) The manufacturer shall disclose to the department any chemical treatment of the vermiculite material and the purpose of the treatment.

Subp. 7. **Reflective foil insulation.** The following requirements apply to reflective foil:

A. Specimens for tests must consist of pieces of insulation cut to approximately three by six inches, suspended in a vertical position and heated to a temperature of 180 degrees Fahrenheit (plus or minus five degrees Fahrenheit) for at least five hours. At the end of the heating period, the tester shall examine the reflective surfaces to determine whether the adhesive has bled through the surface or whether delamination has occurred.

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

B. Reflective foil insulation must be tested according to ASTM C 976-82 or ASTM C 236-87 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 must 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.

Thermal performance for single or multiple sheet sections must be determined according to ASTM C 976-82 or ASTM C 236-87. The test panel must consist of a panel using a wooden frame of two-by-six inch boards 16 inches apart and at least 24 inches long, covered with a minimum of 1 2-inch gypsum wallboard or 1 2-inch plywood on each side. For tests in the vertical position, the test panel must be at least seven feet high at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit. The resultant thermal performance must be based upon the insulation only.

Thermal performance for single sheet radiant barrier reflective insulation products shall meet, as an alternative to this requirement, a reasonable substantiation and basis of the energy savings claim.

C. Layers of insulation composed of unsupported foil that is exposed must have a minimum thickness of 0.0004 inch. Unsupported foil that is sandwiched in multilayer sheet must have a minimum thickness of 0.00035 inch. Foil bonded to kraft paper must have a minimum thickness of 0.00025 inch. Minimum space between layers of a multilayer sheet must conform with Federal Specification HH-I-1252B dated August 18, 1976.

D. Foil must be folded in accordance with TAPPI Standard No. 512-OM86, and the folded edge smoothed using a light finger pressure. The finished insulation must not crack when folded to 180 degree bend at a temperature of 70 degrees Fahrenheit (plus or minus two degrees Fahrenheit) and a relative humidity of 50 percent (plus or minus five percent).

E. Reflective foil insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Reflective Foil Insulation, June 1987 (with the exception that thermal performance shall be tested with a temperature differential of 30 degrees

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Fahrenheit), meets the Minnesota testing standards in this subpart.

Subp. 8. **Other insulation.** Insulation other than insulation specified in subparts 1 to 7, to be sold, marketed, or advertised for use in residential structures in Minnesota must comply with the following requirements:

A. thermal performance and surface burning characteristics must be determined in accordance with subpart 1;

B. results of the water absorption test must be reported;

C. if the material is foam-in-place, a test of the shrinkage using ASTM C 591-85, section 8.5 must be used;

D. if the material contains formaldehyde, a urea-formaldehyde content test is necessary; and

E. the initial report as required by part 4155.0145, subpart 2, must include a description of other tests applied to the product.

Before insulation is sold, marketed, or advertised for use in residential structures in Minnesota, the manufacturer shall test the insulation with an approved laboratory and submit a certification of compliance with a federal, state, or ASTM standard specification that addresses all of the performance characteristics of the product. When no federal, state, or ASTM standard specification has been developed, the manufacturer shall present test data from an approved laboratory that shows the insulation and its intended uses are safe and effective and does not pose a threat to human health.

4155.0135 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. **Application testing requirements for exterior, underground insulation.**

A. Insulation by itself or as part of a system must be in-service tested in a testing facility designed to duplicate actual underground conditions. The testing environment must reflect the extremes of weather, moisture, and soil conditions. The purpose of the testing must be to determine aged R-value performance, giving consideration to the conditions listed in item C. A summary of the test results must be submitted to the department.

B. As an alternative to item A, the testing initiator may elect to have an insulation tested by an approved laboratory and listed for underground use, with consideration given to the conditions listed in item C.

C. The listing of the product for underground use must be based on the most recent applicable ASTM tests or any other tests that are available that give consideration to each of the following conditions:

(1) moisture absorption;

(2) mechanical durability under freeze-thaw cycling conditions;

(3) soil compatibility;

(4) flexural strength or compression; and

(5) vapor drives due to high-low pressure gradients.

D. The initiator seeking the listing shall select the appropriate tests that best address the conditions stated in item C.

E. An association or trade representative may initiate a product's listing on behalf of its constituency. The association shall submit representative samples for testing and certify to the department which manufacturers within its constituency the samples are representative of. The association must have an internal certification procedure to determine constituency conformity to the representative samples submitted for testing.

F. A summary of test results for item B must be submitted to the department.

Subp. 2. **Installation instructions for underground use.** Written instructions on underground use of insulation must, at a minimum, contain instructions or information regarding:

A. optimal application techniques;

B. drainage, as specified in section R-305 of the One & Two Family Dwelling Code by CABO (1983 Edition);

C. waterproofing and dampproofing, as specified in section R-306 of the One & Two Family Dwelling Code by CABO (1983 Edition);

D. varying soil and soil moisture conditions;

E. temperature effects on application;

F. optimal backfill techniques for protection from physical damage; and

G. the manufacturers' warranty, if any. The manufacturer shall state whether it warrants the insulation for underground use and, if applicable, the conditions of warranty and the length of warranty, including a statement of the number of years for which the product is warranted to maintain 80 percent of its advertised R-value.

Manufacturers that recommend a product for underground use in the vertical or horizontal position shall provide complete instructions for its respective applications.

Subp. 3. **Practice of insulation use for exterior underground installation.** The following requirements apply to the exterior installation or application of insulation below the ground:

A. The installation or application of insulation in the vertical and horizontal position must conform to the manufacturers' instructions and recommendations.

B. Insulation extending above the ground line must be covered with an exterior wall finish to protect the insulation from ultraviolet sunlight, moisture absorption, freeze-thaw durability, air erosion, and general weather conditions.

C. Polyurethane or polyisocyanurate spray-applied application must meet the following conditions:

(1) Manufacturers shall recommend the type of urethane systems to be used for underground use and applicators shall only use a recommended system.

(2) Polyurethane or polyisocyanurate spray-applied application must have a protective coating applied to its exterior surface above and below ground. The type of protective coating and method of application must be in accordance with the insulation manufacturer's instructions and recommendations.

D. Mineral fiber foundation insulation and drainage boards must meet the following conditions:

(1) The board must be manufactured to facilitate proper downward drainage, or in the alternative, manufactured in such a manner that moisture will not substantially penetrate horizontally toward the foundation wall.

(2) The board must not be used without exterior drainage, as defined in part 4155.0120.

Subp. 4. **Pipe insulation, duct wrap insulation, and water heater blanket insulation.** Pipe insulation, duct wrap insulation, and water heater blanket insulation must meet the standards of part 4155.0130, including the flammability requirements for insulation in part 4155.0130, subpart 2, item B, clause (5). Water heater blanket standards must meet the requirements of pipe insulation.

4155.0145 REPORTING REQUIREMENTS.

Subpart 1. **Applicability.** This subpart identifies all industry members to whom subparts 2 and 3 apply.

A. Manufacturers of insulation materials, components, or products shall file an initial report as required by subpart 2.

B. A reseller, repackager, or industry member who alters the physical properties of an insulation product manufactured by another industry member shall file an initial report as required by subpart 2.

C. An industry member that intends to sell an insulation product manufactured by another industry member under its own trade or brand name, desires to be listed as the manufacturer, and does not alter physical properties of the insulation product, shall file an initial report. The filing insulation member can comply with subpart 2, item B, by certifying that the product is the same as when it was previously filed.

Subp. 2. **Initial report.** An industry member shall file an initial report at least 30 days before offering for sale in the state any new products, significant changes to a product already filed, or changes to product installation instructions to a product already filed.

The initial report must include the following:

A. the manufacturer's name, address, phone number, and contact person;

B. product names, including any and all generic, trade, and brand names the product may be identified by;

C. type of product;

D. product literature, including installation instructions, a copy of the label affixed to the product, and a list of the intended uses of the product;

E. a fact sheet as required by FTC R-value rule, identified in Code of Federal Regulations, title 16, part 460;

F. results of initial tests, as required by part 4155.0130, identifying tests performed, name of laboratory, testing dates, and test results;

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G. a statement that each product meets or exceeds the test standards required by this chapter;

H. if follow-up agreement is required by part 4155.0130, the:

(1) scope of material characteristics of the product encompassed by this agreement; and

(2) frequency of unannounced inspections; and

I. a description of the quality assurance program.

Subp. 3. **Annual filing requirement.**

A. Industry members who have made initial filings shall file by June 1 of each year.

B. For each product, the report must include:

(1) the manufacturer's name, address, phone number, and contact person;

(2) product names, including all generic, trade, and brand names by which the product may be identified;

(3) certification that the product has not undergone significant changes since the initial report was filed; and

(4) identification of and changes in information that may have changed from the initial or previous annual report, including product brand names, product literature, Federal Trade Commission fact sheet, product usage, or discontinuation of manufacture.

C. Additional testing information must be made available as follows:

(1) Upon the request of the commissioner, the manufacturer, a representative of the manufacturer, or the testing laboratory shall provide all applicable information pertaining to the testing program. The information must include test procedures and protocols, test equipment specifications and calibrations, the qualifications of test laboratory personnel exclusive of personal identifiers, full test data, and proof of an approved laboratory's certification.

(2) Upon the written request of intermediate and ultimate consumers of insulation the manufacturer shall make available a current certification of conformance to applicable test standards.

4155.0155 APPLICATION AND INSTALLATION STANDARDS.

Subpart 1. **Applicability.** Industry members who offer insulation installation services for residential buildings shall comply with the application standards in this part.

The application standards in this part do not apply to nonresidential buildings or construction.

This part applies to new residential construction and retrofit applications.

Subp. 2. **Application and inspection.** Industry members installing insulation shall follow manufacturer's written application instructions.

In attic areas where insulation is to be installed, the installer shall locate all flush and recessed light fixtures, and other heat-producing appurtenances, and shall comply with the following safety procedures:

A. In accordance with section 410-66 of the National Electrical Code (1984), insulation must not be installed closer than three inches to the sides of recessed light fixtures. Rigid nonflammable blocking must be installed to maintain a three-inch minimum clearance from the sides of the fixture. This requirement must be waived if the fixture is approved for coverage with thermal insulation in accordance with section 410-66 of the National Electrical Code (1984).

B. A three-inch minimum air space must be maintained around other heat-producing appurtenances, such as motors, fans, and heaters, unless the fixture is specifically approved for coverage with thermal insulation materials. If the fixture is designated by the manufacturer to require a larger air space than three inches, the larger air space must be maintained. Rigid nonflammable blocking must be installed to maintain the designated clearances.

Subp. 3. **Manufacturer's installation or application instructions.** Manufacturers shall provide installation and application instructions that comply with this subpart:

A. The manufacturer's written instructions describing areas of recommended use, the proper methods of application, and required or recommended safety measures must be provided to each intermediate consumer and installer of all insulation sold for use in Minnesota within ten days of the sale.

B. Intermediate consumers and installers shall provide or make available all written instructions to ultimate consumers.

C. Urea-formaldehyde foam insulation installation must conform with Minnesota Statutes, section 325F.18 and Minnesota Rules, part 4620.2100.

4155.0160 LABELING.

~~All insulations~~ Insulation used or offered for sale in Minnesota ~~shall~~ must be labeled according to ~~applicable federal requirements such as~~ the United States Consumer ~~Products~~ Product Safety Commission requirements ~~set forth~~ in Federal Register, volume 44, pages 39966-39982 (July 6, 1979), or the United States Federal Trade Commission requirements ~~set forth~~ in Federal Register, volume 44, pages 50242-50245 (August 27, 1979)~~, and any other applicable state or federal law~~.

4155.0170 INCORPORATIONS BY REFERENCE AND CITATIONS.

Subpart 1. **Generally.** Portions of the following standards listed in subparts 2 and 3 which are found throughout this chapter are incorporated by reference; most of the material is subject to frequent change, and all of the standards listed are available to the public at the public libraries ~~and the organizations~~ listed in subpart 4.

The standards and tests selected are all an integral part of current insulation industry testing procedures. All manufacturers and testing laboratories presently possess or have access to each referenced incorporation.

Subp. 2. **ASTM.** The following ~~apply to incorporations by reference of~~ ASTM standards are incorporated by reference:

~~A. ASTM is the American Society of Testing and Materials, a scientific and technical organization responsible for the development and authoring of the tests and standards listed. The incorporated references are published by the organization in the "Annual Book of ASTM Standards." All but one of the standards are published in the annual book of 1984, volumes 04.06 and 04.07. Test Standard ASTM C 764-84 will be published in the annual book of 1985, volume 04.06 (released October 1985), but it is available immediately for order from ASTM.~~

~~The last two digits of each test standard number indicate the year of publication and version incorporated by reference.~~

~~B. ASTM Quick Reference.~~

~~(1) C 168-80a~~
~~(2) C 177-76~~
~~(3) C 236-80~~
~~(4) C 516-80~~
~~(5) C 518-76~~
~~(6) C 549-81~~
~~(7) C 553-70~~
~~(8) C 578-83~~
~~(9) C 591-83~~
~~(10) C 665-84~~
~~(11) C 739-84~~
~~(12) C 764-84~~
~~(13) C 951-83~~
~~(14) C 976-82~~
~~(15) C 1014-84~~
~~(16) E 84-84~~
~~(17) E 605-77~~

~~(1)~~ A. ASTM C 168-80a, Standard Definitions of Terms Relating to Thermal Insulation Materials.

~~(2)~~ B. ASTM C ~~177-76~~ 177-85, Steady-State Thermal Transmission Properties by means of the Guarded Hot Plate.

~~(3)~~ C. ASTM C ~~236-80~~ 236-87, Steady-State Thermal Performance of Building Assemblies by means of a Guarded Hot Box.

~~(4)~~ D. ASTM C 516-80 (reapproved 85), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

~~(5)~~ E. ASTM C ~~518-76~~ 518-85, Steady-State Thermal Transmission Properties by means of the Heat Flow Meter.

~~(6)~~ F. ASTM C 549-81 (reapproved 86), Standard Specification for Perlite Loose Fill Insulation.

~~(7)~~ G. ASTM C 553-70 (reapproved 77), Standard Specification for Mineral Fiber Blanket and Felt Insulation.

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~~(8)~~ H. ~~ASTM C 578-83~~ ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation.

~~(9)~~ I. ~~ASTM C 591-83~~ ASTM C 591-85, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

~~(10)~~ J. ~~ASTM C 665-84~~ ASTM C 665-86, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~(11)~~ K. ~~ASTM C 739-84~~ ASTM C 739-86, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

~~(12)~~ L. ASTM C 764-84, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

~~(13)~~ M. ASTM C ~~951-83~~ 951-85, Standard Specification for Urea-Formaldehyde-Based, Foam-in-Place Insulation.

~~(14)~~ N. ASTM C 976-82, Thermal Performance of Building Assemblies by means of a Calibrated Hot Box.

~~(15)~~ O. ASTM C 1014-84, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

~~(16)~~ P. ~~ASTM E 84-84~~ ASTM E 84-84 Revision A, Surface Burning Characteristics of Building Materials.

~~(17)~~ Q. ASTM E 605-77 reapproved 1982, Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members.

R. ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.

Subp. 3. **Other incorporation and citations.** The following non-ASTM standards are also incorporated by reference:

A. ASHRAE Handbook of Fundamentals, (1981 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (Technical Reference Book).

B. CABO, sections R-305 and R-306 of the One & Two Family Dwelling Code, by the Council of American Building Officials (1983 Edition).

C. Federal Specification (FS) HH-I-1252B (August 18, 1976) by the General Services Administration.

D. Federal Trade Commission (FTC) requirements in Code of Federal Regulations, title 16, part 460, (Federal Register, volume ~~44~~, page 50242, August 27, 1979).

E. National Electrical Code, section 410-66 (1984 Edition), by the National Fire Protection Association.

F. Consumer Products Safety Commission (CPSC) Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209 (Federal Register, volume 44, pages 39966-39993, July 6, 1979).

G. Uniform Building Code (~~1982~~ 1985 Edition), by the International Conference of Building Officials.

H. Federal Specification (FS) HH-I-1972 by the General Services Administration.

I. TAPPI Standard No. 512-OM86 by the Technical Association of the Pulp and Paper Industry.

Subp. 4. **Availability.** The standards incorporated by reference are available for public inspection as follows:

A. All documents incorporated by reference in this chapter are available at the following locations:

(1) Minnesota State Law Library; and

(2) James J. Hill Reference Library.

B. All ASTM test standards are available through the following additional locations:

(1) Minneapolis Public Library;

(2) University of Minnesota Engineering Library; and

(3) American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

~~C. General Services Administration Federal Specifications are available by:~~

~~(1) Mail: GSA Federal Specification Request, Superintendent of Documents, Government Printing Office, Washington, D.C. 20402;~~

~~(2) Phone: GSA, Chicago Documents Ordering line: (1) (312) 353-5383.~~

~~D. CABO, the One & Two Family Dwelling Code, by the Council of American Building Officials (1983 Edition), is available at: (CABO) Building Officials and Code Administrators International, Inc., 17926 South Halsted Street, Honewood, Illinois 60430.~~

REPEALER. Minnesota Rules, parts 4155.0120, subparts 8 and 20; 4155.0130, subparts 9, 12, and 14; 4155.0140; and 4155.0180, are repealed.

Department of Transportation

Program Management Division

Proposed Permanent Rules Relating to Seaplane Operations on Ox Yoke Lake

Notice of Intent to Adopt Amendments to a Rule Without a Public Hearing

Notice is hereby given that the State of Minnesota, Department of Transportation intends to adopt the above-entitled amendments to a rule without a public hearing following the procedures set forth in the Administrative Procedure Act for adopting rules without a public hearing in *Minnesota Statutes*, Sections 14.22 to 14.28. The statutory authority to adopt the rule is *Minnesota Statutes*, Section 360.015, subd. 3, which permits the Commissioner of Transportation to adopt rules to protect and insure the general public interest and its safety, the safety of persons using aircraft, and of persons and property on land or water.

All persons have 30 days in which to submit comments in support of or in opposition to the proposed rule or to any part or subpart of the rule. Comment is encouraged. Each comment should identify the portion of the proposed rule addressed, the reason for the comment, and any change proposed.

Any person may make a written request for a public hearing on the rule within the 30-day comment period. If 25 or more persons submit a written request for a public hearing within the 30-day comment period, a public hearing will be held unless a sufficient number withdraw their request in writing. Any persons requesting a public hearing should state his or her name and address, and is encouraged to identify the portion of the proposed rule addressed, the reason for the request, and any change proposed. If a public hearing is required, the department will proceed pursuant to *Minnesota Statutes*, Sections 14.131 to 14.20.

Comments or written requests for a public hearing must be submitted to:

Larry R. Myking, Manager
Aviation Services Unit
Office of Aeronautics
Program Management Division
Minnesota Department of Transportation
644 Bayfield Street
Room 222
St. Paul, Minnesota 55107
Telephone: 612-296-8056

The proposed rule may be modified if the modifications are supported by data and views submitted to the department and do not result in a substantial change in the proposed rule as noticed.

A copy of the proposed rule is attached to this notice.

A Statement of Need and Reasonableness that describes the need for and reasonableness of each provision of the proposed rule and identifies the data and information relied upon to support the proposed rule has been prepared and is available from Larry R. Myking upon request.

The Department has considered the impact these rules will have. The rules impose no fees, and will not impose "costs mandated by the state," or require a local agency or school district to take action that incurs costs mandated by the State within the meaning of *Minnesota Statutes*, Section 3.982. The adoption of these rules will not require the expenditure of money by local public bodies within the meaning of *Minnesota Statutes*, Section 14.11, and will have no impact on small businesses as described in *Minnesota Statutes*, Section 14.115.

If no hearing is required, upon adoption of the rule the rule and the required supporting documents will be submitted to the Attorney General for review as to form and legality. Any person may request notification of the date of submission to the Attorney

KEY: PROPOSED RULES SECTION — Underlining indicates additions to existing rule language. ~~Strike outs~~ indicate deletions from existing rule language. If a proposed rule is totally new, it is designated "all new material." **ADOPTED RULES SECTION** — Underlining indicates additions to proposed rule language. ~~Strike outs~~ indicate deletions from proposed rule language.

STATE OF MINNESOTA

DEPARTMENT OF PUBLIC SERVICE

In the matter of the Proposed Amendment of the Rule of the State Department of Public Service, Energy Division Governing Residential Thermal Insulation Standards	FINDINGS OF FACT, CONCLUSIONS AND ORDER ADOPTING RULE WITHOUT PUBLIC HEARING

Proper notice of Intent to Adopt a Rule Without a Public Hearing was given. Notice of the Commissioner's intent to adopt the above-entitled rule was published in the State Register on May 2, 1988, and was sent by United States mail to all persons on the list maintained by the agency pursuant to Minnesota Statutes, sections 14.14, subdivision 1a and 14.22 on April 29, 1988. The statement of need and reasonableness was prepared before the Notice of Intent to Adopt a Rule without a Public Hearing was mailed to all persons on the rulemaking mailing list and published in the State Register and was available to the public.

All persons were given the opportunity to submit comment on the rule for 30 days after notice of proposed rulemaking. The agency received 1 request for a public hearing. Therefore, the agency did not receive requests for a public hearing from 25 or more persons which were not withdrawn.

Based on the comments and evidence, I find the following:

1) A solicitation of outside opinion for proposed amendments to residential thermal insulation standards published in 10 S.R. 2295 and renewed in 11 S.R. 1797. Forty-four responses were received. Most of these comments are not relevant to the current proposed rule making.

2) The agency received thirteen written comments in response to the proposed adoption to amend the rules without a public hearing published in 12 S.R. 2378.

3) Twelve comments received pertained to the clarification and/or simplification of language of the proposed rule amendment. All of these are non-substantial changes.

The written comments received provided persuasive evidence or opinions for some constructive modifications within the rules. The following changed items (labeled A through Z) are identified to correspond to the proposed rule amendment as prepared by the Revisor's Office. Each item noted includes the actual change; the need or purpose of the new change, and the source of the information necessitating the change. These changes do not constitute substantial changes to the rules in the proposed amendment. Copies of comments received and/or referenced are attached to this document.

A. page 2; line 36 - page 3; lines 1 - 17:
[Minn. Rules Chap. 4155.0110 subp. 5]

The initial proposed rule amendment language regarding insulation and recessed fixtures, which referenced the National Electrical Code, section 410.66, has been replaced with the existing language of that standard. The purpose of this change was to conform to the actual language of the code for purposes of clarification. The need for this modification of the rule's language was prompted by comments received from: Mike Godfrey, Minnesota Building Codes; Richard Ray, Manville Corp.; and Kenneth Mentzer, MIMA.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

B. page 3; lines 30 - 31:
[Minn. Rules Chap. 4155.0120 subp. 3]

The proposed rule amendment language was modified to reflect that it is the accreditation of being able to perform tests, not that the lab itself was not accredited. This change was necessary to clarify the meaning of this rule. The need was identified by staff in review of the proposed rule amendment.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

C. page 4; lines 12 - 13:
[Minn. Rules Chap. 4155.0120 subp. 14]

The term "R - value" was moved as a modifier from emissivity to that of thermal resistance. This change was needed to rectify the proper use of technical terminology. The need was identified by comments received from Kenneth Mentzer, MIMA.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

D. page 5; lines 33 - 35:
[Minn. Rules Chap. 4155.0130 subp. 2 (B)(2)]

Redundant language regarding performed was eliminated for ease of understanding this rule. It is important that the rules be clear and concise. This change was brought to light by comments received from: Richard Ray, Manville Corp.; and Kenneth Mentzer, MIMA.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

E. page 7; line 23:
[Minn. Rules Chap. 4155.0130 subp. 2 (B)(6)]

The term "maximum" was removed from the rules in this section. The reference to the Uniform Building Code in itself sets the criteria. The use of the term "maximum" in this context is meaningless. This modification is based on comments received from: Robert Anderson, Anderson & Associates; and Kenneth Mentzer, MIMA.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

F. page 8; lines 9 & 12:
[Minn. Rules Chap. 4155.0130 subp. 2 (C)(4) & (C)(5)]

The term "performance" was replaced with the term "R - value." This was needed because the change is technically more accurate. This is based on comments received from: Robert Anderson, Anderson & Associates.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

G. page 8; lines 15 - 18:
[Minn. Rules Chap. 4155.0130 subp. 2 (C)(6)]

A product claiming a "system R - value" has additionally been identified in this rule. There was a need for this product to be properly addressed, especially in light of the fact that there is a specific standard that the rule has referenced (namely by the Federal Trade Commission requirements - see attachments, Statement of Need & Reasonableness). The Code of Federal Regulations was also identified as a reference source for this document. This is the proper cite. These changes have been identified in comments received from: Ken Howerton, Federal Trade Commission.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

H. page 10; lines 6 - 7:
[Minn. Rules Chap. 4155.0130 subp. 3 (B)(5)]

The Code of Federal Regulations was identified as the proper reference source for this information (instead of the Federal Register). This change has been identified in comments received from: Ken Howerton, Federal Trade Commission.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

J. page 8; lines 26 - 27:
[Minn. Rules Chap. 4155.0130 subp. 3 (A)(1)]

The Code of Federal Regulations was identified as the proper reference source for this information (instead of the Federal Register). This change has been identified in comments received from: Ken Howerton, Federal Trade Commission.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

K. page 8; lines 32 - 33:
[Minn. Rules Chap. 4155.0130 subp. 3 (A)(2)]

The phrase "randomly selected" has been added as a modifier for the unopened bags. The purpose of this clarification is to clearly identify the "randomness" of the sample testing process. This change was suggested in comments received from: Richard Ray, Manville Corp.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

L. page 9; line 24:
[Minn. Rules Chap. 4155.0130 subp. 3 (B)(2)]

The modifying term "spray" was inadvertently placed after applied instead of before. The need for this correction was identified in comments received from: Richard Ray, Manville Corp.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

M. page 11; line 8:
[Minn. Rules Chap. 4155.0130 subp. 4 (C)(2)]

The amended rule originally incorrectly referenced subpart 1 from another section of this rule. It should have referred to subpart 2. This error was identified in comments received from: Richard Ray, Manville Corp.; and Robert Anderson, Anderson & Associates.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

N. page 11; lines 29 & 34:
[Minn. Rules Chap. 4155.0130 subp. 5 (A) & (B)]

The original ASTM standard was incorrectly identified by a previous year. There is currently a newer updated version for this standard. Once a new standard is issued, it completely replaces the prior standard, rendering it null and void. This needed update was provided in comments received from: Bill Fairweather, BASF.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

O. page 13; line 36:
[Minn. Rules Chap. 4155.0130 subp. 7 (A)]

The proper reference for an adhesive bleeding standard was not properly addressed in the proposed rule amendment. A reference to the ICBO criteria has now been identified. It was essential that a specific standard be cited for proper compliance with this rule. This need was identified in comments received from: Richard Ray, Manville Corp.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

P. page 14; lines 20 - 23:
[Minn. Rules Chap. 4155.0130 subp. 7 (B)]

The proposed added reference to radient barrier products was deleted from the proposed rule amendment. Comments received indicated that this change would be controversial in nature. This was supported by comments received from: Kenneth Mentzer, MIMA.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

Q. page 14; line 19:
[Minn. Rules Chap. 4155.0130 subp. 7 (B)]

The phrase "associated air spaces" was added as a modifier to the insulation performance standard. This change serves as a clarification of the proposed rule amendment. This was supported by comments received from: Kenneth Mentzer, MIMA; and Ken Howerton, Federal Trade Commission.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

R. page 14; lines 28 - 30:
[Minn. Rules Chap. 4155.0130 subp. 7 (C)]

The reference to the Federal Specification was deleted. Although the testing criteria itself is still viable, that particular federal standard is no longer in effect. This information has been verified with the St. Paul Public Library Government Documents section and supported by comments from: Richard Ray, Manville Corp.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

S. page 15; lines 5 - 6:
[Minn. Rules Chap. 4155.0130 subp. 7 (E)]

The language in the proposed rule amendment was modified to reflect that the testing standard was intended to apply to the inside surface of the test panel. The original proposed rule amendment was not clear on this point. This was identified in comments received from: Kenneth Mentzer, MIMA.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

T. page 15; line 12:
[Minn. Rules Chap. 4155.0130 subp. 8 (A)]

This change (from subpart "1" to subpart "2" was previously discussed under item M within this document.

U. page 15; line 18:
[Minn. Rules Chap. 4155.0130 subp. 8 (D)]

The term "urea-formaldehyde" has been replaced with the term "formaldehyde." The previous term is too limiting and restrictive in its scope. The broader term is more accurate for the intent of these rules. This was identified in comments received from: Kenneth Mentzer, MIMA.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

V. page 18; line 21:
[Minn. Rules Chap. 4155.0135 subp. 4]

The amended rule originally incorrectly referenced item B, clause (5) of another section of this rule. The correction should refer to item B, clause (6). This need was identified by staff in review of the proposed rule amendment.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

W. page 18; lines 21 - 22:
[Minn. Rules Chap. 4155.0135 subp. 4]

Flammability requirements for water heater blanket products were changed from the proposed rule of being the same as pipe insulation (ie. flame spread 25 and smoke developed 450) to flame spread 50 and smoke developed 100. These criteria are identical to that for duct insulation in single family dwellings (see Statement of Need and Reasonableness p. __?). This modified proposed rule amendment is less restrictive. A member of the industry has commented that a flame spread criteria of 25 may be too restrictive to attain. [see attachment ___?] This change was supported by comments received from: E. Mirra, Fiberglas.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

X. page 21; lines 6 - 22:
[Minn. Rules Chap. 4155.0155 subp. 2]

The language referencing the National Electrical Code has been deleted as being redundant because they are cited elsewhere in the rules. Further comment can be found previously under item A within this document.

Y. page 22; lines 2 - 9:
[Minn. Rules Chap. 4155.0160]

Original proposed language of these rules referenced both the CPSC and FTC requirements. There was an improper inference that both standards applied to all insulation products. This section now reflects the intent that FTC requirements apply to all products and CPSC requirements apply only to cellulose insulation products. This change is based on comments received from: Robert Anderson, Anderson & Associates; and Ken Howerton, FTC.

This is a clarification of language appearing in the rule as originally noticed and it is not a substantial change. It will not affect new classes of persons that would not be expected to comment on the original rules. It does not introduce significant new subject matter but clarifies existing language in a manner that would be anticipated by a reasonable person examining the rule as originally noticed.

Z. page 23; line 32:
[Minn. Rules Chap. 4155.0170 subp. 2 (H)]

The updated ASTM standard was previously discussed under item N within this document.

The above-captioned rule amendment is needed and reasonable.

NOW, THEREFORE, IT IS ORDERED that the rule identified as proposed amendment to the rule of the state Department of Public Service, Energy Division, governing residential thermal insulation standards is adopted this 12 day of July, 1988, pursuant to authority vested in me by Minnesota Statutes, sections 325F.20, subdivision 1 and 325F.21, subdivisions 1 and 2.

O Reynt
Name

Comm DPS
Title

JUN 06 1988

INTERNATIONAL CELLULOSE CORPORATION
manufacturer of insulation systems

May 31, 1988

Minnesota Dept. of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Energy Division - Attn: Mr. Bruce Nelson

Re: Required use of adhesive in Spray Applied Insulation for Cavity fill

Dear Mr. Nelson:

As you are aware, the task group in ASTM is requiring a product that is intended to be spray applied and be "self supporting". This in and of itself does not mandate the use of an adhesive with the product. It does imply the product will support itself in a wall cavity without the support of anything other than itself. This can be important in a 6" wall cavity with only 3 inches of spray insulation.

Item "B" in your proposal should be changed to read:
B. " All testing shall be performed on product spray applied as per manufacturer's specifications, materials and procedures for the products intended and "labeled use". This could close the gap of doubt on whether or not to use adhesive.

In A.S.T.M., a product which uses a water mist as part of the installation procedure and is labeled "intended as an attic insulation" is regarded as a loose-fill. This product will not fill the requirement to be self supporting nor will it meet the bond strength requirements in the proposed specifications.

In the final analysis, the public will be better served by requiring a product that has some bond strength, at the very minimum that it be self supporting.

Yours very truly,

INTERNATIONAL CELLULOSE CORPORATION

H Boyer

Harold Boyer
V.P. Technical Services

HB/cb

P.O. BOX 450006 • HOUSTON, TX. 77245-0006 • 713/433-6701 • TWX 910 881-3719 • FAX 713 433-2029

TELEFAX COVER PAGE

TO: Mr. Bruce Nelson

ADDRESS: Minnesota Dept. of Public Service
900 American Center

FAX #: 612-297-1959

NUMBER OF PAGES (INCLUDING COVER): 4

FROM: R. J. Ray

ADDRESS: MANVILLE SALES CORP.
P. O. BOX 5108
DENVER, COLORADO 80127-5002

FAX #: 303/978-5094

Manville Sales Corporation
Research & Development Center
Post Office Box 5108
Denver, Colorado 80217-5108
303 978-2000

Manville

May 31, 1988

Mr. Bruce Nelson
Minnesota Dept. of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

Dear Bruce:

I have the following comments regarding the April 14, 1988 Proposed Permanent rules Relating to Thermal Insulation Standards.

1. 4155.0110.5B (pg 3, lines 10-17) - Are chimneys considered "other heat producing appurtenances", requiring a 3" air space from insulation? This comment also pertains to 4155.0155.2.

2. 4155.0130.3A2a (pg 8, line 32) - I suggest the following change: "The laboratory shall pick up three <u>randomly selected</u> unopened bags ···".

3. 4155.0130.3B2 (pg 9, lines 24) - I would change "applied spray cellulose" to "spray - applied cellulose", the term used on page 9, line 10.

4. 4155.0130.4C2 (pg 11, line 8) - Since subpart 1 is the scope, should reference be to subpart 2 instead? This comment also applies to 4155.0130.8A (pg 15, line 12).

5. 4155.0130.7A (pg 13, line 26-36) - A humidity condition should be stated. The ICBO Acceptance Criteria for Reflective Foil requires 50 + 5% R.H., and 5X magnification.

6. 4155.1030.7B (pg 14, lines 1-23) -

   a) Lines 12 - 14 states "The test panel must consist of a panel using a wooden frame of two-by-six inch boards 16 inches apart and at least 24 inches long ···. "The boards should be 16" "on-center", rather than "apart". Then, for horizontal configurations, with heat flow up or down, a test panel of 17 1/2" X 24" could be used. It would then be possible that the metering area would not include the building support members. A minimum test and metering area should be established. ICBO specifies the test frame shall be a minimum 8 by 8 feet, and the metering box area shall be a minimum 4 by 4 feet.

Mr. Bruce Nelson
Minnesota Dept. of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

May 31, 1988

b) In the proposed Minnesota Standards, the test mean temperature and temperature differential is specified for the vertical position only. It should be rewritten to include all positions. The temperature differential should be across the insulation, as is the case in the ASHRAE tables. With a differential of 30°F, there could be a T of approximately 50°, air to air, across the test frame.

c) It should be stated that for vertical test positions, the two-by-six boards should be in the vertical position, not horizontal.

d) Building support members must be included in the metering area. The R-values of the gypsum wallboard, plywood and boards must be measured. Panel R-values i.e., surface-to-surface, and air-to-air should be reported and fully documented in the submittal report.

e) Lines 20-23 - Why has only single sheet radiant barriers, versus multiple sheet reflective insulation, and all the other forms of insulation, been given as an alternative to thermal performance testing, "a reasonable substantiation and basis of the energy savings claim"? What is "reasonable"? What is the defination of radiant barriers? Radiant barriers are more beneficial in southern climates than northern climates, and most of the research on their performance is for southern conditions. Southern data could be badly represented and made to appear that it is applicable for northern climates such as Minnesota. There is much conflicting data as to the thermal performance of radiant barriers. How would it be decided which data set is acceptable?

Allowing energy savings claims as an alternative to thermal testing would be doing a great disservice to the Minnesota Insulation Standards, and such a proposal would certainly not be termed "Non-Controversial" as you state in your letter of April 26, 1988.

** TOTAL PAGE.004 **

Mr. Bruce Nelson
Minnesota Dept. of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

May 31, 1988

7. 4155.0130-7C (pg 14, line 30) - Federal Specification HH-I-1252B was cancelled by the GSA on August 18, 1983, and should not be referenced. Instead, the values for minimum thicknesses in HH-I-1252B should be simply stated in the Standard.

8. 4155.0130-7D (pg 14, lines 31-36) - For a cold weather climate such as Minnesota, I would suggest a crack test at cold temperatures. ICBO requires testing at a second temperature of 32°F +/- 2°F.

9. 4155.0130-8B (pg 15, line 13) - In addition to water absorption, water adsorption should be tested.

I would like to request a public hearing for the proposed changes. If no hearing is required, I would like to be advised of the date of the submission to the Attorney General of the adopted rule and the required supporting documents. In addition, I would like to receive a copy of the adopted rules.

Sincerely

Richard J. Ray

Richard J. Ray
Manville Sales Corp.

MAY 31 1988

TIMOTHY GRETHER, President
E. F. CUSICK, JR., Vice President
KENNETH D. MENTZER, Executive Vice President

mima
Mineral Insulation Manufacturers Association

1420 King Street
Alexandria, VA 22314
(703) 684-0084

May 27, 1988

Bruce D. Nelson
Senior Engineer
Minnesota Insulation Standards Department
Minnesota Department of Public Service
900 American Center
150 E. Kellogg Boulevard
St. Paul, MN 55101

Dear Bruce:

Listed below is an additional comment on the Minnesota Residential Insulation Standards Program Non-Controversial Rules:

Note (2) on page 3: "including facings" should be "excluding facings. If "including facings" is correct, the only facing permitted in Minnesota would be the special flame resistant foil facing (FSK 25).

Sincerely,

Kenneth D. Mentzer
Executive Vice President

CertainTeed Corp. Manville Building Materials Corp. Knauf Fiber Glass Rock Wool Manufacturing Co. Western Fiberglass, Inc.
Guardian Fiberglass, Inc. Owens-Corning Fiberglas Corp. U.S. Mineral Products, Co.

MAY 31 1988

TIMOTHY GRETHER, President
E. F. CUSICK, JR., Vice President
KENNETH D. MENTZER, Executive Vice President



Mineral Insulation Manufacturers Association

1420 King Street
Alexandria, VA 22314
(703) 684-0084

May 26, 1988

Bruce D. Nelson
Senior Engineer
Minnesota Insulation Standards Department
Minnesota Department of Public Service
900 American Center
150 E. Kellogg Boulevard
St. Paul, MN 55101

Dear Bruce:

Enclosed are some additional comments on the Minnesota Residential Insulation Standards Program Non-Controversial Rules.

Sincerely,

Kenneth D. Mentzer
Executive Vice President

Enclosure

PAGE	LINE	COMMENT
2	27	Spelling: "foams" not "forms"
4	13	R-value is attached to emmittance and should be reference to the thermal resistance in the line above the one in question.
5	34	NVLAP does not "approve" laboratories but only "accredits" them.
14	10	The panel framing members for a wall test should represent a typical wall and therefore should be 2x4 framing.
14	18	No method of calculation of the insulation only thermal resistance is specified. Reference should be made here to the ASHRAE isothermal planes method in the Fundamentals Guide.
14	20	For radiant barrier performance, no basis for making performance claims is defined. Reasonable in this specification could be interpreted as anything. This requirement must be strengthened to be equal to the manner in which other insulations are treated.
15	3	For testing reflective insulations, the temperature difference of the test panel must be defined with respect to where the 30°F differential is measured. For Minnesota, this difference should be between the inside surfaces of the test panel. A more easily defined temperature difference would be the ASHRAE design difference for that region which would exceed 75°F for the air to air temperature difference.

As a point of reference, ASTM is currently attempting to define both the test temperature differentials and the procedure for calculating the thermal resistance of the insulation alone when testing in a composite panel as defined on pages 14 and 15.

SF-00006-03

DEPARTMENT ADMINISTRATION
Building Codes & Standards Division

STATE OF MINNESOTA
Office Memorandum

TO: Bruce Nelson, Energy Division

DATE: 5/23/88

FROM: Mike Godfrey
Code Administrator

PHONE: 6-2922

SUBJECT: Insulation Standards Program, PRoposed Rules Review

I have reviewed the proposed non-controversial rule changes to the Minnesota Residential Insulation Standards Program and offer the following comments.

1. Ref. Pg. 1, line 32. "Retrofit water heater blanket insulation.", implies that the rules only apply to existing water heater installations. I suggest that "retrofit" be removed to include new work.

2. Ref.Pg. 3, lines 2-17. The State adopted the 1987 National Electrical Code in August of 1987. The language in items A & B should be verbatum to that in N.E.C. 410-66 (a) & (b) (attached).

3. Ref. Pg. 17, lines 4-8. Although I suggested language similar to this in our previous conversations, now that I see it, I disagree with the specific reference to the C.A.B.O. Code. Drainage systems should be required to maintain the stated performance of the insulation unless substancial data indicates otherwise. Also, all weather wood foundations must be provided with drainage as specified for the system which may be in conflict w/C.A.B.O.

   Additionally, an engineered design may incorporate the parameters established by the Insulation Manufacturer but not conform to the letter of C.A.B.O.. The rule should be general to permit various methods of drainage.

4. Ref. Pg. 21, lines 7-22 (See my item #2).

5. Ref. Pg. 24, Line 28 (See my item #2).

MG/cj

THERMAL INSULATION MANUFACTURERS ASSOCIATION

7 KIRBY PLAZA, P.O. BOX 686, MT. KISCO, NY 10549-0686 • 914/241-2284

MAY 23 1988

May 20, 1988

Mr. Bruce D. Nelson, Senior Engineer
Minnesota Insulation Standards Program
MINNESOTA DEPARTMENT OF PUBLIC SERVICE
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

Dear Mr. Nelson:

RE: Minnesota Residential Insulation Standards Program Proposed Non-Controversial Rules

I would like to take this opportunity to thank you for advising us of the proposed insulation standard rules. Our members will handle the comments of this proposal by their individual companies in lieu of additional general comments from TIMA.

Yours truly,

W. J. Brayman

W. J. Brayman
Chairman - Industrial/Commercial Insulation Committee

WJB/jg

cc: Mr. Bill Reitze, TIMA Executive Director

OWENS/CORNING FIBERGLAS

OWENS-CORNING FIBERGLAS CORPORATION FIBERGLAS TOWER, TOLEDO, OHIO 43659, (419) 248-8000

MAY 23 1988

May 20, 1988

MINNESOTA DEPARTMENT OF PUBLIC SERVICE
Attn: Mr. B. D. Nelson
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Mr. Nelson:

The following is in response to Minnesota Department of Public Service plans to amend the Residential Thermal Insulation standards.

In view of the fact that there are no existing standards for **water heater blankets**, coupled with some product testing Owens-Corning Fiberglas has done, we would recommend the flammability standard be set at 25 Flame Spread and 100 Smoke Developed. Establishing these proposed standards would be less restrictive than the current proposal.

(W)

Thank you for considering our comments on this subject.

OWENS-CORNING FIBERGLAS CORPORATION
SUPPLY FABRICATION DIVISION

E. Mirra

E. Mirra
Fabrication Division Manager

/sh

MAY 27 1988

TIMOTHY GRETHER, President
E. F. CUSICK, JR., Vice President
KENNETH D. MENTZER, Executive Vice President

mima
Mineral Insulation Manufacturers Association

1420 King Street
Alexandria, VA 22314
(703) 684-0084

May 18, 1988

Bruce D. Nelson
Senior Engineer
Minnesota Insulation Standards Department
Minnesota Department of Public Service
900 American Center
150 E. Kellogg Boulevard
St. Paul, MN 55101

Dear Bruce:

Thank you for the opportunity to comment on the Minnesota Residential Insulation Standards Program Non-Controversial Rules. Enclosed you will find some editorial comments.

On page 14, lines 20 through 23, a new section has been added on radiant barriers. MIMA believes this section to be controversial and questions its inclusion in a non-controversial rule. The paragraph raises many unanswered questions. For example, what is "reasonable substantiation and basis of the energy savings claims"? Who makes this determination? Where is a radiant barrier defined?

It is extremely important that information and testing requirements be defined for insulation materials. Radiant barriers claim to reduce heat flow. This can and should be measured to assure consumer protection.

The DOE and ORNL have proposed a research plan to examine the performance of radiant barriers. A copy of the draft plan is enclosed for your information. In the abstract of the plan radiant barrier performance is termed a subject of controversy, see page V.

MIMA requests that you delete the portion of the proposed non-controversial rules addressing radiant barriers. When DOE/ORNL has examined the controversial claims and performance of radiant barriers Minnesota will be in a better position to address this issue.

If you have any questions, please let me know.

Sincerely,

Kenneth D. Mentzer
Executive Vice President

Enclosures

1. Cover letter from Bruce Nelson: It is inappropriate to allow reflective insulations to estimate the energy savings for RBS's . . . they should prove it.

2. Page 3, line 16: "Nonflammable" is not good code language; noncombustible is better if that's what they mean, but wouldn't wood blocking do the job?

3. Page 5, line 34: Add the word "approved" after laboratory.

4. Page 7, line 23: Flammability is not proper in this case; they should use "burning" instead.

5. Page 10, line 15: They should reference the fiber erosion requirements of UL Standard No. 181 as the model codes do.

6. Page 14, line 22: The "reasonable" is too vague for code language.

7. Page 15, line 2: The problem with referencing the ICBO criteria is that it allows a kraft paper, with foil both sides, to be used with untreated kraft paper. As fire tests have shown, the double faced product performs worse than a single face kraft. We should definitely work to get this reference amended.

8. Page 15, line 17: Many mineral insulation manufacturers use phenol formaldehyde in their binders. Would this sentence affect them?

4155.0160 LABELING.

~~All insulations~~ Insulation used or offered for sale in Minnesota ~~shall~~ must be labeled according to ~~applicable federal requirements such as~~ the United States Consumer ~~Products~~ Product Safety Commission requirements ~~set forth~~ in Federal Register, volume 44, pages ~~39966-39982~~ 39993-40002 (July 6, 1979), AND/OR ~~or~~ the United States Federal Trade Commission requirements ~~set forth~~ in Federal Register, volume 44, pages 50242-50245 (August 27, 1979)~~, and any other applicable state or federal law~~.

4155.0170 INCORPORATIONS BY REFERENCE AND CITATIONS.

Subpart 1. **Generally.** Portions of the following standards listed in subparts 2 and 3 which are found throughout this chapter are incorporated by reference; most of the material is subject to frequent change, and all of the standards listed are available to the public at the public libraries ~~and the organizations~~ listed in subpart 4.

The standards and tests selected are all an integral part of current insulation industry testing procedures. All manufacturers and testing laboratories presently possess or have access to each referenced incorporation.

Subp. 2. **ASTM.** The following ~~apply to incorporations by reference of~~ ASTM standards are incorporated by reference:

~~A. ASTM is the American Society of Testing and Materials, a scientific and technical organization responsible for the development and authoring of the tests and standards listed. The incorporated references are published by the organization in the "Annual Book of ASTM Standards." All but one of the standards are published in the annual book of 1984, volumes 04.06 and 04.07. Test Standard ASTM C 764 84 will be published in the annual book of 1985, volume 04.06 (released October 1985), but it is available immediately for order from ASTM.~~

~~The last two digits of each test standard number indicate the year of publication and version incorporated by reference.~~

~~B. ASTM Quick Reference.~~

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Subp. 9. **Department.** "Department" means the Minnesota Department of ~~Energy-and-Economic-Development~~ Public Service.

Subp. 10. to 13. [Unchanged.]

Subp. 14. **Insulation.** "Insulation" means thermal insulation~~,~~ which is a ~~m~~aterial or assembly of materials designed to provide resistance to heat flow in residential building structures, including but not limited to mineral fibrous, mineral cellular, organic fibrous, organic and plastic cellular and reflective materials, whether in loose-fill, flexible, rigid, or semirigid form. Any material advertised for use in residential buildings as having ~~a-thermal-resistance~~ R-~~value~~ energy saving value by virtue of its thermal resistance or emmissivity properties (R-value) except windows and doors, shall be considered as insulation for purposes of this chapter.

Subp. 15. to 19. [Unchanged.]

Subp. 20. [See repealer.]

Subp. 21. [Unchanged.]

Subp. 22. **R or R-value.** "R" or "R-value" means the measure of resistance to heat flow through a material or assembly of materials. It may be stated as the reciprocal of the heat flow through a material expressed in British thermal units per hour, per square foot, per degree Fahrenheit. R-value indicates "thermal performance."

Subp. 23. to 28. [Unchanged.]

4155.0130 INSULATION MATERIALS STANDARDS.

Subpart 1. **Scope.** This part sets forth standards for the product quality and safety of thermal insulation materials specified herein, as well as minimum procedures for the testing ~~and-reporting~~ of insulation materials under these standards. Regulated thermal insulation materials that do not demonstrate by tests conformance to these standards shall not be sold, used, distributed, or installed in Minnesota by an industry member. Performance tests for insulation materials must meet or exceed the requirements of this part.

Subp. 2. **General testing ~~and-reporting~~ requirements.**

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ROBERT W. ANDERSON AND ASSOCIATES, INC.
7090 TECUMSEH LANE
CHANHASSEN, MN 55317
(612) 474 2362

MAY 11 1988

May 9, 1988

Bruce D. Nelson
MN Dept. of Public Service
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

Dear Bruce:

The following comments relate to the proposed insulation standards submitted for comment April 26, 1988. The comments are editorial in nature and may help head off problems at a later date.

p.1, line 34 ff. The exclusion of manufactured homes outside MN may set the stage for sub-standard units being shipped in state. I realize that this is a delicate issue, but it should be examined carefully. Correcting sub-standard homes after the fact will be most difficult.

p.5, line 3 ff. Be aware that ASTM material standards, e.g. C-665 for fiber glass, will contain a number of " standard test methods" by reference, and that the test methods can be changed without any obvious change in the material standard. The new test method could cause a change in test results or test criteria. The respective requirements should be reviewed for areas of potential conflict between changes in material and test standards.

p6, line 4 ff. Without a definition of "representative", this requirement is meaningless. In case of dispute, the state or the consumer would be at disadvantage. Consider requiring the manufacturer to submit his plan for "representative" sampling for approval.

(E) p7, line 23 ff. Delete the word "maximum"; otherwise the manufacturers would have to increase the flammability characteristics to the maximum allowed.

(F) p.8, line 9 and p.8, line 12 Change "performance" to R-value.

P.9, line 19 Need to define "health hazard". This is a tricky one...but as is, it has no real meaning.

p.10, line 4 ff. CPSC does not effectively address the fire requirements for spray-on material. Need to state that the CRF and smoldering criteria apply to sprayed-on material rather than

the loose material in the bag. The sprayed material will have a much greater density and added adhesives; both of which increase the amounts of chemical necessary to meet the fire criteria.

(M) p.11, line 8 Should be subpart 2???.

p.12, line 10 Delete

p.16, line 21 Still need definition of "vapor drives". I think the intent is to set some limits on vapor and liquid water transport.

(Y) p.22, line 2 ff. CPSC label requirements are only for cellulose; the FTC's are for all insulations.

I trust the above will be helpful. If you have any questions on the comments, please feel free to call. Keep up the good work!

Sincerely,

Bob Anderson

Kait Hearing FTC Comments 5/9/88 2DP

Department of Public Service

Proposed Permanent Rules Relating to Thermal Insulation Standards

Rules as Proposed

4155.0100 AUTHORITY AND PURPOSE.

The commissioner is authorized by Minnesota Statutes, sections 325F.20, subdivision 1, and 325F.21, subdivisions 1 and 2, to establish standards for the product quality, safety, installation, and labeling of thermal insulation products, and to establish test programs and procedures to ensure that standards established by this chapter ~~shall be~~ are met.

4155.0110 APPLICABILITY.

Subpart 1. Types of residential insulation products covered. This chapter applies to ~~the following thermal insulation materials:~~

~~A. cellulose fiber (loose fill and spray applied);~~

~~B. mineral fiber (blankets, loose fill, board and spray applied);~~

~~C. perlite (loose fill);~~

~~D. polystyrene (board form, expanded and extruded);~~

~~E. polyurethane and polyisocyanurate (board form and field applied);~~

~~F. reflective foil;~~

~~G. urea formaldehyde foam (field applied);~~

~~H. vermiculite (loose fill); and~~

~~I. other products advertising thermal resistance/R values for use in residential buildings~~ insulation products for use in residential buildings. These include insulation for walls, ceilings, floors, foundation walls, pipe insulation, duct insulation, and retrofit water heater blanket insulation.

Not included are insulation used in manufactured appliances, windows, and doors, and insulation used in new

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procedures in items A and B.

A. In accordance with section 410-66 of the National Electrical Code (1984), insulation must not be installed closer than three inches to the sides of recessed light fixtures. Rigid nonflammable blocking must be installed to maintain a three-inch minimum clearance from the sides of the fixture. This requirement must be waived if the fixture is approved for coverage with thermal insulation in accordance with section 410-66 of the National Electrical Code (1984).

B. A three-inch minimum air space must be maintained around other heat-producing appurtenances, such as motors, fans, and heaters, unless the fixture is specifically approved for coverage with thermal insulation materials. If the fixture is designated by the manufacturer to require a larger air space than three inches, the larger air space must be maintained. Rigid nonflammable blocking must be installed to maintain the designated clearances.

4155.0120 DEFINITIONS.

Subpart 1. and 2. [Unchanged.]

Subp. 3. **Approved laboratory.** "Approved laboratory" means any testing facility, including a facility owned or operated by a manufacturer, that has been ~~approved~~ accredited by ~~NVLAP~~ one or more of the following agencies to perform the required test~~s~~:

A. United States Department of Commerce, National Voluntary Laboratory Accreditation Program (NVLAP), Gaithersburg, Maryland; or

B. American Association for Laboratory Accreditation, Gaithersburg, Maryland.

Exception: In the event that an approved laboratory program is temporarily delayed or is not capable of accrediting a test or tests, a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel to perform the required testing is an approved laboratory.

Subp. 4. to 7. [Unchanged.]

Subp. 8. [See repealer.]

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General testing ~~and-reporting~~ requirements for regulated thermal insulation materials in this part are as follows:

A. When ASTM amends, reorganizes, or modifies a standard test method and the manufacturer or testing laboratory desires to use the new version, the department may be petitioned to adopt the new test method version. Until the department adopts or decides not to adopt the new version, the petitioner may request a temporary variance to use the new test method version. Criteria or factors in granting a variance are:

(1) whether the new test method version amounts to a substantial change over the old version;

(2) whether the amendment to the test version was controversial within the ASTM decision making body;

(3) whether the department sees the new test version as an improvement in testing quality control;

(4) whether the new version adversely affects consumers or manufacturers; and

(5) whether there is strong opposition outside of the ASTM organization to the new test version.

B. All regulated thermal insulation materials ~~shall~~ must be tested for compliance with the standards in this part by April 2, 1986. Testing procedures are as follows:

(1) ~~Testing must be performed at least every other year. The testing must be completed by June 1 of every even-numbered year.~~

~~(2)~~ Until April 2, 1986, testing ~~shall~~ must be performed only at a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel necessary to perform testing required by parts 4155.0130 to 4155.0150. Tests performed in the 1985 calendar year are acceptable.

~~(3)~~ (2) After 120 days following adoption of this chapter, all testing ~~shall~~ must be performed by ~~laboratories~~ an approved ~~and accredited by NVLAP~~ laboratory to perform the required tests. ~~In the event that the NVLAP program is temporarily delayed in accrediting a laboratory or is not~~

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~~(5) the date of testing;~~

~~(6) a list of uniform product groups tested together;~~

~~(7) a statement that each product meets or exceeds the test standards required by parts 4155.0100 to 4155.0180; and~~

~~(8) the testing laboratory's NVLAP certification history.~~

~~C. Additional testing information shall be made available as follows:~~

~~(1) Upon the request of the commissioner, the manufacturer, a representative of the manufacturer, or the testing laboratory shall provide all applicable information pertaining to the testing program. The information shall include test procedures and protocols, test equipment specifications and calibrations, the qualifications of test laboratory personnel exclusive of personal identifiers, full test data, and proof of NVLAP certification.~~

~~(2) Upon the written request of intermediate and ultimate consumers of insulation the manufacturer shall make available a current certification of conformance to applicable test standards.~~

(6) Insulation must have maximum flammability characteristics in accordance with the Uniform Building Code, 1985 Edition, sections 1712 and 1713, for its intended uses.

~~D.~~ C. All thermal performance tests ~~shall~~ must be conducted in accordance with this item, unless additional requirements are imposed within the body of a materials standard. ~~All~~ Insulation's thermal performance ~~shall~~ must be stated in R-value.

(1) The following ASTM test methods ~~shall~~ must be used: ASTM C ~~177-76~~ 177-85, ASTM C ~~236-80~~ 236-87, ASTM C ~~518-76~~ 518-85, or ASTM C 976-82. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification.

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inspection ~~shall~~ must be unannounced, and the inspector shall conduct tests in the plant laboratory, on a sample ~~taken from the marketplace,~~ for settled density, smoldering combustion, critical radiant flux, corrosiveness (ph), and starch.

~~C.~~ (3) The department shall be immediately notified by the manufacturer of any failure to meet test standards.

~~Subp. 4. Cellulose fiber spray applied. The following requirements apply to~~ B. Cellulose fiber ~~spray~~ spray-applied must meet the following requirements:

~~A.~~ (1) The basic material ~~shall~~ must consist of virgin or recycled wood-based cellulosic fiber. It may be made from related paper or paperboard stock, stock that does not contain contaminated materials and extraneous foreign materials, such as metals and glass, that could 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~~ must not create a health hazard.

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

~~B.~~ (2) All testing ~~shall~~ must be performed on applied spray cellulose.

~~C.~~ (3) Determination of thermal performance ~~shall~~ must be in accordance with ASTM C ~~177-76~~ 177-85, ASTM C ~~236-80~~ 236-87, ASTM C ~~518-76~~ 518-85 or ASTM C 976-82 at the manufacturer's option, at the test-defined density of the material. R-value testing ~~shall~~ must be performed at a thickness of material of two inches, unless the material is designed for use at a lesser maximum thickness and the material is so designated on the label or label notice by the manufacturer. It ~~shall~~ must then be tested at the maximum thickness of suggested use.

~~D.~~ (4) Density ~~shall~~ must be determined in accordance with section 7 of ASTM E 605-77 reapproved 1982. The

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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.

(2) Thermal performance and surface burning characteristics shall be determined in accordance with subpart 1.

~~B.--Determination-of-the-thermal-performance-shall-be-in-accordance-with-ASTM-C-177-76,-ASTM-C-236-80,-ASTM-C-518-76,-or-ASTM-C-976-82-at-the-manufacturer's-option.~~

~~C.--Surface-burning-characteristics-of-materials-with-facings-and-membranes-intended-for-exposed-applications-shall-be-determined-according-to-ASTM-E-84-84-and-shall-not-exceed-the-following-values:--flame-spread,-25,-and-smoke-developed,-450.--Facings-and-membranes-of-materials-intended-for-exposed-applications-shall-be-exposed-to-the-flame-during-the-ASTM-E-84-84-test.--Insulation-boards-exclusive-of-facings-and-membranes-shall-not-exceed-the-following-values:--flame-spread,-25,-and-smoke-developed,-50.~~

~~Subp.-8.--Mineral-fiber-Spray-applied.--The-product-shall~~ D. Spray-applied mineral fiber must comply with ASTM C 1014-84, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

Subp. 9. [See repealer.]

Subp. ~~10~~ 5. ~~**Polystyrene-in-board-form**~~ Foam plastic insulation.

~~A.--The-product-shall~~ Molded expanded polystyrene insulation must comply with ~~ASTM-C-578-83,~~ ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

B. Extruded Polystyrene must comply with ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

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~~restrictions listed in the notice described in subpart 14.~~

F. Spray-applied urethane must comply with ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Polyurethane Thermal Insulation.

Subp. 14. [See repealer.]

Subp. 15. [See repealer.]

Subp. 6. Perlite and vermiculite insulation.

A. Perlite loose-fill insulation must meet the following requirements:

(1) The product must comply with ASTM C 549-81 (reapproved 1986), Standard Specification for Perlite Loose-Fill Insulation.

(2) The manufacturer shall disclose to the department any chemical treatment of the perlite material and the purpose of the treatment.

B. Vermiculite in loose-fill form must meet the following requirements:

(1) The product must comply with ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

(2) The manufacturer shall disclose to the department any chemical treatment of the vermiculite material and the purpose of the treatment.

Subp. 7. Reflective foil insulation. The following requirements apply to reflective foil:

A. Specimens for tests must consist of pieces of insulation cut to approximately three by six inches, suspended in a vertical position and heated to a temperature of 180 degrees Fahrenheit (plus or minus five degrees Fahrenheit) for at least five hours. At the end of the heating period, the tester shall examine the reflective surfaces to determine whether the adhesive has bled through the surface or whether delamination has occurred.

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

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E. Reflective foil insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Reflective Foil Insulation, June 1987 (with the exception that thermal performance shall be tested with a temperature differential of 30 degrees Fahrenheit), meets the Minnesota testing standards in this subpart.

Subp. 8. Other insulation. Insulation other than insulation specified in subparts 1 to 7, to be sold, marketed, or advertised for use in residential structures in Minnesota must comply with the following requirements:

A. thermal performance and surface burning characteristics must be determined in accordance with subpart 1;

B. results of the water absorption test must be reported;

C. if the material is foam-in-place, a test of the shrinkage using ASTM C 591-85, section 8.5 must be used;

D. if the material contains formaldehyde, a urea-formaldehyde content test is necessary; and

E. the initial report as required by part 4155.0145, subpart 2, must include a description of other tests applied to the product.

Before insulation is sold, marketed, or advertised for use in residential structures in Minnesota, the manufacturer shall test the insulation with an approved laboratory and submit a certification of compliance with a federal, state, or ASTM standard specification that addresses all of the performance characteristics of the product. When no federal, state, or ASTM standard specification has been developed, the manufacturer shall present test data from an approved laboratory that shows the insulation and its intended uses are safe and effective and does not pose a threat to human health.

4155.0135 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. **Application testing requirements for exterior, underground insulation.**

A. Insulation by itself or as part of a system must

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Written instructions on underground use of insulation must, at a minimum, contain instructions or information regarding:

A. optimal application techniques;

B. drainage, as specified in section R-305 of the One & Two Family Dwelling Code by CABO (1983 Edition);

C. waterproofing and dampproofing, as specified in section R-306 of the One & Two Family Dwelling Code by CABO (1983 Edition);

D. varying soil and soil moisture conditions;

E. temperature effects on application;

F. optimal backfill techniques for protection from physical damage; and

G. the manufacturers' warranty, if any. The manufacturer shall state whether it warrants the insulation for underground use and, if applicable, the conditions of warranty and the length of warranty, including a statement of the number of years for which the product is warranted to maintain 80 percent of its advertised R-value.

Manufacturers that recommend a product for underground use in the vertical or horizontal position shall provide complete instructions for its respective applications.

Subp. 3. **Practice of insulation use for exterior underground installation.** The following requirements apply to the exterior installation or application of insulation below the ground:

A. The installation or application of insulation in the vertical and horizontal position must conform to the manufacturers' instructions and recommendations.

B. Insulation extending above the ground line must be covered with an exterior wall finish to protect the insulation from ultraviolet sunlight, moisture absorption, freeze-thaw durability, air erosion, and general weather conditions.

C. Polyurethane or polyisocyanurate spray-applied application must meet the following conditions:

(1) Manufacturers shall recommend the type of urethane systems to be used for underground use and applicators

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manufacturer, and does not alter physical properties of the insulation product, shall file an initial report. The filing insulation member can comply with subpart 2, item B, by certifying that the product is the same as when it was previously filed.

Subp. 2. **Initial report.** An industry member shall file an initial report at least 30 days before offering for sale in the state any new products, significant changes to a product already filed, or changes to product installation instructions to a product already filed.

The initial report must include the following:

A. the manufacturer's name, address, phone number, and contact person;

B. product names, including any and all generic, trade, and brand names the product may be identified by;

C. type of product;

D. product literature, including installation instructions, a copy of the label affixed to the product, and a list of the intended uses of the product;

E. a fact sheet as required by FTC R-value rule, identified in Code of Federal Regulations, title 16, part 460;

F. results of initial tests, as required by part 4155.0130, identifying tests performed, name of laboratory, testing dates, and test results;

G. a statement that each product meets or exceeds the test standards required by this chapter;

H. if follow-up agreement is required by part 4155.0130, the:

(1) scope of material characteristics of the product encompassed by this agreement; and

(2) frequency of unannounced inspections; and

I. a description of the quality assurance program.

Subp. 3. **Annual filing requirement.**

A. Industry members who have made initial filings shall file by June 1 of each year.

B. For each product, the report must include:

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installing insulation shall follow manufacturer's written application instructions.

In attic areas where insulation is to be installed, the installer shall locate all flush and recessed light fixtures, and other heat-producing appurtenances, and shall comply with the following safety procedures:

A. In accordance with section 410-66 of the National Electrical Code (1984), insulation must not be installed closer than three inches to the sides of recessed light fixtures. Rigid nonflammable blocking must be installed to maintain a three-inch minimum clearance from the sides of the fixture. This requirement must be waived if the fixture is approved for coverage with thermal insulation in accordance with section 410-66 of the National Electrical Code (1984).

B. A three-inch minimum air space must be maintained around other heat-producing appurtenances, such as motors, fans, and heaters, unless the fixture is specifically approved for coverage with thermal insulation materials. If the fixture is designated by the manufacturer to require a larger air space than three inches, the larger air space must be maintained. Rigid nonflammable blocking must be installed to maintain the designated clearances.

Subp. 3. **Manufacturer's installation or application instructions.** Manufacturers shall provide installation and application instructions that comply with this subpart:

A. The manufacturer's written instructions describing areas of recommended use, the proper methods of application, and required or recommended safety measures must be provided to each intermediate consumer and installer of all insulation sold for use in Minnesota within ten days of the sale.

B. Intermediate consumers and installers shall provide or make available all written instructions to ultimate consumers.

C. Urea-formaldehyde foam insulation installation must conform with Minnesota Statutes, section 325F.18 and Minnesota Rules, part 4620.2100.

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~~(1) C 168-80a~~
~~(2) C 177-76~~
~~(3) C 236-80~~
~~(4) C 516-80~~
~~(5) C 518-76~~
~~(6) C 549-81~~
~~(7) C 553-70~~
~~(8) C 578-83~~
~~(9) C 591-83~~
~~(10) C 665-84~~
~~(11) C 739-84~~
~~(12) C 764-84~~
~~(13) C 951-83~~
~~(14) C 976-82~~
~~(15) C 1014-84~~
~~(16) E 84-84~~
~~(17) E 605-77~~

~~(1)~~ A. ASTM C 168-80a, Standard Definitions of Terms Relating to Thermal Insulation Materials.

~~(2)~~ B. ASTM C ~~177-76~~ 177-85, Steady-State Thermal Transmission Properties by means of the Guarded Hot Plate.

~~(3)~~ C. ASTM C ~~236-80~~ 236-87, Steady-State Thermal Performance of Building Assemblies by means of a Guarded Hot Box.

~~(4)~~ D. ASTM C 516-80 (reapproved 85), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

~~(5)~~ E. ASTM C ~~518-76~~ 518-85, Steady-State Thermal Transmission Properties by means of the Heat Flow Meter.

~~(6)~~ F. ASTM C 549-81 (reapproved 86), Standard Specification for Perlite Loose Fill Insulation.

~~(7)~~ G. ASTM C 553-70 (reapproved 77), Standard Specification for Mineral Fiber Blanket and Felt Insulation.

~~(8)~~ H. ~~ASTM C 578-83~~ ASTM C 578-85, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation.

~~(9)~~ I. ~~ASTM C 591-83~~ ASTM C 591-85, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

~~(10)~~ J. ~~ASTM C 665-84~~ ASTM C 665-86, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~(11)~~ K. ~~ASTM C 739-84~~ ASTM C 739-86, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

~~(12)~~ L. ASTM C 764-84, Standard Specification for

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General Services Administration.

I. TAPPI Standard No. 512-OM86 by the Technical Association of the Pulp and Paper Industry.

Subp. 4. **Availability.** The standards incorporated by reference are available for public inspection as follows:

A. All documents incorporated by reference in this chapter are available at the following locations:

(1) Minnesota State Law Library; and

(2) James J. Hill Reference Library.

B. All ASTM test standards are available through the following additional locations:

(1) Minneapolis Public Library;

(2) University of Minnesota Engineering Library; and

(3) American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

~~C.--General-Services-Administration-Federal Specifications-are-available-by:~~

~~(1)-Mail:--GSA-Federal-Specification-Request, Superintendent-of-Documents, Government-Printing-Office, Washington, D.C.-20402,~~

~~(2)-Phone:--GSA, Chicago-Documents-Ordering-line: (1)-(312)-353-5383.~~

~~D.--CABO, the-One-&-Two-Family-Dwelling-Code, by-the Council-of-American-Building-Officials-(1983-Edition), is available-at:--(CABO)-Building-Officials-and-Code-Administrators International, Inc., 17926-South-Halsted-Street, Homewood, Illinois-60430.~~

REPEALER. Minnesota Rules, parts 4155.0120, subparts 8 and 20; 4155.0130, subparts 9, 12, and 14; 4155.0140; and 4155.0180, are repealed.

Approved by Revisor _____

MAY 05 1988

American Association For Laboratory Accreditation

May 4, 1988

Mr. Bruce D. Nelson
Minnesota Insulation Standards Program
900 American Center
150 East Kellogg Boulevard
St. Paul MN 55101

Dear Mr. Nelson:

We have received a copy of your "Minnesota Residential Insulation Standards Program Proposed Non-Controversial Rules" and note the inclusion of laboratories accredited by the American Association for Laboratory Accreditation as "approved Laboratories". We look forward to supporting the State of Minnesota in this way.

We have sent you our procedures and the scopes of accreditation for laboratories which are now in our program. If you need additional information, please let us know. If you have any special testing requirements, we would be pleased to learn of them and be sure to include them in the program for your use.

As laboratories become accredited to meet your needs, we will send you copies of their scopes of accreditation. We will keep you apprised of any changes as they occur.

Please keep us informed of your needs, so that we will be able to serve you better.

Very truly yours,

John W. Locke
President

656 Quince Orchard Road • #704 • Gaithersburg, MD 20878-1409 • 301-670-1377

BASF Corporation
Chemicals Division

BASF

MAY 09 1988

May 3, 1988

Bruce Nelson
Minnesota Dept. Of Public Service
900 American Center
150 E. Kellogg Blvd.
St. Paul, Minnesota 55101

Re: Proposed Non-Controversial Rules

Dear Bruce:

We have only one comment pertaining to the proposed rules submitted with your April 26 notice.

(N) To complete the updating of ASTM Standards, ASTM C578-85, as referenced under 4155.0130 Subpart 5, A and B, and 4155.0170, Subpart 2H, should now read ASTM C578-87A.

Sincerely,

E. W. Fairweather
Market Development Manager
Styropor Business

EWF:bv

MAR 21 1988

PHONE: ILLINOIS · (312) 697-4800
WATS LINE · 1-800-323-8027

W. J. DENNIS & COMPANY
1111 DAVIS ROAD • ELGIN, ILLINOIS 60123

March 18, 1988

Minnesota Department of Public Service
Energy Division
900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

Attention: Mr. Bruce Nelson, Senior Engineer
Minnesota Insulation Standards Program

RE: W. J. Dennis & Company Response to February 18, 1988 Draft of Proposed Non-controversial Rules

Dear Mr. Nelson:

I appreciate your giving us an extension of several days so that we might respond after some review, reflection, and even additional conversation with your division.

I was happy to see that the proposed rules would make allowance for companies that needed a "manufacturers" listing even though they might be somewhat more in a position of distributing or packaging and distributing an insulation product.

I was also heartened by our February 25, 1988 conversation in which you recognized that "converters" -- people who often fabricate insulation material for sale to companies such as W. J. Dennis -- do not have the same laboratories and substantial resources that giant insulation corporations would possess. I understand that you are now thinking of making compliance less formidable for converters.

I did want to note for you that the FTC apparently exempts pipe insulation from its labelling and fact sheet regulations. Also, it seems to be the case that the Uniform Building Code does not really refer to water heater jackets. I do, therefore, question the creation of the totally new Section 4115.0135 specifically for the three categories of insulation products we might sell in Minnesota: pipe insulation, duct wrap insulation, and water heater blankets. [4155.0135 Subp. 4]

These three items have now been spelled out much more specifically than they were in the original regulation, and they have been tied to the revised Section 4155.0130, Subpart 2.B.5. The Minnesota Energy Division seems, too, to have been evolving toward a standard calling for flame spread of 25 and smoke

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WEATHERSTRIPS

HOME CARE HELPERS™

developed of 50. I understand from Barrett Avigdor that this 25/50 interpretation may be significantly modified since the Uniform Building Code invokes a standard for foam plastic pipe cover of flame spread 75 and smoke developed 450. Also, even duct wrap has an allowed rating of 50/100 for ducting serving a single dwelling unit -- probably a very typical dwelling unit for a Dennis customer who is a do-it-yourselfer.

Barrett Avigdor also indicated that you had mentioned thermal barrier standards. It would seem that the typical basement or even crawl space in which a Dennis customer would be putting our products would have all necessary thermal barriers from its original construction. It is important, too, to note that Dennis products would be most likely to be used by a do-it-yourself consumer in a home he was already occupying -- rather than used by a contractor in new construction.

I am somewhat troubled by the fact that in the proposed revisions of the regulation, Minnesota goes to Section 4155.0130, Subpart 7.D. and deliberately eliminates reference to ASTM E 84-84, while it is invoking tough flame and smoke standards on our three categories of product.

The proposed revisions also affect Section 4155.0120 D. Definitions, Subpart 14. Insulation, where insulation is no longer limited to product having an R-value, but instead is extended to any products advertising "energy saving value". First, the FTC regulations make stringent requirements only of companies that are manufacturers of the specific products covered by the regulations. Secondly, Dennis has elected to put R-values on only two of its products. I feel it would be unfair to so greatly extend the definition of insulation when we have been circumspect in our claims. Additionally, in conversations with both you and Mr. Philip Goldstein, there has been a specific exclusion of weatherstrip from the "insulation" definition. I would feel much better if Minnesota's insulation definition included the phraseology that appears in so many of your mailings: "Products not considered insulation are those for which the R-value is listed only for information or materials sold for air leakage reduction, such as foam sealant or weatherstripping."

We at Dennis absolutely do not want to do anything that would swindle or harm the consumer. We do want to be able to do business in Minnesota as a compliant, but not unfairly burdened company. I thank you for your open and receptive attitude.

Sincerely yours,

W. J. DENNIS & COMPANY

Frank Malley
Vice President - Purchasing

FM/cl

cc: Mr. Doug Rohrman - Keck, Mahin & Cate
Ms. Barrett S. Avigdor - Keck, Mahin & Cate

MAR 14 1988

Manville Sales Corporation
P.O. Box 747
Winder, Georgia 30680
404 867-4571

Manville

March 9, 1988

Minnesota Department of Public Service
Mr. Bruce D. Nelson
900 American Center
150 E. Kellogg Boulevard
St. Paul, MN 55101

Dear Bruce:

I have the following comments regarding the February 18, 1988 notice on proposed rule changes to the Minnesota Residential Insulation Standards Program.

I am in favor of the draft proposed outline, but wonder why the draft proposed changes were presented essentially in reverse order from the outline. In addition, there are numerous additions which are not presented as such, by underlining. For instance, I am referring to Sections 4155.0140, Subpart 2B1, 4, and 6, and Subpart 3A and B1. If wording is changed, even though the basic meaning may not change. It should be presented as a change. I hope that more care is taken when the proposed changes are published in the State Register.

I offer comments on two sections:

1) 4155.0130, Subpart 2B2: I would suggest the following change: "All testing shall be performed by <u>laboratories</u> approved ~~laboratories~~ to perform the required tests".

2) 4155.0130, Subpart 7B on reflective foil insulation: The FTC Rule 460, dated August 27, 1979 allows in Part 460.5, b and d1 for testing with the Calibrated Hot Box, which is now ASTM C976. This method is considered by the testing industry as more accurate than C236, and should not be excluded from the State's Insulation Standards.

Sincerely,

Richard J. Ray

Richard J. Ray
Manville Sales Corporation

STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

In the Matter of the Proposed Amendment of the Rule of the State Department of Public Service, Energy Division Governing Residential Thermal Insulation Standards

Declaration of Attorney in the Attorney General's Office Representing the Department of Public Service

I, Margie Hendriksen, an attorney in the Attorney General's Office representing the Department of Public Service, declare that I have examined the rule and rulemaking record in the above-captioned matter; and that it is my opinion that the Administrative Procedure Act, Minn. Stat. ch. 14 (1986) and Minn. Rules ch. 2010 (1987) have been followed. For Attorney General billing purposes, the four digit docket code is 85-0001-0731.

Dated: July 21, 1988

Respectfully submitted,

MARGIE E. HENDRIKSEN
Special Assistant
Attorney General

Telephone: 612/296-2921

COUNSEL FOR THE MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

MEH:cec

STATE OF MINNESOTA

STATE REGISTER

DEPARTMENT OF ADMINISTRATION—DOCUMENTS DIVISION



LIBRARY - MN DEPT. OF ENERGY &
ECONOMIC DEVELOPMENT
150 E. KELLOGG BLVD. # 900
ST. PAUL, MN 55101

Monday 30 March 1987

VOLUME 11, NUMBER 39

Pages 1765-1812

Pollution Control Agency
Solid and Hazardous Waste Division

Notice of Intent to Solicit Outside Opinions Concerning Proposed Amendments to Rules for Establishing Fee Systems for Generators of Low-Level Radioactive Waste

Notice is hereby given that the Minnesota Pollution Control Agency (Agency) is seeking information and opinions from sources outside the Agency in preparing amendments to rules adopted pursuant to Minn. Stat. § 116C.834 (1986), which requires establishment of a fee system for generators of low-level radioactive waste (LLRW), to provide funds for carrying out Minnesota's responsibilities in the Midwest Interstate Low-Level Radioactive Waste Compact.

The Agency requests information and comments concerning the subject matter of the proposed amendments. Written or oral statements and comments concerning these matters will be accepted for consideration until April 29, 1987 and should be addressed to:

Ms. Dagmar M. Romano
Solid and Hazardous Waste Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155
Telephone Number: 612/296-7992

Oral statements will be accepted during regular business hours, 8:30 a.m. to 4:30 p.m., Monday through Friday, at 612/296-7992 or in person at the above address.

Any written material received by the Agency shall become part of the record regarding the amendments to these rules.

Dated: 24 March 1987

Thomas J. Kalitowski, Executive Director

Department of Public Safety

Notice to All Minnesota Businesses Regarding Requirements of the Superfund Amendments and Reauthorization Act of 1986

The Superfund Amendments and Reauthorization Act (SARA) of 1986 includes a section (Title III) on emergency planning and community right-to-know. The federal legislation requires that any company that has a chemical or chemicals on the list of 402 extremely hazardous chemicals found in 40 CFR 300 in excess of the Threshold Planning Quantity must notify the state commission by May 17, 1987. Those notifications and all future required notifications should be made to the following address in Minnesota:

State Emergency Response Commission
% Thomas Motherway, Director
Division of Emergency Services
Room B5, State Capitol
St. Paul, Minnesota 55155

The Division of Emergency Services has been designated as the lead state agency for the law, and emergency reporting of a chemical release should be made to the state emergency number 612/778-0800.

Department of Public Service
Energy Division

Outside Opinion Sought for Proposed Amendments to Residential Thermal Insulation Standards

Notice is hereby given that the Department of Public Service (DPS) is seeking information or opinions from sources outside the agency in preparing amendments to Minn. Rules Chapter 4155, Residential Thermal Insulation Standards (as proposed at 9 S.R. 2424 and as adopted at 10 S.R. 1208). The adoption of these rules is authorized by Minnesota Statutes, sections 325F.20, subdivision 1 and 325F.21, subdivisions 1 and 2.

This notice supplements the solicitation of outside opinion on amendments to Minn. Rules Chapter 4155 published at 10 S.R. 2295. The Department requests information and comments on any part of the rules.

Interested persons may submit statements of information or comment orally or in writing. Written statements should be addressed to: Bruce Nelson, Insulation Standards Program, DPS, 900 American Center Building, 150 E. Kellogg Blvd., St. Paul, MN 55101. Oral statements will be received during regular business hours by telephone at (612) 297-2313 and in person at the above address.

All statements and comments pertaining to this matter shall be accepted until May 15, 1987, or until the end of the comment period for any proposed rules. Any written material received by DPS shall become part of the rulemaking record in the event that amendments to these rules are proposed.

Tony Perpich, Director

Office of the Secretary of State

Notice of Vacancies in Multi-Member State Agencies

Notice is hereby given to the public that vacancies have occurred in multi-member state agencies, pursuant to Minn. Stat. § 15.0597, subd. 4. Application forms may be obtained at the Office of the Secretary of State, 180 State Office Building, St. Paul 55155-1299; (612) 296-2805. Application deadline is April 21, 1987.

CAPITOL AREA ARCHITECTURAL AND PLANNING BOARD has 1 vacancy open for a public member. The board is responsible for architecture and comprehensive land-use planning in the capitol area of St. Paul; exercises zoning and design control authority; controls redevelopment of the north capitol area. Members are appointed by the Governor. Members must file with the Ethical Practices Board. Monthly meetings at the Capitol; members receive $35 per diem. For specific information contact the Capitol Area Architectural and Planning Board, B-46 Capitol Bldg., St. Paul 55155; (612) 296-7138.

MINNESOTA STATE BOARD OF EDUCATION CURRICULUM TASK FORCE IN EDUCATING THE BLACK LEARNER has 15 vacancies open for members. The following qualifications apply:

1) one member from each congressional district
2) 50/50 representation by gender
3) at least 50% representation of minority group members
4) representation from each of the following groups
   a. parents
   b. students
   c. Pre-K Post Secondary Educators
   d. business
   e. community

The State Board of Education has rule making and policy making authority for Minnesota schools. The task force will advise the State Board of Education on issues relating to Black Learners in Minnesota. Members are appointed by the Board of Education. Members will be reimbursed for travel, lodging and meals in accordance with state agency guidelines; no per diem. One meeting a month from July 1987-August 1988 in the Twin Cities. For specific information contact the Minnesota State Board of Education Curriculum Task Force in Educating the Black Learner, 980 Capitol Square Bldg., St. Paul 55101; (612) 296-5147.

GOVERNOR'S MINNESOTA JUDICIAL MERIT ADVISORY COMMISSION has 12 vacancies open for the following:

a) 1 member from each of the ten judicial districts
b) 2 at-large members

The commission shall seek out, evaluate and recommend to the Governor outstanding persons who are learned in the law to fill vacancies which may occur on the courts of Minnesota. Members are appointed by the Governor. Members receive no compensation or per diem. For specific information contact the Governor's Minnesota Judicial Merit Advisory Commission, 130 Capitol, St. Paul 55155; (612) 296-0055.

Macklanburg-Duncan

April 6, 1987

Minnesota Dept. of Energy
900 American Center
150 E. Kellogg Blvd.
St. Paul, MN 55101

RE: Proposed Rule Revisions

In response to the proposed draft revisions released on March 30, 1987, the following elements of these revisions are of concern. The insulation type that concerns Macklanburg-Duncan as a manufacturer are our Pipe and Duct wrap categorized as other insulations.

All revisions are found to be acceptable except for the follow-up requirements. It is felt that with proper Q.C. of raw materials, where as no changes are made in material or manufacture process, that any variance in the finished product will be minimal. Follow-up inspection by a NVLAP laboratory will prove to be costly and availability of such services is extremely limited as to geographic location.

I propose that manufacturers of other type insulations be required to submit evidence of Quality Control Procedures and Inspection of raw materials and Finished products on a quarterly basis. I feel follow-up testing should only be required upon change of raw material or manufacturing process.

Please feel free to contact me with any questions or comments you may have concerning these proposals.

Sincerely,

Roger Trammell
Quality Control

P.O. Box 25188 • Oklahoma City, OK 73125-0188 • 405/528-4411

DOW CHEMICAL U.S.A.

GRANVILLE RESEARCH CENTER
P.O. BOX 515
GRANVILLE, OHIO 43023 - 0515

April 6, 1987

Bruce D. Nelson
Department of Public Service
Energy Division
900 America Center Building
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

RE: SUGGESTED RULE LANGUAGE FOR EXTRUDED POLYSTYRENE (XEPS)

In a February 12, 1987 letter and at a February 18, 1987 meeting changes were being proposed for the Minnesota Residential Insulation Standard which would require that all manufacturers employ an independent NVLAP facility for initial testing and also for proposed quarterly monitoring and semi-annual testing. Because of this, a manufacturer's NVLAP facility will not be able to submit the information for the outlined requirements.

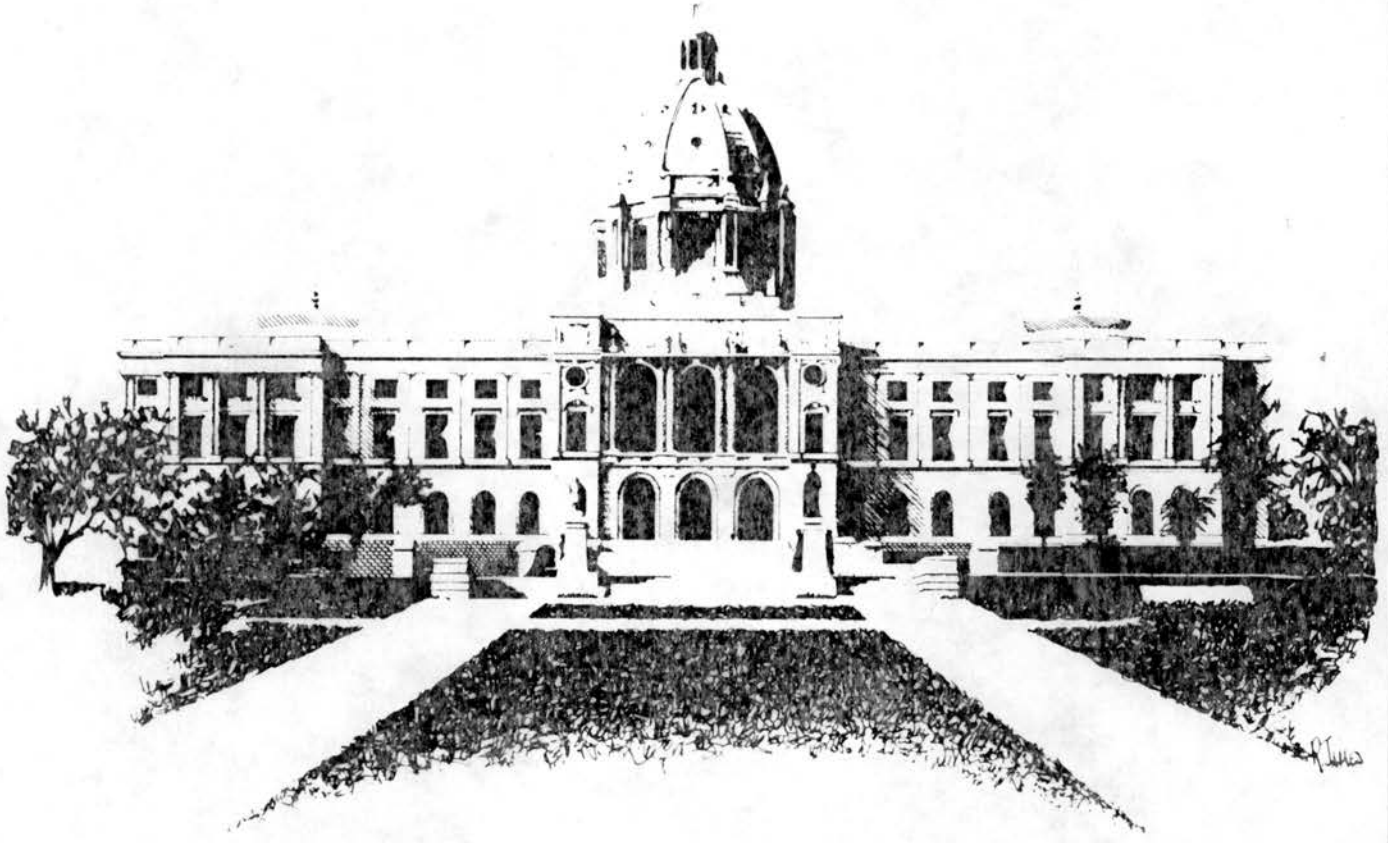
We feel this is not a reasonable change. The National Voluntary Laboratory Accreditation Program (NVLAP) is set up to insure that the procedures, test facilities, and personnel are competent for the identified tests. This helps to insure tested accuracy from one NVLAP facility to another. An independent NVLAP laboratory's results should not be significantly different from a manufacturer's NVLAP facility's results. In fact, the manufacturer's laboratory has an advantage in monitoring product quality because the personnel are in a better position, than an outside lab, to understand the manufacturing process and product performance as the material ages. Results from any NVLAP facility should be aceptable for the Standard.

One of the reasons for the Standard, by my understanding, is to help insure product quality of the various insulation materials. A conscientious manufacturer who has gone to the effort and expense to have his facilities recognized as a NVLAP facility should not be penalized by also requiring him to employ an independent lab for the Standard requirements. An economic penalty is placed on the manufacturer for maintaining facilities which he can use to measure product quality for materials sold in Minnesota or in other areas of the U.S. In other words, the product quality will not change just because an independent lab will also test material.

(over)

STATE REGISTER

STATE OF MINNESOTA



VOLUME 10, NUMBER 46

Monday 12 May 1986

Pages 2277-2304

Department of Energy and Economic Development, Business Financial Management Division

Notice of Tax Exempt Financing Issuance Authority

Notice of Availability

Pursuant to Minn. Laws 1986, Ch. 465, Article 1, Section 22

The Department gives notice that the amounts of tax exempt financing issuance authority available to qualified issuers as of May 5, 1986, is as follows:

COMPETITIVE POOL (EXISTING LAW)

Pursuant to Minn. Laws 1986, Ch. 465, Article 1, Section 13

Total Pool Available (Priority to Manufacturing Projects)	$306,022,800.
For:	
Pollution Control/Waste Management Projects	$ 70,064,560.
Commercial Redevelopment Projects	$ 95,312,980.

COMPETITIVE POOL (FEDERAL VOLUME LIMITATION ACT)

Pursuant to Minn. Laws 1986, Ch. 465, Article 1, Section 19

Total Pool Available (Priority to a—General Obligation Projects, b—Manufacturing Projects)	$295,081,237.
For:	
Pollution Control/Waste Management Projects	$ 59,856,247.
Commercial Redevelopment/Multifamily Housing Projects	$104,748,432.

QUALIFIED 501(c)(3) BOND POOL (FEDERAL VOLUME LIMITATION ACT)

Pursuant to Minn. Laws 186, Ch. 465, Article 1, Section 20

Total Pool Available	$ 77,500,000.

Pursuant to Minnesota Laws 1986, Ch. 465, Article 1, Section 13, Subd. 2, Section 19, Subd. 2, Section 20, Subd. 3, and Section 21, Subd. 2, issuers requesting allocations of issuance authority must submit applications, any applicable deposit and any other supporting documents required. Application forms are available from the Department upon request.

Department of Energy and Economic Development, Energy Division

Outside Opinion Sought for Proposed Amendments to Residential Thermal Insulation Standards

Notice is hereby given that the Department of Energy and Economic Development, Energy Division (DEED) is seeking information or opinions from sources outside the agency in preparing amendments to Minn. Rules Chapter 4155, Residential Thermal Insulation Standards (as proposed at 9 S.R. 2424 and as adopted at 10 S.R. 1208). The adoption of these rules is authorized by Minnesota Statutes, sections 325F.20, subdivision 1 and 325F.21, subdivisions 1 and 2.

DEED requests information and comments on any part of the rules, but in particular on 4155.0120, subp. 14, Definitions; 4155.0130, subp. 1, Scope; 4155.0130 subp. 2, General testing and reporting requirements; 4155.0130 subp. 3, Cellulose fiber in loose-fill form; 4155.0130 subp. 4, Cellulose fiber spray applied; 4155.0130 subp. 10, Polystyrene in board form; 4155.0130 subp. 11, Polyurethene and polyisocyanurate in board form; 4155.0130 subp. 12, Reflective foil; 4155.0130 subp. 13, Urea formaldehyde foam field applied; 4155.0130 subp. 13, Urea formaldehyde foam insulation safety notice; and 4155.0150, subp. 2, Report of intended application and installation.

Interested persons may submit statements of information or comment orally or in writing. Written statements should be addressed to: Bruce Nelson, Insulation Standards Program, DEED, 900 American Center Building, 150 E. Kellogg Blvd., St. Paul,

MN 55101. Oral statements will be received during regular business hours by telephone at (612) 297-2313 and in person at the above address.

All statements and comments pertaining to this matter shall be accepted until September 13, 1986, or until the end of the comment period for any proposed rules. Any written material received by DEED shall become part of the rulemaking record in the event that amendments to these rules are proposed.

Mark B. Dayton,
Commissioner

Department of Human Rights

Outside Opinion Sought on Proposed Rules Governing Processing of Discrimination Charges

Notice is hereby given that the Department of Human Rights is seeking information or opinions from persons or groups in preparing to promulgate new and amended rules governing case processing procedures.

The promulgation of these rules is authorized by Minnesota Statutes 363.05 subdivision 1 (8) (1984) which authorizes the commissioner to adopt suitable rules and regulations of effectuating the purposes of Chapter 363.

The Department of Human Rights requests information and comments concerning the subject matter of these rules, including comment on the issue of whether or not these rules and amendments are likely to have a qualitative or quantitative impact upon small businesses as defined by Minn. Statutes § 14.115. Interested or affected persons or groups may submit statements of information or comment orally or in writing. Written statements should be addressed to:

David Nelson, Management Services
Minnesota Department of Human Rights
500 Bremer Tower — 7th and Minnesota Streets
St. Paul, Minnesota 55101

Oral statements will be received during regular business hours over the telephone at (612) 296-5678.

All statements of information and comment shall be accepted until May 26, 1986. Any written material received by the Department of Human Rights pursuant to this notice shall become part of the rulemaking record in the event that the rules are promulgated.

Department of Jobs and Training

Notice of Solicitation of Outside Opinion Regarding Rules to Operate Employment and Training Services and the Child Care Sliding Fee Program

Pursuant to Minnesota Statutes, sections 14.10, notice is hereby given that the State Department of Jobs and Training is seeking information or opinions from sources outside the agency in preparing to propose the adoption of permanent rules governing the operation of the programs assigned the department by Minnesota Laws 1985, 1st Special Session Chapter 14, Article 9.

The adoption of these rules is authorized by Minnesota Statutes, Section 268.021, which permits the agency to adopt rules with respect to programs it administers. More specific rulemaking authority is given in sections 17, 30, 31, 40, 53, 66, 67, 71 and 72 of Minnesota Laws 1985, 1st Special Session, chapter 14, article 9, which amended Minnesota Statutes, chapters 256, 256D, and 268.

The State Department of Jobs and Training requests information and comments concerning the subject matter of the rules. Interested or affected persons or groups submitting data or views may wish to refer to the Proposed Emergency Rules Relating to Employment, parts 3301.0010-3301.0650, in the December 2, 1985 (Volume 10, Number 23) issue of the *State Register*, pp. 1240-1265 and the Adopted Rules in the March 17, 1986 (Volume 10, Number 38) issue, pp. 1911-1927. Data or views on the subject matter of concern may be submitted orally or in writing. Written statements should be addressed to:

Colleen Gunderson
Minnesota Department of Jobs and Training
390 North Robert Street, Room 302
St. Paul, MN 55101

Mobay

FEB 2 9 1988

Bayer

Mobay Corporation
A Bayer USA INC. Company

Mobay Road
Pittsburgh, PA 15205-9741
Telephone: 412/777-2000

February 24, 1988

Mr. Bruce D. Nelson
Minnesota Insulation Standards Program
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Mr. Nelson:

There is a misprint on page 7 of the February 18, 1988 document regarding "Minnesota Residential Insulation Standards Program." ASTM C591-85 is a specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation, not for urea-formaldehyde. The ASTM specification for urea-formaldehyde foam was C951-83 which was discontinued in 1986.

is 951 ✓ corrected

Very truly yours,

Donald C. Wysocki

Donald C. Wysocki
ASTM C-16.22 Chairman

Enclosure

cc: G. F. Bauman/Mobay
Robert Morgan/ASTM

Writer's Direct Dial Number
(412) 777-2574

4155.0130 INSULATION MATERIALS STANDARDS

F. ~~Subp. 13~~ Ureaformaldehyde foam filed applied. The following requirements apply to ureaformaldehyde foam:

1.A The product shall comply with ASTM C 591-83, or ASTM C 591-85 Standard Specification for Ureaformaldehyde-Based, Foam-in-Place Insulation.

2.B 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.

3.C Manufacturers and installers of ureaformaldehyde foam insulation shall ~~present a 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 eight 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 Director of Energy Conservation, Department of Energy and Economic Development within 24 hours after the contract for installment is completed with the purchaser.~~ comply with Minn. Rules Chap. 4620.1600 through 4620.2100 and Minn. Stat. 325f.18.

[Subpart 14, "Ureaformaldehyde Foam Insulation Safety Notice" has been deleted.]

G. Spray applied urethane. The product shall comply with ASTM C 1029-85, Standard Specification for Spray-Applied Rigid Polyurethane Thermal Insulation.

4155.0120 Definitions

Subpart 3. Approved Laboratory. "Approved laboratory" means any testing facility, including a facility owned or operated by a manufacturer, that has been accredited by one or more of the following agencies to perform the required test:

A. United States Department of Commerce, National Voluntary Laboratory Accreditation Program (NVLAP), Gaithersburg, Md.
B. American Association for Laboratory Accreditation, Gaithersburg, Md.

Exception: [moved from 4155.0130, subp. 2, A(3)] In the event that an approved laboratory program is temporarily delayed or is not capable of accrediting a test or tests, a testing laboratory possessing the appropriate equipment, facilities, and qualified personnel to perform the required testing shall be considered an approved laboratory.

Subpart 14. Insulation. "Insulation" means thermal insulation which is a material or assembly of materials designed to provide resistance to heat flow in residential building structures, including but not limited to mineral fibrous, mineral cellular, organic fibrous, organic and plastic cellular and reflective materials, whether in loose-fill, flexible, rigid, or semirigid form. Any material advertised for use in residential buildings as having ~~a thermal resistance R-value~~ energy saving value by virtue of its thermal resistance or emissivity properties, except windows and doors, shall be considered as insulation for purposes of this chapter.

OWENS-CORNING FIBERGLAS CORPORATION FIBERGLAS TOWER, TOLEDO, OHIO 43659, (419) 248-8000

March 23, 1987

Mr. Greg Hubinger
Acting Manager
Conservation Programs
Department of Public Service
7th Floor American Center Building
Kellogg & Robert Streets
St. Paul, MN 55101

Subj: Minnesota Residential Insulation Standards Program

These comments are submitted by Owens-Corning Fiberglas Corporation in response to the request by the Department of Public Service, Energy Division for comments on the Residential Thermal Insulation Standard. Specifically, Owens-Corning wishes to comment on the Standard's requirement for annual testing, which is included in part 4155.0130, subpart 2.

As stated in our September 12, 1986 comments, Owens-Corning recommends that the Department institute a manufacturer certification program in place of the annual testing requirement. Each manufacturer should be required to certify annually that his insulation products meet the Minnesota Standard test requirements, based upon the manufacturer's quality assurance program and periodic testing by a NVLAP accredited laboratory. A manufacturer should also be required to maintain records to substantiate its certification. This supporting documentation could be made available to the Department within a reasonable time period following a written request.

Presently, Owens-Corning has a comprehensive quality assurance system for insulation products designed to consistently meet its product specifications as well as FTC Rule 460 and the Minnesota Insulation Standard. We believe that the test requirements of the Minnesota Standard plus an annual certification program would address the Department's concern for product quality and would alleviate the unnecessary and burdensome requirement of annual testing for insulation manufacturers.

I understand that your Department presently is considering a third-party follow-up service in lieu of annual testing by the insulation manufacturer. We strongly recommend against such an approach. The Standard already imposes a requirement that testing be performed by an NVLAP certified laboratory. If the Standard were changed to mandate third-party testing exclusively, manufacturers could no longer use their in house NVLAP laboratory to comply with Minnesota's testing requirements.

NVLAP certification should already satisfy the State's concern with quality product testing. It is unnecessary and unreasonable to require that this testing be performed solely by independent NVLAP laboratories. It is also not practicable for all requirements of the Standard. For example, it is Owens-Corning's understanding that there are no independent NVLAP laboratories presently certified to perform the corrosion provisions of ASTM C665 and C764, as required by the Standard. Only mineral wool manufacturers carry the accreditation.

I would be glad to discuss this further with you at the March 24th meeting.

Sincerely,

Timothy C. Grether, Manager
Residential & Commercial Insulation Products
Technical Services Department

TCG/kaw

DOW CHEMICAL U.S.A.

GRANVILLE RESEARCH CENTER
P.O. BOX 515
GRANVILLE, OHIO 43023 - 0515

March 20, 1987

Bruce D. Nelson
Department of Public Service
Energy Division
900 American Center Building
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

RE: PROPOSED CHANGES TO RESIDENTIAL THERMAL INSULATION STANDARD

This is in response to the notice of intent to amend rules without a public hearing dated 20 February, 1987. We agree with the proposed changes to the Standard 4155.0130 Subpart 2A which suggests the product testing be changed from a one-year period to a two-year period. We support these changes being implemented without a public hearing being held.

Also, upon adoption of the rule and the submission of the rule to the Attorney General, we would like to receive notification and a copy of the adopted rules. Please send the information to my attention.

Best regards,

Phil Hendrickson
Senior Development Engineer
STYROFOAM® Brand Products

PH:ac

®Trademark of The Dow Chemical Company

THE ASSURANCE OF TOMORROW
SAFETY

Manville Sales Corporation
Research & Development Center
Post Office Box 5108
Denver, Colorado 80217-5108
303 978-2000

Manville

March 16, 1987

Bruce D. Nelson
Department of Public Service
Energy Division
900 American Center Building
150 East Kellogg Boulevard
St. Paul, Minnesota 55101
(612) 297-2313

Dear Bruce:

I am writing in support of the proposed amendments to Minnesota Rules, Chapter 4155.0130, subpart 2.A(1). I agree that testing and reporting of insulation materials on an every other year basis is more reasonable, and results in little compromise to the Insulation Material Standards.

I look forward to seeing you on March 24th, for the meeting on Mineral and Glass Fiber.

Very truly yours,

MANVILLE CORPORATION
TECHNOLOGY CENTER

Richard J Ray

Richard J. Ray
Section Manager

lnd

EDWARDS SALES

6530 CAMBRIDGE STREET • MINNEAPOLIS, MINNESOTA 55426 • PHONE 612/929-6794

March 11, 1987

Mr. Bruce D. Nelson
DEPARTMENT OF PUBLIC SERVICE
ENERGY DIVISION
900 American Center Bldg.
150 E. Kellogg Blvd.
St. Paul, MN 55101

Re: Residential Thermal Insulation Standards

Dear Bruce:

The proposed changes to the Standards 4155.0130 Subpart 1. Supb.2 A as presented with your letter dated 20 February, 1987 are noted. I support these changes being implemented without a public hearing held, for the reasons put forth in your letter.

Sincerely,

EDWARDS SALES

Laverne Wheeler

Laverne Wheeler

LW/mg

c.c. Phil Hendrickson
DOW CHEMICAL, U.S.A.

WATERPROOFING, INC.
OF NEW BRIGHTON

ASSOCIATE MEMBER:
Minneapolis Builders Association
St. Paul Area Builders Association

Feb. 17, 1987

Dear Bruce,

In reference to your letter of February 5th concerning insulation used as below grade insulation:

We have observed Bead Board to absorb so much water as to be more than 3 men could lift. The problem was observed often in our Earth Shelter repairs. Horizontal 2" EPS was fully saturated while the verticle sheets were less a problem, depending on soil drainage.

We have observed the urethane foam to absorb large amounts of water if it was only Damproofed. As to the absorption characteristics of Urethane Foams, I beleive the only sucessfull use would be to cover them with a Waterproofing membrane and then protect the membrane with a protection course so it was not damaged during backfill.

It would take some time to research my files for documentation, if this would be of help to you.

Sincerely,

David Kleifgen

David Kleifgen

10815 MANKATO STREET N.E. ● BLAINE, MINNESOTA 55434 ● 612-780-5926

ba associates, inc. architects/engineers
Brent Anderson Associates, Inc. • 12221 Wood Lake Drive • Burnsville, Minnesota 55337 • Phone:(612) 894-5751

January 26, 1987

Mr. Bruce Nelson
Minnesota Department of Energy and Economic Development
900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

Re: Thermal and Insulation Standards

Dear Mr. Nelson:

In reference to your letter dated December 11, 1986, I have been involved with below-grade construction since 1976, and much of that time involved construction research at the University of Minnesota Underground Space Center. In the last five years I have been doing business in below-grade construction specializing in waterproofing, concrete foundations, and thermal protection. I have also been involved as an expert witness in water-related litigation as well.

In general, let me describe my thoughts regarding insulation placed below-grade. Extruded polystyrene insulation when used in horizontal deck applications is far superior to expanded bead board polystyrene insulation when used below-grade. In several cases in which I was involved as an expert witness and waterproofing consultant, I had the experience of removing the soil on many below-grade earth covered decks. In all cases where expanded bead polystyrene insulation was used, the material had absorbed excessive amounts of water and when lifted from the deck, lost some of its structural integrity. Also, in some cases it was so saturated, it completely fell apart. Generally, we would find that the bottom layer of expanded bead board suffered the most water damage. However, layers of insulation placed above the bottom layer suffered far less water intrusion.

In cases where extruded polystyrene insulation was used horizontally below-grade, damage due to water absorption was hard to detect. Furthermore, mechanical dmaage due to backfill was much less with extruded polystyrene insulation as compared to expanded polystyrene insulation.

Our experience in vertical wall applications shows less difference between the two polystyrene insulation boards. Damage due to water absorption of expanded bead board generally occurs on a vertical wall in the lower third, where soil drainage is poor. If good drainage techniques are part of the backfilling process, there is less damage due to water absorption in the expanded bead polystyrene insulation. However, we have never experienced a problem with extruded polystyrene in a vertical application.

Our experience on below-grade decks with spray urethane foam is that it is a "disaster." Under no circumstances should it be allowed below-grade. The problem is more in its application rather than the material itself. Despite

what any reputable manufacturers may claim, I enfatically state that spray foam systems, no matter what type, cannot be realistically backfilled and waterproofed against without causing damage. Therefore, water leakage is almost certain to occur within two years.

Spray urethane foam applications on vertical walls has also been a problem as well. My direct experience has been much less, so I will only comment and suggest that long-term thermal performance will probably be marginal. I would stronglt recommend that the state disallow spray urethane foams for below-grade use.

In conclusion, my recommendation is that the State of Minnesota allow only extruded polystyrene insulation for below-grade use. "Warm-n-Dri" fiberglass board also appears to be acceptable for below-grade use as well. I have never excavated a foundation where this material was used, but its experience in Canada appears to be quite good. The State of Minnesota should contact David Kleifgen of Underground Waterproofing, for his comment on this fiberglass board used below-grade.

Regarding the types of expanded bead polystyrene insulation products used below-grade, I can only say they were in the range of 0.9 to 1.5 psc densities. I did not have the water logged samples of expanded bead board tested because it did not directly pertain to the water leakage problem or litigation at hand. However, on one occasion, I did send some samples to the U.S. Armuy Corps of Engineer's research laboratory for visual inspection. They also confirmed my belief that extruded board is superior to both bead board and urethane foam for below-grade use.

Sincerely,

Brent Anderson

Brent D. Anderson, P.E.
President

BA:hp

encl: (1) Various published articles on thermal insulation by BA

Koppers Company, Inc., Chemical and Allied Products
436 Seventh Avenue, Pittsburgh, PA 15219
Telephone 412-227-2000

1350 Koppers Building

KOPPERS

January 22, 1987

Mr. Bruce Nelson
Minnesota Department of Energy
and Economic Development
Energy Division
Office of Energy Conservation
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Mr. Nelson:

This will reply to your letter of December 19, 1986 concerning the Minnesota Residential Insulation Standards Program and our subsequent phone conversations concerning this letter.

As stated in our recent telephone discussions, we feel that the Minnesota requirement for annual testing of products is an unreasonable requirement. Koppers Company has a follow-up service agreement with both Underwriters Laboratories Inc. and Factory Mutual which requires periodic monitoring of our production facilities at Oak Creek, Wisconsin to insure that the product is manufactured in accordance with and consistent with the products' performance at the time the product was classified. If there are no changes in the manufacture or formulation of the product, there should be no significant change in test results no matter how frequently testing is conducted.

Therefore, we urge that the State of Minnesota consider recognition of above described follow-up service agreements as do the Model Building Codes.

As a bare minimum, we urge some less frequent schedule of required testing.

Koppers Company, in developing products for new markets, routinely conducts tests to determine the products' suitability for particular market applications.

COOPERATIVE EXTENSION SERVICE

NORTH DAKOTA STATE UNIVERSITY OF AGRICULTURE AND APPLIED SCIENCE
U.S. DEPARTMENT OF AGRICULTURE COOPERATING. FARGO, NORTH DAKOTA 58105

Box 5626, University Station, NDSU, Fargo, ND 58105 Phone: 237-7235

January 12, 1987

Bruce Nelson
Minnesota Dept. of Energy
and Economic Development
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Mr. Nelson:

This is in response to your December 17 letter. My comments here are a reflection on my observations generally made over several years about the use of foundation insulation with farm buildings and homes around North Dakota.

Expanded polystyrene exposed to daylight and climate changes appears to disintegrate slowly after a couple of years. Birds, insects, rodents, equipment, chemicals and other abuse will hasten or contribute to this rate. Dry Lite is one brand.

Extruded polystyrene under similar conditions is likewise affected but at a slower rate depending on the amount of physical abuse. Dow Styrofoam is the common brand.

Either extruded or expanded polystyrene seems to function satisfactorily if correctly installed and maintained.

Sprayed-on urethane and plastic or foil-covered urethane board properly protected likewise has generally performed satisfactorily to my knowledge. Again, exposure to the elements and general abuse hastens its deterioration.

Please send me your completed report. Also a list of publications and plans available from your office.

Very truly yours,

Dexter W. Johnson
Extension Agricultural Engineer

/db

UNDERWRITERS LABORATORY
APPROVED
CELLULOSE INSULATION

ENERGY ZONE MFG.

1002 1st STREET N.E.
P. O. BOX 205
BUFFALO, MINNESOTA 55313

(612) 682-5755

January 7, 1987

Minnesota Dept of Energy & Economic Dev
Attn: Mr. Bruce Nelson, Energy Division
900 American Center Building
150 East Kellogg Blvd.
St. Paul, Mn. 55101

Dear Mr. Nelson:

We are writing in response to your request for written comment on the new Minnesota Residential Thermal Insulation Standards; (11/26/85; revisor kc AR07055+). We feel that stanards are good and will improve the quality of products and applicators in the state of Minnesota.

We have a few suggestions that we feel will better bring the intent of the standards into conformance with accepted industry practice. They are as follows;

#1 Section 4155.0130 Insulation Materials Standards Subpart 2. A 3, 4 & 5 a & b page 6 & subpart 3 A,B 1 & 2 & C page 8 Regarding NVLAP Approved Laboratory Testing.

Presently the rules are written in such a way that inforcement is unclear & in the case of cellulose discriminatory.

Section 3 page 6 states "all testing shall be performed by laboratories approved and accredited by NVLAP." Section 5 a & b proceed to outline how a manufacturer without NVLAP testing can be in compliance without NVLAPP testing. Subpart 3B page 8 then states "All (cellulose) manufacturers shall contract with an Independent NVLAP approved laboratory." It is commonly known that most of your major national level insulation manufacturers own the NVLAP approved lab used to test their materials. It is also true that many "approved" testing laboratories are not NVLAP approved, nor do they have any followup programs to comply with Subpart 3B 1 & 2 page 8. We feel that the rules described above are unclear, ambigious and unfairly discriminatory against Cellulose insulation.

If the intent of the standards is to assure the Minnesota consumer that the product he is buying is what it is represented to be, then we believe it is only fair that products competing for the same usage market (attics; fiberglass, cellulose, mineral wool etc.

walls; cellulose, fiberglass batts, poly styrene etc.) be required to be tested, monitored and judged in the same way. As the rules are now written, a fiberglass manufacturer could use his own "NVLAP" approved lab to test and document his claims and not be required to have any field test follow-up verifications. A polystyrene manufacturer could choose any "Approved Lab" regardless of their status with NVLAP, to do their testing and followup. A cellulose maker is the only manufacturer required to hire aNVLAP approved Independent Laboratory to test and monitor his product.

We support the requirement of having NVLAP approved Independent Laboratories testing with a strong follow-up program and believe that it is only fair that this requirement be extended to ALL insulation products.

The products discussed in the standards (cellulose, fiberglass, mineral wool, polystyrene etc.) are not unique and singular in their usage. The contractors & consumers of insulations are constantly making choices between one product or another. For example; an attic can be insulated with fiberglass or cellulose, a wall with polystyrene or fiberglass batts. Since the products have overlaping usage markets, we believe it only fair that the criteria used for testing & judging them be as equal as possible.

We believe that it is only fair and the consumer is best served when all insulations be tested by NVLAP approved Independent Laboratories with strong follow-up field sample testing programs.

#2 Requirement for annual testing: Subparts 1 & 2 pages 5 & 6
(see discussion #1)

As a manufacturer on insulation we are presently using a NVLAP approved independent laboratory to do our testing and followup field work. We are in compliance with Minnesota Insulation Standards. As the standards are presently written, we could not modify our product or introduce a new product in Minnesota without being out of compliance with the standard. There is no provision for a product testing period or for the necessary manufacturer test period for a product to be tested by an independent NVLAP laboratory. We suggest that the standards be ammended to allow for a reasonable period of time to pass (example 120 days) between the introduction of a product change or a new product and the final acceptance of a product; a probation period. This would give the manufacturer sufficient time to meet the Minnesota Standards without being technically in noncompliance during the test period. In the future we may choose to change the way we make our product or introduce a new product. Another company may want to sell in the Minnesota market.

4155.0130 subpart 2,a,1 page 8 states, "testing shall, at a minimum, be performed annually and prior to June of each year." When your product is being tested by a NVLAP approved independent laboratoy, it is subject to unannounced surprise testing and random field testing 12

months of the year. We feel the addition of an annual full battery of tests is an unnecessary repitition of what we are doing all year long. It is also very expenseive to pay for the additional full battery of tests. We suggest that those companies with NVLAP approved independent laboratory testing and followup programs be exempted from an annual test requirement.

#3 4155.0150 Application and Installation Standards Subpart 4-d page 15

"cellulose fiber spray applied shall not be used in below ground application."

We agree that there are certain below grade external insulation applications where cellulose would not be appropriate. As the rule is written, you do not differentiate between external and internal. There are many internal below grade applications where cellulose would be appropriate and an excellant choise. (wood foundations for example) We would appreciate knowing why cellulose has been omitted from below grade application. More likely the product and its below grade usage had not been fully researched.

#4 Applicator Standards: Section 4155.0150 pages 14, 15, 16

After review of the applicator standards we believe that more attention should be paid to the applicator and his or her conduct while installing insulation. Too often the applicator has negated the R-value and thermal performance of the blowing product by not blowing the prescribed bag count as recommended by the manufacturer. We suggest that the authors of the Minnesota Standards address this issue more completely.

#5 Real Field Condition Testing vs Theoretical Testing

Most of the tests performed on insulation products are tightly controled in lab test that often doesn't properly simulate real installed circumstances. We suggest that the state examine the possibility of testing insulations under more realistic field conditions.

We also suggest that R-values of products be tested at real field condition levels, not simulations. The current trend in the insulation industry is to look at an insulations actual field performance with the following 4 factors in mind: R-value, Infiltration, convection & conduction. The sum total of the products performance is refered to as the performance value. (please see the attached explanation from an article by Ivan Sandou.) We suggest that the state look more closely at the actual field performance of insulations and less of theoretical lab tests.

#6 Community Action Agencies dictating cellulose chemical formulations.

As you are aware, the weatherization programs of Community Action Agencies are major buyers of cellulose insulation. Over the past two years it has become popular for some of the Community Action Agency weatherization directors to dictate to the cellulose manufacturers what chemical formulation to use to make cellulose for their programs. They base their decission on vague notions that the formulations they want are "best". They do not put forward any documentaion to sustain their claims. Unfortunately, the formulations they demand are also the most expensive and of no known superiority in effectiveness.

Cellulose made in or shipped into Minnesota is now being monitored and tested by 4 governing bodies, the CPSC, the FTC, the State of Minnesota, and an approved NVLAP third party testing company (in our case UL). All of these organizations are aware of, have tested and accepted a variety of cellulose chemical formulations. They have found them to be safe and acceptable in all catagories of testing for cellulose. We feel that it is disciminatory and unfair that weatherization directors choose to ignore the facts and set unreasonable standards for cellulose used in their programs. We ask that the state examine this situation.

The agencies most outspoken in this policy are the weatherization programs based in St. Paul, Mankato, and Hibbing.

Mr. Nelson, we appreciate your dilligent efforts to improve the quality of the Minnesota insulation industry and thank you for your request for our opinions regarding the new Minnesota Residential Thermal Insulation Standards. We hope our perspective can be of help to your efforts.

Best regards.

Sincerely,

James O. Larson
President

John J. Joyce
Sales Manager

JL/sl

enclosures

factors effecting heat loss
wet spray manual
Ivan Sandall 1986

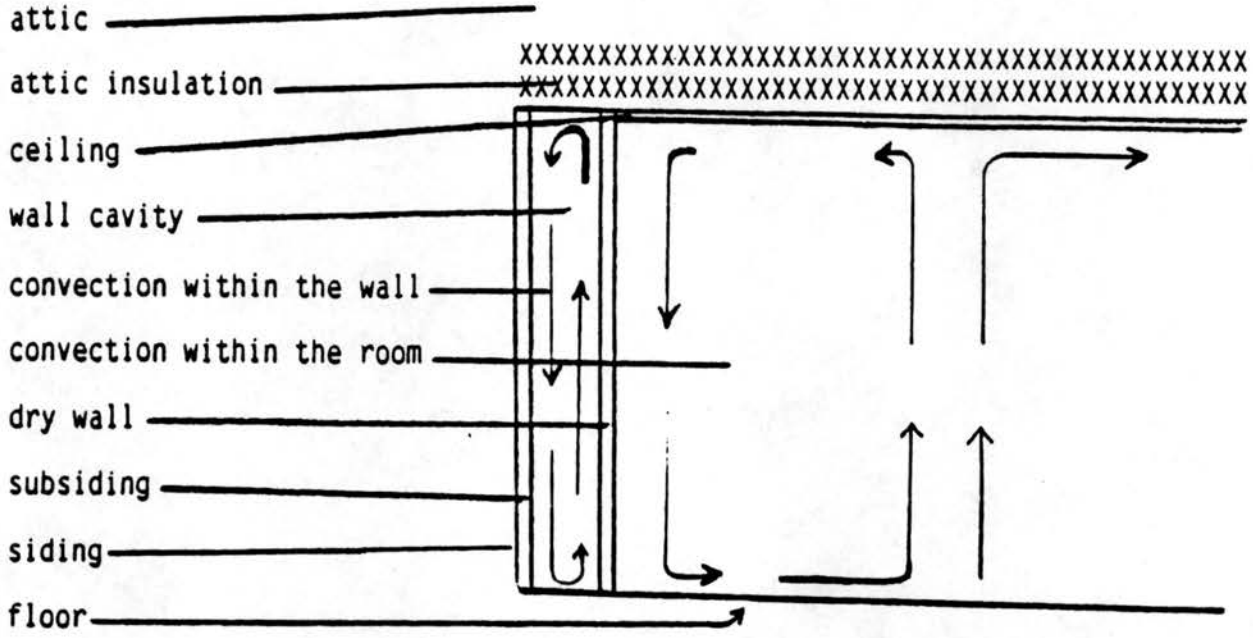
FACTORS EFFECTING HEAT LOSS

The insulation industry has spent years trying to educate the public to think R-Value instead of inches. Do you know that the public is finally recognizing that it has something to do with the amount of insulation in their house. Unfortunately, when we as an industry finally achieved a small amount of progress in this area of education, we discovered that R-Value does not tell the whole story. It doesn't even tell a very large portion of the story. The truth of the matter is that the insulation industry does not have in their terminology a word that accurately describes performance. The R-Value of one insulation will not necessarily perform the same as the R-Value of another.

Having sprayed for many years, I have discovered that sprayed walls resulted in excellent performance. The real test concerns four areas of performance. If an insulation performs well in each of these areas, it will perform well in a structure, resulting in low heating costs.

Infiltration. This is the movement of air through walls, around windows and doors, heat vents, plate lines, corners and any other area where air can move through. For good performance, it is essential to control air flow. For many years vapor barriers were used to control air flow. Even today this method is still being used because of a very basic misconception. The misconception being a vapor barrier is adequate to stop infiltration. Air flow must be controlled by the insulation itself, and not by a poly barrier or any other type such as rigid foam on the outside of the wall. If insulations do not control the air flow, infiltration and convection will result. An infiltration barrier may result in a very tight house, but not necessarily a warm house. Let me illustrate that by an example: let us look at a new house with no insulation. In determining that infiltration was the major heat loser, I wrap the entire house with a poly barrier. After completion, would this house be warm and comfortable? The answer to this question will easily be revealed under the next area called convection insulation. Let us consider this same house with the vapor barrier and a loosely bound insulation fiber fo full thickness within the cavity. After completion, would this house be warm and comfortable? Answer: It would be better than with empty cavities, but even though the infiltration is cut out, convection still exists. If we wanted this house to be very comfortable, we would use a product that does not allow for free air flow through the insulation. This would stop the infiltration and convection problems and create a very comfortable house. The use of urathanes and other foam type subsidings are vapor barriers in themselves and should never be put on the outside of the exterior wall. Vapor barriers should always be put on the inner side of exterior walls. Vapor barriers will be handled in another section, but I am mentioning this so that you will understand that the very best method is to spray the wall with a material that controls infiltration and not try to control it with poly or subsidings.

Convection. Convection is the circulation of air within a space. Air when heated, rises and when cooled, falls. In a wall, the natural forces of gravity along with a warm inner surface and a cold outer surface creates a continuous movement of air.



Starting with the exterior wall cavity, note this process: (This is the normal flow of air within wall cavities and within rooms.)

1. The convecting process within the wall.
2. The air cools, moving down the outside of the cavity. (Air drops when cooled).
3. The air heats as it comes up the inside of the cavity. (Air rises when heated).
4. The greater the temperature difference between outside and inside, the faster the convecting process.
5. The faster the convecting process within the wall cavity, the colder the drywall.
6. The colder the drywall the faster the convecting process within each room of the house.
7. The faster the convecting process within the rooms of the house, the faster the house temperature drops.
8. The faster the house temperature drops, the more fuel will be used to replenish the heat.
9. The more fuel used, the higher the heating bills.

Let us go back to the illustration of the house. We will use a sprayed wall with a product that controls air flow. This results in very slow or no moving air within the wall cavity. Because this convection within the wall cavity is controlled, the drywall on the inner side of the wall is not cooled quickly. The result being because of the much warmer drywall, a much slower convecting process within the house itself. Slow convecting gives comfort within a room while fast convecting makes a room feel drafty. People will feel more comfortable at a lower thermostat setting with slow convection within the room (65° - 68°). When fast convection exists within a room, the thermostat setting for reasonable comfort will be above 70°. The speed of the convection within the house is determined by the temperature of the drywall on the exterior walls and

ceiling. Cold glass from the windows will also speed up the convecting process within the house. Remember, an insulation with the capability to control air flow within the insulation itself, will have a high performance value.

Conduction. Conduction is the transmission of energy moving through a substance. If you recall the cool drywall which would speed up the convecting process within the room Because of the high conductivity of glass, the windows will also speed up this convecting process. The studs which allow the cold to conduct through them will speed up convection. The insulation materials themselves, if they possess conduction qualities, will allow the cold to conduct through and result in a cool drywall surface, thus speeding up the convecting process within the room. "Now just a minute, I thought energy moved through the surface. Since there is more energy stored up in warm air than there is in cold air, then, heat moves out through the walls and ceilings and not the reverse." Yes, this is absolutely true, but both processes take place. Just put your hand on the window in cold weather. If cold didn't also move inward, glass would be warm to the touch. We could insulate with reflective surface insulations only and hold the heat in without concern about cold moving in as well. Insulation is necessary; it must be able to control air flow, and it must have non conductive qualities to obtain high levels of performance.

R-Value. This is the resistance of heat or the measure of heat lost through a material. This test is done in a laboratory, normally using a sample 1 inch thick, with the tested temperature at 75°. R-Value then is testing heat flow through insulation or other materials. Air flow is not part of the test.

Performance-Value. Performance of insulation cannot be evaluated before each of the above factors are evaluated individually. To determine the performance of an insulation, one must evaluate its ability to control infiltration and convection, its ability to contain conduction and its heat flow characteristics. To sell high performing products, the customer will need to understand the difference between high performing products and R-Value alone. Contractors especially need to understand these factors. If they are genuinely interested in quality of insulation, they respond to this approach. If they accept this idea of Performance-Value, they will be interested in giving you future jobs.

BASF Corporation
Chemicals Division

BASF

JAN 1 2 1987

January 7, 1987

Mr. Greg Hubinger
Minnesota Department of
Energy and Economic Development
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Greg:

Many thanks for your December 30 letter. We are currently in touch with Bruce Nelson in an effort to set up a meeting in order to discuss EPS insulation applications below-grade in detail.

It should be noted that the two reports forwarded with your letter were identical and, most importantly, were prepared by representatives of Dow Chemical Company, a manufacturer of insulation board products in direct competition with EPS. Test procedures selected by Dow may have been oriented more toward marketing than research.

Again, we look forward to meeting with you at your earliest convenience.

Sincerely,

E. W. Fairweather
Market Development Manager
Styropor®

EWF:amp

100 Cherry Hill Road, Parsippany, New Jersey 07054 (201) 263-3400

BASF Corporation
Chemicals Division

BASF

January 5, 1987

Mr. Bruce Nelson
Minnesota Department of
Energy and Economic Development
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Bruce:

Many thanks for your December 22 letter regarding performance of below-ground insulation products.

Your letter enclosed a form letter your department intends to use in collecting information concerning performance of these products.

Speaking solely for manufacturers of expanded polystyrene products, we feel our industry has collected all necessary and pertinent test and performance information, all of which is analyzed and summarized by the University of Minnesota Underground Space Center in an October 1986 report entitled "Moisture Absorption and its Effect on the Thermal Properties of EPS Insulation for Foundation Applications." I understand Ray Sterling forwarded a copy of the report to your office.

As a result of the University's study, the EPS industry has developed guide specifications for the use of EPS products below-grade, and we therefore had suggested a meeting with your department to review these specifications. May we again suggest such a meeting in late January or early February, at your convenience.

We shall look forward to meeting with you.

Sincerely,

E. W. Fairweather
Market Development Manager
Styropor®

EWF:amp

100 Cherry Hill Road, Parsippany, New Jersey 07054 (201) 263-3400

January 5, 1987

Mr. Bruce D. Nelson
Minnesota Dept. of Energy
& Economic Development
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

Dear Mr. Nelson:

In response to your request for information regarding insulation used below ground:

1.) I used 1" thick expanded polystyrene insulation as exterior perimeter insulation around by home that was built in 1976.

2.) I did some landscaping work in the fall of 1986 which gave me a chance to look at the EPS insulation that was installed in 1976.

3.) There was no evidence whatsoever of any deterioration or change in cosmetic appearance or insulation valve.

I am very satisfied with expanded polystyrene as a below ground exterior insulation and would use it again should the need arise. The material was purchased from Poly Foam, Inc., Lester Prairie, Minnesota.

Sincerely,

David H. Karels

David H. Karels
Rt. 1, box 354
Waverly, MN 55390

EDWARDS SALES
6530 CAMBRIDGE STREET • MINNEAPOLIS, MINNESOTA 55426 • PHONE 612/929-6794

December 30, 1986

Mr. Bruce Nelson
MINNESOTA DEPARTMENT OF
ENERGY & ECONOMIC DEVELOPMENT
900 American Center
150 E. Kellogg Blvd.
St. Paul, MN 55101

Dear Bruce:

This letter is in follow-up of our meeting December 22 and contains both comments regarding the Minnesota Insulation Standards Program and enclosures which hopefully will add to your information.

Enclosed is a copy of Phil Hendrickson's (DOW CHEMICAL, U.S.A.) letter dated September 9, 1986 informing you that STYROFOAM® RS Brand Insulation is classified as "Type X" instead of "Type IV" as listed on the most recent listing. He further states "The performance of the product in the field will be the same", so its recommendation for use below grade remains.

The listing dated 10/27/86 also shows STYROFOAM SM as "Extruded PS Type I". This should read "Type IV".

Your next printing should show a name change from"PSF 002 to Grayboard". This is merely a name change and still is "Extruded PS Type X - recommended for "Below Grade" applications.

Enclosed also is a DOW Technical Newsletter summarizing The Society of Plastics Industry report on aged R-Value of Rigid Foams and the "in-service R-Value" that the MRCA (Midwest Roofing Contractors Association) recommends. While the in-service conditions in residential applications may differ from the conditions in a roof, the R-Value change as determined by the SPI study should be valid for comparison purposes.

LIFE IS FRAGILE HANDLE WITH CARE

Enclosed is a recent report by David C. Esch, Highway Research Manager of The Alaska DOT, on performance of buried insulation layers. He reports on the effectiveness of foamed-in-place urethane, EPS and Extruded polystyrene used in insulating highways and runways in Alaska.

Enclosed is a copy of DOW'S Energy Savers News which discusses reflective air space claims as related to R-Value.

Section 4155.0150 Subp 8 (E)

The meaning of this paragraph needs to be clarified. It could be interpreted to mean that a trade association or representatives may submit for testing a product from one or more of its members and claim that those test results are valid for all or any members of the association or trade group. While a trade association may appropriately promote and support uses of a product it normally does not assume responsibility or liability for a product's performance in lieu of the manufacturer.

It may be appropriate for a trade association to handle the testing of a member's product by an approved laboratory, but for a trade association to test one manufacturer's product and suggest that another manufacturer's product be accepted for below grade applications based on the first manufacturer's test results seems entirely illogical.

If, as recorded in the Statement of Need and Reasonableness, this sub paragraph was included to accomodate "smaller manufacturers that cannot or do not allocate funds for extensive testing" how then is the consumer protected? On page 5 of the Statement of Need and Reasonableness it states "The Department concluded that special treatment cannot be directly given to small businesses without sacrificing the purpose of the rules". Is not the purpose of the rules to insure that a manufacturer provide quality products and verify their performance by test results in order that the consumer is assured that he will receive the benefits as claimed?

If a manufacturer is "small" should the consumer be less protected when he buys his product? I believe it is equally as important to assure that products from both small and large manufacturers meet certain requirements.

This paragraph could be changed to allow trade associations to provide a service to their members by establishing a standard test for below ground use, by conducting a test program or by assisting their members in obtaining testing from an approved laboratory. If, however, the purpose of this paragraph is to allow listing of some manufacturers, large or small, without the testing of their product I recommend the paragraph be deleted.

Best Regards,

EDWARDS SALES

Laverne Wheeler

Laverne Wheeler

LW/mg

enclosures

c.c. Phil Hendrickson, DOW CHEMICAL, U.S.A.

LESTER'S

ENGINEERED BUILDING SYSTEMS

BY PHONE:
MN WATS 1-800-552-1192
OUTSTATE WATS 1-800-328-5860
MINNEAPOLIS 1-612-445-6740
LOCAL 1-612-395-2531

LESTER'S OF MINNESOTA, INC. LESTER PRAIRIE, MINNESOTA 55354

Decemb er 30, 1986

Mr. Bruce D. Nelson, Senior Engineer
Minnesota Dept. of Energy and
Economic Development
900 American Center
150 East Kellogg Blvd.
St. Paul, MN. 55101

RE: Below grade insulation, your letter of 12/24/86

We have wondered about the state's position on below grade insulation for quite some time. Our experience would suggest Expanded Poly Styrene (EPS) bead board works as good as any product, and in most cases for less consumer cost.

We have used E.P.S. below grade extensively for over 20 years. These uses include:

. Residential basements - Placed below grade on exterior of blocks, to grade level.

. Under floor - basements and monolithic slabs.

* . Perimeter foundations - Place in concrete forms, with aluminum or glass (FRP) above grade skin.

* I would hesitate to guess how many "miles" of this we have installed in the 50,000+ ag and light commercial structures we have erected. Agricultural applications expose the EPS to extreme moisture conditions with frequent freeze/thaw cycles.

To our knowledge we have not experienced any difficulties with deterioration or performance as intended. Quite frequently, with building add ons, our people will have occassion to dig up old below grade E.P.S. It simply looks O.K.

I trust this may have some bearing on your future decisions. Thank you.

Sincerely,

LESTER'S OF MINNSOTA, INC.

Jon Schwichtenberg
V.P. Marketing and Sales

JS:kh

Poly FOAM

Dri-Lite

Expanded Polystyrene for:
Packaging
Insulation
Flotation
OEM Parts

POLY-FOAM INC., Lester Prairie, Minnesota 55354/(612) 395-2551 • Minneapolis Phone (612) 445-4089

December 22, 1986

Mr. Bruce Nelson
Senior Engineer
MN Dept. of Energy & Economic Development
900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

Dear Mr. Nelson:

In response to your letter of 12/18/86, I suggest you write the following people.

Dave Karels
Route 1
Box 354
Waverly, MN 55390

Barry Peterson
206 Highway Circle
Lester Prairie, MN 55354

Norris Hirsch
Route 1
Waverly, MN 55390

Jon Schwichtenberg
Vice President
Lesters of Minnesota
Lester Prairie, MN 55354

Yours truly,

Bob Humboldt

R. E. Humboldt
President

REH/nd

MINNESOTA
Department of Energy
and Economic Development

Energy Division
Office of Energy Conservation
(612) 296-5133

900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

December 18, 1986

Bob Humboldt
Poly Foam, Inc.
116 Pine Street South
Lester Prarie, MN 55354

Dear Mr. Humboldt:

Enclosed please find a copy of a form letter by which the Department hopes to collect information on the performance of various types of material used as below-ground insulation. Since you have expressed concern about the Department's position on the use of expanded polystyrene as below-ground insulation, I am requesting that you provide names and addresses of persons to whom a copy of this letter should be sent. For each of our letters, the date requested for response would be changed to give about 3 to 4 weeks from the date sent.

Thank you for your assistance. If you have any questions please call me at 612/297-2313.

Sincerely,

Bruce Nelson

Bruce Nelson
Senior Engineer

AN EQUAL OPPORTUNITY EMPLOYER

155-C

BASF Corporation
Chemicals Division

BASF

November 25, 1986

Bruce Nelson
Minnesota Dept. of Energy
and Economic Development
Office of Energy Conservation
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

Dear Mr. Nelson:

Greg Hubinger's letter of November 13 to "Manufacturers of EPS Insulation Products Sold in Minnesota" has been forwarded to this office. Essentially, the letter explains your department's decision not to list EPS as below-ground insulation.

As a representative of Minnesota-based EPS manufacturers, we request an opportunity to present our case to the Department at your earliest convenience. A meeting date of Wednesday, December 10, is suggested for your acceptance.

At the requested meeting, we will be prepared to present specific EPS design specifications and it would be appreciated if your department would be prepared to clarify the following statements in Mr. Hubinger's November 13 letter:

1) "There are no generally accepted physical property criteria established for insulation material to assure it will perform as adequate below-ground insulation under all circumstances."

   Question: How then have any below-ground insulation products gained acceptance from the department?

2) "There are documented reports of EPS performing poorly when used as below-ground insulation."

   Question: Documentation requested.

We shall look forward to meeting with you.

Sincerely,

E. W. Fairweather
Market Development Manager
Styropor® Business

EWF:amp

100 Cherry Hill Road, Parsippany, New Jersey 07054 (201) 263-3400

DRAFT - February 1987

Specification and Installation Recommendations
EPS Insulation
for
Foundation Applications

Introduction

EPS insulation has been specified and used in below-grade, foundation applications for over 30 years. HUD/FHA recognized its cost effective performance as early as the 60's and today the product is extensively used for critical insulated shallow foundation design in northern climates.

In spite of its long history of effective performance, firm EPS specification and installation recommendations for a variety of below-grade exposures have not been developed. The significance of below-grade moisture exposures, freeze/thaw cycling and vapor drive, and their effect on EPS insulation, have not been firmly established.

Responding to the needs of specifiers, The Society of the Plastics Industry, Inc. commissioned the University of Minnesota Underground Space Center to review all existing field and laboratory test data pertaining to EPS in moist environments; tabulate and compile their findings; analyze the significance of test procedures and results; and prepare

basic recommendations for the specification and installation of EPS insulation in below-grade applications.

The October 1986 University of Minnesota report, entitled "Moisture Absorption and its Effect on the Thermal Properties of EPS Insulation for Foundation Applications" is available from SPI, EPS Division, 1275 K Street, N.W., Suite 400, Washington, DC 20005.

Key findings and recommendations of the report are summarized below.

Freeze/Thaw performance - "Freeze-thaw testing involving hundreds of full-thickness freeze-thaw cycles of a fully or partially submerged insulation is poorly related to the expected performance of insulations for below-grade applications over a reasonable economic life for a building."

(section 2.4, page 29)

"The impact of freeze-thaw cycling in a drained, below-grade building foundation application should not be large since the annual number of freeze-thaw cycles is small below grade and little of the insulation thickness will experience sub-freezing temperatures."

(section 4.3, page 54)

Vapor drive/condensation - "Building/ground vapor pressure differentials should seldom exceed 0.30" Hg outwards and 0.50" Hg inwards. Laboratory test results at this level of vapor pressure differential did not result in a significant absorption of moisture."

(section 2.1, page 19)

(section 4.3, page 53)

Moisture absorption tests - "Perhaps the most evident conclusion from an examination of the entire database, including the results for materials other than EPS, is that it is possible to drive large quantities of moisture into any foam insulation material if the driving potential is high enough and the exposure time long enough."

(section 4.1, page 50)

"For building foundation applications which are the principal subject of this paper, the worst test results were 7.8%/volume moisture absorption recorded for laboratory submersion in water, 15.5%/volume for horizontal ground contact applications and 13.2%/volume for vertical ground contact applications. The above percentages represent the worst individual test data and not the averages of several samples."

(section 4.1, page 50)

"The moisture absorption of an EPS insulation below ground varies according to the severity of the moisture exposure and whether drainage has been provided. The conditions of exposure are far more important that the time of exposure, insulation density or thickness. Under moderately favorable conditions, it is not anticipated from the test data that EPS insulation will absorb more than 15%/volume moisture (note above - horizontal ground contact) and it may, in fact, absorb much less."

(section 4.3, page 53)

Moisture vs. Conductivity - "The effect of absorbed moisture on the thermal conductivity of EPS can be estimated with good reliability using the following regression curve based on thermal conductivity test temperature of 40-50°F:

$$K = K(dry) + .00302w + .000256w^2$$

where: K = apparent thermal conductivity at 40°F

K(dry) = apparent dry thermal conductivity at 40°F

w = moisture content (percent by volume)

(section 4.3, page 53)

Insulation Cost - "The initial cost of an insulation material is an important factor in its selection for a particular use. EPS insulation is the least expensive foam plastic board insulation available and this factor should be considered

with regard to its long-term cost-effectiveness in foundation applications."

"Local cost data should be used to develop figures for the initial thermal resistance per unit cost provided by EPS insulation and then the long-term thermal resistance per unit cost can be estimated from the appropriate data in this report. The long-term cost-effectiveness of EPS can then be compared with similar estimates for other insulation materials."

"The most appropriate technique for comparison in exterior foundation applications where insulation thickness is not a design constraint would be to calculate equivalent thicknesses of insulation for each insulation type. An inexpensive insulation such as EPS will allow a larger thickness which will in turn have a somewhat greater resistance to moisture absorption than if an equal thickness was compared."

(section 4.2, page 53)

Report Recommendations (Appendix A) - page 62

1. Since EPS quality can vary between suppliers, specify that the insulation meets ASTM standard C578-85 for the EPS density selected and make sure the product complies with that specification. A critical parameter not always examined is

bead fusion. Significant variations can occur especially at the lower densities. A high bead fusion will provide greater moisture resistance, a lower vapor permeability and an increased freeze-thaw resistance. Adequate fusion is tested through compliance with ASTM C578-85.

2. Provide a foundation drainage system to limit the moisture exposure conditions for the below-grade insulation.
3. Specify one thick layer of insulation rather than two or more thinner layers - the moisture absorption and increase in thermal conductivity will be minimized when using thicker layers.
4. Type I EPS under ASTM C578-85 appears suitable for shallow (0-10 feet), vertical, adequately drained below grade insulation applications. Higher densities of EPS insulation are preferred for less-than-optimum conditions and when additional strength or resistance to compression are required.
5. A polyethylene sheet (or similar moisture barrier) separating the insulation from a moist soil should be beneficial. Although this can act as a cold side vapor retarder for vapor transport from the building in the wintertime, the vapor pressure differentials are small and greater net benefit should be derived from the isolation from the soil moisture. Provision should be made so that any moisture reaching the insulation layers can drain out at the bottom of the insulated sections.

Industry Recommendations

The University of Minnesota study defines worst case tested performance of **EPS insulation of undefined quality** and, through use of a regression curve, facilitates development of suitable **Design R-values** for anticipated exposure conditions.

Supplementing Appendix A Design and Specification Recommendations, the following "Design R-values" are recommended for EPS insulation used in below grade applications and meeting the physical properties of Type I products under ASTM Standard C578-85:

Insulation Position	Drainage Condition	Assumed % Moisture Content	Design R/inch
vertical	good	5	3.76
	moderate	10	3.27
	poor	13	3.01
horizontal	moderate	13	3.01
	poor	15	2.84

Drainage Conditions - Definitions

Good - Drainage complying with the requirements of the CABO One and Two Family Dwelling Code, Section R-305, 1983 Edition, with compacted backfill ranging from GW to GC classifications under the Corps of Engineers Unified Classification System.

Moderate - Same, but with compacted backfill ranging from SW to SC classifications.

Poor - Conditions and backfill not complying with requirements of the CABO One and Two Family Dwelling Code.

Moderate/horizontal position - Finish grade sloped away from foundation wall at 1/2" per foot for 5'0" distance. Insulation similarly sloped or tapered to promote drainage.

As recommended by the University of Minnesota, applications featuring moderate to poor drainage conditions will benefit through use of a polyethylene (6 mil) film moisture barrier and critical load conditions may be met by higher density EPS products.

As a product selection guide for barrier-protected and/or high load exposure application, the following key properties pertain to EPS products conforming to ASTM C578-85 requirements:

ASTM Designation	Minimum Density (pcf)	Minimum R-value (@ 40°F)	Barrier-protected Design R/inch*	Allowable Compressive Load** (psf)
Type I	0.90	4.0	3.76	300
Type VIII	1.15	4.2	3.87	430
Type II	1.35	4.4	4.02	575
Type IX	1.80	4.6	4.19	900

* Assumes 5% moisture content with moisture barrier protection.
** Long term loads resulting in deformation of less than 1%.

Typical Loads and Lateral Pressures
Common Compacted Backfills*

Classification	Weight per foot of depth	Lateral Pressure per foot of depth
GW to GC	120-140	41-46
SW to SC	85-130	45-68

* Backfill in 8-12" lifts - compact to 88-90% Proctor density but avoid overcompaction and excessive lateral stresses.

Cautions:

1) Waterproofing and/or dampproofing, meeting the requirements of Section R-306 of the CABO One and Two Family Dwelling Code, 1983 edition, shall be chemically compatible with the EPS insulation.
2) To prevent UV degradation, store insulation under a light-colored, opaque tarp; cover above grade areas with impact/weather resistant board or cementitious finish.
3) EPS insulation is combustible; do not expose to ignition sources.

UC INDUSTRIES, INC.
TECHNOLOGY CENTER
137 EAST AVE., P.O. BOX 423
TALLMADGE, OH 44278-0423
(216) 633-6735

March 19, 1987

Mr. Bruce D. Nelson
Department of Public Service
Energy Division
900 American Center Building
150 East Kellogg Blvd.
St. Paul, MN 55101

RE: Proposal to Adopt Amendments to Minnesota Rules, Chapter 4155.0130, Sub Part 2.A.(1), Without a public Hearing

Dear Mr. Nelson:

This letter is to indicate the support of UC Industries, manufacturer of FOAMULAR® Extruded Polystyrene Insulation, for the above named proposed amendment. The proposed amendment is a significant step in the ongoing process to further refine the rules concerning insulation materials standards.

Yours truly,

Herbert Slone, Architect
Manager Construction Technology

cc: Roy Divis
File

HS/jk

ALFOL, INC.

9839 YORK ROAD • P. O. BOX 7024 • CHARLOTTE, NORTH CAROLINA 28217 • TEL. 704/588-2170

November 20, 1986

Minnesota Department of Energy and Economic Development
Energy Division
Office of Energy Conservation
900 America Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Attention: Mr. Bruce Nelson

Dear Sir:

The following is in response to the need I expressed to amend the State Administrative Rules of November 30, 1985, establishing standards governing the manufacture of all thermal insulation.

Page 11 Section B states "Reflective foil insulation shall be tested according to ASTM C 976-82 - -." A quick check would show that laboratories approved by NAVLAP owning the equipment necessary to make this test are too few. The Federal Trade Commission in their Labeling and Advertising Regulation use the ASTM C-236 Guarded Hot Box or the ASTM C 976-82 Calibrated Hot Box as their standard test methods. We feel this is reasonable until more Calibrated Hot Boxes become available.

Page 11 Section D "Surface burning characteristics -" This section should state "for exposed applications" See page 9-10 subparagraph 7 C for comparison.

I have enclosed highlighted copies of the FTC and Minnesota Rules in the areas discussed.

We thank you for allowing us these considerations and look forward to doing business in your state.

Very truly yours,

Paul F. Juneau

Paul F. Juneau
Vice President

PFJ/ras

enc.

12/11/86 Paul Juneau
C-236 is ok.

for installation by pneumatic conveying equipment and simultaneous mixing with water or adhesive at the spray nozzle.

B. All testing shall be performed on applied spray cellulose.

C. Determination of thermal performance shall be in accordance with ASTM C 177-76, ASTM C 236-80, ASTM C 518-76 or ASTM C 976-82 at the manufacturer's option, at the test-defined density of the material. R-value testing shall be performed at a thickness of material of two inches, unless the material is designed for use at a lesser maximum thickness and the material is so designated on the label or label notice by the manufacturer. It shall then be tested at the maximum thickness of suggested use.

D. Density shall be determined in accordance with section 7 of ASTM E 605-77. The density established by this test shall be used in the preparation of manufacturer's installation guidelines and in the determination of thermal performance.

E. Critical radiant flux and smoldering combustion shall be tested for in accordance with the CPSC Interim Safety Standard for Cellulose Insulation, Federal Register volume 44, pages 39966-39982 (July 6, 1979) [or the ASTM equivalent in C 739-84]. Values achieved shall not exceed those established by the CPSC.

F. Moisture absorption shall be determined in accordance with section 15 of ASTM C 553-70. Moisture absorption shall not exceed 15 percent by weight.

G. The product shall comply with test standards for air erosion, bond strength, and bond deflection that have been accepted by the ASTM or a federal or state government agency.

H. Test procedures in item F are not required of products that 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.

Subp. 5. Mineral fiber in loose-fill form. The product shall comply with ASTM C 764-84, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

Subp. 6. Mineral fiber in batts and blankets form. The product shall comply with ASTM C 665-84, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

Subp. 7. Mineral fiber in board form. The following requirements apply to mineral fiber in board form:

A. 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.

B. Determination of the thermal performance shall be in accordance with ASTM C 177-76, ASTM C 236-80, ASTM C 518-76, or ASTM C 976-82 at the manufacturer's option.

C. Surface burning characteristics of materials with facings and membranes intended for exposed applications shall be determined according to ASTM E 84-84 and shall not exceed the following values: flame spread, 25; and smoke developed, 450. Facings and membranes of materials intended for exposed applications shall be exposed to the flame during the ASTM E 84-84 test. Insulation boards exclusive of facings and membranes shall not exceed the following values: flame spread, 25; and smoke developed, 50.

Subp. 8. **Mineral fiber spray applied.** The product shall comply with ASTM C 1014-84, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

Subp. 9. **Perlite in loose-fill form.** The following requirements apply to perlite loose fill insulation:

A. The product shall comply with ASTM C 549-81, Standard Specification for Perlite Loose Fill Insulation.

B. The manufacturer shall disclose to the department any chemical treatment of the perlite material and the purpose of the treatment.

Subp. 10. **Polystyrene in board form.** The product shall comply with ASTM C 578-83, Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation and the accompanying Supplementary Requirements.

Subp. 11. **Polyurethane and polyisocyanurate in board form.** Unfaced polyurethane and polyisocyanurate shall comply with ASTM C 591-83, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation. Faced polyurethane and polyisocyanurate shall comply with Federal Specification HH-I-1972, dated August 21, 1981, Insulation Board Thermal Faced Polyurethane or Polyisocyanurate.

Subp. 12. **Reflective foil.** The following requirements apply to reflective foil:

A. Specimens for tests shall consist of pieces of insulation cut to approximately three by six inches, suspended

in a vertical position and heated to a temperature of 180 degrees Fahrenheit (plus or minus five degrees Fahrenheit) for at least five hours. At the end of the heating period, examine the reflective surfaces to determine whether the adhesive has bled through the surface or delamination has occurred.

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

B. Reflective foil insulation shall be tested according to ASTM C 976-82 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.

(1) Thermal performance for single or multiple sheet sections shall be determined according to ASTM C 976-82. The test panel shall consist of a panel utilizing a wooden frame of two-by-six inch boards 16 inches apart and at least 24 inches long, covered with 3/4-inch plywood on each side. For tests in the vertical position, the test panel shall be at least seven feet high at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit. The resultant thermal performance shall be based upon the insulation only.

(2) Foil facings on insulation material must comply with Federal Trade Commission requirements in section 460.5 of Federal Register, volume 44, page 50242 (August 27, 1979).

C. 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 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 FS HH-I-1252B dated August 18, 1976.

D. Surface burning characteristics shall be determined according to ASTM E 84-84 and shall not exceed the following values: flame spread, 25; and smoke developed, 50.

E. Foil shall be folded and the folded edge smoothed using a light finger pressure. The finished insulation shall not crack when folded to 180 degree bend at a temperature of 70 degrees Fahrenheit (plus or minus two degrees Fahrenheit) and a relative humidity of 50 percent (plus or minus five percent).

PART 460—LABELING AND ADVERTISING OF HOME INSULATION

Sec.

460.1 What this regulation does.
460.2 What is home insulation.
460.3 Who is covered.
460.4 When the rules apply.
460.5 R-value tests.
460.6 "Representative thickness" testing.
460.7 Which test version to use.
460.8 R-value tolerances.
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460.12 Labels.
460.13 Fact sheets.
460.14 How retailers must handle fact sheets.
460.15 How installers must handle fact sheets.
460.16 What new home sellers must tell new home buyers.
460.17 What installers must tell their customers.
460.18 Insulation ads.
460.19 Savings claims.
460.20 R-value per inch claims.
460.21 Government claims.
460.22 Tax claims.
460.23 Other laws, rules, and orders.
460.24 Stayed or invalid parts.
Appendix A—Enforcement Policy Statement for Foreign Language Advertising.
Appendix B—Enforcement Policy Statement for Clear and Conspicuous Disclosures in Television Advertising.

Authority: 38 Stat. 717, as amended, 15 U.S.C. 41 et seq.

§ 460.1 What this regulation does.

This regulation deals with home insulation labels, fact sheets, ads, and other promotional materials in or affecting commerce, as "commerce" is defined in the Federal Trade Commission Act. If you are covered by this regulation, breaking any of its rules is an unfair and deceptive act or practice or an unfair method of competition under section 5 of that Act. **You can be fined heavily (up to $10,000) each time you break a rule.**

§ 460.2 What is home insulation.

Insulation is any material mainly used to slow down heat flow. It may be mineral or organic, fibrous, cellular, or reflective (aluminum foil). It may be in rigid, semirigid, flexible, or loose-fill form. Home insulation is for use in old or new homes, condominiums, cooperatives, apartments, modular homes, or mobile homes. It does not include pipe insulation. It does not include any kind of duct insulation except for duct wrap.

§ 460.3 Who is covered.

You are covered by this regulation if you are a member of the home insulation industry. This includes individuals, firms, partnerships, and corporations. It includes manufacturers, distributors, franchisors, installers, retailers, utility companies, and trade associations. Advertisers and advertising agencies are also covered. So are labs doing tests for industry members. If you sell new homes to consumers, you are covered.

§ 460.4 When the rules apply.

You must follow these rules each time you import, manufacture, distribute, sell, install, promote, or label home insulation. You must follow them each time you prepare, approve, place, or pay for home insulation labels, fact sheets, ads, or other promotional materials for consumer use. You must also follow them each time you supply anyone covered by this regulation with written information that is to be used in labels, fact sheets, ads, or other promotional materials for consumer use. Testing labs must follow the rules unless the industry members tells them, in writing, that labels, fact sheets, ads, or other promotional materials for home insulation will not be based on the test results.

§ 460.5 R-value tests.

R-values measure resistance to heat flow. R-values given in labels, fact sheets, ads, or other promotional materials must be based on tests done under the methods listed below. They were designed by the American Society of Testing and Materials (ASTM).

The test methods are:

(a) All types of insulation except aluminum foil must be tested with ASTM C177, C518, or C236. If the "calibrated hot box" becomes an ASTM standard test method, it can also be used. The tests must be done on the insulation material alone (excluding any air spaces). The tests must be done at a mean temperature of 75° Fahrenheit.

(1) For polyurethane, polyisocyanurate, and extruded polystyrene, the tests must be done on samples that fully reflect the effect of aging on the product's R-value. To age the sample, follow the procedure in paragraph 4.6.4 of GSA Specification HH-I-530A, or another reliable procedure.

(2) For cellulose, the tests must be done at the settled density determined under GSA Specification HH-I-515D.

(3) 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. When a settled density procedure becomes part of a final GSA Specification for loose-fill mineral wool, the tests must be done at the settled density determined under the GSA Specification.

(b) Aluminum foil systems with more than one sheet must be tested with ASTM C236 (or the calibrated hot box). The tests must be done at a mean temperature of 75° Fahrenheit, with a temperature differential of 30° Fahrenheit.

(c) Single sheet systems of aluminum foil must be tested with ASTM E408 or another test method that provides comparable results. This tests the emissivity of the foil—its power to radiate heat. To get the R-value for a specific emissivity level, air space, and direction of heat flow, use the tables in the most recent edition of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers' (ASHRAE) Handbook. You must use the R-value shown for 50° Fahrenheit, with a temperature differential of 30° Fahrenheit.

(d) For insulation materials with foil facings, you must test the R-value of the material alone (excluding any air spaces) under the methods listed in subsection (a). You can also determine the R-value of the material in conjunction with an air space. You can use one of two methods to do this:

(1) You can test the system, with its air space, under ASTM C236 (or the calibrated hot box). If you do this, you must follow the rules in subsection (a) on temperature, aging, and settled density.

(2) You can add up the tested R-value of the material and the R-value of the air space. To get the R-value for the air space, you must follow the rules in subsection (c).

§ 460.6 "Representative thickness" testing.

All tests except aluminum foil tests must be done at a representative thickness for every thickness shown in a label, fact sheet, ad, or other promotional material. "Representative thickness" means a thickness at which the R-value per unit will vary no more than plus or minus 2% with increases in thickness. However, if the thickness shown in your label, fact sheet, ad, or promotional material is less than the representative thickness, then you can test the insulation at the thickness shown.

§ 460.7 Which test version to use.

Use the version of the ASTM test method that was in effect when this regulation was promulgated. If ASTM changes a test method, the new version will automatically replace the old one in these rules 90 days after ASTM first publishes the change. However, the Commission's staff or a person affected by the change can petition the

SEP 12 1986

DOW CHEMICAL U.S.A.

GRANVILLE RESEARCH CENTER
P.O. BOX 515
GRANVILLE, OHIO 43023 - 0515

September 11, 1986

Bruce Nelson
Insulation Standards Program, DEED
900 American Center Bldg.
150 E. Kellogg Blvd.
St. Paul, MN 55101

RE: COMMENTS CONCERNING RESIDENTIAL INSULATION STANDARDS

This is in response to your request for outside opinions concerning amendments to Minnesota Rules Chapter 4155, Residential Thermal Insulation Standards. Comments will be focused on the noted sections.

SECTION 4155.0120, SUBPART 25:
We agree the tested thermal performance should be based only upon the "insulating material" as noted in this section. We feel that this is necessary so that the consumer can examine insulating information in a "unaltered" condition from which he can make a reasonable comparison. R-values derived from systems can be misleading if it is not made clear how the system must be constructed and if the real world conditions do not match the system test conditions. It is relatively easy for a home owner to verify the total R-value of a wall or ceiling with the known material thicknesses and the R's/inch information. But, it becomes more difficult to verify that the systems, incorporating isolated air spaces, are installed as specified or if it is performing as claimed.

This is also a reasonable requirement to the manufacturers of insulation products because it is in agreement with the current FTC guidelines, as noted in the Code of Federal Regulations, TITLE 16, PART 460, titled "Labeling and Advertising of Home Insulation". Altering the requirments in Minnesota from the FTC regulations would only create confusion for the consumer and for manufacturers.

SECTION 4155.0130, SUBP. 10:
We suggest the standard be revised to require compliance with "ASTM C578-85" the newly revised standard for polystyrene insulation. This is reasonable in that the insulation manufacturers have developed and adopted this standard to further classify polystyrene products.

SECTION 4155.0150, SUBP. 2:
We agree that is is reasonable to require a statement for the intended application and installation instructions. This information is necessary to provide guidance to the home builder and should be readily available to him. Providing this information to the department (DEED) should only be a verification that this information is available and that the department can verify the intended used (for example, below grade testing information has been submitted to the department).

THE ASSURANCE OF TOMORROW
SAFETY

SECTION 4155.0150, SUBP. 8:
The exterior below ground test information requirement, as it is currently outlined, does not provide information to the department or the consumer that can be used to readily compare the performance of different products. Without standardized tests it will be left to the examiner to determine whether the testing procedures are sufficiently severe or whether the results are meaningful.

SECTION 4155.0150 SUBP. 8, ITEM B:
It is suggested the "approved laboratory" be omitted for this requirement. This is reasonable and necessary because there are no NVLAP approved testing facilities for this area and there are no approved tests for the conditons listed in SUBP. 8, ITEM C. There is no movement towards establishing either of these by the insulation manufacturers at the current time. It is also suggested that at least one (or more) specific test listed under SUBP. 8, ITEM C be required for all materials which would like to be listed for below grade use. This is necessary and reasonable to allow comparisons to be made. Something similar to the following is suggested:

SECTION 4155.0150 SUBP. 8, ITEM C (2):
All insulation materials shall be subjected to freeze/thaw cycling conditions as outlined in ASTM C666. Water absorption and percent R-value retained at 400 cycles (or another period at time) shall be determined.

It is felt that this is necessary to allow comparisons to be made. Though it is recognized that ASTM C666 is a severe test that is designed towards testing concrete specimens, it is felt it can be representative of severe conditions which may impact the performance of insulation materials.

If you would like to further discuss any of the previous items, please let me know.

Best regards,

Philip D. Hendrickson
Senior Research Engineer
STYROFOAM® Brand Products

cc: Laverne Wheeler, Edwards Sales

PDH:ac

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Manville Service Corporation
Research & Development Center
Ken-Caryl Ranch
Denver, Colorado 80217
303 978-2000

SEP 12 1986

Manville

September 11, 1986

Minnestoa DEED
Mr. Bruce Nelson
Office of Energy Conservation
900 American Center
150 East Kellog Boulevard
St. Paul, MN 55101
(612) 297-2313

Dear Bruce:

This is in response to DEED's request for comments regarding possible amendments to Minn. Rules Chapter 4155, Residential Thermal Insulation Standards. We wish to make the following recommendations:

1. Section 4155.0130, Subp. 2B, General testing and reporting requirements. This Subp. states that testing and reporting be done on an annual basis. Annual testing will certainly place a burden on the small manufacturer. In addition, we also suggest that manufacturers need not report compliance on an annual basis. Rather, once certified, the manufacturer need only inform the State when they drop-out of compliance. For instance, with the State of California, a product's certification does not have an expiration date. The burden is on the manufacturer to notify the State if compliance ceases. An alternative would be for the manufacturer to simply state, on an annual basis, that their products meet the Insulation Standards.

2. Section 4155.0130, Subp. 4F, Cellulose fiber spray applied. Reference should be to Section 14, not 15, of ASTM C 553-70.

3. Section 4155.0130, Subp. 10, Polystyrene in board form. Reference should be to the 1985 version of ASTM C 578, not the 1983 version.

4. Section 4155.0130, Subp. 11, Polyurethane and polyisocyanurate in board form. Reference should be to the 1985 version of ASTM C 591, not the 1983 version. In addition, I would recommend broadening the scope of this Subpart to include ASTM C 1029-85, Spray-Applied Rigid Cellular Polyurethanc Thermal Insulation.

Please feel free to call me at (303) 978-5053 if you have any questions.

Sincerely,

MANVILLE CORPORATION
RESEARCH AND DEVELOPMENT CENTER

Richard J. Ray
Section Manager
F/G Product Development

lnd

OWENS-CORNING FIBERGLAS CORPORATION FIBERGLAS TOWER, TOLEDO, OHIO 43659, (419) 248-8000

September 12, 1986

Mr. Bruce Nelson
Insulation Standards Program
Dept. of Energy and Economic
Development
900 American Center Bldg.
150 E. Kellogg Blvd.
St. Paul, MN 55101

Dear Mr. Nelson:

These comments are submitted by Owens-Corning Fiberglas Corporation in response to the request by the Department of Energy and Economic Development for comments on the Residential Thermal Insulation Standard. Specifically, Owens-Corning wishes to comment on the Standard's requirement for annual testing, which is included in part 4155.0130, subpart 2.

With regard to annual testing, you have indicated to me that the Department is concerned with quality assurance in the insulation industry. Owens-Corning recommends that the Department institute a manufacturer certification program in place of the annual testing requirement. Each manufacturer should be required to certify annually that his insulation products meet the Minnesota Standard test requirements, based upon the manufacturer's quality assurance program and periodic testing by a NVLAP accredited laboratory. A manufacturer should also be required to maintain records to substantiate its certification. This supporting documentation could be made available to the Department within a reasonable time period following a written request.

Presently, Owens-Corning has a comprehensive quality assurance system for insulation products designed to consistently meet its product specifications as well as FTC Rule 460 and the Minnesota Insulation Standard. We believe that the test requirements of the Minnesota Standard plus an annual certification program would address the Department's concern for product quality and would alleviate the unnecessary and burdensome requirement of annual testing for insulation manufacturers.

Very truly yours,

Kathleen L. Diller
Counsel

KLD/dl

DOW CHEMICAL U.S.A.

GRANVILLE RESEARCH CENTER
P.O. BOX 515
GRANVILLE, OHIO 43023 · 0515

September 9, 1986

Greg Hubinger
Assistant Manager of Conservation Programs
900 American Center Bldg.
150 E. Kellogg Blvd.
St. Paul, MN 55101

RE: INACCURACIES IN DRAFT LIST

I want to express my thanks to you and Bruce Nelson for reviewing our initial submittal for the information on the below ground testing and instruction requirements. We were somewhat surprised to examine the draft listing (8/23/86 letter) and find we were not listed as filing information for exterior below grade use when we knew we had addressed (and reviewed with you) all of the items concerning this area in our initial filing. I assume, based on your 9/3/86 letter, all of this has been cleared-up and we will be listed as having completed the below-grade use filing in your updated list which you will issue in mid-September.

I do want to note two other inaccuracies in your 8/21/86 draft list. First, as I mentioned to Bruce, the mailing address should be:

Dow Chemical U.S.A.
Granville Research Center
Bldg. F
P.O. Box 515
Granville, Ohio 43023

Second, our product STYROFOAM® RS should now be listed under "Type" as EXTRUDED PS TYPE "X" instead of TYPE "IV" as classified by ASTM C578-85. Though our product's properties and performance have not changed significantly, we have adjusted our production specifications so that we can more economically produce a product which will meet the needs of the application. The performance of the product in the field will be the same.

If you should have any questions, please let me know.

Best regards,

Phil Hendrickson

Phil Hendrickson
614-587-5406
Senior Research Engineer
STYROFOAM® Brand Products

cc: Bruce Nelson - DEED-Energy Division
Laverne Wheeler, Edwards Sales

PH:ac

®Trademark of The Dow Chemical Company



DON CASSIDY, SR., President
D. W. KORTE, Vice-President
KENNETH D. MENTZER, Executive Vice President

mima
Mineral Insulation Manufacturers Association

1420 King Street
Alexandria, VA 22314
(703) 684-0084

September 5, 1986

Mr. Bruce Nelson
Insulation Standards Program
DEED
900 American Center Building
150 E. Kellogg Boulevard
St. Pual, Minnesota 55101

Dear Bruce,

This is in response to DEED's request for comments on the proposed amendments to the Residential Thermal Insulation Standards. We have reviewed the standards and find them to be complete and appropriate regarding quality requirements. However, we wish to make a recommendation regarding the reporting requirements.

Section 4155.0130, Subp. 2B, requires that manufacturers make an annual report on annual testing. We recommend that DEED allow manufacturers to certify annually that products meet the same physical characteristics as the initially submitted ASTM test. We recommend that the certification be based on no change or alteration of the manufacturing process and a continuing quality control program. Thermal testing results would be available to DEED upon request.

We believe this method of reporting would assure DEED of annual compliance for manufacturers of mineral fiber insulation. The known and tested physical characteristics of mineral fiber do not change unless significant manufacturing changes are made. Allowing annual certification would eliminate the unneeded and costly burden of testing consistent and unchanging material.

We appreciate the opportunity to submit these comments. If you have any questions please let me know.

Sincerely,

Ken

Kenneth D. Mentzer
Executive Vice President

cc: SLAC

American Rockwool, Inc.
L.C. Cassidy & Son, Inc.
CertainTeed Corp.
Guardian Fiberglass, Inc.
Knauf Fiber Glass
Manville Building
Materials Corp.
Owens-Corning Fiberglas Corp.
Rockwool Industries, Inc.
Rock Wool Manufacturing Co.
U.S. Mineral Products, Co.

SEP 0 5 1986

RIMA Reflective Insulation Manufacturers Association

P.O. Box 2454 • Irwindale, CA 91706

September 2, 1986

Minnesota Department of Energy and Economic Development
Energy Division
Office of Energy Conservation
900 American Center
150 East Kellogg Boulevard
Saint Paul, MN 55101

Dear Gentlemen:

The Reflective Insulation Manufacturers Association -RIMA- is commenting on your new energy code effective June 1, 1986. Apparently, the State of Minnesota did not ask RIMA for advice at the time that the specifications for products were drawn up, as your office might not have been aware of RIMA's existence.

At this time, we would like to point out to you the following:
The requirement on page 11 - paragraph B, states that; "Reflective foil insulation shall be tested according to ASTM C 976-82..." Currently, RIMA has no information as to any NVLAP laboratory doing this particular test, that can be certified under NVLAP. There are at present, just a few of these test equipment pieces available in the USA and it is doubtful if, because of the short supply, a manufacturer can go out and purchase the series of testing that you require. As you know, all reflective foil manufacturers have the ASTM C-236 test performed because that is the test required in rule 460 enforced by the Federal Trade Commission.

Currently, none of the reflective foil manufacturers has available any of the ASTM C 976-82 test information and your requirement would select this group of producers of insulation material to perform a series of tests that is not required of other insulation products. We suggest that the energy code be changed to read that, "Reflective foil insulation shall be tested according to ASTM C-236..."

Furthermore, in the next paragraph -B(1)- the test panel is being described as needing to contain framing members. Our organization would like to know why reflective foil products need to be tested with framing members while mass insulation products do not need to be tested under the same conditions. Rule 460 was designed to give the consumer a way of comparing the same type of products in a group. The Rule was never designed to show the consumer specific performances of different products.

RIMA **Reflective Insulation Manufacturers Association**

P.O. Box 2454 • Irwindale, CA 91706

Your energy code is inconsistent in accepting a material specification for mass insulations, and insisting on obtaining a "system R-value" that does not include just the product with an air space on each side, but also framing members.

In order to obtain good information for comparison reasons, the testing of both types of insulation products, should run parallel to each other. In other words the reflective foil products should also be tested without framing members or all mass insulation products should also be tested with framing members.

Please consider the above points and respond to us as we will be glad to help your energy office to obtain the right information so it can make the right demands for the residents of your state.

Very truly yours,

Bowen Hyma

Bowen Hyma
Board of Directors
RIMA
P.O. Box 387
Broomfield, CO 80020

AUG 18 1986

INDUSTRIES, INC.
TECHNOLOGY CENTER
137 EAST AVE., P.O. BOX 423
TALLMADGE, OH 44278-0423
(216) 633-6735

August 14, 1986

Greg Hubinger → Bruce
Assistant Manager of Conversation Programs
Minn. Department of Energy & Economic Development
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

RE: Letter from Chairman, EPS Code and Regulation Committee, Society of the Plastics Industry, dated July 1, 1986

Dear Mr. Hubinger:

This letter is to bring to your attention, the fact that a recommendation made in the above referenced letter is not accurate for the entire polystyrene industry.

Recommendation #1 in the above referenced letter states that "For a number of years The Society of the Plastics Industry, Inc., has provided the expanded polystyrene industry with a program providing Quality Assurance Requirements for third party Quality Assurance Inspection for the production of certified EPS insulation board". In way of clarification, producers of extruded polystyrene insulation board do not utilize the referenced program due to its failure to address all necessary product characteristics; nor has the program ever been sanctioned by producers of extruded polystyrene insulation board. Therefore, acceptance of the referenced program as "widely used throughout the industry, successfully", would be incorrect and would not serve the interest of the State of Minnesota.

The above referenced letter was issued as the opinion of the EPS Code and Regulation Committee without circulation to the Committee for comment. Therefore, all statements in the letter are not representative of all members of The Society of the Plastics Industry.

Yours truly,

Herbert Slone
Architect
Construction Technologist

HS/dz
cc:M.Shallcross
R.Divis

INDUSTRIES, INC.
TECHNOLOGY CENTER
137 EAST AVE., P.O. BOX 423
TALLMADGE, OH 44278-0423
(216) 633-6735

JUL 28 1986

July 24, 1986

Mr. Greg Hubinger
Assistant Manager of Conservation Programs
Energy Division
Department of Energy and Economic Development
900 American Center Building
150 East Kellogg Blvd.
St. Paul, MN. 55101
ATTN: Insulation Standards Program

RE: ANNUAL TESTING REQUIREMENTS

Dear Mr. Hubinger:

This letter is intended to focus attention on difficulties created for the polystyrene insulation industry, due to Section 4155.0130 subpart 2(A)(3) which states that required testing must be performed by a laboratory holding NVLAP accreditation, and to petition the Department of Energy and Economic Development for change.

Enclosed is a list complied by the US Department of Commerce in the 1985-86 NVLAP Directory of accredited laboratories, showing those laboratories involved in testing of thermal insulation products and bearing NVLAP accreditation. Also enclosed is a chart prepared by UC Industries, using US Department of Commerce information, which shows those laboratories bearing NVLAP accreditation to perform testing in accordance with ASTM C578-85 on polystyrene insulation in board form as required by Section 4155.0130 subpart 10 of the Minnesota statute.

Note that of the 21 laboratories accredited, 11 are associated with the manufacture or development of competing insulation products. Of the 10 remaining laboratories, 7 are accredited to perform only the thermal resistance portion (ASTM C518) of ASTM C578-85. Of the 3 remaining laboratories, US Testing is accredited to perform 2 of the 8 tests required by ASTM C578-85, UL is accredited to perform 4 of 8, and Radco 7 of 8.

The State of Minnesota should not expect manufacturers to complete testing in the laboratories of a competitor. The testing accreditation of many laboratories is greatly limited to include only one or two tests with many laboratories being accredited for the thermal property test, but few accredited for the more obscure tests. It is a burden on the polystyrene industry to attempt to piece together the results of many laboratories in an effort to present a complete package. Only Radco, located in California, approaches offering a complete independent test service. Thus, the State of

Minnesota has legislated Radco into a very advantageous position. Radco is not NVLAP accredited to perform the required oxygen index test (ASTM D2863) nor is any other laboratory. Therefore, full compliance with the Minnesota statute in the 1987 submission will be impossible for manufacturers of polystyrene insulation board.

Some manufacturers have suggested that annual testing be dropped in favor of requiring an annual statement from the manufacturer that their process has not changed from the previous year, therefore, it is assumed that quality is maintained. It is the position of UC Industries that mandatory annual testing is desirable and is the only way for the State of Minnesota to insure the continued quality of insulation products sold in Minnesota. Process change is only one of many variables which can effect quality, therefore, certification of process alone is not assurance of quality.

UC Industries strongly urges the State of Minnesota to continue to require the submission of annual test data to insure that proper quality assurance and quality control functions are in place; however, we believe that test data developed by in house quality assurance/quality control laboratories must be deemed acceptable. Test data developed inhouse could be made more binding by requiring a responsible representative of the company to submit, with the data a notarized statement which attests to the factuality of the data submitted.

The State of Minnesota can better assure quality insulation products in the State by recognizing test data developed through competent in house quality assurance/quality control procedures. Certainly, an option should remain open for those companies wishing to contract with outside laboratories. For those companies wishing to submit in house data, the State of Minnesota should consider requesting a summary, outlining quality assurance/quality control proceedures in place, and equipment available for testing in house. Requests for such information is not unusual for those companies already participating in listing programs with agencies such as Underwriters Laboratories and Factory Mutual. UC Industries invites you and/or selected members of your staff to visit our Manufacturing Plant and Technology Center in Tallmadge, Ohio for orientation to our quality assurance/quality control system so that you can have a personal knowledge of the viability of our proposal.

Consider soliciting additional input from the Society of the Plastics Industry regarding other foam plastic insulation interests. Contact Mr. Patrick Toner, Director, Technical and Regulatory Affairs, Society of the Plastics Industry; 1025 Connecticut Avenue, N.W.; Suite 409; Washington D.C. 20036. Telephone (202) 822-6700.

UC Industries desires that the above statement be hereby considered a petition to the State of Minnesota, Department of Energy and Economic Development, to act to amend the Residential Thermal Insulation Standards in the manner described herein.

Yours truly,

Herbert Slone
Architect
Construction Technologist

encl.
HS/dz
cc:P.Toner
M.Shallcross
R.Divis
R.Bond

CertainTeed Corporation
Residential Insulation Group
North Central District
201 W Burnsville Parkway
Suite 130-H
(612) 890-5700
Burnsville, MN 55337

May 15, 1986

cc. Bruce Nelson

Greg Hubinger
Manager of Conservation Programs
Minnesota Department of Energy and Economic Development
900 American Center
150 E. Kellogg Boulevard
St. Paul, MN 55101

Dear Mr. Hubinger:

I recently received a letter from your Department, dated May 13th, 1986 to those to make and sell insulation products for the State of Minnesota.

I wanted to write you a letter indicating CertainTeed Corporation's pleasure that such a program exists, and is in fact going forward. As in any business in a free enterprise system, such as what we have in the United States, there are any number of companies and people who will attempt to make and/or sell products that do not necessarily serve the public's best interest.

The fact that you are requiring manufacturers, wholesalers, retailers and contractors in the State of Minnesota to conform to regulations with respect to criteria that an insulation product meets, deserves applause and certainly I hope that you insist upon not only setting the standards, but more importantly, following up with enforcement procedures relative to this program.

I recently had a conversation with Mr. Bruce Nelson in your Department, as I was inquiring whether or not at this point in time a list of those approved and those not approved had been finalized. As you may or may not know, with regard to insulation, while the products are sold throughout the calendar year in the State of Minnesota, the peak months are August through November. It would be encouraging, speaking on behalf of CertainTeed Corporation, to be able to have that kind of information out before the peak months for insulation products approach.

This kind of effort will go a long way in enabling all to adhere to one universal set of standards, and allow those who meet those standards to do business in the State of Minnesota, and at the same time letting those who do not meet standards be aware of their shortcomings.

Again, thanks for your program and if there is anything we at CertainTeed Corporation can do to help in this endeavor, please contact me.

Sincerely,

Jeff Carroll
District Manager
CERTAINTEED CORPORATION

HUNTSMAN CHEMICAL CORPORATION

July 1, 1986

Minnesota Department of Energy
and Economic Development
Energy Division, Office of Energy Conservation
900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

Atten Mr. Greg Hubinger
Assistant Manager of Conservation Programs

Ref: "Minnesota Thermal Insulation Rules"
Letter to manufacturers of insulation products
sold in Minnesota, May 19, 1986

Dear Mr. Hubinger:

Per your request and responding to the advice of Bruce Nelson the Code and Regulation Committee of the Expanded Polystyrene Division of the Society of the Plastics Industries, Inc. has reviewed the above referenced subject matter.

There are a number of requirements in the rules which are either unclear, inappropriate, or not compliable which are brought to your attention. Our desire then, is to define these problem areas to you and to offer suggested revisions which would meet the requirements of the State of Minnesota and allow the industry to comply without undo hardships.

1. Scope - Rigid foam insulation products are manufactured in common for both residential and commercial construction. These products are sold to Distribution centers who then sell to contractors. To maintain separate product lines through the distribution chain to comply with the states rule would place an undo economic burden from the manufacturer to the builder for no apparent cause. In fact it probably would not occur and insulation sold in the State of Minnesota could conceivably comply only for commercial insulation and in essence remove the availability of residential insulation in the State of Minnesota.

2. Material Quality Compliance - The economic burden of yearly testing for product characteristics which are typical properties dependent upon product type and not the mode of production is not feasible. For

5100 BAINBRIDGE BLVD. • CHESAPEAKE • VIRGINIA 23320 • 804-494-2500

example referencing ASTM 578 for Expanded Polystyrene insulation products, WVP, Water Absorption, Dimensional Stability, Oxygen Index are inherent product properties and not dependent upon the manufacturing process. Compliance to this standard, yearly, is estimated to cost the manufacturer as much as $3,000 per type and there are nine types of Expanded Polystyrene. Typically any one manufacturer could produce as many as four types and $10,000 to $12,000/per year in testing is economically not possible. With this in mind it is conceivable that either the insulation costs in Minnesota would be significantly higher than in other areas of the country or that many manufacturers would simply pull out of the Minnesota market, a situation we are convinced was not foreseen and not desirable by the Department of Energy and Economic Development.

3. NVAP Testing - A review of your list of NVAP labs has indicated the following problems:

   a. Only 9 of the 24 labs listed are independent laboratories. The remaining fifteen are producers of insulation. These manufacturers who do not have their own NVAP labs are placed in an unfair economic and competitive disadvantage. Again we do not believe the State of Minnesota intends to provide a competitive advantage to those manufacturers who have their own NVAP labs.

   b. Referencing a specific example of ASTM C-578 exploratory investigation have indicated that there are no NVAP labs certified to run all the ASTM tests listed in C-578. Most are certified for thermal resistance testing only. This presents an unsolvable dilemma. NVAP labs are certified for specific ASTM tests. A listed lab certified for all the test requirements for ASTM C-578 is unknown.

4. Referencing specifically sub p. 10 Polystyrene in board form, the specification of ASTM C-578-83 should be changed to ASTM C-578-85 which has superseded the C-578-83 version. Furthermore this paragraph implies that Expanded Polystyrene does <u>not</u> have to comply with the Uniform Building Code or the Building codes of the State of Minnesota relative to ASTM E-84 requirements.

Assuming that the intent of the Residential Thermal Insulation Standards is to "establish standards for the product quality, safety, installation and labeling of thermal insulation products, and establish test programs and procedures to ensure that standards established by this chapter shall be met;" the following recommendations are made.

1. "Establish standards for product quality." For a number of years the Society of the Plastics Industry Inc. has provided the Expanded Polystyrene Industry with a program providing quality assurance requirements for Third Party Quality Assurance Inspection for the production of Certified EPS Insulation Board. This program is widely used throughout the industry, successfully. This program, although complying with the needs of the State of Minnesota, conflicts with the insulation rules in the following areas.

   a. The use of manufacturer's NVAP labs allows for self-certification for some and requires Third Party certification by others, an obvious forced competitive situation.

   b. The SPI program is compatible with Third Party certification labs programs with quarterly unannounced inspections rather than the bi-monthly inspections required which significantly increases costs.

Consequently, it is recommended that the State of Minnesota require approved Third Party quality assurance programs to satisfy this requirement.

2. Safety - It is noted that the safe use of insulation is already controlled by two regulatory agencies, the Uniform Building Code and OSHA through required MSDS. Our recommendation is for the State of Minnesota to require compliance to the combustibility requirements of applicable building codes and OSHA Regulations.

3. Installation - See above regarding compliance to building code requirements. We see no purpose in establishing a secondary building code that may or may not conflict with the already established building codes.

4. Labeling - This subject has been adequately covered in par. 4155.0160.

In summary, it appears that there are a number of areas of significant concern to the EPS industry which without clarification or modification may well cause trade restrictive

practices at the expense of the State of Minnesota. It is highly recommended that timely considerations of these matters be addressed.

Very truly yours,

James Shannon
Chairman
EPS Code & Regulation Committee
Society of the Plastics Industry, Inc.

CertainTeed Corporation
Insulation Group
P.O. Box 860
Valley Forge, PA 19482
(215) 341-7000

CertainTeed

April 25, 1986

Mr. Greg Hubinger
Minnesota Dept. of Energy
and Economic Development
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

RE: CertainTeed Foil Faced and Flame Resistant
Foil Faced Insulation

Dear Mr. Hubinger:

Concerning application instructions for the subject foil faced products, the method of application is the same as for kraft faced products, that is, the batts are installed by inset or face stapling to wood framing with the facing, which is a vapor barrier, toward the conditioned space (pages 8 & 9 of enclosed installation brochure).

The foil facing is a more stringent vapor barrier than the kraft/asphalt facing. CertainTeed's standard foil facing has a perm rating of 0.1, whereas the kraft facing has a perm of 1.0 or less. Flame resistant foil has a perm rating of 0.028.

The three model building codes (BOCA, ICBO & SBCCI) require that flame resistant foil (FSK-25) be used when a facing is to be exposed. For example, this insulation would be used if the spaces between roof rafters were insulated and a finish board material was not installed. In actuality its use in residential construction is limited. It has greater use in commercial and industrial construction. Kraft and standard foil facings must be concealed, which means that the insulation must be installed where the facing will be behind and in substantial contact with the back surface of approved ceiling, sidewall or floor finish materials.

Concerning possible future amendments to the Minnesota rules as mentioned on the "Questions and Answers" sheet, I had previously discussed the subject of annual testing with your department. As discussed we do not believe annual testing should be required unless there is a change in the product. Most agencies that require product approval, including California, do not require retesting unless there has been a change in the product. Some agencies require reapproval of products every one or two years and certification by the manufacturer that the product has not been changed is adequate to permit reapproval. We would appreciate your consideration of this suggestion.

Please respond with <u>any</u> correspondence including approval of CertainTeed residential insulation products to the undersigned.

Very truly yours,

John J. DiCesare, Jr.
Supervisor, Codes & Standards
Residential Insulation

JJD:cd

FENNA CONSTRUCTION, INC.
8508 Xylon Avenue North
Brooklyn Park, MN 55445
(612)424-9778

January 7, 1986

MINNESOTA DEPARTMENT OF ENERGY AND ECONOMIC DEVELOPMENT
ATTENTION: Bruce D. Nelson, Senior Engineer Conservation Programs
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Mr. Nelson:

This letter is in response to your letter of December 30, 1986.

1. Yes, I have observed extruded polystyrene that has been in place approximately 4 years.

2. The polystyrene above ground was covered with either fiberglass panels or treated plywood. This protected it from sunlight and the covering could be painted to match the house siding.

   Below ground the product in sandy soil conditions showed no signs of deterioration.

3. I have also had basements insulated with spray urethane. Immediately after the urethane was applied waterproofing material was sprayed over it.

   Because of the field application the urethane would have an uneven thickness. Some places would be 2"-2 1/2" and other areas would only be 3/4"-1 1/4" thick.

   During winter construction frozen dirt chunks would break the waterproofing barrier during backfill.

   Once the waterproofing was scraped off, the urethane was exposed to sunlight above ground and moisture below ground.

   I stopped using the product because of its poor appearance. It would look terrible and the bottom row of siding could not be nailed straight over the product. You end up with wavy siding on the bottom row, because of the varying thickness.

I could never figure out how a uniform R-Value could be obtained with the different thickness of the product.

Sincerely,

Jerome N. Fenna

Jerome N. Fenna, President
Fenna Construction, Inc.

MINNESOTA
Department of Public Service

Energy Division
(612) 296-5120

900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

RESIDENTIAL THERMAL INSULATION STANDARDS

Notice of Intent to Amend Rules Without a Public Heating

Notice is hereby given that the Minnesota Department of Public Service proposes to adopt amendments to Minnesota Rules, Chapter 4155.0130, subpart 2.A.(1), without a public hearing. The Commissioner has determined that the proposed amendment of these rules will be noncontroversial in nature and has elected to follow the procedures set forth in the Minn. Stat., sections 14.22 to 14.28. Authority for the adoption of these rules is contained in Minn. Stat., sections 325F.20, subd. 1 and 325F.21, subd. 1 and 2.

Minnesota Rules, Chapter 4155 apply to manufacturers of all residential thermal insulation products sold or installed in Minnesota.

All persons have 30 days in which to submit comment in support of or in opposition to any part of the proposed amendments. Comment is encouraged. Each comment should identify the proposed amendment addressed, the reason for the comment, and any change proposed.

All persons may make a written request for a public hearing on the proposed amendments within the 30-day comment period. If 25 or more persons submit a written request for a public hearing within the 30-day comment period, a public hearing will be held unless a sufficent number withdraw their requests in writing. Any person requesting a public hearing must state his or her name and address and is encouraged to identify the portion of the proposed amendment addressed, the reason for the request, and any change proposed. If a public hearing is required, the agency will proceed pursuant to Minn. Stat., sections 14.131 to 14.20.

Persons who wish to submit comments or a written request for a public hearing should submit such comments or requests to: Bruce D. Nelson, Department of Public Service, Energy Division, 900 American Center Building, 150 East Kellogg Boulevard, St. Paul, Minnesota 55101 (612)297-2313.

Comments or requests for a public hearing must be received by the Department of Public Service, Energy Division by 4:00 p.m., May 31, 1988. The proposed amendments may be modified if the modifications are supported by the data and views submitted to the Department and do not result in a substantial change in the proposed amendments as noticed.

A Copy of the proposed rule amendment is attached to this notice.

A Statement of Need and Reasonableness that describes the need for and reasonableness of each provision of the proposed amendments and identifies the data and information relied upon to support the proposed amendments has been prepared and is available by requesting a copy from Mr. Nelson at the address listed above.

The implementation of these amendments will not require the expenditure of public money in excess of $100,000 by local bodies in either of the two years following their adoption, nor do the rules have any impact on agricultural land.

The adoption of these amendments will affect small businesses in Minnesota. The Department has evaluated the effect of the proposed rules on small businesses and has considered each of the methods prescribed by Minn. Stat. Section 14.155, subd. 2, for reducing the impact of the rules on small businesses. Small businesses would benefit from the proposed rule, since the required frequency of testing is reduced, resulting in less stringent compliance, schedules and deadlines in conformance with Minn. Stat. Section 14.155, subd. 2(a) and (b). The propsed rule would have no effect on reporting requirements addressed by Minn. Stat. Section 14.155, subd. 2(a), (b) or (c). The requirements of Chapter 4155 are already performance standards for all insulation types in conformance with Minn. Stat. Section 14.155, subd. 2(d). The Department has determined that small businesses cannot be exempted from any or all requirements of the rules in conformance with Minn. Stat. Section 14.155, subd. 2(e).

If no hearing is required, upon adoption of the rule, the rule and the required supporting documents will be submitted to the Attorney General for review as to legality and form to the extent that form relates to legality. Any person may request notification of the date of submission to the Attorney General. Persons who wish to be advised of the submission of this material to the Attorney General, or who wish to receive a copy of the adopted rules, must submit a written request for such to Mr. Nelson at the above address.

Tony Perpich, Commissioner
Department of Public Service
Dated: 18 April 1988

STATE OF MINNESOTA

Office Memorandum

DEPARTMENT : Public Service, Energy Division

PHONE :

DATE : 7/15/88

TO : Marsha Battles-Jenks (approval MB-J)
Tony Perpich (date & sign attachment)

FROM : Bruce Nelson
Narv Sondahl

SUBJECT : Approval and Signature Requested on Findings of Fact, Conclusions and Order Adopting Rule Without a Public Hearing for Residential Insulation Standards

This amendment is intended to modify the rules governing the Minnesota Residential Thermal Insulation Program. There are three reasons for these proposed modifications. First, to modify the manufacturer test requirements to more closely mirror the testing procedures used by manufacturers and accredited laboratories. Second, to update the ASTM tests required to the most current standards. And third, to make several minor modifications that are necessary based on experience working with the program.

Thirteen letters in support of this rule amendment were received. There was only one call for a public hearing. This document will be submitted to the Attorney General's office for review in accordance with Chapter 14 rulemaking procedures.

Margaret Hendricksen has reviewed the Findings of Fact.

[IS RULE/memo]

Notice for outside Opinion was published 5/12/86

30 comments were received by the Agency.
There were not 25 requests for a hearing.

Notice for outside Opinion was published on 3/30/87

2 comments were recd by Agency



Notice of Intent (Affidavit of) is missing
Called Denis Ahlers (Margie is on vacation).

Rule

Not all new Material
Changes in Adopted Rule

Authority

325F.20 Subd 1 OK

325F.21 Subds 1+2

Office of the Revisor of Statutes
Administrative Rules

Craig E. Lindeke
Senior Assistant Revisor
296-0946

700 State Office Building
100 Constitution Avenue
St. Paul, MN 55155-1297

JUL 08 1988

July 6, 1988

Bruce Nelson
Department of Public Service
900 American Center Building
Saint Paul, Minnesota 55155

RE: AR1295 Thermal Insulation Standards

Dear Mr. Nelson:

Enclosed are four copies of your rule with the modifications you requested.

Please submit the rules to the Attorney General or the Office of Administrative Hearings, as appropriate.

If you have any questions or need further modifications, please call me.

Very truly yours,

Craig E. Lindeke

CEL/mm
Encl.