

Minnesota Attorney General: Administrative Rules Proceedings

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Version 3
August 20, 2018

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RULE REVIEW CHECKLIST

File No. 1692 Docket No. 050009 0730

DATE RECEIVED 4-3-90 ADOPTED W/O HEARING ✓

REVIEW DATE 4-13-90 EMERGENCY RULE _____

DUE DATE 4-19-90 To Revisor 4-8-90

REVISOR APPROVED 4-17-90

APPROVED 4-18-90 REVISOR DISAPPROVED _____

DISAPPROVED _____ FILED W/SEC. OF STATE _____

WITHDRAWN _____ RETURNED TO AGENCY _____

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4 Rule as adopted (4 copies)

✓ Notice to Solicit Outside Information/Opinion (if applicable)
- Oct 9, 1989 Date published in State Register
- ✓ Comments

_____ Petition for Adoption of a Rule (if applicable)

_____ Board's Authorizing Resolution
- _____ Date adopted

✓ Proposed Rule
- ✓ Revisor's Certificate

✓ Notice of Intent to Adopt Rule
- 325F.20 subd 1 Statutory Authority 325F.21 subd 1 and 2
- _____ Small Business Statement
- _____ Expenditure of public money statement
- Feb 11, 1990 Signature

✓ Statement of Need and Reasonableness (if applicable)
- NA Small Business Statement Can't exempt them
- _____ Fees - § 16A.128

✓ Affidavit of Mailing Notice of Intent to Adopt Rule
- Feb 23, 1990 Date (30)/25 days before adoption
- ✓ Notice attached
- _____ Copy of rule or summary attached

✓ Publication in State Register
- Feb 26, 1990 Date (30)/25 days before adoption

✓ 180-day deadline from:
- NA Effective date of law requiring rule (14.12) (both rules) amendments
- ✓ 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
- April 5, 1990 Date

✓ Written requests, submissions or comments

✓ Declaration of attorney
- Jocelyn Olson Name of SAAG representing agency

✓ Notice of Submission to Atty. Gen. (if applicable) April 5, 1990

✓ Aff. of Mailing Notice to Atty. Gen. (if applicable) April 5, 1990

Department of Public Service

Adopted Permanent Rules Relating to Insulation Standards

Rules as Adopted

7640.0120 DEFINITIONS.

Subpart 1. **Applicability.** For the purposes of this chapter, the following definitions of terms apply. Technical, scientific, and engineering terms undefined by this part have the meanings given in ASTM C 168, Standard Definitions of Terms Relating to Thermal Insulation Materials.

[For text of subps 2 to 16, see M.R.]

Subp. 17. **Manufacturer of insulation.** "Manufacturer of insulation" means:

A. an industry member who produces insulation materials in their final form for distribution or sale to intermediate and ultimate consumers;

B. an industry member who produces insulation materials or installation instructions for a product the manufacture of which is completed at the jobsite; or

C. an installer of an insulation product the manufacture of which is completed at the jobsite who prepares or modifies the product's installation instructions.

An applicator, contractor, or fabricator of insulation materials who installs, applies, or uses insulation materials for their intended uses and follows the manufacturer's installation instructions, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation.

[For text of subps 18 to 26, see M.R.]

7640.0130 INSULATION MATERIALS STANDARDS.

[For text of subpart 1, see M.R.]

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

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[For text of item A, see M.R.]

B. All regulated thermal insulation materials must be tested for compliance with the standards in this part as follows:

[For text of subitems (1) to (4), see M.R.]

(5) Insulation must have flammability characteristics in accordance with the UBC, 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) One of the following test methods must be used: ASTM C 177, ASTM C 236, ASTM C 518, ~~or~~ ASTM C 976, or ASTM C 1114. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification. Thermal conductivity ~~must only be measured~~ measurements at ~~a~~ mean ~~temperature of~~ temperatures other than 75 degrees Fahrenheit are not required.

(2) R-value testing must be performed at the insulation's representative thickness, and be consistent with the requirements of Code of Federal Regulations, title 16, part 460. Unit R per inch must be derived from R-value testing performed to its representative thickness.

(3) For foam plastic insulations that incorporate blowing agents other than air or pentane, R-value tests must be done on samples that have been treated to fully reflect the effect of aging on the product's R-value. If criteria for treating samples to reflect the effect of aging are not specified within a material specification, the samples must be treated for either 90 days at 140 ±2 degrees Fahrenheit (60 ±1 degree centigrade) or six months at ambient conditions prior to conditioning and thermal resistance testing. During treating, air circulation must be provided so that all surfaces of the insulation are exposed to the surrounding environmental conditions.

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[For text of subitems (4) to (6), see M.R.]

[For text of item D, see M.R.]

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, 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, Code of Federal Regulations, title 16, part 1209 subpart B.

[For text of subitems (2) and (3), see M.R.]

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

[For text of subitems (1) and (2), see M.R.]

(3) Determination of thermal performance must be in accordance with subpart 2, item C, 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 ASTM E 605. 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 combustion must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. ~~If the product in loose-fill form meets the criteria for critical radiant flux, then a test of the product in spray-applied form for critical radiant flux is unnecessary.~~

(6) Moisture absorption must be determined in accordance with section 14 of ASTM C 553. Moisture absorption

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must not exceed 15 percent by weight.

(7) The product must have a minimum adhesive/cohesive bond strength per unit area of five times the weight of the material under the test plate when tested in accordance with ASTM E 736.

Exception: Testing and compliance with bond strength criteria are not required of products that are intended only for installation in enclosed cavities, and the product is identified as intended only for those installations.

(8) Corrosion must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for corrosion, then a test of the product in spray-applied form is unnecessary.

(9) Odor emission must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for odor emission, then a test of the product in spray-applied form is unnecessary.

(10) Fungi resistance must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for fungi resistance, then a test of the product in spray-applied form is unnecessary.

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

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

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

C. Mineral fiber in board form must ~~comply with ASTM~~

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~~C-612,-Standard-Specification-for-Mineral-Fiber-Block-and-Board Thermal-Insulation.~~ meet the following requirements:

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

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

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

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

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

B. Extruded Polystyrene must comply with ASTM C 578, 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, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

Exception: Aged R-value must be 5.6 per inch or greater at 75 degrees Fahrenheit.

[For text of item D, see M.R.]

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

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

[For text of subitem (2), see M.R.]

F. Spray applied urethane must comply with ASTM C

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1029, Standard Specification for Spray Applied Rigid Polyurethane Thermal Insulation.

G. Rigid cellular phenolic insulation must comply with ASTM C 1126, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

H. Foam plastic insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Foam Plastic for the intended application meets the requirements of part 7640.0130.

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, Standard Specification for Perlite Loose Fill Insulation.

[For text of subitem (2), see M.R.]

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

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

[For text of subitem (2), see M.R.]

Subp. 7. **Reflective foil insulation.**

A. The following requirements apply to reflective foil insulation:

[For text of subitem (1), see M.R.]

(2) Except for radiant barrier products, thermal performance for single or multiple sheet sections must be determined according to ASTM C 976 or ASTM C 236. 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 and the associated air spaces.

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[For text of subitems (3) to (6), see M.R.]

B. Reflective insulation systems with more than one sheet must be tested according to ASTM C 976 or ASTM C 236 to determine the thermal performance for heat flow 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. The tests must be done at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit.

C. A single sheet reflective insulation system must be tested according to ASTM E 408 to determine its emissivity. To get the R-value for the measured emissivity and a specific air space and direction of heat flow, Table 2 in chapter 22 of the ASHRAE Handbook of Fundamentals must be used. The R-value shown for 50 degrees Fahrenheit must be used, with a temperature differential of 30 degrees Fahrenheit.

[For text of item D, see M.R.]

Subp. 8. **Other insulation.** Insulation other than insulation specified in subparts 1 to 7 must comply with the requirements in items A to F.

[For text of item A, see M.R.]

B. Water or moisture absorption must be determined according to one of the following methods:

(1) ASTM C 272;

(2) ASTM C 553, section 14;

(3) ASTM C 739, section 12; or

(4) ASTM D 2842.

[For text of items C and D, see M.R.]

E. The product must not produce a detectable odor that is classified as objectionable and strong or very strong by two or more panel members when tested in accordance with ASTM C 739, section 13.

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[For text of item F, see M.R.]

7640.0140 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. **Physical requirements for insulation materials designed for exterior, underground use.**

A. The insulation, installed according to the manufacturer's recommendations, must be in service tested at either a testing facility or an actual house for a period of one continuous year. The testing environment must have historical winter weather conditions no less than 8,000 Fahrenheit heating degree days, and soil conditions with drainage characteristics classified as poor in Table 7-4 of the Building Foundation Design Handbook. The purpose of the testing must be to determine aged R-value performance.

Exception: In-service testing is not necessary if the manufacturer demonstrates that a product of the same material specification with equal or less durability in this application has been successfully in-service tested. The manufacturer shall demonstrate the equal or less durability test by comparing laboratory test results of the physical characteristics listed in part 7640.0140, subpart 1, item B, clauses (1) to (4).

B. The manufacturer shall demonstrate that the product will exhibit less than a ten percent loss in R-value <u>contained in the FTC fact sheet filed under part 7640.0150, subpart 2, item E,</u> when installed underground and the combined effect of assumed conditions on the following physical characteristics are considered:

[For text of subitems (1) and (2), see M.R.]

(3) soil compatibility; and

(4) compressive strength.

The manufacturer shall state the assumed conditions in the initial report filed according to part 7640.0150, subpart 2.

C. An association may conduct tests and prepare a filing for exterior below grade application of a type of product on behalf of its constituency. The association shall conduct testing according to subpart 1, item A, on at least three

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specimens of the product. The association shall demonstrate that the manufacturers' products for which the tests and filing would apply are representative of the tests and filing performed by the association.

D. Mineral fiber board for exterior below ground application must be manufactured to facilitate downward drainage.

Subp. 2. **Requirements for installation instructions for underground use.** Written instructions on underground use of insulation must contain instructions or information for vertical and, if recommended, horizontal application regarding:

A. application techniques;

B. if required for the insulation, drainage, as specified in section R-305 of the CABO One & Two Family Dwelling Code;

C. if required for the insulation, waterproofing or dampproofing, as specified in section R-306 of the CABO One & Two Family Dwelling Code;

D. chemical resistance information;

E. ambient temperature range permitted during application; and

F. backfill techniques and backfill materials for prevention of damage to the insulation material and below grade protective coating.

Subp. 3. **Installation requirements for exterior above ground and underground use.**

A. Insulation extending above grade must be covered with an exterior wall finish to protect the insulation from deterioration due to sunlight, and physical abuse.

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

C. Mineral fiber foundation insulation must include exterior drainage, as defined in part 7640.0120.

[For text of subp 4, see M.R.]

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7640.0150 REPORTING REQUIREMENTS.

[For text of subpart 1, see M.R.]

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:

[For text of items A to E, see M.R.]

F. results of initial tests, as required by part 7640.0130, identifying tests performed, name of laboratory, testing dates, and test results. The report for "other" insulation products regulated by part 7640.0130, subpart 8, must also include the products' Material Safety Data Sheet;

[For text of items G to I, see M.R.]

[For text of subp 3, see M.R.]

7640.0160 APPLICATION AND INSTALLATION STANDARDS.

Subpart 1. **Applicability.** Industry members, including industry members who offer insulation installation services for new and existing residential buildings, shall comply with this part.

An installer of an insulation the manufacture of which is completed at the jobsite who significantly alters the manufacturer's installation instructions becomes a manufacturer for the purpose of Minnesota Rules, chapter 7640.

Subp. 2. **Application and inspection.**

A. Industry members installing insulation shall follow manufacturer's written application instructions.

B. When installing insulation in attic areas, the installer shall locate flush and recessed light fixtures, and other heat producing appurtenances, and shall comply with National Electrical Code, section 410-66, subsections A and B.

C. Installation of cellulosic and mineral fiber in loose-fill form must be in conformance with ASTM standard C 1015, including part 7.7.2.

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D. Installation of reflective insulation must be in conformance with ASTM standard C 727.

E. Installers of urea formaldehyde foam insulation shall conform with Minnesota Statutes, section 325F.18, and Minnesota Rules, parts 4620.1600 to 4620.2100.

F. State and local agencies using appropriated federal funds and persons contracting with state or local agencies with respect to work performed under the contracts shall comply with Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Products Containing Recovered Materials.

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

[For text of items A and B, see M.R.]

C. Installation instructions for products whose manufacture is completed at the jobsite must address the quality assurance program required by part 7640.0130, subpart 2, item D; ambient temperature during application; and actions necessary to facilitate curing or drying.

7640.0180 INCORPORATIONS BY REFERENCE AND CITATIONS.

[For text of subpart 1, see M.R.]

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

[For text of items A to C, see M.R.]

D. ASTM C 272-53 (reapproved 1980), Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.

E. ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

F. ASTM C 518-85, Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

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

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H. ASTM C 553-70 (reapproved 1977), Standard Specification for Mineral Fiber Blanket and Felt Insulation (Industrial Type).

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

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

~~K. ASTM C 612-83, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.~~

~~L.~~ K. ASTM C 665-88, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~M.~~ L. ASTM C 727-72 (reapproved 1978), Standard Recommended Practice for Use of Reflective Insulation in Building Constructions.

~~N.~~ M. ASTM C 739-88, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

~~O.~~ N. ASTM C 764-88, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

~~P.~~ O. ASTM C 951-83, Standard Specification for Urea-Formaldehyde-Based, Foam in Place Insulation.

~~Q.~~ P. ASTM C 976-82, Standard Test Method for Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box.

~~R.~~ Q. ASTM C 1014-88, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

~~S.~~ R. ASTM C 1015-84, Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation.

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

T. ASTM C 1114-89, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus.

U. ASTM C 1126-89, Standard Specification for Faced

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or Unfaced Rigid Cellular Phenolic Thermal Insulation.

V. ASTM D 2842-69 (reapproved 1975), Standard Test Method for Water Absorption of Rigid Cellular Plastics.

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

X. ASTM E 408-71 (reapproved 1985), Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection Meter Techniques.

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

Z. ASTM E 736-86, Test for Cohesion/Adhesion of Sprayed Fire Resistive Materials Applied to Structural Members.

[For text of subp 2a, see M.R.]

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

A. ASHRAE Handbook of Fundamentals, (1989 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., chapter 22, tables 1 and 2.

[For text of item B, see M.R.]

C. Code of Federal Regulations, title 16, part 460, Labeling and Advertising of Home Insulation.

[For text of items D to J, see M.R.]

K. Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Insulation Products Containing Recovered Materials.

L. Underground Space Center, University of Minnesota; Building Foundation Design Handbook; Prepared for Oak Ridge National Laboratory; May 1988, Table 7-4.

[For text of subp 4, see M.R.]

REPEALER. Minnesota Rules, part 7640.0110, subpart 5, is repealed.

Approved
by Revisor _____

APPROVED AS TO LEGALITY

April 18, 1990

HUBERT H. HUMPHREY, III
ATTORNEY GENERAL

BY Charlene M. Hatch
SPECIAL ASSISTANT ATTORNEY GENERAL

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED

APR 2 0 1990

Joan Anderson Growe

Secretary of State

12:08 pm

STATE OF MINNESOTA

OFFICE OF THE ATTORNEY GENERAL

HUBERT H. HUMPHREY, III
ATTORNEY GENERAL

BUSINESS REGULATION SECTION
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April 5, 1990

Rec 4-5-90

Patricia Nolte
Legal Assistant
Public Finance Division
404 Capitol Office Building
525 Park Street
St. Paul, MN 55103

Re: In the Matter of the Proposed Amendments to Rules Governing Thermal Insulation Standards, Minn. Rules Chapter 7640

Dear Ms. Nolte:

On April 5, 1990, the Minnesota Department of Public Service adopted the above-captioned rules governing thermal insulation standards. Enclosed for your review are the following:

1. Rule Amendments as adopted (original and three copies).

2. Findings of Fact, Conclusions, and Order Adopting Rule Amendments (two copies).

3. Notice of Intent to Solicit Outside Opinion (14 S.R. 979, October 9, 1989).

4. Copies of written comments received pursuant to Notice of Intent to Solicit Outside Opinion.

5. Notice of Intent to Amend Rules Without a Public Hearing and Rules as Proposed (14 S.R. 2122, February 26, 1990.)

6. Comments received pursuant to notice of intent to adopt rule amendments without a public hearing.

7. Notice of Intent to Amend Rules Without a Public Hearing, as mailed.

8. Affidavit of Mailing and mailing list.

9. Certificate of mailing list.

10. Affidavit of Additional Discretionary Notice

11. Rules as proposed.

12. Statement of Need and Reasonableness.

13. Notice of Submission of Rule Amendments Adopted Without Public Hearing to the Attorney General

14. Affidavit of Mailing Notice of Submission of Rule Amendments Adopted Without Public Hearing to the Attorney General.

15. Declaration of Counsel.

Very truly yours,

Jocelyn F. Olson

JOCELYN F. OLSON
Assistant Attorney General

Telephone: (612) 296-3701

cc: Bruce Nelson

Stat Auth 325F.20 subd. 1c

The Commissioner shall adopt rules pursuant to chapter 14 regarding quality, information and product safety specifications for the manufacture labeling, installation

325F.21 subd 1 and 2

subd 1

Upon the adoption of specifications under 325F.20 subd 1 all insulation used or offered in MN shall be tested.

subd 2 The Commissioner shall purchase unopened insulation packages

end of comment period March 29, 1990 stated in Notice of Intent > 30 days

INSTRUCTIONS CHECKLIST FOR SECRETARY IN RULE REVIEW - NEW RULES

1. Check for 4 copies of rule as adopted ✓
2. Check for Declaration of Counsel ✓

Note: If 4 copies not sent or if rule does not have revisor's typed-in words "Rule as Adopted", call agency or SAAG. Review period does not start until four copies are received.

2. Take 2 copies of rule as adopted to Revisor's Office (Corrine) 7th floor, S.O.B. ✓

3. Log information in Rule Log Book:

   a. Rule number - next sequential number (our file number) ✓
   b. Title (from Order Adopting -- abbreviate if necessary but keep recognizable) ✓
   c. Date Received (when all 4 copies rec'd.) ✓
   d. W/O - if noncontroverisal and held without a hearing ✓
   e. EM - if emergency rule
   f. Review date - for w/o rules only, count off 9 calendar days not including day received (include weekends and holidays ✓
   g. Due date - for w/o rules count to the 14th day from date received. ✓
      - for emergency rules, it's 10 working days from date rec'd. ✓
      NEVER COUNT THE DAY RECEIVED

4. Enter information onto Checklist (most information can be gotten from log) ✓

   a. File number (our file number RR#1692) ✓
   b. Docket number (this will be 05.0009.____ - last four digits should be provided by SAAG on Statement of Compliance with Rulemaking Procedures. If not, call SAAG or determine from docket no. list ✓
   c. Write in received, review and due dates ✓
   d. Check if without a hearing or emergency ✓
   e. When two rule copies come back from revisor, write in date you get them in the Revisor Approved blank ✓

5. Make a file. ✓
   a. Type a gold label:
      RR#0000 ------- I.D.#05.0009.____
      DEPARTMENT --------Title of Rule
      NOTE:--Type EM in () after title if the rule is an emergency rule
   b. Paper clip Checklist to front of legal size file folder and place rest of materials inside ✓

6. Log into File Box.
   Take last card for agency and type rule number, title, date received (and "EM", if appicable) on the card.
   Replace card in box. ✓

7. Place file on Rita's credenza. ✓

STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

In the Matter of the Proposed Amendments to Rules of the Minnesota Department of Public Service Governing Residential Thermal Insulation Standards, Minn. Rules ch. 7640	FINDINGS OF FACT, CONCLUSIONS, AND ORDER ADOPTING RULE AMENDMENTS

The above-entitled matter came before Tony Perpich, Commissioner of the Department of Public Service, on April 25, 1990. In accordance with statutory requirements regarding the requirements regarding the adoption of noncontroversial rules, after considering the Statement of Need and Reasonableness, after considering all of the evidence in the rulemaking record, the Commissioner hereby adopts the following Findings of Fact, Conclusions, and Order:

FINDINGS OF FACT

1. Notice of the Department of Public Service's intent to adopt the above-entitled rule amendments without a public hearing was published in the State Register on February 26, 1990, (14 S.R. 2122), and was sent by mail to all persons on the list maintained by the Department pursuant to Minn. Stat. §§ 14.14, subd. 1a and 14.22 (1988) on February 23, 1990. In accordance with Minn. Stat. § 14.115 (1988), additional discretionary notice was mailed to manufacturers, wholesalers, and installers of residential insulation in order to provide an opportunity for small businesses to participate in the rulemaking process.

2. The Statement of Need and Reasonableness was prepared prior to mailing and publication of the notice and was made available to the public.

3. All persons were given the opportunity to submit comments on the rule amendments for 30 days after notice of proposed rulemaking. The 30 day comment period, as set out in the notice, expired on March 29, 1990.

4. During the comment period the Department received no requests for public hearing.

5. One request for notice of the submission to the Attorney General was received by the Department.

6. The Department received eight written comments following publication of the proposed rules. The seventh comment confirmed oral comments that were made during the comment period by Mr. Clifford Smith in a telephone conversation with Bruce Nelson of the Department staff. On additional oral comment was received from Mr. Hugh McAdams, as described in Finding No. 6.f. below. The Department finds that the following modifications to the proposed rule amendments are justified by the record in this proceeding:

a. <u>Part 7640.0120, Definitions, subp. 17, Manufacturer of Insulation, item C</u>

The Department proposed to add to its definition of "manufacturer of insulation" a statement that an applicator, contractor, or fabricator of insulation who installs, applies, or uses insulation materials for their intended uses, without

changing the thermal or physical properties of the insulation material is not a manufacturer. The Department received comments from Mr. Harold Boyer of International Cellulose Corporation and Mr. Tim Greather of Owens Corning Fiberglas that this statement be amended to make it clear that in order to fall outside the definition of "manufacturer," the person installing, applying or using the insulation materials must follow the manufacturer's installation instructions. The Department agrees with this suggestion and has modified the statement as follows:

> An applicator, contractor, or fabricator of insulation who installs, applies, or uses insulation materials for their intended uses and follows the manufacturer's installation instructions, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation.

The department finds that this modification is needed and reasonable because it clarifies the intent of the rule and makes it consistent with item C of subpart 17. Item C states that a manufacturer is a person who "prepares or modifies the product's installation instructions." Therefore a person who merely follows the instructions is not a manufacturer under item C.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely people who install, apply, or use insulation materials. Because the modification is merely a clarification of the proposed rules, the modification does not introduce new subject matter into the rule nor does it make a major substantive change

that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

b. Part 7640.0130, Insulation Materials Standards, subp. 2, General Testing Requirements, item C(1)

The Department received two comments on this item, which specifies the test methods for thermal performance tests. First, Mr. David Yarborough of Tennessee Technological University commented that a reference to ASTM C 1114 should be added to the item as an alternative test method. This is a recently adopted and published ASTM concensus standard, and its omission from the proposed rules was simply an oversight by the Department. Therefore, the Department has modified the first sentence of item C(1) as follows:

> One of the following test methods must be used: ASTM C 177, ASTM C 236, ASTM C 518, ~~or~~ ASTM C 976, or ASTM C 1114.

A second comment related to the language of the third sentence of item C(1), which as proposed states: "Thermal conductivity must only be measured at a mean temperature of 75 degrees Fahrenheit." Mr. David Yarborough and Mr. Tim Greather commented that the wording of this sentence appears to indicate that products whose thermal conductivity is measured at temperatures other than 75 degrees F are unacceptable. Because this was not the Department's intent, the Department has modified this sentence as follows:

> Thermal conductivity measurements ~~must only be measured~~ at ~~a~~ mean temperatures other than ~~temperature of~~ 75 degrees Fahrenheit are not required.

The first modification is needed and reasonable because it makes complete the list of alternative test methods for thermal performance. It makes the item consistent with the intent of this part to allow manufacturers to test for R-value using all applicable ASTM standard test methods. The second modification is needed and reasonable because it clarifies the rule and eliminates an incorrect implication that exists in the rule as proposed.

The modifications do not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. The addition of an alternative test method for thermal performance and the clarification of the intent of third sentence of the rule do not introduce new subject matter into the rule. The modifications do not make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

c. Part 7640.0130, Insulation Materials Standards, subp. 3, Cellulose Insulation, item B(5)

This item deals with critical radiant flux and smoldering combustion of cellulose insulation. The Department proposed to add the following sentence to this part: "If the product in loose-fill form meets the criteria for critical radiant flux, then a test of the product in spray-applied form is unnecessary." The Department proposes to withdraw this amendment. This

modification is based on the comments received from Mr. John DiCesare of CertainTeed and Mr. Robert Anderson. It is needed and reasonable because, as stated by the commenters, critical radiant flux testing of cellulose in loose fill form will not suffice for the same product in spray-applied form, since the test results for the two forms of the product would not be the same due to the difference in density between the loose fill and the spray-applied form of the product.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. Because the modification is does not address a subject other than testing for critical radiant flux and smoldering combustion, the modification does not introduce new subject matter into the rule nor does it make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

d. Part 7640.0130, Insulation Materials Standards, subp. 4, Mineral Fiber Insulation, item C

The Department proposed to amend item C of this rule to replace the detailed requirements for mineral fiber in board form with a reference to ASTM C 612, Standard Specifications for Mineral Fiber Block and Board Thermal Insulation. The Department has withdrawn the proposed amendment and reinstates the language of the existing rule. This action is based on the written comments of Mr. Tim Greather and a telephone conversation on

March 29, 1990, with Mr. Clifford Smith, both of Owens Corning Fiberglas. Mr. Greather's comment is set forth in a letter dated March 28, 1990, and Mr. Smith's comment was received in a March 28, 1990, telephone conversation which was subsequently confirmed in a letter dated April 1, 1990. The modification is reasonable because, as stated in the comments, the ASTM C 665 standard relates primarily to insulation material for industrial applications with temperatures up to 1,800 degrees F. Therefore, manufacturers of products for residential applications would be unduly burdened if compliance with that standard were mandatory.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. Because the modification is does not address a subject other than standards for mineral fiber in board form, the modification does not introduce new subject matter into the rule nor does it make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

e. Part 7640.0130, Insulation Materials Standards, subp. 7, Reflective Foil Insulation, item B

The Department received a comment from Mr. David Yarborough indicating that the first sentence is unclear. The Department has modified the first sentence as follows:

> Reflective insulation systems with more than one sheet must be tested according to ASTM C 976 or ASTM C 236 to determine the thermal performance for heat flow in horizontal, upward, and downward directions.

This modification is needed and reasonable because it clarifies the intent of the rule.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. Because the modification is does not address a subject other than testing thermal performance for reflective insulation systems, the modification does not introduce new subject matter into the rule nor does it make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

f. Part 7640.0140, Requirements for Insulation for Special Applications, subp. 1, Physical Requirements for Insulation Materials Designed for Exterior, Underground Use, item B

The proposed amendments to this rule state that the manufacturer must demonstrate that the product will exhibit less than a ten percent loss in R-value when installed underground. The Department received a comment in a March 21, 1990, telephone call from Mr. Hugh McAdams of IPI Division of PMC, Inc. indicating that this rule is unclear because a product may have, at different times, several different R-values due to the different conditions in which it may be placed. The Department has modified this portion of the rule to state:

> The manufacturer shall demonstrate that the product will exhibit less than a ten percent loss in R-value contained in the FTC fact sheet filed under part

7640.0150, subpart 2, item E when installed underground
. . .

This modification is needed because it fixes the R-value that the manufacturer will use in the demonstration. It is reasonable to fix that R-value as the one contained in the FTC fact sheet filed under part 7640.0150, subp. 2, item E because this R-value is determined in accordance with both Minn. Rules ch. 7640 and 16 C.F.R. Part 460, and would be widely recognized as the published R-value for the product.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. Because the modification is does not address a subject other than the demonstration concerning the loss of R-value for products designed for exterior, underground use, the modification does not introduce new subject matter into the rule nor does it make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

g. Part 7640.0180, Incorporations by Reference and Citations, subp. 2, ASTM, item K, and Relabeling of items L through T

The withdrawal of the proposed amendment to part 7640.0130, subp. 4, item C, relating to mineral fiber insulation in board form, makes it necessary and reasonable to also withdraw the proposed amendment to part 7640.0180, subp. 2, item K. Item K is an incorporation by reference of ASTM C 612-32, Standard

Specification for Mineral Fiber Block and Board Thermal Insulation. This modification is needed and reasonable because there was only one reference to ASTM C 612-32, which appeared in part 7640.0130, subp. 4, item C, and that reference has now been deleted. The elimination of proposed item K necessitates a relabeling of proposed items L through T.

For the same reasons advanced with respect to the withdrawal of part 7640.0130, subp. 4, item C, this modification is not a substantial change.

h. Part 7640.0180, Incorporations by Reference and Citations, subp. 2, ASTM, inserted as item T

The modification to part 7640.0130, subp. 2, item C(1) adding a reference to ASTM C 1114 necessitates the addition of that standard to this part. The Department has inserted as item T: "ASTM C 1114-89, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus." This modification is needed and reasonable because Minn. Stat. § 14.07, subd. 4 (1988) requires a statement of incorporation by reference for all publications and documents incorporated by reference into the rule.

For the same reasons advanced with respect to the modifications made to part 7640.0130, subp. 2, item C(1), this modification is not a substantial change.

7. The Department adopts the Statement of Need and Reasonableness, in its entirety, as the factual basis for the

proposed rules. The Department hereby incorporates the Statement of Need and Reasonableness into these findings.

9. The above-captioned rule amendments, as modified, are needed and reasonable.

CONCLUSIONS

1. The Minnesota Department of Public Service duly acquired and has jurisdiction over this proceeding.

2. The Department published and served due, timely, and adequate notice of the intent to adopt the rules without a public hearing.

3. All relevant legal and procedural requirements of statute and rule have been complied with.

4. The modifications to the proposed rule amendments are supported by the record and do not result in a substantial change in the proposed rules.

ORDER

NOW, THEREFORE, IT IS ORDERED that the attached amendments to rules governing thermal insulation standards, Minn. Rules Chapter 7640, are adopted pursuant to the authority vested in the Department by Minn. Stat. § 325F.20 (1988).

MINNESOTA DEPARTMENT OF PUBLIC SERVICE

Dated: April 05, 1990

Tony Perpich
Commissioner

STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

In the Matter of the Proposed Amendments to Rules of the Minnesota Department of Public Service Governing Residential Thermal Insulation Standards, Minn. Rules ch. 7640	FINDINGS OF FACT, CONCLUSIONS, AND ORDER ADOPTING RULE AMENDMENTS

The above-entitled matter came before Tony Perpich, Commissioner of the Department of Public Service, on April 25, 1990. In accordance with statutory requirements regarding the requirements regarding the adoption of noncontroversial rules, after considering the Statement of Need and Reasonableness, after considering all of the evidence in the rulemaking record, the Commissioner hereby adopts the following Findings of Fact, Conclusions, and Order:

FINDINGS OF FACT

1. Notice of the Department of Public Service's intent to adopt the above-entitled rule amendments without a public hearing was published in the State Register on February 26, 1990, (14 S.R. 2122), and was sent by mail to all persons on the list maintained by the Department pursuant to Minn. Stat. §§ 14.14, subd. 1a and 14.22 (1988) on February 23, 1990. In accordance with Minn. Stat. § 14.115 (1988), additional discretionary notice was mailed to manufacturers, wholesalers, and installers of residential insulation in order to provide an opportunity for small businesses to participate in the rulemaking process.

2. The Statement of Need and Reasonableness was prepared prior to mailing and publication of the notice and was made available to the public.

3. All persons were given the opportunity to submit comments on the rule amendments for 30 days after notice of proposed rulemaking. The 30 day comment period, as set out in the notice, expired on March 29, 1990.

4. During the comment period the Department received no requests for public hearing.

5. One request for notice of the submission to the Attorney General was received by the Department.

6. The Department received eight written comments following publication of the proposed rules. The seventh comment confirmed oral comments that were made during the comment period by Mr. Clifford Smith in a telephone conversation with Bruce Nelson of the Department staff. On additional oral comment was received from Mr. Hugh McAdams, as described in Finding No. 6.f. below. The Department finds that the following modifications to the proposed rule amendments are justified by the record in this proceeding:

a. Part 7640.0120, Definitions, subp. 17, Manufacturer of Insulation, item C

The Department proposed to add to its definition of "manufacturer of insulation" a statement that an applicator, contractor, or fabricator of insulation who installs, applies, or uses insulation materials for their intended uses, without

changing the thermal or physical properties of the insulation material is not a manufacturer. The Department received comments from Mr. Harold Boyer of International Cellulose Corporation and Mr. Tim Greather of Owens Corning Fiberglas that this statement be amended to make it clear that in order to fall outside the definition of "manufacturer," the person installing, applying or using the insulation materials must follow the manufacturer's installation instructions. The Department agrees with this suggestion and has modified the statement as follows:

> An applicator, contractor, or fabricator of insulation who installs, applies, or uses insulation materials for their intended uses and follows the manufacturer's installation instructions, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation.

The department finds that this modification is needed and reasonable because it clarifies the intent of the rule and makes it consistent with item C of subpart 17. Item C states that a manufacturer is a person who "prepares or modifies the product's installation instructions." Therefore a person who merely follows the instructions is not a manufacturer under item C.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely people who install, apply, or use insulation materials. Because the modification is merely a clarification of the proposed rules, the modification does not introduce new subject matter into the rule nor does it make a major substantive change

that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

b. Part 7640.0130, Insulation Materials Standards, subp. 2, General Testing Requirements, item C(1)

The Department received two comments on this item, which specifies the test methods for thermal performance tests. First, Mr. David Yarborough of Tennessee Technological University commented that a reference to ASTM C 1114 should be added to the item as an alternative test method. This is a recently adopted and published ASTM concensus standard, and its omission from the proposed rules was simply an oversight by the Department. Therefore, the Department has modified the first sentence of item C(1) as follows:

> One of the following test methods must be used: ASTM C 177, ASTM C 236, ASTM C 518, ~~or~~ ASTM C 976, or ASTM C 1114.

A second comment related to the language of the third sentence of item C(1), which as proposed states: "Thermal conductivity must only be measured at a mean temperature of 75 degrees Fahrenheit." Mr. David Yarborough and Mr. Tim Greather commented that the wording of this sentence appears to indicate that products whose thermal conductivity is measured at temperatures other than 75 degrees F are unacceptable. Because this was not the Department's intent, the Department has modified this sentence as follows:

> Thermal conductivity measurements ~~must only be measured~~ at ~~a~~ mean temperatures other than ~~temperature of~~ 75 degrees Fahrenheit are not required.

The first modification is needed and reasonable because it makes complete the list of alternative test methods for thermal performance. It makes the item consistent with the intent of this part to allow manufacturers to test for R-value using all applicable ASTM standard test methods. The second modification is needed and reasonable because it clarifies the rule and eliminates an incorrect implication that exists in the rule as proposed.

The modifications do not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. The addition of an alternative test method for thermal performance and the clarification of the intent of third sentence of the rule do not introduce new subject matter into the rule. The modifications do not make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

c. Part 7640.0130, Insulation Materials Standards, subp. 3, Cellulose Insulation, item B(5)

This item deals with critical radiant flux and smoldering combustion of cellulose insulation. The Department proposed to add the following sentence to this part: "If the product in loose-fill form meets the criteria for critical radiant flux, then a test of the product in spray-applied form is unnecessary." The Department proposes to withdraw this amendment. This

modification is based on the comments received from Mr. John DiCesare of CertainTeed and Mr. Robert Anderson. It is needed and reasonable because, as stated by the commenters, critical radiant flux testing of cellulose in loose fill form will not suffice for the same product in spray-applied form, since the test results for the two forms of the product would not be the same due to the difference in density between the loose fill and the spray-applied form of the product.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. Because the modification is does not address a subject other than testing for critical radiant flux and smoldering combustion, the modification does not introduce new subject matter into the rule nor does it make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

d. Part 7640.0130, Insulation Materials Standards, subp. 4, Mineral Fiber Insulation, item C

The Department proposed to amend item C of this rule to replace the detailed requirements for mineral fiber in board form with a reference to ASTM C 612, Standard Specifications for Mineral Fiber Block and Board Thermal Insulation. The Department has withdrawn the proposed amendment and reinstates the language of the existing rule. This action is based on the written comments of Mr. Tim Greather and a telephone conversation on

March 29, 1990, with Mr. Clifford Smith, both of Owens Corning Fiberglas. Mr. Greather's comment is set forth in a letter dated March 28, 1990, and Mr. Smith's comment was received in a March 28, 1990, telephone conversation which was subsequently confirmed in a letter dated April 1, 1990. The modification is reasonable because, as stated in the comments, the ASTM C 665 standard relates primarily to insulation material for industrial applications with temperatures up to 1,800 degrees F. Therefore, manufacturers of products for residential applications would be unduly burdened if compliance with that standard were mandatory.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. Because the modification is does not address a subject other than standards for mineral fiber in board form, the modification does not introduce new subject matter into the rule nor does it make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

e. Part 7640.0130, Insulation Materials Standards, subp. 7, Reflective Foil Insulation, item B

The Department received a comment from Mr. David Yarborough indicating that the first sentence is unclear. The Department has modified the first sentence as follows:

> Reflective insulation systems with more than one sheet must be tested according to ASTM C 976 or ASTM C 236 to determine the thermal performance for heat flow in horizontal, upward, and downward directions.

This modification is needed and reasonable because it clarifies the intent of the rule.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. Because the modification is does not address a subject other than testing thermal performance for reflective insulation systems, the modification does not introduce new subject matter into the rule nor does it make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

f. Part 7640.0140, Requirements for Insulation for Special Applications, subp. 1, Physical Requirements for Insulation Materials Designed for Exterior, Underground Use, item B

The proposed amendments to this rule state that the manufacturer must demonstrate that the product will exhibit less than a ten percent loss in R-value when installed underground. The Department received a comment in a March 21, 1990, telephone call from Mr. Hugh McAdams of IPI Division of PMC, Inc. indicating that this rule is unclear because a product may have, at different times, several different R-values due to the different conditions in which it may be placed. The Department has modified this portion of the rule to state:

> The manufacturer shall demonstrate that the product will exhibit less than a ten percent loss in R-value contained in the FTC fact sheet filed under part

7640.0150, subpart 2, item E when installed underground
. . .

This modification is needed because it fixes the R-value that the manufacturer will use in the demonstration. It is reasonable to fix that R-value as the one contained in the FTC fact sheet filed under part 7640.0150, subp. 2, item E because this R-value is determined in accordance with both Minn. Rules ch. 7640 and 16 C.F.R. Part 460, and would be widely recognized as the published R-value for the product.

The modification does not constitute a substantial change because the rule as modified continues to affect the same classes of persons as those affected by the rule as proposed, namely manufacturers of insulation materials. Because the modification is does not address a subject other than the demonstration concerning the loss of R-value for products designed for exterior, underground use, the modification does not introduce new subject matter into the rule nor does it make a major substantive change that was not raised by the proposed rule as originally noticed in such a way as to invite reaction.

g. Part 7640.0180, Incorporations by Reference and Citations, subp. 2, ASTM, item K, and Relabeling of items L through T

The withdrawal of the proposed amendment to part 7640.0130, subp. 4, item C, relating to mineral fiber insulation in board form, makes it necessary and reasonable to also withdraw the proposed amendment to part 7640.0180, subp. 2, item K. Item K is an incorporation by reference of ASTM C 612-32, Standard

Specification for Mineral Fiber Block and Board Thermal Insulation. This modification is needed and reasonable because there was only one reference to ASTM C 612-32, which appeared in part 7640.0130, subp. 4, item C, and that reference has now been deleted. The elimination of proposed item K necessitates a relabeling of proposed items L through T.

For the same reasons advanced with respect to the withdrawal of part 7640.0130, subp. 4, item C, this modification is not a substantial change.

h. Part 7640.0180, Incorporations by Reference and Citations, subp. 2, ASTM, inserted as item T

The modification to part 7640.0130, subp. 2, item C(1) adding a reference to ASTM C 1114 necessitates the addition of that standard to this part. The Department has inserted as item T: "ASTM C 1114-89, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus." This modification is needed and reasonable because Minn. Stat. § 14.07, subd. 4 (1988) requires a statement of incorporation by reference for all publications and documents incorporated by reference into the rule.

For the same reasons advanced with respect to the modifications made to part 7640.0130, subp. 2, item C(1), this modification is not a substantial change.

7. The Department adopts the Statement of Need and Reasonableness, in its entirety, as the factual basis for the

proposed rules. The Department hereby incorporates the Statement of Need and Reasonableness into these findings.

9. The above-captioned rule amendments, as modified, are needed and reasonable.

CONCLUSIONS

1. The Minnesota Department of Public Service duly acquired and has jurisdiction over this proceeding.

2. The Department published and served due, timely, and adequate notice of the intent to adopt the rules without a public hearing.

3. All relevant legal and procedural requirements of statute and rule have been complied with.

4. The modifications to the proposed rule amendments are supported by the record and do not result in a substantial change in the proposed rules.

ORDER

NOW, THEREFORE, IT IS ORDERED that the attached amendments to rules governing thermal insulation standards, Minn. Rules Chapter 7640, are adopted pursuant to the authority vested in the Department by Minn. Stat. § 325F.20 (1988).

MINNESOTA DEPARTMENT OF PUBLIC SERVICE

Dated: April 05, 1990

Tony Perpich
Commissioner

Department of Public Safety

Notice of Solicitation of Outside Information or Opinions Regarding Proposed Rule Governing One Call Notification System, Reporting Requirements, Enforcement and Sanctions, Drug Testing, and Training Requirements

NOTICE IS HEREBY GIVEN that the State Department of Public Safety, Office of Pipeline Safety, is seeking information or opinions from sources outside the agency in preparing to propose the adoption of rules governing the one call notification system, reporting requirements, enforcement and sanctions, drug testing, and training requirements. The adoption of the rule is authorized by *Minnesota Statutes*, chapters 229F.56 to 299F.641, 299J and 216D.

The State Department of Public Safety requests information and opinions concerning the subject matter of the rule. Interested persons or groups may submit data or views on the subject matter of concern in writing or orally. Written statements should be addressed to:

William Barbeau, Director
Office of Pipeline Safety
130 Market House
289 East Fifth Street
St. Paul, MN 55101

Oral statments will be received during regular business hours over the telephone at (612) 296-9636 and in person at the above address.

Any written material received by the Statement Department of Public Safety shall become part of the rulemaking record to be submitted to the attorney general or administrative law judge in the event that the rule is adopted.

Paul J. Tschida, Commissioner
Department of Public Safety

Department of Public Service

Energy Division

Correction of Notice of Extension of Deadline

The deadline of October 1, 1989, by the Department of Public Service to seek opinions and information on proposed amendment to *Minnesota Rules* Chapter 7670 [formerly designated as *Minnesota Rules* 4215] governing energy matters within the State Building Code was established by publication June 19, 1989 [not June 27, 1989]. The deadline has been extended to December 21, 1989.

Department of Public Service

Energy Division

Notice of Solicitation of Outside Information or Opinions Regarding Proposed Rule Governing Residential Thermal Insulation Standards

NOTICE IS HEREBY GIVEN that the State Department of Public Service is seeking information or opinions from sources outside the agency in preparing to propose the amendment of *Minnesota Rules* Chapter 7640 governing Residential Thermal Insulation Standards. The adoption of the rule is authorized by *Minnesota Statutes*, section 325F.20 subdivision 1 and 325F.21 subdivisions 1 and 2, which requires the agency 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.

The State Department of Public Service requests information and opinions concerning the subject matter of the rule, including: revised ASTM standards, spray applied cellulose, standards for other insulation products and test standards and application requirements for insulation intended for exterior foundation wall installation. Interested persons or groups may submit data or views on the subject matter of concern in writing or orally. Written statements should be addressed to:

Bruce Nelson, Senior Engineer
Department of Public Service, Energy Division,
900 American Center Building, 150 East Kellogg Boulevard,
St. Paul, Minnesota 55101
(612) 297-2313

Oral statements will be received during regular business hours over the telephone and in person at the above address.

All statements of information and opinions shall be accepted until January 2, 1989. Any written material received by the State Department of Public Service shall become part of the rulemaking record to be submitted to the attorney general or administrative law judge in the event that the rule is adopted.

Dated: 29 September 1989

Tony Perpich
Commissioner

Office of the Secretary of State

Notice of Vacancies in Multi-Member Agencies

NOTICE IS HEREBY GIVEN to the public that vacancies have occurred in multi-member state agencies, pursuant to *Minnesota Statutes* 15.0597, subdivision 4. Application forms may be obtained from the Office of the Secretary of State, Open Appointments, 180 State Office Building, St. Paul MN 55155-1299; (612) 297-5845, or in person at Room 174 of the State Office Building. More specific information about these vacancies may be obtained from the agencies listed below. The application deadline is October 31, 1989.

ELEMENTARY-SECONDARY-VOCATIONAL (ESV) COMPUTER COUNCIL
Board of Education, Capitol Square Bldg., 550 Cedar St., St. Paul 55101. 612-297-3752
Minnesota Statutes 121.934 as amended by *Laws of 1989*

APPOINTING AUTHORITY: Governor. COMPENSATION: None.
VACANCY: One member, urban school district administrator from either Congressional District 6 or Congressional District 2.

The council advises and assists the Board of Education in the development of plans and standards for ESV-IS (elementary, secondary, and vocational education) and SDE-IS (State Department of Education) information systems. Fourteen members to include one administrator from a rural school district, one administrator from an urban school district, one school board member from an urban district, one school board member from a rural district, one teacher from a rural school district, one teacher from an urban school district; three private sector managers of whom at least two are data processing managers; three public sector managers of whom at least two are data processing managers; one person representing post-secondary vocational technical education, and one person from the Department of Education. Public and private sector managers shall not be employees or board members of school districts or the Department of Education. The Council should include at least one resident of each congressional district.

MN CRIME VICTIM AND WITNESS ADVISORY COUNCIL
Dept. of Public Safety, 211 Transportation Bldg., St. Paul 55155. 612-296-6642
Minnesota Statutes 611A.70

APPOINTING AUTHORITY: Commissioner of Public Safety. COMPENSATION: None.
VACANCY: Two members, crime victim assistance representatives.

The council reviews on a regular basis the treatment of victims by the criminal justice system and the need and availability of services to crime victims. Twelve members include two members of the Minnesota legislature who have demonstrated expertise and interest in crime victim issues, one from each house; one district court judge; one county attorney; one public defender; one peace officer; one medical or osteopathic physician licensed to practice in this state; five members who are crime victims or crime victims assistance representatives; three public members. The appointments should take into account sex, race and geographic distribution.

MATERNAL AND CHILD HEALTH ADVISORY TASK FORCE
Dept. of Health, Maternal and Child Health Division, Box 9441, 717 Delaware St. S.E., Mpls 55440. 612-623-5459
Minnesota Statutes 145.881

APPOINTING AUTHORITY: Commissioner of Health. COMPENSATION: Reimbursed for expenses.
VACANCY: Two members—one consumer representative interested in the health of mothers and children, and one representative of a community health board as defined in *Minnesota Statutes* 145A.02, subdivision 5, with knowledge, experience, and interest in MCH programs, issues, and problems.

The task force meets to review and report on the health care needs of mothers and children throughout the state of Minnesota. Fifteen members will provide equal representation from five professionals with expertise in maternal and child health services, five representatives of local health boards as defined in *Minnesota Statutes* 145A.02, and five consumer representatives interested in the health of mothers and children. No member may be employees of the state Department of Health.

COMMENTS RECEIVED PURSUANT TO
NOTICE OF INTENT TO SOLICIT OUTSIDE INFORMATION

SEP 0 1 1989

The Society of the
Plastics Industry, Inc.

Polyurethane Foam Contractors Division

1275 K Street N.W. – Suite 400
Washington, DC 20005
202-371-5200 800-523-6154

August 30, 1989

Bruce Nelson, Senior Engineer
Energy Division
Minnesota Department of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Re: Minnesota Residential Insulation Standards Program

Dear Mr. Nelson:

I am in receipt of the revision of the Insulation Standards rules, Chapter 7640, dated August 2, 1989.

We at PFCD represent industry members consisting of both polyurethane foam manufacturers and contractors and/or applicators of "final form" spray polyurethane foam insulation.

I would refer to 7640.0120, Definitions, Subparagraph 17, "Manufacturer of Insulation." It is my interpretation of the latter part of the paragraph, which states "...or spray urethane foam insulation manufacturer of the component resins and catalysts used for in situ foaming," means that the contractor/installer/applicator is the on site manufacturer.

The contractor/applicator is an installer of the component resins and catalysts furnished by the manufacturer, who must not and will not deviate from the manufacturer's formulation and/or the manufacturer's application specifications.

Therefore, the proper terminology for this applicator would be contractor or fabricator, not manufacturer.

This revision is based on an Industry request and I would appreciate your acknowledgement.

If you have any questions, please contact me at (800) 523-6154.

Sincerely,

Daniel L. Benedict
SPI/PFCD

DLB/rjs

cc: G. Sievert

PARAMOUNT
TECHNICAL PRODUCTS, INC.

2600 Paramount Drive • P.O. Box 1042
Spearfish, SD 57783

(605) 642-4787 (800) 658-5500

October 12, 1989

Mr. Bruce Nelson
MINNESOTA DEPARTMENT OF
PUBLIC SERVICE
900 American Center
150 E. Kellogg Blvd.
St. Paul, MN 5101
Fax: 612-297-1959

Dear Mr. Nelson,

In response to your letter of October 9, 1989 wherein you request outside opinions on the entire insulation standards rules, and specifically to the question "do the results of our exterior foundation wall research (November, 1988) indicate that changes should be made in these rules." Bruce, for a long time you have been aware of my position relative to the use of polyurethane foams in underground environment.

When you ask a question about the results of your exterior wall research let me say only this, whoever set up the program didn't understand urethanes and secondly, the tests were installed and monitored in such a way that the results would be absolute nonsense. For example, anyone with even rudimentary knowledge would know that the installation of a polyurethane spray foam, the type and density of the resultant foam, the adhesion of the foam, the insulation value of the foam and the resultant moisture absorption of the foam are all dependent on variables in the environment which were beyond the scope of the test.

For example, no one considered the relative humidity during the time of the installation. Relative humidity determines the type (structure) of the resultant foam. For example, the introduction of high humidity causes the foam to form in an open cell structure which results in tremendous moisture absorption and a quick breakdown in the ability of the foam to insulate at all. The relative humidity can also affect the friability of the foam to the extent that the material is so crushable that it will not sustain backfill without extensive damage.

Another factor that was not considered was the temperature that the installation was made. Anyone should know that the density of the foam directly dependent on the installation temperature. The higher the density, the lower the insulation value and the lower the density the less able to sustain damage from backfill.

Another area which no one has paid proper attention, is the so called protection materials which go over the sprayed insulation. Currently, they are using mixtures of asphalt, rubberized asphalt, visqueen or nothing to protect the foam from moisture. Facts are, none of these materials are efficient nor have any of them been able to pass as waterproofing agents at their best performance. It is for this reason that these products are considered dampproofing materials which makes them totally unsuitable to protect the foam against the penetration of water.

The procedure as you have proceeded it with, from a scientific standpoint, can only be described as silly. The only possible way that a urethane foam could be protected is by a membrane that has a permeability of 10-11 or less to the penetration to vapor and even in this case, one single point of damage would allow water to pass through and infiltrate through the whole urethane foam system.

Recently, the Owens-Corning people entered the market with a dampproofing product consisting of rubberized asphalt coupled with a drainage membrane. By carefully controlling the placement of this product ie; never allowing it to be used where there is a waterhead thus (preventing it from being faced with the high criteria that waterproofing membranes requires) they have given long term guarantees and coupled them to unfounded claims relative to the insulation values of their drainage material. Facts are, any drainage material opens to the surface allows a direct transfer of heat to the external environment. Another factor which makes the Owens-Corning system a composition of buffalo dung and compost is the fact that whenever you drain a surface water down a vertical wall, you are in effect transferring the external ambient of the water directly to the wall which is supposedly being insulated. You accepted Owens-Corning's "inhouse" results as being doctrine thus continue to allow the citizens of Minnesota to be conned by this major company.

I could understand your position if you were one of those who believe that "big companies don't lie" however, the facts are cold water next to a wall makes the wall cold.

Bruce, I honestly believe you are doing your best to provide the citizens of Minnesota with quality products however, you'll only get these results when you face the real issues that are out there.

Good luck in your efforts.

Sincerely yours,

Bryan M. McGroarty,
Technical Director

The Celotex Corporation
Post Office Box 31602
Tampa, Florida 33631-3602
(813) 871-4811

December 12, 1989

Minnesota Dept. of Public Service
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

Attention: Bruce Nelson
Minnesota Insulation Standards Program

Reference: Proposed Revision of the Minnesota
Insulation Standards

Dear Mr. Nelson:

I have reviewed your proposed revisions to the Minnesota Insulation Standards relating to exterior foundation wall insulation and I have a few comments on the draft copy.

Bruce, I owuld strongly recommend that the State of Minnesota adopt a prescriptive code that specifies foundation application. Continuing the rule without specific tests and allowing each manufacturer to dictate his own results is meaningless.

I would also like to point out that the use of insulation, without requiring good building practice, in below grade applications will most likely encounter performance problems. Without proper drainage, etc., insulation and water do not mix to give favorable results.

Requiring FTC constraints is also questionable because it does not require testing after in service use. The FTC labeling requirements are on home insulation testing prior to installation.

Please take the above-mentioned comments under consideration for your insulation standards and please call me if you have any additional questions.

Sincerely,

Tom P. Wolf

Tom P. Wolf
Manager, Technical Services

cs

Stepan

Stepan Company

Northfield, Illinois 60093
Telephone 312 446 7500

December 6, 1989

Mr. Bruce Nelson
MINNESOTA DEPARTMENT OF PUBLIC SERVICE
Energy Division
900 American Center Building
150 East Kellogg Blvd.
St. Paul, MN 55101

Dear Bruce:

I would like to thank you for allowing Mike Maretich and myself to sit in our your meeting concerning the below grade insulation specifications. This type of energy saving program will no doubt pave the way for many other states to adapt the same type of requirements.

As we discussed, I am enclosing a copy of a manual put together by DuPont which outlines the basic fundamentals of all polyurethane foams. I hope this is helpful in your search to write the necessary specs.

If you have any questions or would like any other information, please don't hesitate to contact me at my office at (708) 446-0919. I enjoyed meeting you and look forward to speaking with you soon.

Sincerely,

Karl A. Hipchen

Karl A. Hipchen
Sales Representative

KAH:bak

Amoco Foam Products Company

400 Northridge Road
Suite 1000
Atlanta, Georgia 30350
(404) 587-0535

December 18, 1989

Mr. Bruce Nelson
Minnesota Department of Public Service
Insulation Standards Program
Energy Division
American Center Building
150 Kellogg Blvd., Room 900
St. Paul, MN 55101

Dear Mr. Nelson:

Thank you for keeping me informed on the progress of the Insulation Standards Rules revisions (Part 7640.0140). I would like to offer the following comments:

1. **Subpart 1A:** The word "system" should be changed to "material", since this is the term used in the title of this section. The first sentence could be clarified by stating: "The insulation material, installed in accordance with the manufacturer's recommendations, must be tested at a recognized laboratory or in service for a period of one year."

Rather than require conditions similar to those at the Minneapolis-St. Paul Airport, you may want to specify a minimum number of freeze-thaw cycles. This information can be obtained for various locations through the National Oceanic and Atmospheric Administration.

The sentence which references soil conditions is not clear. Does this sentence imply that "poor" soil conditions are acceptable?

2. **Subpart 1A, Exception:** You may want to delete number 3 as one of the requirements, since this might be difficult to demonstrate.

3. **Subpart 1C:** It is not clear who is doing the testing. You may want to state the following: "The association will provide laboratory or in service test data as indicated in Subpart 1A and 1B.

The 3 specimen requirement should be shown in Subpart 1A.

The last sentence in this paragraph is not clear, and may not be necessary.

4. Subpart 2, first sentence: This sentence should say: "The insulation manufacturer shall provide installation instructions which contain the following information:"

A. installation techniques;

B. drainage requirements: see Section R-305 of the CABO One and Two Family Dwelling Code;

C. waterproofing and dampproofing: see Section R-306 of the CABO One and Two Family Dwelling Code;

D. chemical resistance information;

E. undesirable weather conditions during installation;

F. information pertaining to backfill materials and techniques.

5. Subpart 3, title: The following wording is suggested: "Requirements for protection of insulation exposed above grade."

6. Subpart 3A: The following wording is suggested: "Insulation extending above grade must be covered with an EIF system recommended by the insulation manufacturer or with a siding material."

If you have any questions, please give me a call.

Sincerely,

Alisa R. Hoffee

Alisa R. Hoffee
Assistant Technical Project Manager
Industrial Products
:ah

cc: P. Sullivan, Northridge
C. Heyd, Northridge

DEC

Amoco Foam Products Company

400 Northridge Road
Suite 1000
Atlanta, Georgia 30350
(404) 587-0535

December 18, 1989

Mr. Bruce Nelson
Minnesota Department of Public Service
Insulation Standards Program
Energy Division
American Center Building
150 Kellogg Blvd., Room 900
St. Paul, MN 55101

Dear Mr. Nelson:

This letter is in reference to your request for comments regarding the Minnesota Insulation Standards Rules relating to "other" insulations. I would like to make the following comments:

1. Part 7640.0130, Subpart 8B: There are several ASTM test methods for determining moisture/water absorption. Clause B should list all known methods, or indicate that the appropriate test method should be used depending on the material. For example, ASTM C272, ASTM D2842, and ASTM C209 can be used to determine moisture/water absorption.

I have attached copies of the various water/moisture absorption test methods for your information. If you have any questions, please give me a call.

Sincerely,

Alisa R. Hoffee

Alisa R. Hoffee
Assistant Technical Project Manager
Industrial Products
:ah

cc: P. Sullivan, Northridge
C. Heyd, Northridge

DEC 26 1989

DOW CHEMICAL U.S.A.

GRANVILLE RESEARCH CENTER
P.O. BOX 515
GRANVILLE, OHIO 43023 - 0515

December 20, 1989

Mr. Bruce Nelson
Energy Division
Minnesota Department of Public Service
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

SUBJECT: COMMENTS ON PROPOSED REVISIONS TO THE MINNESOTA INSULATION STANDARD RULES ADDRESSING FOUNDATION INSULATION

Bruce, here are our comments on the revisions outlined in your November 22 correspondence and notes from your November 15 industry meeting.

Section 7640.0140, Subpart 1., Items A, B, C, D, E, & F; because these Items are inter-related they will be discussed together.

It appears that this subpart has been revised significantly from the existing Rule where it asks that the insulation be tested to "reflect the extreme of weather." The proposed revision is only requesting performance information on "one continuous year" exposure based on the manufacturer's installation recommendations which could vary from extreme to mild. Some of the questions that come to mind are: (1) will the material always be exposed to the manufacturer's conditions over the life of the home or could some of the protection systems fail?, (2) does one year of data with unknown exposure conditions give an adequate picture of the long-term material performance or give adequate information to compare different material's performance? The overall impact of the proposed revisions seem unreasonable in that it will give the insulation user less information about the long-term performance of a product or not allow them to accurately compare the performances of different products to a standard exposure base.

As expressed in the meeting notes, there are some problems with the existing rule such as: (1) there are no approved laboratories which test in this area, and (2) there are no recognized standard tests established on significant properties for this application. Most existing laboratory tests on the significant properties (such as moisture absorption) have been adapted from tests designed for other materials. In most cases, these are severe exposure condition tests but they can highlight some differences in the insulation materials being evaluated which do not necessarily become obvious in mild in-field condition tests. In other words, severe tests may provide a means to accelerate exposure conditions. Though some adjustment to the test criteria seem appropriate, it appears unreasonable to require less information than is needed for a good evaluation by the insulation user.

An acceptable alternative may be to suggest in -field results as well as some "extreme" laboratory test results. This would give the consumer more data to make an informed decision.

THE ASSURANCE OF TOMORROW
SAFETY

I also question the change "...testing is not necessary if the manufacturer demonstrates that a product of the same material specification...has been successfully in service tested" in this Subpart. Not all insulation materials that meet the same material specification will necessarily perform the same when exposed to moisture conditions, freeze-thaw conditions, etc. Materials from different manufacturers which meet the same material specification will not necessarily be of the same product quality. Product quality can have a significant impact on a product's performance.

Subpart 2. Item G. Warranty

We obviously disagree with the comment in the meeting notes that a manufacturer's warranty statement is "unrealistic" for this application. We do make a thermal warranty statement for our products (see enclosed) which are commonly used in the foundation area. Therefore, we feel it is unreasonable to eliminate this item as shown in the proposed revisions.

The existing rule asks the manufacturer to "state whether it warrants the insulation for underground use". This is reasonable in that it is not requiring the manufacturer to make a warranty, it is only asking him to state whether a warranty is or is not made for this application. At this point in time, we are only aware of Dow making a broad warranty statement for products which are commonly used in the foundation area. We feel comfortable in doing this based on our long-term experience in below-grade applications, severe exposure testing performance of our products, and confidence in our quality control. A statement by all manufacturers on their product warranty (or lack of a warranty) would give the consumer a significant item to help them decide if they are purchasing a quality proven product or if they are taking a gamble on the product's performance.

We do suggest that this item be revised to allow greater flexibility to the manufacturer in developing a warranty statement by the elimination of the section: "...statement of the number of years...maintain 80 percent of...R-value". This is reasonable in that it removes some restrictions concerning a warranty statement.

Bruce, these are the major comments we have on the proposed revisions to the Rule. We appreciate your taking them into consideration. If you should have any questions, please give me a call.

Best regards,

Phil Hendrickson
Project Leader
STYROFOAM* Brand Products
Technical Service & Development

cc: Laverne Wheeler, Edward Sales

*Trademark of The Dow Chemical Company



Thermal Warranty

STYROFOAM* Brand Insulation. The Dow Chemical Company ("Dow") hereby warrants that for a period of fifteen years, commencing with the date on which the Insulation† ("Insulation") subject to this Warranty was manufactured (or purchased, if within 180 days of its manufacture), the Insulation's actual thermal resistance will not vary by more than ten percent from an R-value of 5.0 per inch. If the Insulation is determined by sampling and tests (conducted as provided below) to not meet warranty value, Dow will either deliver to the Owner ("Owner") of the building on which the Insulation was initially installed a quantity of equivalent Dow product to replace the non-performing Insulation or, at Dow's sole discretion, refund to the Owner the original purchase price of the non-performing Insulation. Total Dow expense for the life of this Warranty will be limited to the original purchase price of the Insulation.

This Warranty is in lieu of all other guarantees and warranties, express or implied, including the warranties of merchantability and fitness, and shall not be extended or altered except by written instrument signed by Dow and the Owner. THERE ARE NO WARRANTIES OR GUARANTEES WHICH EXTEND BEYOND THE DESCRIPTION SET FORTH IN THIS WARRANTY.

Conditions. The Dow Chemical Company's obligations under this Warranty are applicable to Insulation manufactured after July 1, 1987 and will only take effect if (1) the Owner notifies Dow of any failure of the Insulation to perform as warranted herein in writing and within thirty days of Owner's earliest notice, actual or constructive, of such failure; and (2) installed in strict accordance with all applicable Dow specifications, recommendations and guidelines which were in effect at the time of such installation. This Warranty shall be void if, in Dow's judgment, the Insulation's performance has been impaired by either damage or alterations (lacking prior Dow written approval) to the Insulation.

Exclusions. Dow does not warrant the compatibility of any other product (including but not limited to any roofing membrane or coatings) with the Insulation, and does not assume any liability for any incidental or consequential damages, including (but not limited to) incremental heating, cooling or similar costs and any other harm to persons or property.

Insulation Testing. All sampling shall be conducted in accordance with sampling procedures prescribed by Dow, and samples of the Insulation shall only be taken in the presence of an authorized Dow representative. Testing of Insulation samples shall be in accordance with ASTM Test Method C518-85, or the then closest Dow-approved effective equivalent thereof. Insulation samples shall be conditioned to equilibrium prior to testing. All samples and testing costs (including but not limited to costs of Insulation covering removal and replacement) shall be at the Owner's sole expense.

†STYROFOAM Brand Residential Sheathing Insulation
STYROFOAM Brand Tongue and Groove Insulation
STYROFOAM Brand Square Edge Insulation
STYROFOAM Brand Score Board Insulation
STYROFOAM Brand Plaza Deck Insulation
STYROFOAM 40 Brand High Load Insulation
STYROFOAM 60 Brand High Load Insulation
STYROFOAM 115 Brand High Load Insulation

*Trademark of
The Dow Chemical Company

Dow* Styrofoam* BRAND

Warranty does not include:
1/2" STYROFOAM Brand Residential Sheathing Insulation

Product used in geotechnical applications

Form No. 179-5294-88R

The Society of the
Plastics Industry, Inc.

Polyurethane Foam Contractors Division

1275 K Street N.W. – Suite 400
Washington, DC 20005
202-371-5200 800-523-6154

FAX: 202-289-7579

FACSIMILE MESSAGE COVER LETTER

DATE: 12-20-89 TIME: 2:15 P.M. EST

TO: BRUCE NELSON, SR. ENGINEER

COMPANY ENERGY DIVISION FAX 612-297-1959

ATTN:

FROM: DAN BENEDICT - SPI/PFCD

Total number of pages, including cover letter 5

Any problems, call Pamela at 800-523-6154

* *

BRUCE:

THIS IS THE LANGUAGE USED ON INSULATION MFGRS. IN STATE OF CALIF. WHEN ESTABLISHED, PLS. SEND A COPY FOR S.P.I. LEGAL LOOK-THRU. SURE WOULD BE APPRECIATED. IF YOU REQUIRE FURTHER INFO. PLS. CALL.

REGARDS,

DB Benedict

12. 20. 89 03:24PM P02

STATE OF CALIFORNIA
CURRENT CONSUMER AFFAIRS

Assembly Bill No. 1131

CHAPTER 925

An act to amend Sections 101, 205, 19000, 19004, 19019, 19022, 19030, 19034, 19059.7, 19161.5, 19174, and 19175 of, and to add Sections 19074 and 19213.1 to, the Business and Professions Code, and to amend the heading of Chapter 10.5 (commencing with Section 25910) of Division 15 of the Public Resources Code, relating to consumer affairs, making an appropriation therefor, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor September 21, 1987. Filed with Secretary of State September 22, 1987.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1131, Johnson. Consumer affairs: Bureau of Home Furnishings: insulation materials.

Existing law provides for the establishment and enforcement of insulation standards by the State Energy Resources Conservation and Development Commission and the Bureau of Home Furnishings.

This bill would revise those provisions, including revising the definition of insulation material and defining insulation manufacturer.

The bill would provide that insulation manufacturers having more than one plant shall hold one license for all plants under the same ownership and producing the same type of insulation and provides that the license for any insulation manufacturer shall not exceed $6,000.

The bill would change the name of the Bureau of Home Furnishings to the Bureau of Home Furnishings and Thermal Insulation and would make related changes.

The bill would authorize the chief of the bureau to determine when any article not otherwise clearly defined, is insulation.

The bill would authorize the bureau to require licensees to have their products inspected and tested and to pay a fee of not less than $200 nor more than $500 for each test or inspection.

The bill would also change the name of the act to the Home Furnishings and Thermal Insulation Act and would provide that the act shall not apply to the attaching of fiberglass insulation to metal duct work by a licensed contractor using industry-accepted adhesives and metal pins.

Existing provisions of the Business and Professions Code continuously appropriate money in the Bureau of Home Furnishings Fund. This bill would rename that fund the Bureau of Home Furnishings and Thermal Insulation Fund. Because this bill would increase the moneys in that fund, it would constitute an

appropriation.

This bill would declare the intent of the Legislature that the inspection program in the bureau be reviewed and evaluated by the bureau, as specified.

A violation of the provisions relating to building insulation materials is a misdemeanor. Because this bill would create new crimes, it would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

This bill would declare that it is to take effect immediately as an urgency statute.

Appropriation: yes.

The people of the State of California do enact as follows:

SECTION 1. Section 101 of the Business and Professions Code is amended to read:

101. The department is comprised of:

(a) The Board of Dental Examiners of California.

(b) The Board of Medical Quality Assurance of the State of California.

(c) The State Board of Optometry.

(d) The California State Board of Pharmacy.

(e) The Board of Examiners in Veterinary Medicine.

(f) The State Board of Accountancy.

(g) The California State Board of Architectural Examiners.

(h) The State Board of Barber Examiners.

(i) The State Board of Registration for Professional Engineers and Land Surveyors.

(j) The Contractors' State License Board.

(k) The State Board of Cosmetology.

(l) The State Board of Funeral Directors and Embalmers.

(m) The Structural Pest Control Board.

(n) The Bureau of Home Furnishings and Thermal Insulation.

(o) The Board of Registered Nursing.

(p) The State Board of Dry Cleaning and Fabric Care.

(q) The Board of Chiropractic Examiners.

(r) The Board of Behavioral Science Examiners.

(s) The State Athletic Commission.

(t) The Cemetery Board.

(u) The State Board of Guide Dogs for the Blind.

(v) The Bureau of Collection and Investigative Services.

(w) The Certified Shorthand Reporters Board.

(x) The Board of Vocational Nurse and Psychiatric Technician

Examiners of the State of California.

(y) The California State Board of Landscape Architects.

(z) The Bureau of Repair Services.

(aa) The Bureau of Employment Agencies.

(ab) The Board of Osteopathic Examiners.

(ac) The Division of Investigation.

(ad) The Bureau of Automotive Repair.

(ae) The State Board of Registration for Geologists and Geophysicists.

(af) The State Board of Examiners of Nursing Home Administrators.

(ag) Any other boards, offices, or officers subject to its jurisdiction by law.

SEC. 2. Section 205 of the Business and Professions Code is amended to read:

205. There is in the State Treasury the Professions and Vocations Fund. The fund shall consist of the following special funds:

Accountancy Fund.

California State Board of Architectural Examiners' Fund.

Athletic Commission Fund.

State Board of Barber Examiners' Fund.

Cemetery Fund.

Contractors' License Fund.

Board of Cosmetology's Contingent Fund.

State Dentistry Fund.

Dry Cleaning and Fabric Care Fund.

State Funeral Directors and Embalmers' Fund.

Bureau of Home Furnishings and Thermal Insulation Fund.

State Board of Landscape Architects' Fund.

Contingent Fund of the Board of Medical Examiners.

Board of Nurse Examiners' Fund.

State Optometry Fund.

Pharmacy Board Contingent Fund.

Physical Therapy Fund.

Private Investigator and Adjuster Fund.

Professional Engineers' and Land Surveyors' Fund.

Consumer Affairs Fund.

Behavioral Science Examiners Fund.

Shorthand Reporters' Fund.

Structural Pest Control Fund.

Board of Veterinary Examiners' Contingent Fund.

Vocational Nurse Examiners' Fund.

For accounting and recordkeeping purposes, the Professions and Vocations Fund shall be deemed to be a single special fund, and each of the several special funds therein shall constitute and be deemed to be a separate account in the Professions and Vocations Fund. Each such account or fund shall be available for expenditure only for such purposes as are now or may hereafter be provided by law.

12. 20. 89 03:24 PM

SEC. 3. Section 19000 of the Business and Professions Code is amended to read:

19000. This chapter may be cited as the Home Furnishings and Thermal Insulation Act.

SEC. 4. Section 19004 of the Business and Professions Code is amended to read:

19004. (a) "Bureau" refers to the Bureau of Home Furnishings and Thermal Insulation.

(b) "Chief" refers to the chief of the bureau.

(c) "Inspector" refers to an inspector either employed by, or under contract to, the bureau.

(d) "Director" refers to the Director of Consumer Affairs.

(e) "Department" refers to the Department of Consumer Affairs.

(f) "Board" refers to the California Advisory Board of Home Furnishings.

SEC. 5. Section 19019 of the Business and Professions Code is amended to read:

19019. "Insulation material" means any material or combination of materials applied or installed within or contiguous to a roof, wall, ceiling, or floor of a building or structure, or contiguous to the surface of any appliance or its intake or outtake mechanism, for the purpose of reducing heat transfer and thus energy requirements for heating and cooling or reducing adverse temperature fluctuations of the building, room, appliance, or structure.

SEC. 6. Section 19022 of the Business and Professions Code is amended to read:

19022. (a) An "insulation manufacturer" is any person who produces insulation materials or a combination of materials which, when properly applied or installed without any alteration, dilution, or modification so as to affect the thermal or physical properties, performance, or intended use as supplied by the manufacturer, retards the transfer of heat or cold. "Insulation manufacturer" also includes any person who produces finished products whose function is insulation, including, but not limited to, insulated roof and wall panels, insulation kits, pipe insulation, flexible insulated ducting, spray applied insulation systems, or other similar material.

(b) Anyone who alters, substitutes, or recompounds any insulation product or material shall be considered to be the manufacturer of that particular insulation product.

(c) Any applicator, contractor, or fabricator of insulation materials, who installs, applies, or uses insulation materials for their intended use, without changing the thermal or physical properties of the insulation material, shall not be considered an insulation manufacturer, provided that the manufacturer of the insulation material has been licensed in accordance with this chapter.

(d) As used in subdivision (b) "alteration," "substitution," or "recompounding" includes:

(1) The attachment of facings or vapor barriers, including, but not

limited to, plastic, metal, felt, paper, or other similar materials.

(2) The compression, expansion, or reshaping of insulation materials.

(3) The addition of, or mixing with adhesives.

(4) In the case of spray applied or foamed in place insulation, any addition to, substitution of, or deletion from the chemical system provided by the insulation manufacturers.

(e) This chapter does not apply to the attaching of fiberglass insulation to metal duct work by a licensed contractor using industry-accepted adhesives and metal pins.

(f) This chapter does not apply to the attaching of fiberglass insulation to metal duct work by a licensed contractor using industry-accepted adhesives and metal pins.

SEC. 7. Section 19030 of the Business and Professions Code is amended to read:

19030. The Bureau of Home Furnishings in the department under the supervision and control of the chief is continued in existence as the Bureau of Home Furnishings and Thermal Insulation.

SEC. 8. Section 19034 of the Business and Professions Code is amended to read:

19034. With the approval of the director, the chief may adopt rules and regulations necessary for the administration of this chapter and declaring the policy of the bureau, and shall determine when any article, not otherwise clearly defined, is "upholstered furniture" or "bedding" or "insulation" under the provisions of this chapter.

SEC. 9. Section 19059.7 of the Business and Professions Code is amended to read:

19059.7. Every insulation manufacturer who sells insulation material in California shall hold an insulation manufacturing license issued by the bureau. Manufacturers having more than one manufacturing plant shall hold a single license for all plants under the same ownership producing the same generic type of insulation. The total annual license fee for any insulation manufacturer shall not exceed eight thousand dollars ($8,000).

SEC. 10. Section 19074 is added to the Business and Professions Code, to read:

19074. This chapter does not apply to the manufacturer of insulating window or door glass or products containing insulating window or door glass.

SEC. 11. Section 19161.5 of the Business and Professions Code is amended to read:

19161.5. The chief of the bureau, subject to the approval of the Director of Consumer Affairs, may in his or her discretion exempt items of upholstered furniture which are deemed not to pose a serious fire hazard from the fire retardant requirements of Section 19161.

SEC. 12. Section 19174 of the Business and Professions Code is

12. 20. 89 03:24PM P04

amended to read:

19174. All fees collected under this chapter shall be reported to the Controller and paid to the Treasurer and credited to the Bureau of Home Furnishings and Thermal Insulation Fund, to be expended only in carrying out this chapter.

SEC. 13. Section 19175 of the Business and Professions Code is amended to read:

19173. (a) All fees collected by the bureau relating to insulation standards shall be credited to the Bureau of Home Furnishings and Thermal Insulation Fund to be expended only for carrying out provisions of this chapter relating to insulation standards.

(b) All fees collected by the bureau relating to the home furnishings program shall be credited to the Bureau of Home Furnishings and Thermal Insulation Fund to be expended only for carrying out the provisions of this chapter relating to the home furnishings program.

SEC. 14. Section 19213.1 is added to the Business and Professions Code, to read:

19213.1. The bureau may require a licensee who sells or manufactures furniture and bedding products that are inspected and found not to be in compliance with this chapter, or any regulation implementing it, to pay those reasonable fees as are necessary to cover the costs of inspections and testing necessary to investigate and enforce compliance by those licenses. The range of fees for testing or inspection shall be fixed by the bureau in an amount not less than two hundred dollars ($200) and not more than five hundred dollars ($500) for each test or inspection.

SEC. 15. The heading of Chapter 10.5 (commencing with Section 25910) of Division 15 of the Public Resources Code is amended to read:

CHAPTER 10.5. INSULATION MATERIAL STANDARDS

SEC. 16. It is the intent of the Legislature that the inspection program in the Bureau of Home Furnishings and Thermal Insulation shall be reviewed and evaluated by the bureau, including the effect of decentralization of inspectors from the Division of Investigation. The bureau shall take appropriate action based on the results of this analysis to maintain the effectiveness of its activities.

SEC. 17. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs which may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, changes the definition of a crime or infraction, changes the penalty for a crime or infraction, or eliminates a crime or infraction.

SEC. 18. This act is an urgency statute necessary for the immediate preservation of the public peace, health, or safety within the meaning of Article IV of the Constitution and shall go into

immediate effect. The facts constituting the necessity are:

In order to add specificity, eliminate ambiguities, and otherwise clarify the the regulatory authority of the Bureau of Home Furnishings and Thermal Insulation over insulation materials and home furnishings, it is necessary that this act take effect immediately.

O

POE 12. 20. 89 03:24PM

UC INDUSTRIES, INC.
TECHNOLOGY CENTER
137 EAST AVE., P.O. BOX 423
TALLMADGE, OH 44278-0423
(216) 633-6735

JAN 0 8 1990

January 3, 1990

Mr. Bruce Nelson
Minnesota Insulation Standards Program
Energy Division
Minnesota Department of Public Service
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

RE: Proposed Revision of Minnesota Insulation Standards' Rules
Relating to Exterior Foundation Wall Insulation

Dear Mr. Nelson:

Thank you for your recent correspondence regarding the November 15th meeting at your office and for the draft of proposed amendments to the rules. Below are specific comments which I have regarding the proposed amendments to Section 7640.0140. Should you have any questions, please feel free to contact me at the letterhead address.

Sub-Part 1(A)

The section as worded does not state a position regarding retroactivity of the proposed amendments. As written in the current proposal, I assume that insulation products already approved for use below grade will continue to be so approved and will not be subject to the analysis described in the proposed new section. If the proposal is intended to be retroactive, then a reasonable time period for gathering and submitting the required data must be specified.

Sub-Part 1(A)

Specific characteristics for measuring winter severity at Minneapolis-St. Paul International Airport must be defined. Many criteria for measurement exists such as minimum temperature, minimum average temperature, number of days below freezing, freezing/thawing air temperature index, annual snowfall, heating degree days, etc. Unless specific criteria are defined, performance comparisons cannot be made and the proposed rules cannot be enforced. The characteristics specified to define "severity" should be related in some way to the below ground performance which is to be measured and regulated. None of the characteristics mentioned above has much, if any, impact on conditions more than a few inches below grade. Therefore, one must question if it is appropriate to link product performance to winter severity at the Minneapolis-St. Paul International Airport.

Sub-Part 1(A)

The proposed wording places no limit on allowable insulation R-value loss after conditioning for a period of one continuous year in service. Section (B) permits a maximum of 10% R-value loss based on laboratory conditioning and testing. Laboratory and in-service conditioning should be subject to the same performance criteria.

Sub-Part 1(B)

Conditioning criteria mentioned in Clauses 1, 2, 3, & 4 are not sufficiently defined. If performance is to be limited as proposed, then specific conditioning criteria must be established such as; How is water absorption to be measured? Two-hour or twenty-four hour immersion? How is the sample to be weighed after immersion? How many freeze/thaw cycles is the sample to be subjected to prior to physical property testing? Is freezing to occur in water, and thawing in air; or freezing in water, thawing in water? Is R-value measured on the same sample after freeze/thaw conditioning and moisture immersion or are test results reported on separate samples? Are tests to be performed on freshly manufactured samples or samples which are 180 days away from manufacture?

It is impossible to predict performance of an insulation product until conditioning criteria are established. Therefore, it is inappropriate to state a performance limitation (10% R-value loss) until conditioning criteria are established.

The FTC Rule states that the R-value of foam insulation products, when sold, are permitted to deviate below the advertised R-value by no more than 10%. The rule deals with truth in advertising and has absolutely nothing to do with in-place performance standards. Therefore, it is inappropriate to cite the FTC limitation as justification for in-situ performance requirements.

Clauses #1 & 4 are improperly referred to as "conditions to be considered" when actually they are physical properties, like R-value, which may deteriorate after conditioning. "Conditions to be considered" or "sample conditioning" includes processes such as freeze/thaw conditioning.

The entire (B) section needs to be reconsidered and validated via a concensus process if the State of Minnesota intends to place limitations on product performance. Many ASTM standards exist which have been validated via a concensus process and the State of Minnesota can save considerable time and effort by considering their use. Note, however, that the standards are primarily written to define physical property measurement and test methodology and do not create an in-situ product performance standard as is contemplated by the State of Minnesota.

Sub-Part 1(B)

The removal of irrelevant items such as "flexural strength" and "vapor drives" is appropriate.

Sub-Part 1(D)

The term "substantially penetrate" should be defined.

Sub-Part 2(B), (C)

These sections should be eliminated from the proposed rules. Good construction practice and, presumably, local building codes require drainage per CABO Section R-305 and waterproofing/dampproofing per CABO Section R-306. Drainage, waterproofing and dampproofing as specified in the CABO One & Two Family Dwelling Code are considered good construction practice and should be included in the construction of a foundation regardless of whether the foundation is insulated or not.

Sub-Part 2(E)

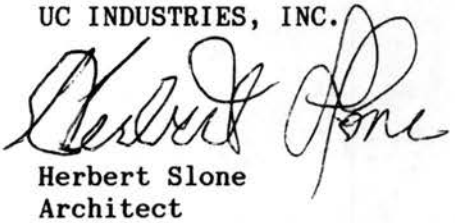
The section should read, "ambient temperature range permitted during application."

Sub-Part 3(B)

The peformance expectations of "a protective coating" should be defined or virtually any covering with any performance properties will be acceptable.

Yours truly,

UC INDUSTRIES, INC.



Herbert Slone
Architect
Manager, Construction Technology

HS:vlw

cc: Pat Rynd
Roy Divis

The Society of the
Plastics Industry, Inc.

Polyurethane Foam Contractors Division

1275 K Street N.W. – Suite 400
Washington, DC 20005
202-371-5200 800-523-6154
January 11, 1990

Bruce Nelson, Senior Engineer
Energy Division
MN Department of Public Service
900 American Center
150 E. Kellogg Boulevard
St. Paul, MN 55101

RE: Minnesota Residential Insulation Standards Program

Dear Mr. Nelson:

I have received the recent revision of the Insulation Standards rules, Chapter 7640, dated December 29, 1989.

Under 7640.0120 DEFINITIONS, Subparagraph 17., "Manufacturer of insulation," line 27, should there not be a "D.", prior to the changed text we discussed which reads "An applicator, contractor, or fabricator of insulation materials who installs, applies, or uses insulation materials for their intended uses, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation"?

The members of the Polyurethane Foam Contractors Division of the Society of the Plastics Industry, Inc., thank you for assigning them the proper category of the insulation industry and by not defining the applicator, contractor, as a "manufacturer."

I am looking forward to receiving a copy of the proposed rule revisions in mid February.

If you have any questions, please call me at 800-523-6154.

Sincerely,

Daniel L. Benedict
Assistant Division Manager
SPI/PFCD

DLB:pmc
cc: G. Sievert
R. Sherman
C. Sherek
P. Toner
J. Pattock

A	B
7075.1070	7077.0550
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7075.1115	7077.0610
7075.1120	7077.0615
7075.1125	7077.0620
7075.1130	7077.0625
7075.1135	7077.0630
7075.1140	7077.0640
7075.1145	7077.0645
7075.1150	7077.0650
7075.1155	7077.0655
7075.1160	7077.0660
7075.1400	7077.0700
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7075.1470	7077.0735
7075.1480	7077.0740
7075.1490	7077.0745
7075.1500	7077.0750
7075.1510	7077.0755
7075.1520	7077.0760
7075.1530	7077.0765
7075.2505	7077.0400
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Department of Public Service

Proposed Permanent Rules Relating to Insulation Standards

Notice of Intent to Amend Rules Without a Public Hearing

NOTICE IS HEREBY GIVEN that the Minnesota Department of Public Service intends to adopt amendments to *Minnesota Rules* Chapter 7640, 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 325F.20, subd. 1 and 325F.21, subd. 1 and 2.

All persons have 30 days in which to submit comment in support of or in opposition to any part or subpart 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.

Comments or written requests for a public hearing must be submitted to:

Bruce Nelson, Senior Engineer
Department of Public Service, Energy Division
900 American Center Building
150 East Kellogg Boulevard
St. Paul, MN 55101
phone (612) 297-2313 fax (612) 297-1959

Comments or requests for a public hearing must be received no later than 4:00 p.m., March 29, 1990.

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.

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 address listed above.

Dated: 7 February 1990

Tony Perpich, Commissioner
Department of Public Service

Rules as Proposed

7640.0120 DEFINITIONS.

Subpart 1. **Applicability.** For the purposes of this chapter, the following definitions of terms apply. Technical, scientific, and engineering terms undefined by this part have the meanings given in ~~the ASHRAE Handbook of Fundamentals or in~~ ASTM C ~~168-88a~~ 168, Standard Definitions of Terms Relating to Thermal Insulation Materials.

[For text of subps 2 to 16, see M.R.]

Subp. 17. **Manufacturer of insulation.** "Manufacturer of insulation" means:

A. an industry member who produces insulation materials in their final form for distribution or sale to intermediate and ultimate consumers ~~or who is a urea formaldehyde foam or spray urethane foam insulation manufacturer of the component resins and catalysts used for in situ foaming.~~;

B. an industry member who produces insulation materials or installation instructions for a product the manufacture of which is completed at the jobsite; or

C. an installer of an insulation product the manufacture of which is completed at the jobsite who prepares or modifies the product's installation instructions.

An applicator, contractor, or fabricator of insulation materials who installs, applies, or uses insulation materials for their intended uses, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation.

[For text of subps 18 to 26, see M.R.]

7640.0130 INSULATION MATERIALS STANDARDS.

[For text of subpart 1, see M.R.]

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.

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

[For text of item A, see M.R.]

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:

[For text of subitems (1) to (4), see M.R.]

(5) Insulation must have flammability characteristics in accordance with the ~~Uniform Building Code, 1985 Edition~~ UBC, 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) One of the following ~~ASTM~~ test methods must be used: ASTM C ~~177-85~~ 177, ASTM C ~~236-87~~ 236, ASTM C ~~518-85~~ 518, or ASTM C ~~976-82~~ 976. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification. Thermal conductivity must only be measured at a mean temperature of 75 degrees Fahrenheit.

(2) R-value testing must be performed at the insulation's representative thickness, and be consistent with the requirements of ~~the United States Federal Trade Commission~~ Code of Federal Regulations, title 16, part 460. Unit R per inch must be derived from R-value testing performed to its representative thickness.

(3) For ~~polyurethane, polyisocyanurate, and extruded polystyrene, in accordance with the FTC R-value rule, section 460.5~~ foam plastic insulations that incorporate blowing agents other than air or pentane, R-value tests must be done on samples that have been treated to fully reflect the effect of aging on the product's R-value. If criteria for treating samples to reflect the effect of aging are not specified within a material specification, the samples must be treated for either 90 days at 140 ± 2 degrees Fahrenheit (60 ± 1 degree centigrade) or six months at ambient conditions prior to conditioning and thermal resistance testing. During treating, air circulation must be provided so that all surfaces of the insulation are exposed to the surrounding environmental conditions.

[For text of subitems (4) to (6), see M.R.]

[For text of item D, see M.R.]

Subp. 3. **Cellulose insulation.**

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

(1) The product must comply with ASTM C ~~739-86~~ 739, 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, Code of Federal Regulations, title 16, part 1209 subpart B.

[For text of subitems (2) and (3), see M.R.]

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

[For text of subitems (1) and (2), see M.R.]

(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~~ subpart 2, item C, 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~~ 605. 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 combustion must be ~~tested for~~ in accordance with ASTM C ~~739-86, part 5~~ 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. ~~Values achieved must not exceed those established by the CPSC.~~ If the product in loose-fill form meets the criteria for critical radiant flux, then a test of the product in spray-applied form for critical radiant flux is unnecessary.

(6) Moisture absorption must be determined in accordance with section ~~15~~ 14 of ASTM C ~~553-70 reapproved 1977~~ 553. 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~~ have a minimum adhesive/cohesive bond strength per unit area of five times the weight of the material under the test plate when tested in accordance with ASTM E 736.

~~(8) Test procedures in subitem (7)~~ Exception: Testing and compliance with bond strength criteria 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~~ intended only for installation in enclosed cavities, and the product is identified as intended only for those installations.

(8) Corrosion must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for corrosion, then a test of the product in spray-applied form is unnecessary.

(9) Odor emission must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for odor emission, then a test of the product in spray-applied form is unnecessary.

(10) Fungi resistance must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for fungi resistance, then a test of the product in spray-applied form is unnecessary.

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

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

B. Mineral fiber in batts and blankets form must comply with ASTM C ~~665-86~~ 665, 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:~~ comply with ASTM C 612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

~~(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 2.~~

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

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

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

B. Extruded Polystyrene must comply with ASTM C ~~578-87A~~ 578, 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 ~~591-85~~ 591, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

Exception: Aged R-value must be 5.6 per inch or greater at 75 degrees Fahrenheit.

[For text of item D, see M.R.]

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

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

[For text of subitem (2), see M.R.]

~~(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.~~

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

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.

G. Rigid cellular phenolic insulation must comply with ASTM C 1126, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

H. Foam plastic insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Foam Plastic~~, October, 1982,~~ for the intended application~~,~~ meets the ~~Minnesota testing standards in this subpart~~ requirements of part 7640.0130.

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)~~ 549, Standard Specification for Perlite Loose Fill Insulation.

[For text of subitem (2), see M.R.]

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

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

[For text of subitem (2), see M.R.]

Subp. 7. **Reflective foil insulation.**

A. The following requirements apply to reflective foil insulation:

[For text of subitem (1), see M.R.]

(2) Except for radiant barrier products, thermal performance for single or multiple sheet sections must be determined according to ASTM C ~~976-82~~ 976 or ASTM C ~~236-87~~ 236. 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 and the associated air spaces.

[For text of subitems (3) to (6), see M.R.]

B. Reflective insulation systems with more than one sheet must be tested according to ASTM C ~~976-82~~ 976 or ASTM C ~~236-87~~ 236 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. The tests must be done at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit.

C. A single sheet reflective insulation ~~systems~~ system must be tested ~~with~~ according to ASTM E 408 ~~or another test method that provides comparable results. This tests the~~ to determine its emissivity ~~of the foil (its power to radiate heat)~~. To get the R-value for ~~a specific~~ the measured emissivity ~~level,~~ and a specific 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)~~ Table 2 in chapter 22 of the ASHRAE Handbook of Fundamentals must be used. The R-value shown for 50 degrees Fahrenheit must be used, with a temperature differential of 30 degrees Fahrenheit.

[For text of item D, see M.R.]

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 requirements in items A to F.

[For text of item A, see M.R.]

B. ~~Results of the~~ Water or moisture absorption ~~test~~ must be ~~reported~~ determined according to one of the following methods:

(1) ASTM C 272;

(2) ASTM C 553, section 14;

(3) ASTM C 739, section 12; or

(4) ASTM D 2842.

[For text of items C and D, see M.R.]

E. The ~~initial report as required by part 7640.0150, subpart 2, must include a description of other tests applied to the~~ product must not produce a detectable odor that is classified as objectionable and strong or very strong by two or more panel members when tested in accordance with ASTM C 739, section 13.

[For text of item F, see M.R.]

7640.0140 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. ~~**Application testing**~~ **Physical requirements for insulation materials designed for exterior, underground ~~insulation~~ use.**

A. The insulation ~~by itself or as part of a system~~, installed according to the manufacturer's recommendations, must be in service tested ~~in~~ at either a testing facility ~~designed to duplicate actual underground conditions~~ or an actual house for a period of one continuous year. The testing environment must ~~reflect the extremes of~~ have historical winter weather~~, moisture~~ conditions no less than 8,000 Fahrenheit heating degree days, and soil conditions with drainage characteristics classified as poor in Table 7-4 of the Building Foundation Design Handbook. 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~~.

Exception: In-service testing is not necessary if the manufacturer demonstrates that a product of the same material specification with equal or less durability in this application has been successfully in-service tested. The manufacturer shall demonstrate the equal or less durability test by comparing laboratory test results of the physical characteristics listed in part 7640.0140, subpart 1, item B, clauses (1) to (4).

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~~ manufacturer shall demonstrate that the product ~~for~~ will exhibit less than a ten percent loss in R-value when installed underground ~~use must be based on the most recent applicable ASTM tests or any other tests that are available that give consideration to each~~ and the combined effect of ~~the following~~ assumed conditions on the following physical characteristics are considered:

[For text of subitems (1) and (2), see M.R.]

(3) soil compatibility; and

(4) ~~flexural strength or compression; and~~ compressive strength

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

~~D.~~ The ~~initiator~~ manufacturer ~~seeking the listing~~ shall ~~select~~ state the ~~appropriate tests that best address the~~ assumed conditions ~~stated~~ in ~~item C~~ the initial report filed according to part 7640.0150, subpart 2.

~~E~~ C. An association ~~or trade representative~~ may ~~initiate a product's listing~~ conduct tests and prepare a filing for exterior below grade application of a type of product on behalf of its constituency. The association shall ~~submit representative samples for~~ conduct testing ~~and certify to the department which manufacturers within its constituency the samples are representative of~~ according to subpart 1, item A, on at least three specimens of the product. The association ~~must have an internal certification procedure to determine constituency conformity to~~ shall demonstrate that the manufacturers' products for which the tests and filing would apply are representative ~~samples submitted for testing~~ of the tests and filing performed by the association.

~~F~~ D. ~~A summary of test results for item B must be submitted to the department~~ Mineral fiber board for exterior below ground application must be manufactured to facilitate downward drainage.

Subp. 2. **Requirements for installation instructions for underground use.** Written instructions on underground use of insulation must~~, at a minimum,~~ contain instructions or information for vertical and, if recommended, horizontal application regarding:

A. ~~optimal~~ application techniques;

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

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

D. ~~varying soil and soil moisture conditions~~ chemical resistance information;

E. ambient temperature ~~effects on~~ range permitted during application; and

F. ~~optimal~~ backfill techniques and backfill materials for ~~protection from physical damage; and~~ prevention of damage to the insulation material and below grade protective coating.

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.

~~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~~ Installation requirements for exterior above ground and underground ~~installation~~ use.** ~~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~~ grade must be covered with an exterior wall finish to protect the insulation from ~~ultraviolet~~ deterioration due to sunlight, ~~moisture absorption, freeze thaw durability, air erosion, and general weather conditions~~ and physical abuse.

~~C~~ B. 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~~ C. 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~~ include exterior drainage, as defined in part 7640.0120.

[For text of subp 4, see M.R.]

7640.0150 REPORTING REQUIREMENTS.

[For text of subpart 1, see M.R.]

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:

[For text of items A to E, see M.R.]

F. results of initial tests, as required by part 7640.0130, identifying tests performed, name of laboratory, testing dates, and test results. The report for "other" insulation products regulated by part 7640.0130, subpart 8, must also include the products' Material Safety Data Sheet;

[For text of items G to I, see M.R.]

[For text of subp 3, see M.R.]

7640.0160 APPLICATION AND INSTALLATION STANDARDS.

Subpart 1. **Applicability.** Industry members, including industry members who offer insulation installation services for new and existing 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.~~

An installer of an insulation the manufacture of which is completed at the jobsite who significantly alters the manufacturer's installation instructions becomes a manufacturer for the purpose of *Minnesota Rules*, chapter 7640.

Subp. 2. **Application and inspection.**

A. Industry members installing insulation shall follow manufacturer's written application instructions.

~~In attic areas where insulation is to be installed, the installer shall comply with part 7640.0110, subpart 5.~~

B. When installing insulation in attic areas, the installer shall locate flush and recessed light fixtures, and other heat producing appurtenances, and shall comply with National Electrical Code, section 410-66, subsections A and B.

C. Installation of cellulosic and mineral fiber in loose-fill form must ~~comply~~ be in conformance with ASTM standard C ~~1015-81~~ 1015, including part 7.7.2.

D. Installation of reflective insulation must ~~comply~~ be in conformance with ASTM standard C ~~727-72 (reapproved 1978)~~ 727.

E. Installers of urea formaldehyde foam insulation shall conform with *Minnesota Statutes*, section 325F.18, and *Minnesota Rules*, parts 4620.1600 to 4620.2100.

F. State and local agencies using appropriated federal funds and persons contracting with state or local agencies with respect to work performed under the contracts shall comply with Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Products Containing Recovered Materials.

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

[For text of items A and B, see M.R.]

C. ~~Urea formaldehyde foam insulation installation must conform with *Minnesota Statutes*, section 325F.18 and *Minnesota Rules*, part 4620.2100~~ Installation instructions for products whose manufacture is completed at the jobsite must address the quality assurance program required by part 7640.0130, subpart 2, item D; ambient temperature during application; and actions necessary to facilitate curing or drying.

7640.0180 INCORPORATIONS BY REFERENCE AND CITATIONS.

[For text of subpart 1, see M.R.]

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

[For text of items A to C, see M.R.]

D. ASTM C 272-53 (reapproved 1980), Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.

E. ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

~~E~~ F. ASTM C 518-85, Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

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

~~G~~ H. ASTM C 553-70 (reapproved 1977), Standard Specification for Mineral Fiber Blanket and Felt Insulation (Industrial Type).

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

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

~~J~~ K. ASTM C 612-83, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

L. ASTM C ~~665-86~~ 665-88, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~K~~ M. ASTM C 727-72 (reapproved 1978), Standard Recommended Practice for Use of Reflective Insulation in Building Constructions.

~~L~~ N. ASTM C ~~739-86~~ 739-88, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

~~M~~ O. ASTM C ~~764-84~~ 764-88, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

~~N~~ P. ASTM C 951-83, Standard Specification for Urea-Formaldehyde-Based, Foam in Place Insulation.

~~O~~ Q. ASTM C 976-82, Standard Test Method for Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box.

~~P~~ R. ASTM C ~~1014-84~~ 1014-88, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

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

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.

~~R~~ S. ASTM C 1015-84, Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation.

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

~~T~~ U. ASTM C 1126-89, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

V. ASTM D 2842-69 (reapproved 1975), Standard Test Method for Water Absorption of Rigid Cellular Plastics.

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

X. ASTM E 408-71 (reapproved 1985), Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection Meter Techniques.

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

Z. ASTM E 736-86, Test for Cohesion/Adhesion of Sprayed Fire Resistive Materials Applied to Structural Members.

[For text of subp 2a, see M.R.]

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

A. ASHRAE Handbook of Fundamentals, (~~1981~~ 1989 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (~~Technical Reference Book~~), chapter 22, tables 1 and 2.

[For text of item B, see M.R.]

C. ~~Federal Trade Commission requirements in~~ Code of Federal Regulations, title 16, part 460, Labeling and Advertising of Home Insulation.

[For text of items D to J, see M.R.]

K. Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Insulation Products Containing Recovered Materials.

L. Underground Space Center, University of Minnesota; Building Foundation Design Handbook; Prepared for Oak Ridge National Laboratory; May 1988, Table 7-4.

[For text of subp 4, see M.R.]

REPEALER. *Minnesota Rules*, part 7640.0110, subpart 5, is repealed.

Adopted Rules

The adoption of a rule becomes effective after the requirements of Minn. Stat. §14.14-14.28 have been met and five working days after the rule is published in *State Register*, unless a later date is required by statutes or specified in the rule.

If an adopted rule is identical to its proposed form as previously published, a notice of adoption and a citation to its previous *State Register* publication will be printed.

If an adopted rule differs from its proposed form, language which has been deleted will be printed with strikeouts and new language will be underlined. The rule's previous *State Register* publication will be cited.

An emergency rule becomes effective five working days after the approval of the Attorney General as specified in Minn. Stat. §14.33 and upon the approval of the Revisor of Statutes as specified in §14.36. Notice of approval by the Attorney General will be published as soon as practicable, and the adopted emergency rule will be published in the manner provided for adopted rules under §14.18.

Department of Labor and Industry

Adopted Permanent Rules Relating to OSHA Update

Rules as Adopted

5205.0010 ADOPTION OF FEDERAL OCCUPATIONAL SAFETY AND HEALTH STANDARDS BY REFERENCE.

[For text of subpart 1, see M.R.]

Subp. 2. **Part 1910.** Part 1910: Occupational Safety and Health Standards as published in Volume 43, No. 206 of the *Federal Register* on October 24, 1978, and corrected in Volume 43, No. 216 on November 7, 1978, which incorporates changes, additions, deletions, and corrections made up to November 7, 1978; and subsequent changes made prior to December 6, 1989:

COMMENTS RECEIVED PURSUANT TO NOTICE
OF INTENT TO ADOPT RULE AMENDMENTS WITHOUT
A PUBLIC HEARING

ROBERT W. ANDERSON & ASSOCIATES, INC.

ENGINEERING CONSULTANTS

441 Intrepid Court
Boulder City, Nevada 89005
(702) 293-3474

MAR 05 1990

February 27, 1990

Bruce Nelson
Energy Division
900 American Center
150 East Kellogg Blvd.
St. Paul, MN 55101

Dear Bruce:

Many thanks for keeping me on your mailing list on the Thermal Insulation Standards. I have listed a few comments on the proposed revisions dated February 21, 1990 for your consideration.

7640.0120 Sub 1, and 7640.0160 Sub 1.

"Applicability" remains limited to only residential buildings. I suggest your office seriously consider eventually extending the standards to commercial and industrial buildings. These buildings offer a potential for significant energy conservation savings and represent a considerable insulation market. Based on my experience, substandard products are sometimes dumped or otherwise used in the commercial/industrial area; the prime example being the flat roof applications.

7640.0130 Sub 2, C3.

The requirements for aging plastic foams make no mention of the samples surface conditions, specifically the presence or absence of metallic facings or "skins" on the materials surfaces. It is well known that the aging or diffusion of gases are retarded by such surface conditions. A specially fabricated test sample with a good skin coating would not necessarily represent production materials that have sliced surfaces.

7640.0130 Sub 3, B3

It should be clearly defined that the R-value of the spray-applied product should be determined on spray-applied samples at the application density. This is not clear in the text. Some people would tend to use the super low loose-fill density values.

There is a need to define the term "spray-applied" cellulose. Does it or does it not include the following?

- material applied to side wall with small amounts of water. The material may or may not include adhesive.
- material applied to attic areas with small amounts of water. The material may or may not include adhesive.

In the above cases, the applicator is changing the characteristics, applied density and composition of the insulation by adding water and/or adhesive. At that point, does the contractor become the "manufacturer"?

7640.0130 Sub 3, B5.

The CRF test on the loose-fill product should be conducted at the spray-applied density, not the loose-fill density. Likewise, there is no mention of a smoldering test. If these products are to be applied in walls and attics, it should be treated with the same safety rationale as loose-fill. More important, the spray-applied products are at a higher density than the loose-fill and have a much greater propensity to smolder than the lower density loose-fill material. In most cases, a loose-fill may pass the smolder test, but when used as a spray-applied product at higher densities, the material will fail. Since most safety problems related to cellulose are smolder combustion, this point should be carefully considered. In considering the above comments, see the preceding comments regarding the definition of "spray-applied".

7640.0130 Sub 3, B10.

If a contractor adds a starch adhesive to some loose-fill, the product may no longer pass the fungi test. The test should be conducted on the final product.

7640.0140 Sub 2, G.

I believe it would be a mistake to delete this section. There are too many unknowns in the testing and evaluation of foundation insulation products to rely on only one test data point for acceptance. This opens the door wide for all kinds of foundation insulations that manage to get some laboratory to write a letter of certification. I still believe the manufacturer needs to make some statement of usability and performance of his product, and let the marketplace chose the products accordingly.

If you may want to discuss any of the above points, please feel free to call me.

Aside from the above mundane matters, life in Nevada is treating us as good as we had hoped. I will be starting up soon on the second phase of work for DOE/ORNL on the testing and evaluation of Radiation Control Coatings (sometimes called white paint). Some of this work will also support my efforts to write the ASTM standard for RCCs, however, for the most part, the standards process is moving very slowly without any direct support from manufacturers or governmental groups (I'm still working on Ray Hillier but so far no support).

This summer, we will trade the dry heat of Nevada for the wet heat of Burma. I'll be working June, July and the first half of August setting up a national industrial energy conservation program under the sponsorship of a project by the World Bank. The prime contractor for the project is a consulting firm in Vermont. I'll let you know about fungi resistant materials when we get back.

We may or may not be at ASTM C-16 meeting in San Fransisco this April; I'm beginning to seriously object to the excessive hotel/meal costs of their selected sites. It is too high a penalty to pay for the opportunity to donate your time. Maybe we have become spoiled by the much lower rates in Vegas (sans gambling).

Let me hear from you, and if I can be of service, let me know that too. Any good reports available lately?

Best regards,

Bob Anderson

Insulation Group

CertainTeed Corporation
750 E. Swedesford Road
PO Box 860
Valley Forge, PA 19482-0105
215 341-7000

CertainTeed

MAR 05 1990

February 28, 1990

Mr. Bruce Nelson
Minnesota Department
of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Mr. Nelson:

We have read the proposed revisions to the Minnesota Residential Insulation Standards and have only one comment to make. At the top of page 4 it states there is no need to test a product in the spray applied form if the loose fill form meets the criteria for critical radiant flux. Might not the spray applied form have an adhesive that has a higher flame spread rating than the loose fill product? We would think that a separate test would be required if it is not known that the adhesive flame spread rating is equal to or less than that of the loose fill form.

Very truly yours,

John J. DiCesare, Jr.
Supervisor, Codes & Standards
Residential Insulation

JJDi.ne

INTERNATIONAL CELLULOSE CORPORATION
Innovative Fiber Technology

March 1, 1990

Bruce Nelson, Senior Engineer
Department of Public Service, Energy Division
900 American Center Building
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

Re: Residential Thermal Insulation Standards

Dear Bruce:

Good Job!!

Thanks for the opportunity to comment.

Regards,

INTERNATIONAL CELLULOSE CORPORATION

Harold Boyer

Harold Boyer
V.P. Technical Services

HB/ps

P.O. BOX 450006 • HOUSTON, TX. 77245-0006 • 713/433-6701 • TWX 910 881-3719 • FAX 713 433-2029

MINNESOTA
Department of Public Service

Administrative Office
(612) 296-7107

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St. Paul, Minnesota 55101

RESIDENTIAL THERMAL INSULATION STANDARDS

Notice of Intent to Amend Rules Without a Public Hearing

Notice is hereby given that the Minnesota Department of Public Service intends to adopt amendments to Minnesota Rules Chapter 7640, 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.

All persons have 30 days in which to submit comment in support of or in opposition to any part or subpart 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 Minn. Stat., sections 14.131 to 14.20.

Comments or written requests for a public hearing must be submitted to:

Bruce Nelson, Senior Engineer
Department of Public Service, Energy Division
900 American Center Building
150 East Kellogg Boulevard
St. Paul, MN 55101
phone (612) 297-2313 fax (612) 297-1959.

Comments or requests for a public hearing must be received no later than 4:00 p.m., March 29, 1990.

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.

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 address listed above.

Tony Perpich, Commissioner
Department of Public Service

Feb 7, 1990
Dated

Department of Public Service

Proposed Permanent Rules Relating to Insulation Standards

Rules as Proposed

7640.0120 DEFINITIONS.

Subpart 1. **Applicability.** For the purposes of this chapter, the following definitions of terms apply. Technical, scientific, and engineering terms undefined by this part have the meanings given in ~~the ASHRAE Handbook of Fundamentals or in~~ ASTM C ~~168-88a~~ 168, Standard Definitions of Terms Relating to Thermal Insulation Materials.

[For text of subps 2 to 16, see M.R.]

Subp. 17. **Manufacturer of insulation.** "Manufacturer of insulation" means:

A. an industry member who produces insulation materials in their final form for distribution or sale to intermediate and ultimate consumers ~~or who is a urea formaldehyde foam or spray urethane foam insulation manufacturer of the component resins and catalysts used for in situ foaming~~;

B. an industry member who produces insulation materials or installation instructions for a product the manufacture of which is completed at the jobsite; or

C. an installer of an insulation product the manufacture of which is completed at the jobsite who prepares or modifies the product's installation instructions.

An applicator, contractor, or fabricator of insulation materials who installs, applies, or uses insulation materials for their intended uses, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation.

[For text of subps 18 to 26, see M.R.]

7640.0130 INSULATION MATERIALS STANDARDS.

[For text of subpart 1, see M.R.]

Subp. 2. **General testing requirements.** General testing

Approved by Revisor

requirements for regulated thermal insulation materials in this part are as follows:

[For text of item A, see M.R.]

B. All regulated thermal insulation materials must be tested for compliance with the standards in this part ~~by April 27, 1986. Testing procedures are~~ as follows:

[For text of subitems (1) to (4), see M.R.]

(5) Insulation must have flammability characteristics in accordance with the ~~Uniform Building Code, 1985 Edition~~ UBC, 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) One of the following ~~ASTM~~ test methods must be used: ASTM C ~~177-85~~ 177, ASTM C ~~236-87~~ 236, ASTM C ~~518-85~~ 518, or ASTM C ~~976-82~~ 976. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification. Thermal conductivity must only be measured at a mean temperature of 75 degrees Fahrenheit.

(2) R-value testing must be performed at the insulation's representative thickness, and be consistent with the requirements of ~~the United States Federal Trade Commission~~ Code of Federal Regulations, title 16, part 460. Unit R per inch must be derived from R-value testing performed to its representative thickness.

(3) For ~~polyurethane, polyisocyanurate, and extruded polystyrene, in accordance with the FTC R value rule, section 460.5~~ foam plastic insulations that incorporate blowing agents other than air or pentane, R-value tests must be done on samples that have been treated to fully reflect the effect of aging on the product's R-value. If criteria for treating samples to reflect the effect of aging are not specified within a material specification, the samples must be treated for either 90 days at 140 ±2 degrees Fahrenheit (60 ±1 degree centigrade)

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or six months at ambient conditions prior to conditioning and thermal resistance testing. During treating, air circulation must be provided so that all surfaces of the insulation are exposed to the surrounding environmental conditions.

[For text of subitems (4) to (6), see M.R.]

[For text of item D, see M.R.]

Subp. 3. **Cellulose insulation.**

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

(1) The product must comply with ASTM C ~~739-86~~ 739, 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, Code of Federal Regulations, title 16, part 1209 subpart B.

[For text of subitems (2) and (3), see M.R.]

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

[For text of subitems (1) and (2), see M.R.]

(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~~ subpart 2, item C, 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~~ 605. 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 combustion must be ~~tested for~~ in accordance with ASTM C ~~739-86, part 5~~ 739, or the CPSC Interim Safety Standard for Cellulose

Approved by Revisor _____

Insulation, Code of Federal Regulations, title 16, part 1209. ~~Values-achieved-must-not-exceed-those-established-by-the CPSC.~~ If the product in loose-fill form meets the criteria for critical radiant flux, then a test of the product in spray-applied form for critical radiant flux is unnecessary.

(6) Moisture absorption must be determined in accordance with section ~~15~~ 14 of ASTM C ~~553-70-reapproved 1977~~ 553. 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~~ have a minimum adhesive/cohesive bond strength per unit area of five times the weight of the material under the test plate when tested in accordance with ASTM E 736.

~~(8)-Test-procedures-in-subitem-(7)~~ Exception: Testing and compliance with bond strength criteria 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~~ intended only for installation in enclosed cavities, and the product is identified as intended only for those installations.

(8) Corrosion must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for corrosion, then a test of the product in spray-applied form is unnecessary.

(9) Odor emission must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for odor emission, then a test of the product in spray-applied form is unnecessary.

(10) Fungi resistance must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose

Approved by Revisor _____

Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for fungi resistance, then a test of the product in spray-applied form is unnecessary.

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

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

B. Mineral fiber in batts and blankets form must comply with ASTM C 665-~~86~~ 665, 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:~~ comply with ASTM C 612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

~~(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 2.~~

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

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

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

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

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Supplementary Requirements.

C. Unfaced polyurethane and polyisocyanurate in board form must comply with ASTM C ~~591-85~~ 591, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

Exception: Aged R-value must be 5.6 per inch or greater at 75 degrees Fahrenheit.

[For text of item D, see M.R.]

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

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

[For text of subitem (2), see M.R.]

~~(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.~~

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

G. Rigid cellular phenolic insulation must comply with ASTM C 1126, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

H. Foam plastic insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Foam Plastic, ~~October, 1982,~~ for the intended application, meets the ~~Minnesota testing standards in this subpart~~ requirements of part 7640.0130.

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)~~ 549, Standard Specification for Perlite Loose Fill Insulation.

[For text of subitem (2), see M.R.]

Approved by Revisor _____

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

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

[For text of subitem (2), see M.R.]

Subp. 7. **Reflective foil insulation.**

A. The following requirements apply to reflective foil insulation:

[For text of subitem (1), see M.R.]

(2) Except for radiant barrier products, thermal performance for single or multiple sheet sections must be determined according to ASTM C ~~976-82~~ 976 or ASTM C ~~236-87~~ 236. 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 and the associated air spaces.

[For text of subitems (3) to (6), see M.R.]

B. Reflective insulation systems with more than one sheet must be tested according to ASTM C ~~976-82~~ 976 or ASTM C ~~236-87~~ 236 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. The tests must be done at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit.

C. A single sheet reflective insulation **systems**

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system must be tested ~~with~~ according to ASTM E 408 ~~or another test method that provides comparable results. This tests the~~ to determine its emissivity ~~of the foil (its power to radiate heat)~~. To get the R-value for ~~a specific~~ the measured emissivity ~~level~~, and a specific 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)~~ Table 2 in chapter 22 of the ASHRAE Handbook of Fundamentals must be used. The R-value shown for 50 degrees Fahrenheit must be used, with a temperature differential of 30 degrees Fahrenheit.

[For text of item D, see M.R.]

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 requirements in items A to F.

[For text of item A, see M.R.]

B. ~~Results of the~~ Water or moisture absorption ~~test~~ must be ~~reported~~ determined according to one of the following methods:

(1) ASTM C 272;

(2) ASTM C 553, section 14;

(3) ASTM C 739, section 12; or

(4) ASTM D 2842.

[For text of items C and D, see M.R.]

E. The ~~initial report as required by part 7640.0150, subpart 2, must include a description of other tests applied to the~~ product must not produce a detectable odor that is classified as objectionable and strong or very strong by two or more panel members when tested in accordance with ASTM C 739, section 13.

[For text of item F, see M.R.]

7640.0140 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. **~~Application testing~~ Physical requirements for insulation materials designed for exterior,**

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underground ~~insulation~~ use.

A. The insulation ~~by-itself-or-as-part-of-a-system,~~ installed according to the manufacturer's recommendations, must be in service tested ~~in~~ at either a testing facility ~~designed-to-duplicate-actual-underground-conditions~~ or an actual house for a period of one continuous year. The testing environment must ~~reflect-the-extremes-of~~ have historical winter weather~~,~~ ~~moisture~~ conditions no less than 8,000 Fahrenheit heating degree days, and soil conditions with drainage characteristics classified as poor in Table 7-4 of the Building Foundation Design Handbook. 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~~.

Exception: In-service testing is not necessary if the manufacturer demonstrates that a product of the same material specification with equal or less durability in this application has been successfully in-service tested. The manufacturer shall demonstrate the equal or less durability test by comparing laboratory test results of the physical characteristics listed in part 7640.0140, subpart 1, item B, clauses (1) to (4).

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~~ manufacturer shall demonstrate that the product ~~for~~ will exhibit less than a ten percent loss in R-value when installed underground ~~use-must-be-based-on-the-most-recent-applicable-ASTM-tests-or-any-other-tests-that-are-available-that-give-consideration-to-each~~ and the combined effect of ~~the-following~~ assumed conditions on the following physical characteristics are considered:

[For text of subitems (1) and (2), see M.R.]

(3) soil compatibility; and

(4) ~~flexural-strength-or-compression,-and~~ compressive strength

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

~~D.~~ The ~~initiator~~ manufacturer ~~seeking the listing~~ shall ~~select~~ state the ~~appropriate tests that best address~~ ~~the~~ assumed conditions ~~stated~~ in ~~item E~~ the initial report filed according to part 7640.0150, subpart 2.

~~E~~ C. An association ~~or trade representative~~ may ~~initiate a product's listing~~ conduct tests and prepare a filing for exterior below grade application of a type of product on behalf of its constituency. The association shall ~~submit representative samples for~~ conduct testing ~~and certify to the department which manufacturers within its constituency the samples are representative of~~ according to subpart 1, item A, on at least three specimens of the product. The association ~~must have an internal certification procedure to determine constituency conformity to~~ shall demonstrate that the manufacturers' products for which the tests and filing would apply are representative ~~samples submitted for testing~~ of the tests and filing performed by the association.

~~F~~ D. ~~A summary of test results for item B must be submitted to the department~~ Mineral fiber board for exterior below ground application must be manufactured to facilitate downward drainage.

Subp. 2. **Requirements for installation instructions for underground use.** Written instructions on underground use of insulation ~~must, at a minimum,~~ contain instructions or information for vertical and, if recommended, horizontal application regarding:

A. ~~optimal~~ application techniques;

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

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

D. ~~varying soil and soil moisture conditions~~ chemical

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resistance information;

E. ambient temperature ~~effects on~~ range permitted during application; and

F. ~~optimal~~ backfill techniques and backfill materials for ~~protection from physical damage, and~~ prevention of damage to the insulation material and below grade protective coating.

~~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~~ Installation requirements for exterior above ground and underground ~~installation~~ use. ~~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~~ grade must be covered with an exterior wall finish to protect the insulation from ~~ultraviolet~~ deterioration due to sunlight, ~~moisture absorption, freeze thaw durability, air erosion, and general weather conditions~~ and physical abuse.

~~C~~ B. 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

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protective coating and method of application must be in accordance with the insulation manufacturer's instructions and recommendations.

~~B~~ C. 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~~ include exterior drainage, as defined in part 7640.0120.

[For text of subp 4, see M.R.]

7640.0150 REPORTING REQUIREMENTS.

[For text of subpart 1, see M.R.]

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:

[For text of items A to E, see M.R.]

F. results of initial tests, as required by part 7640.0130, identifying tests performed, name of laboratory, testing dates, and test results. The report for "other" insulation products regulated by part 7640.0130, subpart 8, must also include the products' Material Safety Data Sheet;

[For text of items G to I, see M.R.]

[For text of subp 3, see M.R.]

7640.0160 APPLICATION AND INSTALLATION STANDARDS.

Subpart 1. **Applicability.** Industry members, including industry members who offer insulation installation services for new and existing 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.~~

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~~This part applies to new residential construction and retrofit applications.~~

An installer of an insulation the manufacture of which is completed at the jobsite who significantly alters the manufacturer's installation instructions becomes a manufacturer for the purpose of Minnesota Rules, chapter 7640.

Subp. 2. **Application and inspection.**

A. Industry members installing insulation shall follow manufacturer's written application instructions.

~~In attic areas where insulation is to be installed, the installer shall comply with part 7640.0110, subpart 5.~~

B. When installing insulation in attic areas, the installer shall locate flush and recessed light fixtures, and other heat producing appurtenances, and shall comply with National Electrical Code, section 410-66, subsections A and B.

C. Installation of cellulosic and mineral fiber in loose-fill form must ~~comply~~ be in conformance with ASTM standard C ~~1015-84~~ 1015, including part 7.7.2.

D. Installation of reflective insulation must ~~comply~~ be in conformance with ASTM standard C ~~727-72 (reapproved 1978)~~ 727.

E. Installers of urea formaldehyde foam insulation shall conform with Minnesota Statutes, section 325F.18, and Minnesota Rules, parts 4620.1600 to 4620.2100.

F. State and local agencies using appropriated federal funds and persons contracting with state or local agencies with respect to work performed under the contracts shall comply with Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Products Containing Recovered Materials.

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

[For text of items A and B, see M.R.]

C. ~~Urea formaldehyde foam insulation installation must conform with Minnesota Statutes, section 325F.18 and~~

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~~Minnesota Rules, part 4620.2100~~ Installation instructions for products whose manufacture is completed at the jobsite must address the quality assurance program required by part 7640.0130, subpart 2, item D; ambient temperature during application; and actions necessary to facilitate curing or drying.

7640.0180 INCORPORATIONS BY REFERENCE AND CITATIONS.

[For text of subpart 1, see M.R.]

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

[For text of items A to C, see M.R.]

D. ASTM C 272-53 (reapproved 1980), Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.

E. ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

~~E~~ F. ASTM C 518-85, Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

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

~~G~~ H. ASTM C 553-70 (reapproved 1977), Standard Specification for Mineral Fiber Blanket and Felt Insulation (Industrial Type).

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

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

~~J~~ K. ASTM C 612-83, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

L. ASTM C 665-86 665-88, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~K~~ M. ASTM C 727-72 (reapproved 1978), Standard Recommended Practice for Use of Reflective Insulation in

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Building Constructions.

~~L~~ N. ASTM C ~~739-86~~ 739-88, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

~~M~~ O. ASTM C ~~764-84~~ 764-88, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

~~N~~ P. ASTM C 951-83, Standard Specification for Urea-Formaldehyde-Based, Foam in Place Insulation.

~~O~~ Q. ASTM C 976-82, Standard Test Method for Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box.

~~P~~ R. ASTM C ~~1014-84~~ 1014-88, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

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

~~R~~ S. ASTM C 1015-84, Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation.

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

~~T~~ U. ASTM C 1126-89, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

V. ASTM D 2842-69 (reapproved 1975), Standard Test Method for Water Absorption of Rigid Cellular Plastics.

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

X. ASTM E 408-71 (reapproved 1985), Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection Meter Techniques.

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

Z. ASTM E 736-86, Test for Cohesion/Adhesion of Sprayed Fire Resistive Materials Applied to Structural Members.

[For text of subp 2a, see M.R.]

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~~ 1989 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (~~Technical Reference Book~~), chapter 22, tables 1 and 2.

[For text of item B, see M.R.]

C. ~~Federal Trade Commission requirements in~~ Code of Federal Regulations, title 16, part 460, Labeling and Advertising of Home Insulation.

[For text of items D to J, see M.R.]

K. Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Insulation Products Containing Recovered Materials.

L. Underground Space Center, University of Minnesota; Building Foundation Design Handbook; Prepared for Oak Ridge National Laboratory; May 1988, Table 7-4.

[For text of subp 4, see M.R.]

REPEALER. Minnesota Rules, part 7640.0110, subpart 5, is repealed.

Approved by Revisor _____

TENNESSEE TECH
UNIVERSITY

Tennessee Technological University
College of Engineering • *Department of Chemical Engineering*
Box 5013 • Cookeville, TN 38505 • 615-372-3297

MAR 0 8 1990

March 5, 1990

Minnesota Department of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101
Attn: Mr. Bruce Nelson
Energy Division

Dear Mr. Nelson:

I have the following comments and questions on the Residential Thermal Insulation Standards.

Page 1 lines 16-32

A loose-fill thermal insulation is mixed with adhesive at the point of installation. Who is the manufacturer?

a. The producer of the fiber?
b. The supplier of the adhesive?
c. The contractor who mixes and installs?
d. Some other entity?

Page 2 lines 15-17 Why is ASTM C 1114 not listed?

lines 20-21 The restriction to testing at only 75°F is counter productive. Clearly the FTC rule calls for testing at a mean temperature of 75°F.

Why is it rational to prohibit additional testing at other temperatures?

Page 6 lines 6-7 Why is R-value being specified by a regulatory body?

Page 7 lines 14-15 The requirement that a hot-box specimen must be 2x6 is restrictive. If a product is designed for installation in a 2x4 cavity constructed on 16 inch center then the test should be done with that spacing. The test configuration and resulting R-value claim should be like the intended application.

lines 19-20 Not consistent with FTC Rule 460.

line 33 Not consistent with FTC Rule 460.

lines 26-27 heat flow up, down, and horizontal

General comment: loose-fill insulation.

Sincerely,

David W. Yarbrough, Chairman
Department of Chemical Engineering

DWY/sr

MvL Manville

Manville Technical Center

APR 02 1990

March 28, 1990

Mr. Bruce Nelson
Dept. of Public Service,
Energy Division
900 American Center Building
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

Dear Bruce:

I have received the Proposed revisions to Minnesota Residential Insulation Standards Program rules dated February 8, 1990. I am in agreement with the Proposed revisions.

I would like to receive a copy of the Statement of Need and Reasonableness, and am requesting notification of the date of submission of the Rules to the Attorney General. I would also like to receive a copy of the adopted rules.

Thank you for the opportunity to review the Proposed revisions.

Sincerely,

Richard J. Ray

Richard J. Ray
Manville Sales Corp.

cc: S. Braun MIMA
R. Larson 12-09

Manville Sales Corporation
P.O. Box 5108 • Denver, CO 80217-5108 • 303 978-2000 • Fax: 303 978-5094 • Telex: 216115 MANV UR

UC INDUSTRIES, INC.
TECHNOLOGY CENTER
137 EAST AVE., P.O. BOX 423
TALLMADGE, OH 44278-0423
(216) 633-6735

MAR 29 1990

TELECOPIER MESSAGE

DATE: 3/29/90

TO: Bruce Nelson FAX#: 612-297-1959

FROM: Herbert Slone

SUBJECT: Proposed Amendments to Minnesota Rules, Chpts 7640

NO. OF PAGES INCLUDING COVER PAGE: 3

COMMENTS:

Please confirm receipt of this fax by calling Ricky Herny @ 216-633-6735, Ext. 28.

Thank you!

UC INDUSTRIES, INC.
TECHNOLOGY CENTER
137 EAST AVE., P.O. BOX 423
TALLMADGE, OH 44278-0423
(216) 633-6735

March 29, 1990

Mr. Bruce Nelson
Senior Engineer
Department of Public Service,
Energy Division
900 American Center Bldg.
150 East Kellogg Blvd.
St. Paul, MN 55101

RE: Proposed Amendments to Minnesota Rules,
Chapter 7640

Dear Mr. Nelson:

After reviewing the proposed permanent rules relating to insulation standards, I offer the following comments.

7640.0130 Sub-part 2.C.(1)

The sentence at the end of the subject section regarding measurement of thermal conductivity at a mean temperature of 75°F is more appropriately placed in Section 7640.0120 Sub-part 23 defining "thermal performance". One may have cause to seek the definition of thermal performance at any point while reviewing the rules and, if left in the present location, could not easily locate the critical mean temperature at which thermal conductivity is measured. Therefore, the mean temperature at which measurements are taken is more logically placed in the definition section of the statute. Further, the proposed sentence is unclear in that it could be interpreted to require thermal conductivity measurements at 75°F but permit use of additional measurements at any temperature. More specific wording may be as follows, "thermal conductivity shall be measured at a mean temperature of 75°F for purposes of this rule".

7640.0140 Sub-part 1.B

Intent of this section is to define the level of physical property retention which a below ground insulation must possess after in-service testing or the simulation of in-service testing. Item #2 confuses freeze/thaw conditioning with a physical property or characteristic. The roster of physical properties should include R-value (limited to a 10% loss), soil compatability, and compressive strength. Initial values for the roster of physical properties for each product should be established and a comparison value should be required after freeze/thaw cycling. The proposed rule as written does not clearly define "mechanical durability". A rearrangement of the paragraph as suggested would make clear that mechanical durability is defined as a before and after conditioning comparison of the three properties or characteristics listed.

Further, valid comparisons between alternate products can only be made if subjected to identical freeze/thaw conditioning. Although in-service winter conditions has been specified at 8,000 heating degree days, that has little impact on below grade freeze/thaw cycling. Therefore, those manufacturers opting for in-service testing in a simulated environment should be provided with a standard number of freeze/thaw cycles to which a sample must be subjected. In the absence of such a specification, the statutory requirements for achieving a listing are subjective and arbitrary as defined by the State of Minnesota. Consumers in the State of Minnesota will have no assurance of comparable performance when selecting insulation products on the basis of state listings.

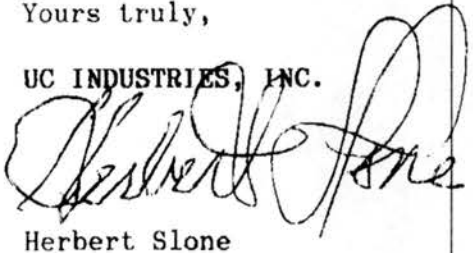
7640.0150 Sub-part 2

This section is not proposed for change; however, please inform me if my interpretation is incorrect. Based on the section cited, it is my understanding that the revised rules, upon becoming effective, will not be retroactively applied to products already filed.

Should you have any questions regarding the above comments, please feel free to contact me at the letterhead address.

Yours truly,

UC INDUSTRIES, INC.



Herbert Slone
Architect
Manager, Construction Technology

HS:vlw

cc: Pat Rynd (UCI)
Rich Gottwald (SPI)

OWENS-CORNING FIBERGLAS CORPORATION

Fiberglas Tower

Toledo, Ohio 43659

TELECOPIER COVER LETTER

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: Bruce Nelson

LOCATION: _____

FROM: Tim Crethen

TOTAL NUMBER OF PAGES 3 (INCLUDING COVER LETTER)

DATE: 3-28-90 TELEPHONE NUMBER CALLED: 412-297-1955

TIME: 4:56

IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL _____

AT (419) 248-6948.



March 28, 1990

Bruce Nelson Senior Engineer
Department of Public Service, Energy Division
900 American Center Building
150 East Kellogg Blvd.
St. Paul, MN 55101

Dear Bruce:

Owens-Corning Fiberglas Corporation would like to offer the following comments on the changes to the Residential Thermal Insulation Standards.

Page 1, Line 29

...for their intended uses and follows the manufacturers' installation instructions, without...

Inserting the reference to manufacturer's instructions will help clarify the distinction between a manufacturer and installer.

Page 2, Line 20

Thermal conductivity must ~~only~~ be measured...

Strike the word "only". Literally, this means the product could not be supplied if tests were run at temperatures other than 75 F even if the 75 F data were also provided.

Page 3, Lines 20-28

It may be helpful to have a definition of spray - applied cellulose to clarify when this section is appropriate.

Page 4, Lines 1-36 and page 5, Lines 1-4

There is no published data, that I know of, that has established the technical accuracy of the statements here. The fact that the base loose-fill material passes the flammability, corrosion, odor, fungi resistance tests does not guarantee that the composite will also pass these tests. Where adhesives are used depending on their chemical composition, they may have problems passing the prescribed requirements. Adding water can move the chemical additives,

perhaps changing the fire and corrosion results. There is not justification for this change.

Page 5, Lines 13-16

Specification ASTM C 612 is for board insulations normally used at elevated temperatures. ASTM C 411, which is referenced by C 612, defines in its scope that it need be used only for materials whose expected exposure is above 200 F. Therefore, use of the C 612 specification for building insulations without an exemption for the high temperature exposure test, may place an unneeded requirement on high density building insulation boards. An exception from the high temperature exposure test is needed.

Page 7, Lines 11-22

Although not being changed at this time, this entire section is confusing and may be incorrect. The first portion of the paragraph should be defined as for horizontal applications. The second portion permits the use of 2 by 6 studs for a vertical section when single layer insulations are almost never installed in such a wall. This entire section should be rewritten to reflect that the test wall should represent the intended use of the product with respect to stud size, spacing and cavity length. The performance will also vary with respect to the heat flow direction.

A good example of what should be used, is the proposed specification for Reflective insulations being balloted currently in ASTM C 16.21. Since this specification is not yet official, the information contained therein could be included in the Minnesota document word for word until the ASTM specification is official. We would be happy to supply a copy of this specification draft if you wish.

Page 14, Line 12 through Page 15, Line 34

Delete all references to the date on the version of the ASTM Standards and Methods used. The document should require the latest version in force at the time of the report filing. ASTM methods are usually considered to be in effect after 30 days from the time of their publication by ASTM. The elimination of the date from the method will permit updating of this standard automatically to reflect the current ASTM state of technology. This also eliminates conflicts between the specified methods when older specifications reference methods that are outdated or have been eliminated completely.

Page 16, Line 1

A similar argument fits for the reference to the latest version of the ASHRAE Fundamentals.

I hope these comments are helpful. Please call if you have any questions.

T. C. Grether
Manager, Technical Services
Residential & Commercial Insulation Products

TCG/ssb

OWENS-CORNING FIBERGLAS CORPORATION
FIBERGLAS TOWER
TOLEDO, OH 43659

TO: Bruce Nelson

LOCATION: 612/297-1959

FROM: Cliff Smith

LOCATION:

PHONE # 419/248-6767

DATE: 4/1/90

TIME SENT:

NUMBER OF PAGES (INCL. COVER): 2

RETURN FAX PHONE NUMBER: 419/248-5303
FAX INFO: RICOH RAPICOM 205
SEND/RECEIVE FAST SPEED AND 6 MIN. SPEED

ANY QUESTIONS OR PROBLEMS CALL

AT 419/248-

OWENS-CORNING FIBERGLAS CORPORATION FIBERGLAS TOWER, TOLEDO, OHIO 43659, (419) 248-8000

April 1, 1990

Mr. Bruce Nelson
Energy Division
Minnesota Department of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Dear Mr. Nelson:

Confirming our phone conversation, it is my recommendation that the current language for mineral fiber insulation in board form remain in favor of the recommended change to adopt ASTM C 512. As we discussed, this ASTM specification relates strictly to industrial insulation and contains many requirements which would have to be excepted in order for the specification to have any meaning when it comes to the products you intend to be covered.

With reference to fibrous glass duct board, I would recommend you consider adopting the requirements of UL 181 which covers the entire system rather than individual components along with the TIMA Fibrous Glass Duct Construction Standard which contains both product performance data as well as specific construction techniques. I'm sending copies of these two documents for your consideration.

I look forward to discussing this matter with you once you have reviewed the information. You may reach me at 419/248-8767 or by FAX at 419/248-5303.
Regards,

OWENS-CORNING FIBERGLAS CORPORATION

CD Smith

Clifford D. Smith, Manager of Technical Services
Manufacturer and Mechanical Insulations Division

cc: T. C. Grether - T/23

MINNESOTA
Department of Public Service

Administrative Office
(612) 296-7107

790 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

RESIDENTIAL THERMAL INSULATION STANDARDS

Notice of Intent to Amend Rules Without a Public Hearing

(1) Notice is hereby given that the Minnesota Department of Public Service intends to adopt amendments to Minnesota Rules Chapter 7640, 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.

(2) All persons have 30 days in which to submit comment in support of or in opposition to any part or subpart of the proposed amendments. Comment is encouraged. (3) 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. (4) 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. (6) 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. (7) If a public hearing is required, the agency will proceed pursuant to Minn. Stat., sections 14.131 to 14.20.

(5) Comments or written requests for a public hearing must be submitted to:

Bruce Nelson, Senior Engineer
Department of Public Service, Energy Division
900 American Center Building
150 East Kellogg Boulevard
St. Paul, MN 55101
phone (612) 297-2313 fax (612) 297-1959.

Comments or requests for a public hearing must be received no later than 4:00 p.m., March 29, 1990.

(8) The proposed amendments may be modified if the modificati are supported by the data and views submitted to the Departmen and do not result in a substantial change in the proposed amendments as noticed.

(11) A Copy of the proposed rule amendment is attached to this notice.

(12) 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 upor support the proposed amendments has been prepared and is available by requesting a copy from Mr. Nelson at the address listed above.

(9) If no hearing is required, upon adoption of the rule, th rule and the required supporting documents will be submitted the Attorney General for review as to legality and form to th extent that form relates to legality. Any person may request notification of the date of submission to the Attorney Genera Persons who wish to be advised of the submission of this mate 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 address listed above.

Tony Perpich

Tony Perpich, Commissioner
Department of Public Service

Feb 7, 1990
Dated

Department of Public Service

Proposed Permanent Rules Relating to Insulation Standards

Rules as Proposed

7640.0120 DEFINITIONS.

Subpart 1. **Applicability.** For the purposes of this chapter, the following definitions of terms apply. Technical, scientific, and engineering terms undefined by this part have the meanings given in ~~the ASHRAE Handbook of Fundamentals or in~~ ASTM C ~~168-88a~~ 168, Standard Definitions of Terms Relating to Thermal Insulation Materials.

[For text of subps 2 to 16, see M.R.]

Subp. 17. **Manufacturer of insulation.** "Manufacturer of insulation" means:

A. an industry member who produces insulation materials in their final form for distribution or sale to intermediate and ultimate consumers ~~or who is a urea formaldehyde foam or spray urethane foam insulation manufacturer of the component resins and catalysts used for in situ foaming.~~;

B. an industry member who produces insulation materials or installation instructions for a product the manufacture of which is completed at the jobsite; or

C. an installer of an insulation product the manufacture of which is completed at the jobsite who prepares or modifies the product's installation instructions.

An applicator, contractor, or fabricator of insulation materials who installs, applies, or uses insulation materials for their intended uses, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation.

[For text of subps 18 to 26, see M.R.]

7640.0130 INSULATION MATERIALS STANDARDS.

[For text of subpart 1, see M.R.]

Subp. 2. **General testing requirements.** General testing

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requirements for regulated thermal insulation materials in this part are as follows:

[For text of item A, see M.R.]

B. All regulated thermal insulation materials must be tested for compliance with the standards in this part ~~by April 27, 1986. Testing procedures are~~ as follows:

[For text of subitems (1) to (4), see M.R.]

(5) Insulation must have flammability characteristics in accordance with the ~~Uniform Building Code, 1985 Edition~~ UBC, 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) One of the following ~~ASTM~~ test methods must be used: ASTM C ~~177-85~~ 177, ASTM C ~~236-87~~ 236, ASTM C ~~518-85~~ 518, or ASTM C ~~976-82~~ 976. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification. Thermal conductivity must only be measured at a mean temperature of 75 degrees Fahrenheit.

(2) R-value testing must be performed at the insulation's representative thickness, and be consistent with the requirements of ~~the United States Federal Trade Commission~~ Code of Federal Regulations, title 16, part 460. Unit R per inch must be derived from R-value testing performed to its representative thickness.

(3) For ~~polyurethane, polyisocyanurate, and extruded polystyrene, in accordance with the FTC R-value rule, section 460.5~~ foam plastic insulations that incorporate blowing agents other than air or pentane, R-value tests must be done on samples that have been treated to fully reflect the effect of aging on the product's R-value. If criteria for treating samples to reflect the effect of aging are not specified within a material specification, the samples must be treated for either 90 days at 140 ±2 degrees Fahrenheit (60 ±1 degree centigrade)

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or six months at ambient conditions prior to conditioning and thermal resistance testing. During treating, air circulation must be provided so that all surfaces of the insulation are exposed to the surrounding environmental conditions.

[For text of subitems (4) to (6), see M.R.]

[For text of item D, see M.R.]

Subp. 3. **Cellulose insulation.**

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

(1) The product must comply with ASTM C ~~739-86~~ 739, 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, Code of Federal Regulations, title 16, part 1209 subpart B.

[For text of subitems (2) and (3), see M.R.]

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

[For text of subitems (1) and (2), see M.R.]

(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~~ subpart 2, item C, 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~~ 605. 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 combustion must be ~~tested for~~ in accordance with ASTM C ~~739-86, part 5~~ 739, or the CPSC Interim Safety Standard for Cellulose

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Insulation, Code of Federal Regulations, title 16, part 1209. ~~Values-achieved-must-not-exceed-those-established-by-the CPSC.~~ If the product in loose-fill form meets the criteria for critical radiant flux, then a test of the product in spray-applied form for critical radiant flux is unnecessary.

(6) Moisture absorption must be determined in accordance with section ~~15~~ 14 of ASTM C ~~553-70-reapproved 1977~~ 553. 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~~ have a minimum adhesive/cohesive bond strength per unit area of five times the weight of the material under the test plate when tested in accordance with ASTM E 736.

~~(8)-Test-procedures-in-subitem-(7)~~ Exception: Testing and compliance with bond strength criteria 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~~ intended only for installation in enclosed cavities, and the product is identified as intended only for those installations.

(8) Corrosion must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for corrosion, then a test of the product in spray-applied form is unnecessary.

(9) Odor emission must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for odor emission, then a test of the product in spray-applied form is unnecessary.

(10) Fungi resistance must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose

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Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for fungi resistance, then a test of the product in spray-applied form is unnecessary.

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

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

B. Mineral fiber in batts and blankets form must comply with ASTM C ~~665-86~~ 665, 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:~~ comply with ASTM C 612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

~~(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 2.~~

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

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

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

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

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Supplementary Requirements.

C. Unfaced polyurethane and polyisocyanurate in board form must comply with ASTM C ~~591-85~~ 591, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

Exception: Aged R-value must be 5.6 per inch or greater at 75 degrees Fahrenheit.

[For text of item D, see M.R.]

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

(1) The product must comply with ASTM C ~~954-85~~ 951, Standard Specification for Urea Formaldehyde Based, Foam in Place Insulation.

[For text of subitem (2), see M.R.]

~~(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.~~

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

G. Rigid cellular phenolic insulation must comply with ASTM C 1126, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

H. Foam plastic insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Foam Plastic, ~~October, 1982,~~ for the intended application, meets the ~~Minnesota testing standards in this subpart~~ requirements of part 7640.0130.

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)~~ 549, Standard Specification for Perlite Loose Fill Insulation.

[For text of subitem (2), see M.R.]

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

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

[For text of subitem (2), see M.R.]

Subp. 7. **Reflective foil insulation.**

A. The following requirements apply to reflective foil insulation:

[For text of subitem (1), see M.R.]

(2) Except for radiant barrier products, thermal performance for single or multiple sheet sections must be determined according to ASTM C ~~976-82~~ 976 or ASTM C ~~236-87~~ 236. 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 and the associated air spaces.

[For text of subitems (3) to (6), see M.R.]

B. Reflective insulation systems with more than one sheet must be tested according to ASTM C ~~976-82~~ 976 or ASTM C ~~236-87~~ 236 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. The tests must be done at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit.

C. A single sheet reflective insulation **systems**

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system must be tested ~~with~~ according to ASTM E 408 ~~or another test method that provides comparable results. This tests the~~ to determine its emissivity ~~of the foil (its power to radiate heat)~~. To get the R-value for ~~a specific~~ the measured emissivity ~~level~~, and a specific 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)~~ Table 2 in chapter 22 of the ASHRAE Handbook of Fundamentals must be used. The R-value shown for 50 degrees Fahrenheit must be used, with a temperature differential of 30 degrees Fahrenheit.

[For text of item D, see M.R.]

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 requirements in items A to F.

[For text of item A, see M.R.]

B. ~~Results of the~~ Water or moisture absorption ~~test~~ must be ~~reported~~ determined according to one of the following methods:

(1) ASTM C 272;

(2) ASTM C 553, section 14;

(3) ASTM C 739, section 12; or

(4) ASTM D 2842.

[For text of items C and D, see M.R.]

E. The ~~initial report as required by part 7640.0150, subpart 2, must include a description of other tests applied to~~ the product must not produce a detectable odor that is classified as objectionable and strong or very strong by two or more panel members when tested in accordance with ASTM C 739, section 13.

[For text of item F, see M.R.]

7640.0140 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. ~~Application testing~~ Physical requirements for insulation materials designed for exterior,

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underground ~~insulation~~ use.

A. The insulation ~~by-itself-or-as-part-of-a-system,~~ installed according to the manufacturer's recommendations, must be in service tested ~~in~~ at either a testing facility ~~designed-to duplicate-actual-underground-conditions~~ or an actual house for a period of one continuous year. The testing environment must ~~reflect-the-extremes-of~~ have historical winter weather, ~~moisture~~ conditions no less than 8,000 Fahrenheit heating degree days, and soil conditions with drainage characteristics classified as poor in Table 7-4 of the Building Foundation Design Handbook. 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.~~

Exception: In-service testing is not necessary if the manufacturer demonstrates that a product of the same material specification with equal or less durability in this application has been successfully in-service tested. The manufacturer shall demonstrate the equal or less durability test by comparing laboratory test results of the physical characteristics listed in part 7640.0140, subpart 1, item B, clauses (1) to (4).

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~~ manufacturer shall demonstrate that the product ~~for~~ will exhibit less than a ten percent loss in R-value when installed underground ~~use-must-be-based-on-the-most recent-applicable-ASTM-tests-or-any-other-tests-that-are available-that-give-consideration-to-each~~ and the combined effect of ~~the-following~~ assumed conditions on the following physical characteristics are considered:

[For text of subitems (1) and (2), see M.R.]

(3) soil compatibility; and

(4) ~~flexural-strength-or-compression,-and~~ compressive strength

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

~~B.~~ The ~~initiator~~ manufacturer ~~seeking-the-listing~~ shall ~~select~~ state the ~~appropriate-tests-that-best-address~~ ~~the~~ assumed conditions ~~stated~~ in ~~item-C~~ the initial report filed according to part 7640.0150, subpart 2.

~~E~~ C. An association ~~or-trade-representative~~ may ~~initiate-a-product's-listing~~ conduct tests and prepare a filing for exterior below grade application of a type of product on behalf of its constituency. The association shall ~~submit representative-samples-for~~ conduct testing ~~and-certify-to-the department-which-manufacturers-within-its-constituency-the samples-are-representative-of~~ according to subpart 1, item A, on at least three specimens of the product. The association ~~must have-an-internal-certification-procedure-to-determine constituency-conformity-to~~ shall demonstrate that the manufacturers' products for which the tests and filing would apply are representative ~~samples-submitted-for-testing~~ of the tests and filing performed by the association.

~~F~~ D. ~~A-summary-of-test-results-for-item-B-must-be submitted-to-the-department~~ Mineral fiber board for exterior below ground application must be manufactured to facilitate downward drainage.

Subp. 2. **Requirements for installation instructions for underground use.** Written instructions on underground use of insulation must~~,-at-a-minimum,~~ contain instructions or information for vertical and, if recommended, horizontal application regarding:

A. ~~optimal~~ application techniques;

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

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

D. ~~varying-soil-and-soil-moisture-conditions~~ chemical

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resistance information;

E. ambient temperature ~~effects on~~ range permitted during application; and

F. ~~optimal~~ backfill techniques and backfill materials for ~~protection from physical damage, and~~ prevention of damage to the insulation material and below grade protective coating.

~~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~~ Installation requirements for exterior above ground and underground ~~installation~~ use. ~~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~~ grade must be covered with an exterior wall finish to protect the insulation from ~~ultraviolet~~ deterioration due to sunlight, ~~moisture absorption, freeze thaw durability, air erosion, and general weather conditions~~ and physical abuse.

~~C~~ B. 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

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protective coating and method of application must be in accordance with the insulation manufacturer's instructions and recommendations.

~~B~~ C. 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~~ include exterior drainage, as defined in part 7640.0120.

[For text of subp 4, see M.R.]

7640.0150 REPORTING REQUIREMENTS.

[For text of subpart 1, see M.R.]

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:

[For text of items A to E, see M.R.]

F. results of initial tests, as required by part 7640.0130, identifying tests performed, name of laboratory, testing dates, and test results. The report for "other" insulation products regulated by part 7640.0130, subpart 8, must also include the products' Material Safety Data Sheet;

[For text of items G to I, see M.R.]

[For text of subp 3, see M.R.]

7640.0160 APPLICATION AND INSTALLATION STANDARDS.

Subpart 1. **Applicability.** Industry members, including industry members who offer insulation installation services for new and existing 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.~~

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~~This part applies to new residential construction and retrofit applications.~~

An installer of an insulation the manufacture of which is completed at the jobsite who significantly alters the manufacturer's installation instructions becomes a manufacturer for the purpose of Minnesota Rules, chapter 7640.

Subp. 2. **Application and inspection.**

A. Industry members installing insulation shall follow manufacturer's written application instructions.

~~In attic areas where insulation is to be installed, the installer shall comply with part 7640.0110, subpart 5.~~

B. When installing insulation in attic areas, the installer shall locate flush and recessed light fixtures, and other heat producing appurtenances, and shall comply with National Electrical Code, section 410-66, subsections A and B.

C. Installation of cellulosic and mineral fiber in loose-fill form must ~~comply~~ be in conformance with ASTM standard C ~~1015-84~~ 1015, including part 7.7.2.

D. Installation of reflective insulation must ~~comply~~ be in conformance with ASTM standard C ~~727-72 (reapproved 1978)~~ 727.

E. Installers of urea formaldehyde foam insulation shall conform with Minnesota Statutes, section 325F.18, and Minnesota Rules, parts 4620.1600 to 4620.2100.

F. State and local agencies using appropriated federal funds and persons contracting with state or local agencies with respect to work performed under the contracts shall comply with Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Products Containing Recovered Materials.

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

[For text of items A and B, see M.R.]

C. ~~Urea formaldehyde foam insulation installation must conform with Minnesota Statutes, section 325F.18 and~~

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~~Minnesota Rules, part 4620.2100~~ Installation instructions for products whose manufacture is completed at the jobsite must address the quality assurance program required by part 7640.0130, subpart 2, item D; ambient temperature during application; and actions necessary to facilitate curing or drying.

7640.0180 INCORPORATIONS BY REFERENCE AND CITATIONS.

[For text of subpart 1, see M.R.]

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

[For text of items A to C, see M.R.]

D. ASTM C 272-53 (reapproved 1980), Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.

E. ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

~~E~~ F. ASTM C 518-85, Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

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

~~G~~ H. ASTM C 553-70 (reapproved 1977), Standard Specification for Mineral Fiber Blanket and Felt Insulation (Industrial Type).

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

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

~~J~~ K. ASTM C 612-83, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

L. ASTM C ~~665-86~~ 665-88, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~K~~ M. ASTM C 727-72 (reapproved 1978), Standard Recommended Practice for Use of Reflective Insulation in

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Building Constructions.

~~b~~ N. ASTM C ~~739-86~~ 739-88, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

~~M~~ O. ASTM C ~~764-84~~ 764-88, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

~~N~~ P. ASTM C 951-83, Standard Specification for Urea-Formaldehyde-Based, Foam in Place Insulation.

~~O~~ Q. ASTM C 976-82, Standard Test Method for Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box.

~~P~~ R. ASTM C ~~1014-84~~ 1014-88, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

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

~~R~~ S. ASTM C 1015-84, Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation.

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

~~T~~ U. ASTM C 1126-89, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

V. ASTM D 2842-69 (reapproved 1975), Standard Test Method for Water Absorption of Rigid Cellular Plastics.

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

X. ASTM E 408-71 (reapproved 1985), Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection Meter Techniques.

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

Z. ASTM E 736-86, Test for Cohesion/Adhesion of Sprayed Fire Resistive Materials Applied to Structural Members.

[For text of subp 2a, see M.R.]

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~~ 1989 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (~~Technical Reference Book~~), chapter 22, tables 1 and 2.

[For text of item B, see M.R.]

C. ~~Federal Trade Commission requirements in~~ Code of Federal Regulations, title 16, part 460, Labeling and Advertising of Home Insulation.

[For text of items D to J, see M.R.]

K. Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Insulation Products Containing Recovered Materials.

L. Underground Space Center, University of Minnesota; Building Foundation Design Handbook; Prepared for Oak Ridge National Laboratory; May 1988, Table 7-4.

[For text of subp 4, see M.R.]

REPEALER. Minnesota Rules, part 7640.0110, subpart 5, is repealed.

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AFFIDAVIT OF MAILING

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

STATE OF MINNESOTA)
) ss.
COUNTY OF RAMSEY)

Dianne Brown, being first duly sworn deposes and says:

I hereby certify that on the 23 day of February, 1990, at the City of St. Paul, County of Ramsey, State of Minnesota, pursuant to Minnesota Statutes, sections 14.14, subdivision 1a and 14.22 or 1430, I mailed the attached Notice of Intent to Adopt a Rule Without a Public Hearing by depositing in the State of Minnesota Central Mail System, a copy thereof, with postage prepaid, to all persons and associations on the Department of Public Service, Energy Division rulemaking mailing list.

Dianne Brown
[Name]

Secretary
[Title]

Subscribed and sworn to before me this 7th day of March, 1990.

Elizabeth L Woodhouse
Notary Public

ELIZABETH L. WOODHOUSE
NOTARY PUBLIC-MINNESOTA
RAMSEY COUNTY
MY COMMISSION EXPIRES FEBRUARY 28, 1998

‹‹‹‹ R U L E S ››››

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
RUDY BOSCHWITZ	HART STATE OFFICE BLDG-RM SH506 WASHINGTON, DC 20510	MCD
DAVID DURENBERGER	RUSSELL BLDG-RM 154 WASHINGTON, DC 20510	MCD
WILLIAM FRENZEL	LONGWORTH OFFICE BLDG-RM 1026 WASHINGTON, DC 20515	MCD
MICHAEL JOHNSON	117 FIFTH ST W - BOX 95 BLUE EARTH, MN 56013	RULES
RALPH T KEYES	2240 MIDLAND GRV RD ST PAUL, MN 55113	RULES
JAMES L OBERSTAR	RAYBURN OFFICE BLDG-RM 2351 WASHINGTON, DC 20515	MCD
RONALD E OLSON	5416 70TH ST W EDINA, MN 55435	RULES
TIMOTHY PENNY	CANNON OFFICE BLDG-RM 436 WASHINGTON, DC 20515	MCD
ALFRED J ROSS	6356 WARE RD LINO LAKES, MN 55014	RULES
MARTIN O SABO	RAYBURN OFFICE BLDG. - RM 2201 WASHINGTON, DC 20515	MCD
ARLAN STANGELAND	RAYBURN OFFICE BLDG. - RM 2245 WASHINGTON, DC 20515	MCD
BRUCE F VENTO	RAYBURN OFFICE BLDG. - RM 2304 WASHINGTON, DC 20515	MCD
VIN WEBER	CANNON OFFICE BLDG. - RM 106 WASHINGTON, DC 20515	MCD
ADMIN HEARING OFFICE SAM RUHLE	310 FOURTH AVE - RM 400 MINNEAPOLIS, MN 55415	RULES
ALABAMA DEPT OF ENERGY	3465 NORMAN BRIDGE RD MONTGOMERY, AL 36105	SEO
ALASKA ENERGY OFFICE	949 E. 36TH AVE - RM 400 ANCHORAGE, AK 99508	SEO

<<<< R U L E S >>>>

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
ARIZONA ENERGY OFFICE MARK GINSBERG	1700 WASHINGTON ST W PHOENIX, AZ 85007	SEO
ARKANSAS ENERGY OFFICE-ECON PLAN	1 CAPITOL MALL-RM 2C 105 LITTLE ROCK, AR 72201	SEO
BEMIDJI CHAMBER OF COMMERCE	BOX 850 BEMIDJI, MN 56601	RULES
BRAINERD WATER & LIGHT DEPT WALTER C SJOLUND	501 LAUREL ST-BOX 373 BRAINERD, MN 56401	RULES
BROEKER GEER LMTD. JOHN M BROEKER	8500 NORMANDALE LK BLVD #1510 MINNEAPOLIS, MN 55437	RULES
CALIFORNIA ENERGY COMMISSION	1516 NINTH ST SACRAMENTO, CA 95814	SEO
CARLTON COUNTY HUMAN SERVICES WILLIAM K. PINSONNAULT	BOX 316, 1215 AVENUE C CLOQUET, MN 55720	RULES
CITY OF BELLE PLAINE DAVID J UNMACHT	420 MAIN ST E BELLE PLAINE, MN 56011	RULES
CITY OF CIRCLE PINES JAMES KEINATH	200 CIVIC HEIGHTS CIRCLE CIRCLE PINES, MN 55014	RULES
CLOQUET CITY OF WILLIAM SCHLENVOGT	508 CLOQUET AVE CLOQUET, MN 55720	RULES
COLORADA OFFICE OF ENERGY CONSERV ROLAND RIVERA	112 14TH AVE E DENVER, CO 80203	SEO
COLUMBIA DIST OF ENERGY UNIT	613 G ST. N.W. WASHINGTON, DC 20001	SEO
CONNECTICUT ENERGY DIVISION BRADFORD S. CHASE	80 WASHINGTON ST HARTFORD, CT 06106	SEO
COOPERATIVE POWER ASSN ROBERT P AMBROSE	14615 LONE OAK RD EDEN PRAIRIE, MN 55344	RULES
COOPERATIVE POWER ASSN ADE MUSSELL	14615 LONE OAK ROAD EDEN PRAIRE, MN 55344	RULES
COTTONWOOD CO OFFICES FARLEY GRUNIG	COURTHOUSE WINDOM, MN 56101	RULES

<<<< R U L E S >>>>

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
DAIRYLAND POWER COOPERATIVE ALBERT D DIAL	BOX 817 LACROSSE, WI 54602	RULE
DAYTON HERMAN GRAHAM & GETTS JOHN H HERMAN	10 FIFTH ST S-STE 930 MINNEAPOLIS, MN 55402	RULE
DELAWARE ENERGY OFFICE	FEDERAL ST-BOX 1401 DOVER, DE 19903	SEO
DORSEY AND WHITNEY BECKY A COMSTOCK	220 SIXTH ST S-RM 2300 MINNEAPOLIS, MN 55402	RULE
DORSEY AND WHITNEY WILLIAM J. KEPPEL	2200 FIRST BANK PL E MINNEAPOLIS, MN 55402	RULE
E W A INC	133 FIRST AVE NORTH MINNEAPOLIS, MN 55401	RULE
FARIBAULT AREA CHAMBER OF COMMERCE ELAINE KENOW	228 CENTRAL AVE -- P. O. BOX 434 FARIBAULT, MN 55021	RULE
FLORIDA ENERGY OFFICE	BRYANT BLDG-RM 301 TALLAHASEE, FL 32301	SEO
FRIDLEY CITY OF JIM ROBINSON	6431 UNIVERSITY AVE NE FRIDLEY, MN 55432	RULE
GEO. A. HORMEL & CO DOUGLAS D. HAHN, P.E.	BOX 800 AUSTIN, MN 55912	RULE
GEORGIA OFFICE OF ENERGY RESOURCES	270 WASHINGTON ST SW-STE 615 ATLANTA, GA 30334	SEO
GUAM ENERGY OFFICE	BOX 2950 AGANA, GM 96910	SEO
HASTINGS CITY OF THOMAS HARMENING	100 SIBLEY ST HASTINGS, MN 55033	RULE
HAWAII ENERGY OFFICE	335 MERCHANT ST. RM 110 HONOLULU, HI 96813	SEO
HENN CNTY ENVIRONMENT & ENERGY OFF BEN KERMMOADE	822 SOUTH 3RD ST. SUITE 300 MINNEAPOLIS, MN 55415	RULE
HENN CNTY ENVIRONMENT & ENERGY OFF LUTHER D. NELSON	822 SOUTH 3RD ST. SUITE 300 MINNEAPOLIS, MN 55415	RULE

‹‹‹‹ R U L E S ››››

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
HENNEPIN CO PROPERTY MANAGEMENT JOHN G MCMILLAN	HENN CNTY GOVT CNTR, BLDG OFC-A LEVL MINNEAPOLIS, MN 55487	RULES
Hessian, McKaby and Soderberg Jerome M. Soderberg	4700 IDS Center Minneapolis, MN 55402	RULES
HONEYWELL INC W C VIITALA	HONEYWELL PLAZA-BOX 524 MINNEAPOLIS, MN 55440	RULES
HOYT HEATING CO. ERIC M. LANNES	PO BOX 60129 RENO/STEAD, NV 89506	RULES
IDAHO OFFICE OF ENERGY	450 STATE ST. W BOISE, ID 83720	SEO
ILLINOIS INST OF NAT RESOURCES	325 ADAMS ST W-RM 300 SPRINGFIELD, IL 62704	SEO
INDIANA ENERGY OFFICE	1 CAPITOL ST N-STE 700 INDIANAPOLIS, IN 46204	SEO
IOWA DEPT OF NATURAL RESOURCES ENERGY BUREAU	WALLACE STATE OFFICE BLDG DES MOINES, IA 50319	SEO
KANSAS CORP COMM-RESEARCH & ENERGY	STATE OFFICE BLDG-FOURTH FLR TOPEKA, KS 66612	SEO
KENTUCKY ENERGY CABINET LANA ROGERS	P.O. BOX 3249 FRANKFORT, KY 40603	SEO
LAKE SUPERIOR INDUSTRIAL BUREAU ALFRED E FRANCE	306 SUPERIOR ST W-#1408 ALWORTH DULUTH, MN 55802	RULES
LEFEVERE AND LEFLER JOHN E DRAWZ	2000 FIRST BANK PLACE WEST MINNEAPOLIS, MN 55402	RULES
LEHMANN & ASSOC INC ERNEST K LEHMANN	430 FIRST AVE N. - RM 790 MINNEAPOLIS, MN 55401	RULES
LEVANDER GILLEN MILLER & MAGNUSON ROGER C MILLER	633 CONCORD ST-RM 402-BOX 298 S ST PAUL, MN 55075	RULES
LINDBERG ASSOCIATES CLARENCE P LINDBERG	750 PLAZA DR S MENDOTA HTS, MN 55120	RULES
LOUISIANA DEPT OF NAT RESOURCES	BOX 94396 BATON ROUGE, LA 70804	SEO

<<<< R U L E S >>>>

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
LUVERNE CITY OF STEVEN L. PERKINS	203 MAIN ST E - BOX 348 LUVERNE, MN 56156	RULES
LYMAN LUMBER CO JUDITH A. JANICKE	300 MORSE AVE - BOX 40 EXCELSIOR, MN 55331	RULES
MAINE OFFICE OF ENERGY RESOURCES	STATE HOUSE-STN 53 AUGUSTA, ME 04333	SEO
MANKATO AREA CHAMBER OF COMMERCE	BOX 999 MANKATO, MN 56002	RULES
MARYLAND ENERGY OFFICE JAN SHOREY	45 CALVERT ST. ANNAPOLIS, MD 21401	SEO
MASSACHUSETTS ENERGY POLICY OFFICE	100 CAMBRIDGE ST-RM 1500 BOSTON, MA 02202	SEO
MICHIGAN ENERGY ADMINISTRATION	BOX 30228 LANSING, MI 48909	SEO
MINN ASSN OF TOWNSHIPS DAVID FRICKE	BOX 267 - 705 CENTRAL AVE. E. ST MICHAEL, MN 55376	RULES
MINN ATTORNEY GEN OFC-ANTITRUST DIV THOMAS F PURSELL	117 UNIV AVE - SECOND FLR ST PAUL, MN 55155	RULES
MINN AUTO DEALERS ASSN LOUIS W CLAESON JR	277 UNIVERSITY AVE ST PAUL, MN 55103	RULES
MINN COOPERATIVES ASSN OF ALLEN GERBER	480 CEDAR ST - RM 380 ST PAUL, MN 55101	RULES
MINN GOVERMENT REPORT JEAN DAWSON	STATE CAPITAL BLDG - PRESS RM B2 ST PAUL, MN 55155	RULES
MINN HOUSING FINANCE AGENCY HEIDE E. WHITNEY	400 SIBLEY ST - STE 300 ST PAUL, MN 55101	RULES
MINN LEGIS COMM TO REVIEW ADMIN RUL MARYANNE V HRUBY	STATE OFFICE BLDG - RM 55 ST PAUL, MN 55155	RULES
MINN MULTI HOUSING ASSN JOHN HORNER	4740 PARK GLEN RD MINNEAPOLIS, MN 55416	RULES
MINN PETROLEUM COUNCIL DARREL BUNGE	350 ST. PETER ST. - RM 1025 ST PAUL, MN 55102	RULES

<<<< R U L E S >>>>

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
MINN POLLUTION CONTROL AGENCY Gerald Willet	520 LAFAYETTE RD. N. ST. PAUL, MN 55155	RULES
MINN POWER CO ELAINE DEBEIR	30 SUPERIOR ST W DULUTH, MN 55802	RULES
MINN POWER CO JAMES A ROBERTS	30 SUPERIOR ST W DULUTH, MN 55802	RULES
MINN RETAIL MERCHANTS ASSN RANDY MORRIS	121 SEVENTH ST E-STE 180 ST PAUL, MN 55101	RULES
MINN STATE UNIV SYSTEM MARY E STANTON	555 PARK ST-STE 230 ST PAUL, MN 55105	RULES
MINNEGASCO TRACY BRIDGE	201 SEVENTH ST S MINNEAPOLIS, MN 55402	RULES
MINNEGASCO INC. GEORGE H. LOFGREN	P.O. BOX 1165 MINNEAPOLIS, MN 55440	RULES
MINNESOTA SENATE DONALD J FRANK	STATE CAPITOL BLDG-RM G10 ST PAUL, MN 55155	RULES
MISSISSIPPI DEPT OF ENERGY	510 GEORGE ST-STE 300 JACKSON, MS 39202	SEO
MISSOURI DIV OF ENERGY	BOX 176 JEFFERSON CITY, MO 65102	SEO
MONTANA ENERGY DIV	1520 E. 6TH AVE HELENA, MT 59620	SEO
MONTEVIDEO CITY OF A.J. JOHNSON	BOX 676 MONTEVIDEO, MN 56265	RULES
MONTICELLO CITY OF	250 BROADWAY ST E MONTICELLO, MN 55362	RULES
MOSS AND BARNETT MICHAEL J AHERN	200 SIXTH ST S-1200 PILLSBURY CNTR MINNEAPOLIS, MN 55402	RULES
MPLS BLDG OWNERS & MGRS ASSN INC. ARTHUR W OLOFSON	927 SOO LINE BLDG-105 5TH ST S. MINNEAPOLIS, MN 55402	RULES
NEBRASKA ENERGY OFFICE ANN BROCKHOFF	BOX 95085 LINCOLN, NB 68509	SEO

<<<< R U L E S >>>>

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
NEVADA COMM SERVICES-ENERGY OFFICE	1100 WILLIAM ST E RM 117 CARSON CITY, NV 89710	SEO
NEW HAMPSHIRE GOV COUNCIL ON ENERGY MALTZIE SCOTT	2 1/2 BEACON ST CONCORD, NH 03301	SEO
NEW JERSEY DEPT OF COMM & ECON DEV ROBERT J. GOLDEN JR.	101 COMMERCE ST RM 204 NEWARK, NJ 07102	SEO
NEW MEXICO DEPT OF ENERGY &MINERALS	525 CAMINO DE LOS MARQUEZ SANTA FE, NM 87501	SEO
NEW YORK STATE ENERGY OFFICE CHARLES STUBER	2 ROCKEFELLER PLAZA-10TH FLR ALBANY, NY 12223	SEO
NORTH CAROLINA ENERGY DIV	BOX 25249 RALEIGH, NC 27611	SEO
NORTH CENTRAL PUBLIC SERVICE CO. JAMES A SMITH	1080 MONTREAL AVE ST PAUL, MN 55116	RULES
NORTH DAKOTA OFFICE OF ENERGY	STATE CAPITOL BLDG-14TH FL BISMARCK, ND 58505	SEO
NORTH MARIANA ISLANDS ENERGY PLANNR	P.O. BOX 340 SAIPAN, MR 96950	SEO
NORTHERN PRODUCTS LOG HOMES, INC. Allison T. Beaulieu	P.O. BOX 616 BANGOR, ME 04401	RULES
NORTHERN STATES POWER C. GARY ANDERSON	414 NICOLLET MALL MINNEAPOLIS, MN 55401	RULES
NORTHERN STATES POWER - LAW DEPT. JOSEPH D. BIZZANO JR.	414 NICOLLET MALL MINNEAPOLIS, MN 55401	RULES
NORTHERN STATES POWER CO KEITH H WIETECKI	414 NICOLLET MALL MINNEAPOLIS, MN 55401	RULES
NORTHERN SUN ALLIANCE JOAN VANHALA	1519 FRANKLIN AVE E MINNEAPOLIS, MN 55404	RULES
OHIO DEPT OF ENERGY	30 BROAD ST E-24TH FLOOR COLUMBUS, OH 43266	SEO
OKLAHOMA DEPT OF ENERGY	2101 N. LINCOLN BLVD. OKLAHOMA CITY, OK 73105	SEO

<<<< R U L E S >>>>

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
OREGON DEPT OF ENERGY	625 MARION ST NE SALEM, OR 97310	SEO
OWATONNA PUBLIC UTILITIES DAVID M. MARTIN	P.O. BOX 800 OWATONNA, MN 55060	RULES
PENNSYLVANIA GOVERNORS ENERGY CNCL	BOX 8010 HARRISBURG, PA 17105	SEO
PHILLIPS LEGISLATIVE SERVICE INC WILLIAM L PHILLIPS	459 RICE ST - 3RD FLOOR ST PAUL, MN 55103	RULES
POPHAM HAIK LAW FIRM ROBERT S BURK	3300 PIPER JAFFERY TOWER MINNEAPOLIS, MN 55402	RULES
PUERTO RICO ENERGY OFFICE	MANILLAS STATION-BOX 41089 SANTRUCE, PR 00940	SEO
Q S S INC CHARLES KROEGER	BOX 838 FARIBAULT, MN 55021	RULES
REGION FIVE REG DEVEL COMM DAVE WEIRENS	611 IOWA AVE STAPLES, MN 56479	RULES
RHODE ISLAND ENERGY OFFICE	275 WESTMINISTER MALL PROVIDENCE, RI 02903	SEO
RICHFIELD CITY OF BRUCE NORDQUIST	6700 PORTLAND AVE S RICHFIELD, MN 55423	RULES
SAAG CHRISTOPHER K. SANDBERG	BREMER TOWER-RM 1100 ST PAUL, MN 55101	RULES
SAMOA ENERGY OFFICE MATT Le'i	TERRITORIAL ENERGY OFFICE PAGO PAGO, SM 96799	SEO
SIERRA CLUB	1313 - 5TH ST. S.E. RM 323 MINNEAPOLIS, MN 55414	RULES
SOUTH CAROLINA ENERGY OFFICE	1201 MAIN ST #1710 COLUMBIA, SC 29201	SEO
SOUTH DAKOTA OFFICE-ENERGY POLICY STEVE WEGMAN	217 1/2 W. MISSOURI PIERRE, SD 57501	SEO
ST CLOUD AREA CHAMBER OF COMMERCE THOMAS MOORE	26 N. SIXTH AVE ST CLOUD, MN 56302	RULES

<<<< R U L E S >>>>

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
ST LOUIS CO PLANNING & ZONING OFF MARK JOHNSON	COURTHOUSE DULUTH, MN 55802	RULES
ST PAUL CITY OF JAN GAFTERLAND	445 CITY HALL ST PAUL, MN 55102	RULES
STATE GOVERNMENT AFFAIRS 3M CO WILLIAM J. LANGLOIS	BLDG 225-5N-04 3M CENTER ST PAUL, MN 55144	RULES
TENNESSEE ENERGY OFFICE	320 - 6TH AVE. N. NASHVILLE, TN 37219	SEO
TEXAS ENERGY OFFICE	1700 NO. CONGRESS AVE SUITE 640 AUSTIN, TX 78701	SEO
TRI COUNTY COMM ACTION PROG MARK G SEXTON	404 SECOND AVE NE LITTLE FALLS, MN 56345	RULES
U OF M ROBERT W SNYDER	1994 BUFORD AVE-RM 248COB ST PAUL, MN 55108	RULES
U S DEPT OF INTERIOR-FISH &WILDLIFE ROBERT F. WELFORD	400 SIBLEY ST-STE 50 ST PAUL, MN 55101	RULES
U.S. HOUSE OF REPRESENTATIVES GERRY SIKORSKI	CANNON OFFICE BLDG-RM 414 WASHINGTON, DC 20515	MCD
UNITED POWER ASSN BRUCE HAUSCHULZ	HIGHWAY 10 ELK RIVER, MN 55330	RULES
UNITED POWER ASSN REYNOLD S RAHKO	HWY 10 E ELK RIVER, MN 55330	RULES
UNOCAL CORP DAVE HENDERSON	1650 GOLF RD E SCHAUMBURG, IL 60196	RULES
UPPER MINN VALLEY REG DEVEL COMM OTTO SCHMID	323 SCHLIEMAN AVE W APPLETON, MN 56208	RULES
UTAH ENERGY OFFICE - 3 TRAID CENTER MICHAEL JOHNSON	355 WEST NORTH TEMPLE - Room 450 SALT LAKE CITY, UT 84180	SEO
VERMONT STATE ENERGY OFFICE	STATE OFFICE BLDG MONTPELIER, VT 05602	SEO
VIRGIN ISLANDS ENERGY OFFICE	BOX 2996 ST THOMAS, VI 00801	SEO

<<<< R U L E S >>>>

People receiving information on rule changes

Company / Person	Street / City, State, Zip	Code
VIRGINIA ENERGY OFFICE JENNIFER SNEAD	2201 W. BROAD ST. RICHMOND, VA 23220	SEO
WALDORF CORP GARY KAZUIKEWICA	2250 WABASHA ST ST PAUL, MN 55114	RULES
WASHINGTON CO HRA SAM GRIFFITH	455 BROADWAY AVE ST PAUL PK, MN 55071	RULES
WASHINGTON STATE ENERGY OFFICE	400 UNION ST E-FIRST FL OLYMPIA, WA 98504	SEO
WINTHROP AND WEINSTINE JOHN A KNAPP	444 CEDAR ST-STE 1800 ST PAUL, MN 55101	RULES
WISCONSIN STATE PLANNING&ENERGY DIV	BOX 7868 MADISON, WI 53707	SEO
WYOMING ENERGY CONSERVATION OFFICE	2301 CENTRAL AVE CHEYENNE, WY 82002	SEO
YAGGY, COLBY ASSOCIATES	717 THIRD AVE SE BOX 7038 ROCHESTER, MN 55903	RULES
ZENK, READ, TYPSTAD & ASSOC. LARRY A READ	BOX 689-OLD HIGHWAY 65 N. ALBERT LEA, MN 56007	RULES

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)

Judith Schmidt, 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 Divisicn, rulemaking mailing list is accurate, complete, and current as of this 30 day of January, 1990.

Judith Schmidt
(name)

Data Proc. Coord.
(title)

Subscribed and sworn to before me this 30th day of February, 1990.

Notary Public

ELIZABETH L. WOODHOUSE
NOTARY PUBLIC-MINNESOTA
RAMSEY COUNTY
MY COMMISSION EXPIRES FEBRUARY 28, 1998

STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

In the Matter of the Proposed Amendments to Rules of the Minnesota Department of Public Service Governing Residential Thermal Insulation Standards, Minn. Rules ch. 7640

AFFIDAVIT OF ADDITIONAL DISCRETIONARY NOTICE

STATE OF MINNESOTA)
) SS.
COUNTY OF RAMSEY)

Bruce Nelson, being duly sworn, deposes and says:

1. That in addition to giving the statutorily required rulemaking notice in the above-captioned matter, the Department of Public Service provided additional discretionary notice to the persons on the attached mailing list. The persons on the mailing list include manufacturers, wholesalers, and installers of residential insulation, some of whom are small businesses within the meaning of Minn. Stat. § 14.115 (1988). **The Department has given this notice in accordance with Minn. Stat. § 14.115, subp. 4 (1988) in order to provide an opportunity for small businesses to participate in the rulemaking process.**

2. This additional discretionary notice was given on the 23rd day of February, 1990, when the Department of Public Service served its "Notice of Intent to Amend Rules Without a Public Hearing" on the persons on the mailing list referred to in paragraph 1 above by depositing in the State of Minnesota Central Mail system or in the United States mail for first class mailing at said City of St. Paul, a copy thereof, properly enveloped, with postage prepaid, and addressed to said persons.

Bruce Nelson

Subscribed and sworn to before me this 23rd day of February, 1990.

ELIZABETH L. WOODHOUSE
NOTARY PUBLIC-MINNESOTA
RAMSEY COUNTY
MY COMMISSION EXPIRES FEBRUARY 28, 1993

Notary Public

MAILING LIST FOR NOTICE OF INTENT TO ADOPT RULES
WITHOUT A PUBLIC HEARING
FEBRUARY, 1990

NAME	ADDRESS	CITY
** COMPANY -		
Dave Tonnancour	P.O. Box 338	Cornell, WI 54732
Glenn Strand	515 E. Mennehaha Pky.	Minneapolis, MN 55419
** COMPANY - AALA		
John Lock / Peter S. Unger	656 Quince Orchard Rd.	Gaithersburg, MD 20878
** COMPANY - Air-Crete Manufacturing		
Dennis Kahnke	206 West 11th St.	Redwood Falls, MN 56283
** COMPANY - Alex Insulation		
Tim Cullen	1301 Wallace St.	Alexandria, MN 56308
** COMPANY - Alfol		
Foster R. Renwick	P.O. Box 7024	Charlotte, NC 28217
** COMPANY - Alumafoil Insulation Corp.		
E. Freel Singleton	P.O. Box 247	Buena Park, CA 90621
** COMPANY - American Energy Products		
Terry Wildeboer	1175 E. Garvey	Covina, CA 91724
** COMPANY - American Insulation Inc.		
Delano Bleskacek	P.O. Box 91	Bloomer, WI 54724
** COMPANY - American Rockwool, Inc.		
Barton W. Bromley	P.O. Box #880	Spring Hope, NC 27856
** COMPANY - Amoco Foam Products Co.		
Alisa Hoffee	400 Northridge Rd.	Atlanta, GA 30350
** COMPANY - Anderson & Assoc.		
Robert Anderson	441 Intrepid Ct.	Boulder City, NV 89005
** COMPANY - Apache Building Products Co.		
Dennis W. Rosato	2025 E. Linden Ave.	Linden, NJ 07030
** COMPANY - Applegate Insulation		
Terry Applegate	P.O. Box 292	Okemo, MI 48864

MAILING LIST FOR NOTICE OF INTENT TO ADOPT RULES
WITHOUT A PUBLIC HEARING
FEBRUARY, 1990

NAME	ADDRESS	CITY
** COMPANY - Ark-Seal International		
Jesse Argon	2185 So. Janson	Denver, CO 80223
** COMPANY - Associated Foam Mgrs.		
	P.O. Box 246	Excelsior, MN 55331
** COMPANY - Atlas Energy Products		
Terry Nelson	2555 Cumberland Parkway	Atlanta, GA 30339
** COMPANY - BASF Wyandotte Corporation		
Tom Greeley	100 Cherry Hill Road	Parisippany, NJ 07054
** COMPANY - Bellar Insulated Masonry, Inc.		
Bill Belvedere	7104 Ohms Lane	Edina, MN 55435
** COMPANY - Benchmark Foam		
John Devine	3200 9th Ave. SE	Watertown, SD 57201-9102
** COMPANY - Bonnieville Power Admin.		
Sev Pratt	P.O. Box 3621	Portland, OR 97208
** COMPANY - Brouk Company		
J. John Brouk, Sr.	1367 S. Kingshighway	St. Louis, MO 63110
** COMPANY - Builders Insulation Co.		
Joe Fischer	7000 - 57th Ave. N.	Minneapolis, MN 55428
** COMPANY - Bureau of Home Furnishings		
Ray Hillier	3485 Orange Grove Ave.	North Highland, CA 95660
** COMPANY - C.P. Chemical Co.		
Walter Hasselman Sr.	39 Westmorlland Ave.	White Plains, NY 10606
** COMPANY - CISEP		
Ken Hagan	610 Centre City Offices	Dayton, OH 45420
** COMPANY - Carpenter Insulation Company		
Jay Scherr	5016 Monument Ave.	Richmond, VA 23230

MAILING LIST FOR NOTICE OF INTENT TO ADOPT RULES
WITHOUT A PUBLIC HEARING
FEBRUARY, 1990

NAME	ADDRESS	CITY
** COMPANY - Casco Insulation		
Ray W. Barkhace	1918 S. High School Rd.	Indianapolis, IN 46241
** COMPANY - Cellofoam North America		
Greg Bontrogen	P.O. Box 406	Conyers, GA 30207
** COMPANY - Cellofoam/Southeastern		
Fred T. Rice	1124 Ellington Drive	Conyers, GA 30207
** COMPANY - Cellulose Insulation of Neb.		
Mike Cswercko	505 West 6th St.	Papillion, NB 68046
** COMPANY - Celotex Corporation		
Doug Gilbertson	300 Dakota Ave S.	Golden Valley, MN 55416
Tom Wolf	P.O. Box 22602	Tampa, FL 33622
** COMPANY - Central Fiber Corp.		
Bob Hershaw	P.O. Box 749	Wellsville, KS 66092
** COMPANY - CertainTeed Corporation		
John J. DiCesare Jr.	P.O. Box 860	Valley Forge, PA 19482
** COMPANY - Cheney Building Systems		
Ted Cheney	2755 So. 160th Street	New Berlin, WI 53151
** COMPANY - Construction Times		
William Baker	110 S. Greeley	Stillwater, MN 55082
** COMPANY - Consumer Products Safety Com.		
Frank Krivda	5401 Westbard Ave.	Washington, DC 20207
** COMPANY - Designed Distribution		
Richard Williams	1374 W. Randall Road	Coopersville, MI 49404
** COMPANY - DiversiFoam Products		
Steve Slavik	9091 Co. Rd. 50	Rockford, MN 55373

MAILING LIST FOR NOTICE OF INTENT TO ADOPT RULES
WITHOUT A PUBLIC HEARING
FEBRUARY, 1990

NAME	ADDRESS	CITY
** COMPANY - Dow Chemical U.S.A.		
Jeff Alcott	P.O. Box 5150	Granville, OH 43023
Phil Hendrickson	P.O. Box 5150	Granville, OH 43023
Dave Williams	410 Sackett Point Rd.	North Haven, CT 06473
** COMPANY - E.H. Pechan & Assoc.		
Nancy Vandenberg	5537 Hempstead Way	Springfield, VA 22151
** COMPANY - EMPRO		
Jeff Eggen	14332 21st Ave. N	Minneapolis, MN 55441
** COMPANY - Eagle Shield		
Tad Barnard	2006 North Highway 360	Grand Prarie, TX 75050
** COMPANY - Edwards Sales		
Laverne Wheeler	6530 Cambridge Street	Minneapolis, MN 55426
** COMPANY - Energy Saver Imports		
Bowen Hyma	P.O. Box 387	Bloomfield, CO 80020
** COMPANY - Energy Zone Mfg. Inc.		
James Larson	P.O. Box 205	Buffalo, MN 55313
** COMPANY - FTC Enforcement Division		
Kent Howerton	6th & Pa. Ave. NW	Washington, DC 20580
** COMPANY - Facile Technologies, Inc.		
Robert Cella	185 6th Ave	Patterson, NJ 07509
** COMPANY - Factory Mutual		
Joe Beauregard	1151 Boston Prov. Tpk.	Norwood, MA 02062
** COMPANY - Fibrex, Inc.		
Theo A. Deal	P.O. Box 1148	Aurora, IL 60507
** COMPANY - Foam Enterprises		
James L. Anderson	13630 Watertower Circle	Minneapolis, MN 55441

MAILING LIST FOR NOTICE OF INTENT TO ADOPT RULES
WITHOUT A PUBLIC HEARING
FEBRUARY, 1990

NAME	ADDRESS	CITY
** COMPANY - Foam-Cots		
Caroll Friedricks	8857 Zeland Ave	Broolkyn Park, MN 55445
** COMPANY - Form Products		
Dave Young	29 W. 471 N. Aurora Rd.	Naperville, IL 60540
** COMPANY - Gaska Tape Inc.		
Chris Habbeger	1810 W. Lusher Ave.	Elkhart, IN 46516
** COMPANY - General Fiberglass		
Gene Berner	21326 Heywood Ave.	Lakeville, MN 55044
** COMPANY - Guardian Fiberglass		
Robert Niswitz	1000 E. North St.	Albion, MI 49224
** COMPANY - HUD/FHA		
Dave Nietz	220 So. Second St.	Minneapolis, MN 55401
** COMPANY - Halstead Industrial Products Group		
Larry Cochrane	P.O. Drawer Y-1	Greensborough, NC 27402
** COMPANY - Halverson Supplies		
Kurt Belinski	11430 K-Tel Drive	Minnetonka, MN 55343
** COMPANY - Holland Industries		
Don Gould	P.O. Box 248	Gilman, IA 50106
** COMPANY - Huntsman Chemical Corp.		
James E. Shannon	5100 Bainbridge Blvd.	Chesapeake, VA 23320
** COMPANY - ICBO		
John Nosse	5360 South Workman Mill	Whittier, CA 90601
** COMPANY - IPI Division of PMC, Inc.		
Hugh McAdams	P.O. Box 70	Elkton, MD 21921-0070
** COMPANY - Icynene, Inc.		
Charles W. Johnson	376 Watline Ave.	Mississauga, Ont., CANADA L4Z 1X2

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NAME	ADDRESS	CITY
** COMPANY - Industrial Thermo Polymers Ltd.		
Steve Hartman	7676-14 Kimbel St.	Mississauga, Ont., Canada L5S 1J8
** COMPANY - Infloor, Inc.		
Tom Farrell	920 Hamel Road	Hamel, MN 55340
** COMPANY - Innovative Energy		
Mary Wadsworth	1119 W. 145th Ave.	Crown Point, IN 46307
** COMPANY - Insul-Mor Mfg., Ltd.		
Jerry DePauw	P.O. Box 259	Oregon, IL 61061
** COMPANY - Insulated Masonry Systems, Inc.		
Rick Johnson	8230 E. Valley Vista Dr.	Scottsdale, AZ 85253
** COMPANY - Insulation Contractors Assoc.		
R. Hartley Edes	15819 Crabbs Branch Way	Rockville, MD 20855
** COMPANY - Insulation Supplies		
John Pates	11430 K-Tel Drive	Minnetonka, MN 55343-8844
** COMPANY - International Cellulose Corp.		
Harold Boyer	P.O. Box 45006	Houston, TX 77245
** COMPANY - Iowa EPS Products		
Randy Nicholson	400 E. Iowa St.	Indanola, IA 50125
** COMPANY - Johnson Layden Corp.		
Stan Johnson	7234 E. Shoeman Lane	Scottsdale, AZ 85251
** COMPANY - Jones Insulation		
DuWayne Jones	11207 NW Magnolia St.	Coon Rapids, MN 55433
** COMPANY - Kavi-T-Foamers		
Larry Jamison	3732 Tonkawood Rd.	Minnetonka, MN 55345
** COMPANY - Keck/Mahin/Cate		
Barrett Azigbor	233 S. Wacker Dr.	Chicago, IL 60606

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NAME	ADDRESS	CITY
** COMPANY - Key Solutions		
Ed Gilson	P.O. Box 5090	Scottsdale, AZ 85261
** COMPANY - Knauf Fiber Glass		
Glenn A. Brower	240 Elizabeth St.	Shelbyville, IN 46176-1496
** COMPANY - Koppers Company Inc.		
Henry J. Mader		Pittsburgh, PA 15219
** COMPANY - Lamotite		
Ken Hegyes	2909 E. 79th St.	Cleveland, OH 44104
** COMPANY - Macklanburg-Duncan		
Roger Trammell	P.O. Box 25188	Oklahoma City, OK 73125-0188
** COMPANY - Manville Sales Corp.		
Richard J. Ray	P.O. Box 5108	Denver, CO 80217-5108
David G. Ober	P.O. Box 5108	Denver, CO 80217-5108
** COMPANY - Mason City Recycling		
Dean Hess	1410 South Monroe	Mason City, IA 50401
** COMPANY - Midwest Technologies, Inc.		
Darrell Moeck	701 Parkway Place Dr.	Little Rock, AR 72211
** COMPANY - Mineral Insulation Mfg. Assoc.		
Kenneth D. Mentzer	1420 King Street	Alexandria, VA 22314
** COMPANY - Ctr. for Energy & Urban Envt.		
Dick Arey	510 First Avenue N	Minneapolis, MN 55403
** COMPANY - Minnesota Masonary Institute		
Gene C. Abbate	5959 Baker Rd.	Minnetonka, MN 55345
** COMPANY - Mizell Brothers		
Joel Tradup	601 Taft St. NE	Minneapolis, MN 55413
** COMPANY - Mobay Chemical Corporation		
Donald C. Wysocki	Mobay Road	Pittsburg, PA 15205

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NAME	ADDRESS	CITY
** COMPANY - Modern Insulation, Inc.		
Bill Bauer	P.O. Box 157	Spencer, WI 55479
** COMPANY - Mortell Co.		
Gene Glon		Kankakee, IL 60901
** COMPANY - Moss & Barnett		
Mike Ahern	90 S. 7th St.	Minneapolis, MN 55402-4119
** COMPANY - NAHB National Research Center		
Raj S. Sikand	400 Prince George's Cent	Upper Marlbaro, MD 20772-8731
** COMPANY - NIST/NVLAP		
Jeff Horlick		Gaithersberg, MD 20899
** COMPANY - NSP		
Lyn Gustafson	414 Nicollet Mall	Minneapolis, MN 55401
** COMPANY - National Inst. of Stds. & Tech.		
F. J. Powell		Gaithersburg, MD 20899
** COMPANY - New Yory State Energy Office		
Adam Hinge	Two Rockefeller Plaza	Albany, NY 12223
** COMPANY - Northern Insulation Products		
John Johnson	414 E. 13th Street	Gibbon, MN 55335
** COMPANY - Novak-Fleck, Inc.		
Wayne Fleck	8857 Zealand Ave. N.	Brooklyn Park, MN 55445
** COMPANY - Oak Ridge National Laboratory		
Jeff Christian	P.O. Box 2008	Oak Ridge, TN 37831-6092
** COMPANY - Oak Ridge National Laboratrory		
Ron Graves	P.O. Box 2008	Oak Ridge, TN 37831-6092
** COMPANY - Omega Point Laboratories		
David Crouse	6868 Alamo Downs Pky.	San Antoino, TX 78238

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FEBRUARY, 1990

NAME	ADDRESS	CITY
** COMPANY - Owens Corning Fiberglas		
Nick McClintoch/Greg Handcock	1 Appletree Square	Bloomington, MN 55420
John Daugherty	Route 160	Grandville, OH 43023
Timothy Grether		Toledo, OH 43659
Clifford Smith		Toledo, OH 43659
Ed Mirra		Toledo, OH 43659
** COMPANY - Paramount Technical Products		
Brian McGroarty	P.O. Box 1042	Spearfish, SD 57783
** COMPANY - Parco		
Al Collison/Roger Borgman	P.O. Box 1533	Norfolk, NE 68701
** COMPANY - Paul's Insulation		
Paul Anderson	P.O. Box 115	Vergas, MN 56587
** COMPANY - Perlite Institute		
Paul Julius	600 South Federal	Chicago, IL 60605
** COMPANY - Perma "R" Products Inc.		
Lee LeClair	P.O. Box 279	Grenada, MI 38901
** COMPANY - Perma-Cell		
Ken Johnson	12016 Riverwood Drive	Burnsville, MN 55337
** COMPANY - Phenolicore Inc.		
Bruce Stansil	2015 Quail Trap Road	Caledonia, IL 61011
** COMPANY - Plymouth Foam Products		
Vance Roberts	1800 Sunset Drive	Plymouth, WI 53073
** COMPANY - Poly Fab Industries, Inc.		
Gregg Lockwood	9540 83rd Avenue N.	Maple Grove, MN 55369
** COMPANY - Poly Foam Inc.		
Roy Bach / Bob Humbolt	116 Pine Street S.	Lester Prairie, MN 55354

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NAME	ADDRESS	CITY
** COMPANY - Polycell Industries		
Francis Sigati	4490 8th Ave.	Marion, IA 52302
** COMPANY - R.L. Adams Plastics		
Gary A. Weinert	2450 Bucannan SW	Grand Rapids, MI 49508
** COMPANY - RADCO		
Marty Kottler	16415 South Avalon Blvd.	Gardena, CA 90248
** COMPANY - RIMA		
Roy Ackers	661 E. Montrey Ave.	Pomona, CA 91767
** COMPANY - Reflectix, Inc.		
Monty Milspaugh	P.O. Box 108	Markleville, IN 46056
** COMPANY - SPI/Polyurethane Foam Division		
George H. Sievert	P.O. Box 240	Rogers, MN 55374
** COMPANY -		
Jay Johnson	4558 Edmond Blvd.	Minneapolis, MN 55406
** COMPANY - Shelter Supply		
Mark LaLiberte	1325 E. 79th St.	Mpls., MN 55420
** COMPANY - Silbrico Corporation		
Richard W. Baldauf	6300 River Road	Hodgkins, IL 60525
** COMPANY - Simplex Products Group		
Dan Sarvis	P.O. Box 10	Adrian, MI 49221
** COMPANY - Siwek Lumber & Millwork		
Dave Siwek	2536 Marshall St. NE	Mpls., MN 55418
** COMPANY - Smith-Gates Corporation		
Mike O'Toole		Farmington, CT 06032
** COMPANY - Society of Plastics Industry		
Rich Gottwald	1275 K Street N.W.	Washington, DC 20005

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NAME	ADDRESS	CITY
** COMPANY - State Building Codes Division		
Mike Godfry		St. Paul, MN 55101
** COMPANY - Stepan Company		
Joseph Lohr	22 Frontage Rd.	Northfield, IL 60093
** COMPANY - Strong-Lite Products		
Henry E. Gerhard	P.O. Box 8029	Pine Bluff, AR 71611
** COMPANY - Styrene Products, Inc.		
Brian Gerber	5320 Fuller Rd.	Schofield, WI 54476-3199
** COMPANY - Styrotech North, Inc.		
Philip Birch	3301 James Day Avenue	Superior, WI 54880
** COMPANY - Styrotech, Inc.		
Alan Mann	1620 Central Ave NE	Minneapolis, MN 55413
** COMPANY - Temple-Inland		
Dick Kenley	P.O. Drawer N	Diboll, TX 75941
** COMPANY - Tennessee Tech. University		
David W. Yarbrough	Box 5013	Cookeville, TN 38505
** COMPANY - Thermal Wall Systems		
Tony Cellucci	P.O. Box 2495	Naperville, IL 60566
** COMPANY - Thermatest Div. of Holometrix		
A.O. Desjarlais	99 Erie St.	Cambridge, MA 02139
** COMPANY - Thermo-Pak Mfg.		
Ray Hieb / Harold Anderson	Box 1496	Fargo, ND 58107
** COMPANY - Thermo/Home Insulation		
Mark Earhart	695 Lowry Avenuse East	Minneapolis, MN 55418
** COMPANY - Tri-State Insulation		
Don Joy	P.O. Box 106	Miller, SD 57362

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NAME	ADDRESS	CITY
** COMPANY - Twin City Testing		
Arnie Kurmis	662 Cromwell Ave.	St. Paul, MN 55114
** COMPANY - U.S. Insulfoam Co.		
Jeffery P. Wallem	P.O. Box 150	Caledonia, IL 61011-0150
** COMPANY - U.S. Mineral Products Co.		
Charlie Cook	P.O. Box 5006	Huntington, IN 46750
** COMPANY - U.S. Testing Company		
Robert Smith	1341 N. 108th East Ave.	Tulsa, OK 74116
** COMPANY - UC Industries		
Herbert Slone	137 East Ave.	Tallmadge, OH 44278
** COMPANY - USG Interiors, Inc.		
Jim Watson	101 South Wacker Dr.	Chicago, IL 60606-4385
** COMPANY - Underwriters Laboratories Inc.		
Richard F. Metz	1210 W. 96th Street	Bloomington, MN 55431
Robert Kiefer	333 Pfingsten Road	Northbrook, IL 60062
** COMPANY - Universal Foam Systems, Inc.		
Dick Christianson	P.O. Box 548	Cudahy, WI 53110-0548
** COMPANY - Vermiculite Association		
Tammie Cebula	600 South Federal St.	Chicago, IL 60605
** COMPANY - W.J. Dennis & Co.		
Frank Malley	1111 Davis Road	Elgin, IL 60123
** COMPANY - W.R. Grace and Company		
Dick Jeager	60501 W. 65th St.	Chicago, IL 60638
** COMPANY - Weather Guard Insulation		
Mike Hartnett	2001 Hitzert Ct.	Fenton, MO 63026
** COMPANY - Wisconsin EPS		
Debra L. Freeberg	P.O. Box 669	Fond Du Lac, WI 54935

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NAME	ADDRESS	CITY
** COMPANY - Wrap-On Company		
Mr. McArdle	5550 W. 70th Place	Bedford Park, IL 60638
** COMPANY - Zaback Insulation, Inc.		
Ruben Zaback	7625 Joyce Road	Carver, MN 55315
** COMPANY - Firestone Building Products Co.		
Gregory A. Brandt	525 Congressional Blvd.	Carmel, IN 46032-5607
** COMPANY - ADO Products		
Kieth Obermeyer	7887 Fuller Rd.	Eden Prairie, MN 55344

Department of Public Service

Proposed Permanent Rules Relating to Insulation Standards

Rules as Proposed

7640.0120 DEFINITIONS.

Subpart 1. **Applicability.** For the purposes of this chapter, the following definitions of terms apply. Technical, scientific, and engineering terms undefined by this part have the meanings given in ~~the ASHRAE Handbook of Fundamentals or in~~ ASTM C ~~168-88a~~ 168, Standard Definitions of Terms Relating to Thermal Insulation Materials.

[For text of subps 2 to 16, see M.R.]

Subp. 17. **Manufacturer of insulation.** "Manufacturer of insulation" means:

A. an industry member who produces insulation materials in their final form for distribution or sale to intermediate and ultimate consumers ~~or who is a urea formaldehyde foam or spray urethane foam insulation manufacturer of the component resins and catalysts used for in situ foaming.~~;

B. an industry member who produces insulation materials or installation instructions for a product the manufacture of which is completed at the jobsite; or

C. an installer of an insulation product the manufacture of which is completed at the jobsite who prepares or modifies the product's installation instructions.

An applicator, contractor, or fabricator of insulation materials who installs, applies, or uses insulation materials for their intended uses, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation.

[For text of subps 18 to 26, see M.R.]

7640.0130 INSULATION MATERIALS STANDARDS.

[For text of subpart 1, see M.R.]

Subp. 2. **General testing requirements.** General testing

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requirements for regulated thermal insulation materials in this part are as follows:

[For text of item A, see M.R.]

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:

[For text of subitems (1) to (4), see M.R.]

(5) Insulation must have flammability characteristics in accordance with the ~~Uniform Building Code, 1985 Edition~~ UBC, 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) One of the following ~~ASTM~~ test methods must be used: ASTM C ~~177-85~~ 177, ASTM C ~~236-87~~ 236, ASTM C ~~518-85~~ 518, or ASTM C ~~976-82~~ 976. Manufacturers shall select the appropriate test method for the material unless a specific method or procedure is referenced within a materials specification. Thermal conductivity must only be measured at a mean temperature of 75 degrees Fahrenheit.

(2) R-value testing must be performed at the insulation's representative thickness, and be consistent with the requirements of ~~the United States Federal Trade Commission~~ Code of Federal Regulations, title 16, part 460. Unit R per inch must be derived from R-value testing performed to its representative thickness.

(3) For ~~polyurethane, polyisocyanurate, and extruded polystyrene, in accordance with the FTC R-value rule, section 460.5~~ foam plastic insulations that incorporate blowing agents other than air or pentane, R-value tests must be done on samples that have been treated to fully reflect the effect of aging on the product's R-value. If criteria for treating samples to reflect the effect of aging are not specified within a material specification, the samples must be treated for either 90 days at 140 ±2 degrees Fahrenheit (60 ±1 degree centigrade)

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or six months at ambient conditions prior to conditioning and thermal resistance testing. During treating, air circulation must be provided so that all surfaces of the insulation are exposed to the surrounding environmental conditions.

[For text of subitems (4) to (6), see M.R.]

[For text of item D, see M.R.]

Subp. 3. **Cellulose insulation.**

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

(1) The product must comply with ASTM C ~~739-86~~ 739, 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, Code of Federal Regulations, title 16, part 1209 subpart B.

[For text of subitems (2) and (3), see M.R.]

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

[For text of subitems (1) and (2), see M.R.]

(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~~ subpart 2, item C, 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~~ 605. 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 combustion must be ~~tested for~~ in accordance with ASTM C ~~739-86, part 5~~ 739, or the CPSC Interim Safety Standard for Cellulose

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Insulation, Code of Federal Regulations, title 16, part 1209. ~~Values-achieved-must-not-exceed-those-established-by-the CPSC.~~ If the product in loose-fill form meets the criteria for critical radiant flux, then a test of the product in spray-applied form for critical radiant flux is unnecessary.

(6) Moisture absorption must be determined in accordance with section ~~15~~ 14 of ASTM C ~~553-70-reapproved 1977~~ 553. 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~~ have a minimum adhesive/cohesive bond strength per unit area of five times the weight of the material under the test plate when tested in accordance with ASTM E 736.

~~(8)-Test-procedures-in-subitem-(7)~~ Exception: Testing and compliance with bond strength criteria 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~~ intended only for installation in enclosed cavities, and the product is identified as intended only for those installations.

(8) Corrosion must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for corrosion, then a test of the product in spray-applied form is unnecessary.

(9) Odor emission must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for odor emission, then a test of the product in spray-applied form is unnecessary.

(10) Fungi resistance must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose

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Insulation, Code of Federal Regulations, title 16, part 1209. If the product in loose-fill form meets the criteria for fungi resistance, then a test of the product in spray-applied form is unnecessary.

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

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

B. Mineral fiber in batts and blankets form must comply with ASTM C ~~665-86~~ 665, 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:~~ comply with ASTM C 612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

~~(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 2.~~

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

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

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

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

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Supplementary Requirements.

C. Unfaced polyurethane and polyisocyanurate in board form must comply with ASTM C ~~591-85~~ 591, Standard Specification for Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

Exception: Aged R-value must be 5.6 per inch or greater at 75 degrees Fahrenheit.

[For text of item D, see M.R.]

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

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

[For text of subitem (2), see M.R.]

~~(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.~~

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

G. Rigid cellular phenolic insulation must comply with ASTM C 1126, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

H. Foam plastic insulation that conforms to all requirements of ICBO Evaluation Service Acceptance Criteria for Foam Plastic, ~~October, 1982,~~ for the intended application, meets the ~~Minnesota testing standards in this subpart~~ requirements of part 7640.0130.

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)~~ 549, Standard Specification for Perlite Loose Fill Insulation.

[For text of subitem (2), see M.R.]

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

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

[For text of subitem (2), see M.R.]

Subp. 7. **Reflective foil insulation.**

A. The following requirements apply to reflective foil insulation:

[For text of subitem (1), see M.R.]

(2) Except for radiant barrier products, thermal performance for single or multiple sheet sections must be determined according to ASTM C ~~976-82~~ 976 or ASTM C ~~236-87~~ 236. 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 and the associated air spaces.

[For text of subitems (3) to (6), see M.R.]

B. Reflective insulation systems with more than one sheet must be tested according to ASTM C ~~976-82~~ 976 or ASTM C ~~236-87~~ 236 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. The tests must be done at a mean temperature of 75 degrees Fahrenheit, with a temperature differential of 30 degrees Fahrenheit.

C. A single sheet reflective insulation ~~systems~~

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system must be tested ~~with~~ according to ASTM E 408 ~~or another test method that provides comparable results. This tests the~~ to determine its emissivity ~~of the foil (its power to radiate heat)~~. To get the R-value for ~~a specific~~ the measured emissivity ~~level~~, and a specific 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)~~ Table 2 in chapter 22 of the ASHRAE Handbook of Fundamentals must be used. The R-value shown for 50 degrees Fahrenheit must be used, with a temperature differential of 30 degrees Fahrenheit.

[For text of item D, see M.R.]

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 requirements in items A to F.

[For text of item A, see M.R.]

B. ~~Results of the~~ Water or moisture absorption ~~test~~ must be ~~reported~~ determined according to one of the following methods:

(1) ASTM C 272;

(2) ASTM C 553, section 14;

(3) ASTM C 739, section 12; or

(4) ASTM D 2842.

[For text of items C and D, see M.R.]

E. The ~~initial report as required by part 7640.0150, subpart 2, must include a description of other tests applied to the~~ product must not produce a detectable odor that is classified as objectionable and strong or very strong by two or more panel members when tested in accordance with ASTM C 739, section 13.

[For text of item F, see M.R.]

7640.0140 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

Subpart 1. **~~Application testing~~ Physical** requirements for **insulation materials designed for exterior,**

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underground ~~insulation~~ use.

A. The insulation ~~by itself or as part of a system,~~ installed according to the manufacturer's recommendations, must be in service tested ~~in~~ at either a testing facility ~~designed to duplicate actual underground conditions~~ or an actual house for a period of one continuous year. The testing environment must ~~reflect the extremes of~~ have historical winter weather, ~~moisture~~ conditions no less than 8,000 Fahrenheit heating degree days, and soil conditions with drainage characteristics classified as poor in Table 7-4 of the Building Foundation Design Handbook. 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.~~

Exception: In-service testing is not necessary if the manufacturer demonstrates that a product of the same material specification with equal or less durability in this application has been successfully in-service tested. The manufacturer shall demonstrate the equal or less durability test by comparing laboratory test results of the physical characteristics listed in part 7640.0140, subpart 1, item B, clauses (1) to (4).

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~~ manufacturer shall demonstrate that the product ~~for~~ will exhibit less than a ten percent loss in R-value when installed underground ~~use must be based on the most recent applicable ASTM tests or any other tests that are available that give consideration to each~~ and the combined effect of ~~the following~~ assumed conditions on the following physical characteristics are considered:

[For text of subitems (1) and (2), see M.R.]

(3) soil compatibility; and

(4) ~~flexural strength or compression; and~~ compressive strength

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

~~B.~~ The ~~initiator~~ manufacturer ~~seeking the listing~~ shall ~~select~~ state the ~~appropriate tests that best address the~~ assumed conditions ~~stated~~ in ~~item C~~ the initial report filed according to part 7640.0150, subpart 2.

~~E~~ C. An association ~~or trade representative~~ may ~~initiate a product's listing~~ conduct tests and prepare a filing for exterior below grade application of a type of product on behalf of its constituency. The association shall ~~submit representative samples for~~ conduct testing ~~and certify to the department which manufacturers within its constituency the samples are representative of~~ according to subpart 1, item A, on at least three specimens of the product. The association ~~must have an internal certification procedure to determine constituency conformity to~~ shall demonstrate that the manufacturers' products for which the tests and filing would apply are representative ~~samples submitted for testing~~ of the tests and filing performed by the association.

~~F~~ D. ~~A summary of test results for item B must be submitted to the department~~ Mineral fiber board for exterior below ground application must be manufactured to facilitate downward drainage.

Subp. 2. Requirements for **installation instructions for underground use.** Written instructions on underground use of insulation must~~, at a minimum,~~ contain instructions or information for vertical and, if recommended, horizontal application regarding:

A. ~~optimal~~ application techniques;

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

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

D. ~~varying soil and soil moisture conditions~~ chemical

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resistance information;

E. ambient temperature ~~effects on~~ range permitted during application; and

F. ~~optimal~~ backfill techniques and backfill materials for ~~protection from physical damage, and~~ prevention of damage to the insulation material and below grade protective coating.

~~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~~ Installation requirements for exterior above ground and underground ~~installation~~ use. ~~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~~ grade must be covered with an exterior wall finish to protect the insulation from ~~ultraviolet~~ deterioration due to sunlight, ~~moisture absorption, freeze thaw durability, air erosion, and general weather conditions~~ and physical abuse.

~~C~~ B. 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

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protective coating and method of application must be in accordance with the insulation manufacturer's instructions and recommendations.

Þ C. 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~~ include exterior drainage, as defined in part 7640.0120.

[For text of subp 4, see M.R.]

7640.0150 REPORTING REQUIREMENTS.

[For text of subpart 1, see M.R.]

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:

[For text of items A to E, see M.R.]

F. results of initial tests, as required by part 7640.0130, identifying tests performed, name of laboratory, testing dates, and test results. The report for "other" insulation products regulated by part 7640.0130, subpart 8, must also include the products' Material Safety Data Sheet;

[For text of items G to I, see M.R.]

[For text of subp 3, see M.R.]

7640.0160 APPLICATION AND INSTALLATION STANDARDS.

Subpart 1. **Applicability.** Industry members, including industry members who offer insulation installation services for new and existing 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.~~

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~~This part applies to new residential construction and retrofit applications.~~

An installer of an insulation the manufacture of which is completed at the jobsite who significantly alters the manufacturer's installation instructions becomes a manufacturer for the purpose of Minnesota Rules, chapter 7640.

Subp. 2. **Application and inspection.**

A. Industry members installing insulation shall follow manufacturer's written application instructions.

~~In attic areas where insulation is to be installed, the installer shall comply with part 7640.0110, subpart 5.~~

B. When installing insulation in attic areas, the installer shall locate flush and recessed light fixtures, and other heat producing appurtenances, and shall comply with National Electrical Code, section 410-66, subsections A and B.

C. Installation of cellulosic and mineral fiber in loose-fill form must ~~comply~~ be in conformance with ASTM standard C ~~1015-84~~ 1015, including part 7.7.2.

D. Installation of reflective insulation must ~~comply~~ be in conformance with ASTM standard C ~~727-72 (reapproved 1978)~~ 727.

E. Installers of urea formaldehyde foam insulation shall conform with Minnesota Statutes, section 325F.18, and Minnesota Rules, parts 4620.1600 to 4620.2100.

F. State and local agencies using appropriated federal funds and persons contracting with state or local agencies with respect to work performed under the contracts shall comply with Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Products Containing Recovered Materials.

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

[For text of items A and B, see M.R.]

C. ~~Urea formaldehyde foam insulation installation must conform with Minnesota Statutes, section 325F.18 and~~

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~~Minnesota Rules, part 4620.2100~~ Installation instructions for products whose manufacture is completed at the jobsite must address the quality assurance program required by part 7640.0130, subpart 2, item D; ambient temperature during application; and actions necessary to facilitate curing or drying.

7640.0180 INCORPORATIONS BY REFERENCE AND CITATIONS.

[For text of subpart 1, see M.R.]

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

[For text of items A to C, see M.R.]

D. ASTM C 272-53 (reapproved 1980), Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.

E. ASTM C 516-80 (reapproved 1985), Standard Specification for Vermiculite Loose-Fill Thermal Insulation.

~~E~~ F. ASTM C 518-85, Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

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

~~G~~ H. ASTM C 553-70 (reapproved 1977), Standard Specification for Mineral Fiber Blanket and Felt Insulation (Industrial Type).

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

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

~~J~~ K. ASTM C 612-83, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

L. ASTM C ~~665-86~~ 665-88, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

~~K~~ M. ASTM C 727-72 (reapproved 1978), Standard Recommended Practice for Use of Reflective Insulation in

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Building Constructions.

~~L~~ N. ASTM C ~~739-86~~ 739-88, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.

~~M~~ O. ASTM C ~~764-84~~ 764-88, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation.

~~N~~ P. ASTM C 951-83, Standard Specification for Urea-Formaldehyde-Based, Foam in Place Insulation.

~~O~~ Q. ASTM C 976-82, Standard Test Method for Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box.

~~P~~ R. ASTM C ~~1014-84~~ 1014-88, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.

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

~~R~~ S. ASTM C 1015-84, Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation.

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

~~T~~ U. ASTM C 1126-89, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

V. ASTM D 2842-69 (reapproved 1975), Standard Test Method for Water Absorption of Rigid Cellular Plastics.

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

X. ASTM E 408-71 (reapproved 1985), Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection Meter Techniques.

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

Z. ASTM E 736-86, Test for Cohesion/Adhesion of Sprayed Fire Resistive Materials Applied to Structural Members.

[For text of subp 2a, see M.R.]

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~~ 1989 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. ~~(Technical Reference Book)~~, chapter 22, tables 1 and 2.

[For text of item B, see M.R.]

C. ~~Federal Trade Commission requirements in~~ Code of Federal Regulations, title 16, part 460, Labeling and Advertising of Home Insulation.

[For text of items D to J, see M.R.]

K. Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Insulation Products Containing Recovered Materials.

L. Underground Space Center, University of Minnesota; Building Foundation Design Handbook; Prepared for Oak Ridge National Laboratory; May 1988, Table 7-4.

[For text of subp 4, see M.R.]

REPEALER. Minnesota Rules, part 7640.0110, subpart 5, is repealed.

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Office of the Revisor of Statutes

Administrative Rules

TITLE: Proposed Permanent Rules Relating to Insulation Standards

AGENCY: Department of Public Service

MINNESOTA RULES: Chapter 7640

INCORPORATIONS BY REFERENCE:

7640.0180: ASTM C 272-53 (reapproved 1980), Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions; ASTM C 612-83, Standard Specification for Mineral Fiber Block and Board Thermal Insulation; ASTM C 665-88, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; ASTM C 739-88, Standard Specification for Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation; ASTM C 764-88, Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation; ASTM C 1014-88, Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation; ASTM C 1126-89, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation; ASTM D 2842-69, (reapproved 1975), Standard Test Method for Water Absorption of Rigid Cellular Plastics; ASTM E 84-84 Revision A, Surface Burning Characteristics of Building Materials; ASTM E 736-86, Test for Cohesion/Adhesion of Sprayed Fire Resistive Materials Applied to Structural Members; ASHRAE Handbook of Fundamentals, (1989 Edition) by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., chapter 22, tables 1 and 2; and Underground Space Center, University of Minnesota; Building Foundation Design Handbook; Prepared for Oak Ridge National Laboratory; May 1988, Table 7-4. Available at Minnesota State Law Library.

The attached rules are approved for publication in the State Register

Craig E. Lindeke
Senior Assistant Revisor

STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

In the Matter of the Proposed Amendments to Rules of the Minnesota Department of Public Service Governing Residential Thermal Insulation Standards, Minn. Rules ch. 7640

STATEMENT OF NEED AND REASONABLENESS

February, 1990

I. INTRODUCTION

The Commissioner of the Minnesota Department of Public Service (Department) proposes to adopt amendments to Minn. Rules ch. 7640, rules known as the Minnesota Residential Thermal Insulation Standards.

The principal rule revisions include modifications to criteria for cellulose spray applied and "other" insulations; modifications to criteria for products designed for exterior below ground use; and updating referenced standards. In addition, editorial changes are proposed to clarify the rule and to conform them with current style requirements.

The original rules governing the manufacture, sale, and installation of all thermal insulation for residential buildings in Minnesota were adopted in November 30, 1985. The rules have been subsequently amended three times: on June 30, 1987; April 30, 1988; and June 26, 1989. Since 1985, approximately 70 manufacturers have completed filings for insulation products with the Department.

The Department began the present rule modification process in October, 1989, by publishing a notice in the State Register (14 S.R. 979) soliciting opinions and information from the public on

the rules governing residential thermal insulation. The deadline for receiving comments was subsequently extended to January 30, 1990.

II. STATEMENT OF DEPARTMENT'S STATUTORY AUTHORITY

The Commissioner's authority to adopt the rule amendments is set forth in Minn. Stat. § 325F.20 (1988), which provides:

> The commissioner shall adopt rules pursuant to chapter 14 regarding quality, information, and product safety specifications for the manufacture, labeling, installation, and thermographing of insulation. The specifications and any amendments to them shall conform as far as is practical to federal standards or other standards generally accepted and in use throughout the United States. The standards, with modifications as may be deemed necessary, may be adopted by reference. The specifications adopted and any amendments shall be based on the application of scientific principles, approved tests, and professional judgment. For purposes of this subdivision, the commissioner may adopt emergency rule, which may remain in effect for 360 days.

"Commissioner" is defined by Minn. Stat. § 325F.19, subd. 3 as the commissioner of energy and economic development. The duties of the commissioner of energy and economic development were transferred to the Department of Public Service by Minn. Laws 1987, ch. 312, art. 1, § 9.

Under these statutes the Commissioner has the necessary statutory authority to adopt the proposed rule amendments.

III. STATEMENT OF NEED

Minn. Stat. ch. 14 (1988) requires the Department to make an affirmative presentation of facts establishing the need for and reasonableness of the rules as proposed. In general terms, this means that the Department must set forth the reasons for its

proposal, and the reasons must not be arbitrary or capricious. However, to the extent that need and reasonableness are separate, need has come to mean that a problem exists which requires administrative attention, and reasonableness means that the solution proposed by the Department is appropriate. The need for the rule amendments is discussed below.

Although the implementation of the Minnesota Residential Thermal Insulation Standards has been going smoothly, the Department believes that certain improvements are needed and is thus proposing these amendments. The first reason that changes are needed is that recent research has heightened the understanding of certain applications of thermal insulation, particularly exterior below grade applications. The revisions proposed are intended to take advantage of this heightened understanding. A second reason for the need for improvement is that the Department is aware of changes in industry practices and federal regulations that relate to residential thermal insulation. Finally, in the day-to-day implementation of these rules, the Department finds that portions of the existing rules are unclear. This rule proposal is intended to clarify those portions.

IV. STATEMENT OF REASONABLENESS

The Department is required by Minn. Stat. ch. 14 to make an affirmative presentation of facts establishing the reasonableness of the proposed rules. Reasonableness is the opposite of

arbitrariness or capriciousness. It means that there is a rational basis for the Department's proposed action. The reasonableness of each section of the proposed rule amendments is discussed below.

Changes in References to ASTM Standards and Other Cross References, Located in Several Parts of the Rule Amendments

In many parts of the proposed rule amendments, the Department proposes to change the form of the references to ASTM standards and other cross references in the rules. In order to fully reference an ASTM standard, one must identity its prefix number, version, and title. Full references to ASTM standards are set forth in part 7640.0180, subp. 2 of the proposed rule amendments, which is entitled "Incorporations by Reference and Citations." However, in the other parts of the rule referencing ASTM standards, the Department proposes to identify only the prefix number, and sometimes the title. Another cross reference of this type refers to the International Conference of Building Officials (ICBO) Evaluation Service Acceptance Criteria for Foam Plastics. The full reference to this standard is set forth in part 7640.0180, subp. 3, item H. However, in the other parts of the rule referencing the ICBO standard, the version referenced is not included. A third cross reference of this type refers to the Code of the Council of American Building Officials (CABO). The full reference to this Code is found in part 7640.0180, subp. 3, item B. However, in the other parts of the rule referencing the CABO Code, the version referenced is not included.

These changes are reasonable because they will reduce the chance for error in future amendments to Minn. Rules ch. 7640, where a new version of a standard may be incorporated in part 7640.0180, subp. 2, but inadvertently overlooked in another part of chapter 7640. They are reasonable for the further reason that the full information on the incorporation by reference is easily found by looking at part 7640.0180.

This explanation serves as the Department's demonstration of the need and reasonableness of the amendments to the ASTM standards and other reference changes in the parts listed below:

Part 7640.0120, subp. 1
Part 7640.0130, subp. 2, item A, subitem 1
Part 7640.0130, subp. 2, item B, subitem 5
Part 7640.0130, subp. 3, item A, subitem 1
Part 7640.0130, subp. 3, item B, subitem 3
Part 7640.0130, subp. 3, item B, subitem 4
Part 7640.0130, subp. 3, item B, subitem 5
Part 7640.0130, subp. 3, item B, subitem 6
Part 7640.0130, subp. 4, item A
Part 7640.0130, subp. 4, item B
Part 7640.0130, subp. 4, item D
Part 7640.0130, subp. 5, item A
Part 7640.0130, subp. 5, item B
Part 7640.0130, subp. 5, item C
Part 7640.0130, subp. 5, item E, subitem 1
Part 7640.0130, subp. 5, item F
Part 7640.0130, subp. 5, item H
Part 7640.0130, subp. 6, item A, subitem 1
Part 7640.0130, subp. 6, item B, subitem 1
Part 7640.0130, subp. 7, item A, subitem 2
Part 7640.0130, subp. 7, item B
Part 7640.0140, subp. 2, item B
Part 7640.0140, subp. 2, item C
Part 7640.0140, subp. 4
Part 7640.0160, subp. 2, item C
Part 7640.0160, subp. 2, item D

Further references to these changes will not be made in the discussion of amendments to these specific sections.

Part 7640.0120, DEFINITIONS, subp. 1, Applicability

This subpart indicates that technical, scientific, and engineering terms undefined in the part have the meanings given them in two specific referenced documents. The Department proposes to amend this part to delete the reference to "the ASHRAE Handbook of Fundamentals." This is reasonable because the other reference in the rule, ASTM C 168, Standard Definitions of Terms Relating to Thermal Insulation Materials, contains all of the terms necessary for the purposes of part 7640.0120.

Part 7640.0120, DEFINITIONS, subp. 17, Manufacturer of insulation

The existing rule defines a "manufacturer of insulation" both in general terms (an industry member who produces insulation materials in their final form for distribution or sale to intermediate and ultimate consumers) and with reference to two specific insulation types (an industry member "who is a urea formaldehyde foam or spray urethane foam insulation manufacturer of the component resins and catalysts used for in situ foaming"). The Department proposes to amend this subpart to create items A, B, and C and to add a final paragraph to this subpart, as discussed below:

Item A

The Department proposes to delete from this part of the definition of a "manufacturer of insulation" the reference to an and industry member "who is a urea formaldehyde foam or spray urethane foam insulation manufacturer of the component resins and

catalysts used for in situ foaming." However, the Department does not intend to deregulate these manufacturers but rather includes them in the more general definitions set forth in items B and C. This deletion is reasonable because it eliminates language that would otherwise be redundant in light of the additional language of items B and C.

Item B

The Department proposes to add to the definition of a "manufacturer of insulation" an industry member who produces insulation materials and installation instructions for a product the manufacture of which is completed at the jobsite. This addition is reasonable because even though a manufacturer of insulation materials may not actually produce the insulation in its final form, the manufacturer controls the final form of the product by specifying the process for the insulation to reach its final form.

Item C

The Department proposes to add to the definition of a "manufacturer of insulation" an installer of an insulation product the manufacture of which is completed at the jobsite who prepares or modifies the product's installation instructions. This addition is reasonable because an installer who prepares or modifies the product's installation instructions controls the final form of the product.

Addition of Final Paragraph

The Department proposes to add a final paragraph to this subpart which states that an applicator, contractor, or fabricator of insulation materials who installs, applies, or uses insulation materials for their intended uses, without changing the thermal or physical properties of the insulation material is not a manufacturer of insulation. This language is reasonable to assure that installers who are merely following the installation instructions do not become subject to all of the rule requirements applicable to manufacturers. This provision, recommended by the Society of Plastics Industries, Polyurethane Foam Contractors Division (Attachment 5), is identical to the provisions of California Statutes, ch. 925, § 6(c).

Part 7640.0130, INSULATION MATERIALS STANDARDS, subp. 2, General testing requirements

The Department proposes to amend items B and C of this subpart as follows:

Item B

The Department proposes to delete the reference to "April 2, 1986" as a deadline for testing of all regulated thermal insulation materials. This is reasonable because this deadline appears in subitem 1 of item B, and this language is thus redundant. Additional grammatical changes are made in this item; these changes are reasonable because they shorten the rule without changing its meaning.

Item C

The Department proposes to amend subitems (1) through (3) of this item, which establishes requirements for thermal performance tests on insulation.

The Department proposes to amend subitem (1) to require only one thermal conductivity (R-value) test at only one temperature, 75 degrees Fahrenheit (F). This amendment is reasonable because it will prevent unnecessarily duplicative testing of products at many different temperatures. Selecting 75 degrees F as the temperature is reasonable because Minn. Stat. § 325F.19, subp. 8 defines the R-value of residential thermal insulation as being determined at 75 degrees F.

The Department proposes to delete the reference to the Federal Trade Commission in subitem (2) and replace the language with a reference to 40 C.F.R. Part 460. This is reasonable because it is more specific than the former reference to "the requirements of the United States Federal Trade Commission" and will thus aid the reader in locating those requirements.

The Department proposes several changes to subitem (3). First, the Department has replaced the words "polyurethane, polyisocyanurate, and extruded polystyrene" with the term "foam plastic insulations that incorporate blowing agents other than air or pentane." This change is needed to assure that aged R-value testing is required for foam plastics <u>in addition to</u> polyurethane, polyisocyanurate, and extruded polystyrene. This

is reasonable because foam plastic insulations incorporating blowing agents other than air or pentane may lose a significant percentage of their initial R-value with aging. All other changes in the rules have the effect of deleting the reference to 40 C.F.R. § 460.5 and making the language of the rule identical to ASTM C 578, section 11 (Attachment 1). It is reasonable to update this portion of the rule to be consistent with current national standards.

Part 7640.0130, INSULATION MATERIALS STANDARDS, subp. 3, Cellulose insulation

The Department proposes to amend subitems 3 through 8 of item B and to add three new subparts to the item.

Subitem 3

The Department proposes to amend subitem 3 by replacing the references to four ASTM standards with a reference to subpart 2, item C. This change is reasonable because it eliminates duplication and reduces the potential for error in future rulemaking if further changes in references are made to subpart 2, item C. Because the thermal performance provisions of part 7640.0130, subp. 2, item C are identical to the deleted ASTM references, the amendments do not result in any change in the requirements of the rule.

Subitem 4

The Department proposes to amend subitem 4 to delete the reference to section 7 of ASTM C 605. This is reasonable because section 7 does not contain the complete requirement of that ASTM standard.

Subitem 5

The Department proposes to amend subitem 5 to delete the words "tested for" in the first sentence, so that the first sentence will state: "Critical radiant flux and smoldering combustion must be in accordance with" certain standards. It is reasonable to delete these two words because their presence suggested that one only needed to test for the elements of critical radiant flux and smoldering combustion, when the true intention of the rule is that those elements meet specified standards. The amended language clarifies the rule.

The Department also proposes to amend the reference to ASTM C 739 to delete the specific reference to part 5 of that standard. This is reasonable because part 5 does not contain all of the requirements of the standard. The Department also proposes to amend the second sentence in the existing rule, which states that values achieved must not exceed those established by the CPSC (Consumer Products Safety Commission). It is reasonable to delete this language because it is redundant in light of the change in the first sentence.

Finally, the Department proposes to amend this subitem to state that if the product in loose-fill form meets the criteria for critical radiant flux, then a test of the product in spray-applied form for critical radiant flux is unnecessary. This is reasonable because a product in loose-filled form that passes the test would certainly pass the test in spray-applied form. This is the opinion expressed in telephone conversations by Mr. Robert Smith of United States Testing Company in Tulsa, Oklahoma, and Mr. Ray Hillier of the California Bureau of Home Furnishings and Thermal Insulation in Sacramento, California. Therefore this exemption is reasonable because it eliminates the requirement for unnecessary testing.

Subitem 6

The Department proposes to amend subitem 6 to replace a reference to section 15 of ASTM C 553 with a reference to section 14 of that standard. This change is reasonable because it corrects an error that was made in previous rulemaking. Section 15 of ASTM C 553 pertains to odor emission, while section 14 pertains to moisture absorption, the subject of this subitem.

Subitems 7 and 8, renumbered as subitem 7

The Department proposes to combine existing subitems 7 and 8, and renumber them as subitem 7. The Department proposes to delete the general language requiring product compliance with test standards for air erosion, bond strength, and bond deflection that have been accepted by the ASTM or a federal or

state government. It is reasonable to delete this general language because standard procedures now exist for testing adhesive/cohesive bond strength.

The Department also proposes to require products to have a minimum adhesive/cohesive bond strength per unit area of five times the weight of the material under the test plate when tested in accordance with ASTM E 736. The addition of the criterion (of five times the product's weight) is needed in order to provide a pass/fail standard for this procedure; the criterion selected is reasonable because it is identical to the requirement for spray-applied mineral fiber established by ASTM C 1014, section 5.2 (referenced in part 7640.0130, subp. D). The adoption by reference of ASTM E 736 is reasonable because it is a national standard.

Finally, the Department proposes to amend the last sentence of renumbered subitem 7 to modify the exception language. The existing rule exempts products from testing if they are "installed so that physical restrictions imposed by the construction elements preclude any possibility of subsequent delamination, erosion, or dusting." The Department proposes to change this language to exempt products from testing if they are "intended only for installation in enclosed cavities." This change is reasonable because it is a shorter and clearer way of stating the same idea. All other language changes in the rule

are grammatical in nature and are reasonable because they result in clear rule language.

New subitems 8, 9 and 10

The Department proposes to add new subitems 8-10, which state that corrosion, odor, and fungi resistance must be in accordance with ASTM C 739, or the CPSC Interim Safety Standard for Cellulose Insulation, 16 C.F.R. Part 1209. This new language is reasonable because it will ensure that the installed product is safe and effective and in compliance with national standards. The Department proposes to exempt the product in spray-applied form from testing for the elements of corrosion, odor emission, and/or fungi resistance if the product in loose-fill form meets the criteria for the corresponding element. This is reasonable because a product in loose-filled form that passes the test for any of these elements would certainly pass the test in spray-applied form for the corresponding element. This is the opinion expressed in telephone conversations by Mr. Robert Smith of United States Testing Company in Tulsa, Oklahoma, and Mr. Ray Hillier of the California Bureau of Home Furnishings and Thermal Insulation in Sacramento, California. Therefore this exemption is reasonable because it eliminates the requirement for unnecessary testing.

Part 7640.0130, INSULATION MATERIALS STANDARDS, subp. 4, Mineral fiber insulation, item C

The Department proposes to amend item C to replace the detailed requirements items in existing subitems 1 and 2 with a

reference to ASTM C 612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation. This change is reasonable because the adoption of the ASTM standard will ensure that mineral fiber insulation in Minnesota conforms with national standards.

Part 7640.0130, INSULATION MATERIALS STANDARDS, subp. 5, Foam plastic Insulation

The Department proposes to delete the language in subitem 3 of item E which requires manufacturers and installers of urea formaldehyde foam insulation to comply with statutes and rules, including parts 4620.1600 to 4620.2100, and Minn. Stat. § 325F.10. At the same time, the Department has proposed to insert this requirement into part 7640.0160, subp. 2, Application and inspection, item E. Moving this language to the application and inspection portion of part 7640.0160 is reasonable because the language of the item relates to installation requirements and not material specifications. This change clarifies the rule.

The Department also proposes to add new language labeled item G and to amend the language in the item relabeled item H.

The new language in item G requires rigid cellular phenolic insulation to comply with ASTM C 1126, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation. This requirement is reasonable because it will ensure that rigid cellular phenolic insulation installed in Minnesota will conform to national standards.

The Department also proposes to amend item H to delete the general language referring to "the Minnesota testing standards in this subpart" and replace that language with "requirements of part 7640.0130. This change is reasonable because it makes the rule more specific and thus more clear.

Part 7640.0130, INSULATION MATERIALS STANDARDS, subp. 7, Reflective foil insulation

The Department proposes to amend item C of this part to make grammatical changes and to make more specific the test requirements applicable to a single sheet reflective insulation system. The proposed amendments delete the option to use "another test method that provides comparable results" to those provided by a test conducted in accordance with ASTM E 408. This is reasonable because there is no other test for determining the emissivity of foil. The Department also proposes to replace the general reference to "the tables in the most recent edition of the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)" with a reference to "Table 2 in Chapter 22 of the ASHRAE Handbook of Fundamentals." This change is reasonable because it makes the testing requirement more specific and thus clarifies the rule.

Part 7640.0130, INSULATION MATERIALS STANDARDS, subp. 8, Other insulation

The Department proposes to amend the first sentence of the rule to delete the words "to be sold, marketed, or advertised for use in residential structures in Minnesota" with reference to

insulation other than insulation specified in subparts 1 to 7. This is reasonable because this language is unnecessary in light of parts 7640.0110, subp. 2 and 7640.0130 which provide that the requirements of the rule relate to the distribution and sale of residential insulation material within Minnesota.

The Department proposes to amend item B to replace the phrase "Results of moisture tests must be reported" with the requirement that water or moisture absorption be determined according to one of four tests: ASTM C 272; ASTM C 553, section 14; ASTM C 739, section 12; or ASTM D 2842. This amendment is needed to identify specific test methods for water or moisture absorption. It is reasonable because the water or moisture percentage of all thermal insulation materials can be determined by one of these methods.

The Department also proposes to delete the language of item E requiring the initial report to include a description of other tests applied. This deletion is reasonable because the sentence is redundant with the reporting requirements of part 7640.0150. The Department proposes to replace the deleted language with a requirement that the product must not produce a detectable odor that is classified as objectionable and strong or very strong by two or more panel members when tested in accordance with ASTM C 739, section 13. This requirement is identical to that established for cellulose products (part 7640.0130, subp. 3) and mineral fiber products (part 7640.0130, subp. 4). It is

reasonable to use the results of this type of odor testing as a standard against which to judge other insulations because approved testing laboratories are familiar with the test method for odor described in ASTM C 739, section 13.

Part 7640.0140, REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS, subp. 1, Physical requirements for insulation materials designed for exterior, underground use

Subpart 1 of this part relates to physical requirements for insulation materials designed for exterior, underground use. The science of exterior below ground insulation is not well understood. There are no national concensus standard specifications for insulation materials used in this application. Thus, specific pass/fail criteria are not included in subpart 1. Rather, the proposed amendments require the manufacturer to show, on the basis of test results and analysis of physical characteristics, that the material is suitable for exterior foundation application.

A research project was conducted by the Department in 1988 with the intent to find out how specific materials were doing in this application two to eight years after installation. The report of this research, "A Survey of Minnesota Home Exterior Foundation Wall Insulation: Moisture Content and Thermal Performance," was published in November, 1988. The Executive Summary of this report is Attachment 2. A major conclusion of this research was that a much better job is needed to protect the

above grade exposed portion of exterior foundation wall insulation.

A meeting was held on November 15, 1989, with representatives of all the types of insulations currently used for this application to discuss this issue. The notes from this meeting (Attachment 3) are frequently referred to in this portion of the Statement of Need and Reasonableness. These notes were distributed to industry members producing and installing insulation materials used in this application. The Department subsequently received opinions and facts that resulted in some of the proposed rule changes that may appear to be in conflict with some of these meeting notes.

The Department proposes to change the title of subpart 1 from "Application testing requirements for exterior, underground insulation" to "Physical requirements for insulation materials designed for exterior, underground insulation." This is reasonable because the new title more clearly indicates the subject content of subpart 1.

Department proposes to amend items A through F in a manner that results in new items A through D. The discussion below addresses the proposed amendments by referring to the new item label.

Item A

The existing item A requires service testing in a testing facility designed to duplicate actual underground testing, with

winter weather moisture and soil conditions, for the purpose of determining aged R-value performance. The discussion at the November 15 meeting (Attachment 3) led to the conclusion that even though there are no exact standards for insulation in an exterior, underground application, field testing continues to be a good idea. However, there is a need for this item to have some more specific parameters.

The Department proposes to add the following specific parameters to item A: the insulation system must be installed in accordance with the manufacturer's recommendations; the test may be conducted at either a testing facility or an actual house; the test must be conducted for a period of one continuous year; the testing environment must have historical winter weather conditions no less than 8,000 Fahrenheit hearing degree days; and the testing environment must have soil conditions classified as poor in Table 7-4 of the Building Foundation Design Handbook (Attachment 4).

Each of these specific parameters is reasonable. It is reasonable to require the insulation to be installed in accordance with the manufacturer's recommendations or else the test results will not be representative of the product as envisioned by the manufacturer. It is reasonable to allow the option of doing testing at an actual house, because in the past the Department has accepted test results at an actual house and has found them to be reliable. It is reasonable to require that

the test be conducted for a period of one continuous year because the product will thus have been exposed to the weather conditions of all four seasons. It is reasonable to require the testing environment to have historical winter weather conditions no less than 8,000 Fahrenheit heating degree days because this condition is approximately representative of weather conditions measured at the St. Paul - Minneapolis International Airport and thus assures that the testing will be done under Minnesota-like weather conditions. It is reasonable to require the testing environment to have "poor" soil conditions because this will ensure that test results will be representative of the likely poorest conditions that would be found in an actual installation; it the product is effective in the poorest soil conditions, it should be effective in better soil conditions.

The Department also proposes to amend item A to delete language requiring the submission of test results to the Department. This is reasonable because this language is redundant of the reporting requirements in part 7640.0150.

The Department also proposes to amend item A to add an exception, stating that in-service testing is not necessary if the manufacturer demonstrates that a product of the same material specification with equal or less durability in this application has been successfully in-service tested. The manufacturer is required by this exception to demonstrate the equal or less durability test by comparing laboratory test results of the

physical characteristics listed in part 7640.0140, subp. B.1(4). This exception is reasonable because it will prevent duplicative testing of a product which has already been proven to be of equal or greater durability in this type of application.

Item B (formerly items B, C, and D)

The Department proposes to delete the language of the existing item B, which allows as an alternative to the testing requirements of item A a test by an approved laboratory. This is reasonable because, as indicated at page 2 of Attachment 3, there are no "approved" laboratories who do this type of testing.

The new item B consists of an amended version of exiting item C, which provides for a review of the physical characteristics of an insulation product. The amended language requires the manufacturer to demonstrate that the product will exhibit less than a ten percent loss in R-value when installed. This pass/fail criterion is reasonable because the Minnesota research on exterior foundation wall insulation (Attachment 2) indicates that most of the 59 specimens examined had less than 10 percent loss of R-value due to moisture absorption. The amended language also requires the manufacturer to demonstrate the combined effect of assumed conditions on the physical characteristics listed in subitems 1 through 5. This requirement is reasonable because manufacturers will know the effects of a limited range of assumed conditions on products that they manufacture.

The Department also proposes to change the wording of one of the physical characteristics in the listed subitems and to delete another. It is reasonable to change "flexural strength or compression" to "compressive strength" because flexural strength is not a significant parameter for products used in this application, while the material specifications of nearly all insulation products identify procedures for determining compressive strength. It is reasonable to delete "vapor drives to to high low pressure gradients" because although the moisture diffusion properties of material of insulation material may affect its thermal performance in an underground application, there is no published research indicating what this effect might be. It would therefore be unreasonable to require manufacturers to make this determination.

Finally, the Department proposes to delete the language of existing item D, which states: "The initiator seeking the listing shall state the appropriate tests that best address the conditions stated in item C." This is reasonable because, as the discussion at the November 15 meeting indicated (Attachment 3), manufacturers should be subject to uniform requirements and not be permitted to choose which requirements their products should meet. In place of the deleted sentence, the Department proposes to add a final sentence to item C that states: "The manufacturer shall state the assumed conditions in the initial report filed pursuant to part 7640.0150, subp. 2." This requirement is

reasonable because, in order to evaluate the demonstration, the Department needs to know the coonditions that were assumed.

Item C (formerly items D and E)

Item C relates to the ability of a trade association of representative to apply to get an insulation product listed for below grade use. The Department proposes to change the first sentence of the rule to specify that the trade association or representative may conduct tests and prepare a filing on behalf of its constituency. This change is reasonable because it clarifies what must be done to initiate the process.

The Department proposes to amend the second sentence of this item to replace a requirement of submitting samples for testing with a requirement to conduct the test in accordance with subpart 1, item A, on at least three specimens of the product. In selecting three tests as the requirement, the Department is exercising its judgment that three tests would be more reliable than one; however, requiring three tests of an individual could be too costly, whereas an association of manufacturers can take advantage of its greater resources to pay for three tests. Therefore, this requirement is reasonable.

Finally, the Department proposes to amend the third sentence of the rule to change the requirement that the association have an internal certification procedure to determine constituency conformity to the representative samples submitted by the association. This is changed to a requirement that the

association must demonstrate that the manufacturers' products for which the tests and filing would apply are representative of the tests and filing performed by the association. This is reasonable because the quality of the representative samples is not as important as the quality of the manufacturers' products.

Item D (formerly item F)

The Department proposes to delete the sentence requiring a summary of test results to be submitted to the Department. This is reasonable because this sentence is redundant with the filing requirements of part 7640.0150. The Department proposes to add a requirement that mineral fiber board for exterior below ground application be manufactured to facilitate downward drainage. This language is the substantially the same as the language in existing part 7640.0140, subp. 3, item C, subitem 1. It is reasonable to move this language to this location because it more appropriately fits under the subject matter of subp. 1 of this rule.

Part 7640.0140, REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS, subp. 2, Requirements for installation instructions for underground use

This part governs installation instructions for underground use. The proposes to delete the phrase "at a minimum" which currently precedes the list of subjects that must be addressed in instructions. This deletion is reasonable because this phrase adds nothing to the clarity or substance of the rule.

The Department also proposes to add language to the first phrase of the rule requiring instructions or information "for vertical and, if recommended, horizontal application." At the same time, the Department proposes to delete the very last sentence of the rule, which now states: "Manufacturers that recommend a product for underground use in the vertical or horizontal position shall provide complete instructions for its respective applications." The net effect of these two amendments is to move the language concerning vertical and horizontal applications from the last sentence to the first phrase. This amendment is reasonable because it improves the organization of clarifies the rule without changing its substantive requirements.

The Department also proposes to amend items A through G of this subpart. The Department proposes to delete the word "optimal" after the phrase "application techniques in item A. This is reasonable because there is neither a common nor a specific definition of the word "optimal" in this context; the language of item A is sufficient without this word.

The Department proposes to amend items B and C relating to drainage, waterproofing, or dampproofing to add the phrase "if required for the insulation." This amendment is reasonable because drainage, waterproofing, or dampproofing are not required for all types of insulation products used in this application. If is reasonable to only require instructions on these parameters where those parameters apply.

The Department proposes to amend item D to replace the words "varying soil and soil moisture conditions" with "chemical resistance information." This amendment is reasonable because there are no standards for determining compatibility of insulation products with soil and moisture conditions. On the other hand, manufacturers are including chemical resistance information in their installation instructions. That information is much more valuable in making a determination as to the appropriateness of the application.

The Department proposes to amend item E by amending the phrase to read: "ambient temperature range permitted during application." This change is reasonable because it clarifies that the ambient temperature is a consideration during application of the product.

The Department proposes to amend item F by deleting the word "optimal" before the phrase "backfill techniques." This deletion is reasonable because there is neither a common nor a specific definition of the word "optimal" in this context, and the phrase is sufficiently clear without it. In addition, the Department proposes to amend the phrase so that it states: "backfill techniques and backfill materials for prevention of damage to the insulation material and below grade protective coating." The participants in the November 15 meeting (Attachment 3) pointed out that the rule should address not only backfill procedures but also backfill material. The amended rule is reasonable because

it clarifies that instructions must address these two items in view of the need to protect them from damage once the insulation has been installed.

The Department proposes to delete item G. The discussion at the November 15 meeting (Attachment 3) indicated that this provision was not needed. Minn. Stat. § 325G.17 - 325G.19 pertaining to consumer warranties requires that, unless specifically disclaimed, all products sold have an implied warranty of fitness. The deleted item established further requirements if the product was warranted for below ground use; the problem is that there is no standard method for determining compliance with these requirements. Thus the requirements applicable to the warranty were unenforceable, and deleting them is reasonable.

Part 7640.0140, REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS, subp. 3, Installation requirements for exterior above ground and underground use

The Department proposes to amend subpart 3 to delete the introductory applicability sentence. This deletion is reasonable because items A through C of the subpart, as amended, are full sentences and speak for themselves.

The Department proposes to amend existing items A through D in a manner that results in new items A through C. The discussion below will refer to the new item labels.

Item A (formerly items A and B)

The Department proposes to delete the language of existing item A, which states that the installation and application of insulation in the vertical or horizontal position must conform to the manufacturers' instructions and recommendations. It is reasonable to delete this language because it is redundant of the language in the amended part 7640.0140, subp. 2.

The Department proposes to amend former item B in two respects. First, the words "above the ground line" are changed to state "above grade." This is reasonable because it makes the language of the rule consistent with the State Building Code. Second, the phrase "protect the insulation from ultraviolet sunlight, moisture absorption, freeze thaw durability, air erosion, and general weather conditions" is replaced with the phrase "protect the insulation from deterioration due to sunlight and physical abuse." Participants at the November 15 meeting (Attachment 3) indicated that the purpose of above grade protective coating is to protect insulation from sunlight and physical abuse only. The exterior foundation wall insulation research study (Attachment 2) found damage due to physical abuse and sunlight but not due to general weather conditions or wind erosion. Therefore these changes are reasonable because they accurately reflect the purpose of the protective coating.

Item B (formerly item C)

The Department proposes to delete the modifier "spray applied" from the phrase concerning polyurethane or polyisocyanurate application. This deletion is reasonable because both polyurethane and polyisocyanurate are available for application in both spray applied and pre-formed board form.

The Department also proposes to delete subitem 1, which requires manufacturers to recommend the type of urethane systems to be used for underground use and requires applicators to use only a recommended system. Deletion of this subitem is reasonable because the language is redundant of the requirement in part 7640.0160, subp. 2, item A. Editorial changes are also proposed to turn the remaining language into a sentence. This is reasonable because it clarifies the rule. Finally, the Department proposes to delete from this item the requirement for a protective coating above ground. This is reasonable because this issue is adequately covered by item A of this subpart.

Item C (formerly item D)

The Department proposes to delete subitem 1 of this item, which requires drainage boards to 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. It is reasonable to delete this requirement from this part of the rule because the language relates to manufacture, not installation of insulation

products. Any concern about installation with respect to drainage is adequately covered by part 7640.0140, subp. 2, item D, which requires installation instructions to address the application considerations of varying soil and soil moisture conditions. The Department is also proposing editorial changes to make the remaining language of item C into a logical sentence. These amendments are reasonable because they clarify the rule.

Part 7640.0150, REPORTING REQUIREMENTS, subp. 2 Initial report

This subpart lists the items that must be included in an initial report of an industry member that must be filed 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 Department proposes to add to item F the requirement that the report for "other" insulation products regulated by part 7640.1030, subp. 7640.0130, subp. 8 must also include the products' Material Safety Data Sheet (MSDS). This requirement is needed because materials classified as "other" insulation products are not described by an ASTM standard specification. If the Department receives a request from the public for information on this type of product, the MSDS is a valuable source of that information. It is reasonable to require the filing of the MSDS because 29 C.F.R. section 1900.1200 requires all manufacturers in SIC codes 20 through 39 (which includes thermal insulation manufacturers) to have MSDS for thermal insulation products or

chemicals, and thus it is not burdensome to require inclusion of the MSDS with the initial report.

Part 7640.0160, APPLICATION AND INSTALLATION STANDARDS, subp. 1, Applicability

The Department proposes to combine the three paragraphs of the existing rule into one sentence without changing the meaning of the rule. This is reasonable because it shortens the rule without altering its requirements.

The Department also proposes to add a statement that an installer of insulation the manufacture of which is completed at the jobsite becomes a manufacturer for the purposes of Minn. Rules ch. 7640. This addition is reasonable because it clarifies the rule and makes it consistent with the definition of "manufacturer or insulation" in part 7640.0120, subp. 17.

Part 7640.0160, APPLICATION AND INSTALLATION STANDARDS, subp. 2, Application and inspection

The Department proposes to amend items A through F of the rule, as discussed below.

As amended, item B now consists of language identical to part 7640.0110, subp. 5, second sentence, of the existing rules, setting forth requirements relating to installation of insulation in attic areas. At the same time, part 7640.0110, subp. 5, which is within the "Applicability" section of the rules, is proposed to be repealed. It is reasonable move this language to the "Application and installation standards" of part 7640.0160 because the requirements in the repealed language do not address the

applicability of the rule but rather addresses product application. This change improves the clarity of the rules. Along with this change, the Department proposes to amend item A of the rule to delete a sentence cross referencing part 7640.0110, subp. 5. This modification is reasonable in light of the proposed repeal of that subpart.

The Department proposes to amend items C and D of the rule to change the word "comply" to the phrase "be in conformance." This change is reasonable because it conforms the rule with current style requirements of the Revisor of Statutes. The Department also proposes to amend these items to update the references to ASTM standards. This is reasonable because it makes the rule consistent with current national standards.

New item E concerns installers of urea formaldehyde foam insulation. The Department proposes to move the language of Minn. Rules pt. 7640.0160, subd. 3, item C of the existing rule to item E. In addition, cross reference in that language to Minn. Rule pt. 7620.2100 is changed to "parts 4620.1600 to 4620.2100." This amendment is reasonable because it clarifies the rule without changing the requirements applicable to installers of urea formaldehyde foam insulation.

New item F provides that state and local agencies who use appropriated federal funds and persons contracting with state and local agencies with respect to work performed under the contracts shall comply with the Guideline for Federal Procurement of

Building Products Containing Recovered Materials, 40 C.F.R. Part 248 (Attachment 6). This requirement is reasonable because it is already required by federal law; adding it to this rule will increase awareness of the need to comply with this federal requirement.

Part 7640.0160, APPLICATION AND INSTALLATION STANDARDS, subp. 3, Manufacturer's installation or application instructions

The Department proposes to amend item C of this rule to replace the existing language with new language. The deleted language required urea formaldehyde foam insulation to conform with Minn. Stat. § 325F.18 and Minn. Rules pt. 4620.2100. As discussed above, this requirement was moved to part 7640.0160, subp. 2, item E; therefore it is reasonable to delete it here in order to avoid redundancy.

The new language of the item provides that installation instructions for products whose manufacture is completed at the jobsite must address the quality assurance program required by part 7640.0130, subp. 2, item D; ambient temperature during application; and actions necessary to facilitate curing or drying. It is reasonable to require the instructions to include information on these items because this information is essential for proper completion of the manufacturing process for insulation products. Requiring a discussion of ambient temperature and curing in the instructions is not burdensome because the manufacturer should know the range of conditions that will assure suitable completion of the manufacturing process on site.

Part 7640.0180, INCORPORATIONS BY REFERENCE AND CITATIONS, subp. 2, ASTM

The Department proposes to amend this subpart to update the references to ASTM standards; to add six new references to ASTM standards (renumbered items D, K, U, V, W and X); and to delete one reference (existing item Q). These revisions update the list of ASTM standards to conform with the most recent versions published by ASTM. This is reasonable because it brings the requirements of Minn. Rules ch. 7640 up to date with current knowledge in the thermal insulation field.

Part 7640.0180, INCORPORATIONS BY REFERENCE AND CITATIONS, subp. 3, Other incorporation and citations

The Department proposes to amend this subpart to modify items A and B and to add new items K and L.

The Department has modified item K to change the reference to the ASHRAE Handbook of Fundamentals to make it specific to Chapter 22, Tables 1 and 2 of that document. This modification is reasonable because it makes the incorporation by reference consistent with the reference to the ASHRAE Handbook cited in part 7640.0130, subp. 7, item C.

The Department proposes to modify the reference in item C to delete the reference to the Federal Trade Commission and to add the title of the regulations set forth in 16 C.F.R. Part 460, specifically, "Labeling and Advertising of Home Insulation." This change is reasonable because it clarifies the reference for the reader.

The Department proposes to add new items K and L to reference 40 C.F.R. Part 248 and the Building Foundation Design Handbook of the University of Minnesota Underground Space Center. These additions are reasonable because these documents are incorporated by reference in parts 7640.0160, subp. 2, item F and in part 7640.0140, subp. 1, item A, respectively.

Repealer, part 7640.0110, APPLICABILITY, subp. 5, Installation, generally

The Department proposes to repeal part 7640.0110, subp. 5, which imposes certain requirements for installation insulation. It is reasonable to repeal the first sentence of subpart 5 because it is redundant; part 7640.0160, subp. 2, item A contains identical language. As to the second sentence of the rule, the Department has proposed to insert the same requirements in part 7640.0160, subp. 2, item B. It is reasonable to move the language from the applicability section to part 7640.0160 because the requirements in the repealed language do not address the applicability of the rule but rather addresses product application. This change improves the clarity of the rules.

V. SMALL BUSINESS CONSIDERATIONS IN RULEMAKING

Minn. Stat. § 14.115, subd. 2 (1988) requires the Department, when proposing rules which may affect small businesses, to consider the following methods for reducing the impact on small businesses:

(a) the establishment of less stringent compliance or reporting requirements for small businesses;

(b) the establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses;

(c) the consolidation or simplification of compliance or reporting requirements for small businesses;

(d) the establishment of performance standards for small businesses to replace design or operational standards required in the rule; and

(e) the exemption of small businesses form any or all requirements of the rule.

The adoption of these rule 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 listed above for reducing the impact of the rules on small businesses.

Small businesses would benefit from the proposed amendments to Minn. Rules pts. 7640.0130 and 7640.0140 relating to cellulose spray applied insulation and insulation for exterior below ground use, respectively. New language is proposed to be added to Part 7640.0130, subp. 3, item B, clauses 5, 8, 9, and 10 which does not require testing of a cellulose spray-applied product if that product meets the respective requirements in loose fill form. The proposed rule will simplify some reporting requirements. Specifically, the language of part 7640.0140, subps. 1, 2, and 3 regarding insulation used in exterior below ground applications is considerably clarified so that filing for a product for this use is simplified.

Minn. Rules ch. 7640 requires performance standards for all insulation product types in conformance with Minn. Stat. § 14.115, subd. 2(d) (1988).

Minn. Stat. § 14.115, subd. 2(e) requires the Department to consider exempting small businesses from any or all requirements of the rules. In this regard, the proposed rule amendments modifies the definition of a manufacturer of insulation (at part 7640.120, subp. 17) to specifically exclude applicators, contractors, or fabricators of insulation materials who installs, applies, or uses insulation materials for their intended uses without changing the thermal or physical properties of the insulation material. However, since Minn. Stat. § 325F.19 broadly defines "industry members" to whom this rule must apply, the Department concludes that manufacturers who are small businesses cannot be exempted from any or all requirements of these statutes.

VI. ATTACHMENTS

The following attachments are incorporated by reference into this Statement of Need and Reasonableness:

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

2. A Survey of Minnesota Home Exterior Foundation Wall Insulation: Moisture Content and Thermal Performance, November, 1988; Executive Summary

3. Notes from the meeting to discuss revision of the Minnesota Insulation Standards Rules relating to exterior foundation wall insulation held on November 15, 1989.

4. Building Foundation Design Handbook; May, 1988; Table

7-4

5. Letter from SPI, Polyurethane Foam Contractors Division, dated August 30, 1989

6. Code of Federal Regulations, title 40, part 248, Guideline for Federal Procurement of Building Products Containing Recovered Materials

VII. CONCLUSION

Based on the foregoing, the proposed amendments to Minn. Stat. ch. 7640 are both needed and reasonable.

Dated: Feb 23, 1990

Tony Perpich

TONY PERPICH
Commissioner

Designation: C 578 - 87a

Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation[1]

This standard is issued under the fixed designation C 578; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This specification has been approved for use by agencies of the DoD, replacing HH-I-524C and for listing in the DoD Index of Specifications and Standards.

1. Scope

1.1 This specification covers the types, physical properties, and dimensions of cellular polystyrene intended for use as thermal insulation for temperatures from −65 to +165°F (−53.9 to +73.9°C). This specification does not cover cryogenic applications. Consult the manufacturer for specific recommendations and properties in cryogenic conditions.

1.2 The use of thermal insulation materials covered by this specification may be regulated by building codes that address fire performance. For some end uses, specifiers should also address the effect of moisture. Guidelines regarding these end use considerations are included in Appendix X1.

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are provided for information purposes only.

1.4 The following safety hazards caveat pertains only to the test methods described in this specification: *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements, see Section 16.

2. Referenced Documents

2.1 *ASTM Standards:*

C 165 Method for Measuring Compressive Properties of Thermal Insulations[2]

C 168 Definitions of Terms Relating to Thermal Insulating Materials[2]

C 177 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot Plate Apparatus[2]

C 203 Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation[2]

C 272 Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions[3]

C 303 Test Method for Density of Preformed Block-Type Thermal Insulation[2]

C 390 Criteria for Sampling and Acceptance of Preformed Thermal Insulation Lots[2]

C 518 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus[2]

C 550 Practice for Measuring Trueness and Squareness of Rigid Block Thermal Insulation[2]

C 870 Practice for Conditioning of Thermal Insulating Materials[2]

D 1600 Abbreviations of Terms Relating to Plastics[4]

D 1621 Test Method for Compressive Properties of Rigid Cellular Plastics[5]

D 1622 Test Method for Apparent Density of Rigid Cellular Plastics[5]

D 2126 Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging[5]

D 2863 Method for Measuring the Minimum Oxygen Concentration to Support Candle-like Combustion of Plastics (Oxygen Index)[5]

E 84 Test Method for Surface Burning Characteristics of Building Materials[6]

E 96 Test Methods for Water Vapor Transmission of Materials[2]

3. Terminology

3.1 *Definitions:*

3.1.1 Terms used in this specification are defined in Definitions C 168.

3.2 *Descriptions of Terms Specific to This Standard:*

3.2.1 *RCPS*—letter designations for the rigid cellular polystyrene thermal insulation classified by this specification that identifies the product as rigid cellular polystyrene.

3.2.2 *PS*—used in this specification to represent polystyrene in accordance with Abbreviations D 1600.

4. Classification

4.1 This specification covers ten types of RCPS thermal insulations currently commercially available as described by the physical property requirements in Table 1.

5. Ordering Information

5.1 Acquisition documents shall specify the following:

5.1.1 Title, number, and year of this specification,

5.1.2 Type (see Table 1),

5.1.3 *R*-value or thickness required (see Tables 1 and 2),

[1] This specification is under the jurisdiction of ASTM Committee C-16 on Thermal Insulation and is the direct responsibility of Subcommittee C 16.22 on Organic and Nonhomogeneous Inorganic Thermal Insulations.

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

[3] *Annual Book of ASTM Standards*, Vol 15.03.

[4] *Annual Book of ASTM Standards*, Vol 08.01.

[5] *Annual Book of ASTM Standards*, Vol 08.02.

[6] *Annual Book of ASTM Standards*, Vol 04.07.

TABLE 1 Physical Property Requirements of RCPS Thermal Insulation

NOTE 1—The values for properties listed in this table may be affected by the presence of a surface skin which is a result of the manufacturing process. Where boards are tested with skins-in-place, this condition shall be noted in the test report.

NOTE 2—Type III has been deleted because it is no longer available.

Property										
Density, min lb/ft³ (kg/m³)	0.70 (12)	0.90 (15)	1.15 (18)	1.35 (22)	1.35 (22)	1.60 (26)	1.80 (29)	1.80 (29)	2.20 (35)	3.00 (48)
Thermal resistance of 1.00 in. (25.4 mm) thickness, min, F·ft²·h/Btu (K·m²/W) mean temperature:										
25°F (−3.9°C)	3.45 (0.61)	4.20 (0.74)	4.40 (0.77)	4.60 (0.81)	5.60 (0.99)	5.60 (0.99)	4.80 (0.84)	5.60 (0.99)	5.60 (0.99)	5.60 (0.99)
40°F (4.4°C)	3.30 (0.58)	4.00 (0.70)	4.20 (0.74)	4.40 (0.77)	5.40 (0.95)	5.40 (0.95)	4.60 (0.81)	5.40 (0.95)	5.40 (0.95)	5.40 (0.95)
75°F (23.9°C)	3.10 (0.55)	3.60 (0.63)	3.80 (0.67)	4.00 (0.70)	5.00 (0.88)	5.00 (0.88)	4.20 (0.74)	5.00 (0.88)	5.00 (0.88)	5.00 (0.88)
110°F (43.3°C)	2.90 (0.51)	3.25 (0.57)	3.45 (0.61)	3.65 (0.64)	4.65 (0.82)	4.65 (0.82)	3.85 (0.69)	4.65 (0.82)	4.65 (0.82)	4.65 (0.82)
Compressive resistance at yield or 10 % deformation, whichever occurs first (with skins intact), min, psi (kPa)	5.0 (35)	10.0 (69)	13.0 (90)	15.0 (104)	15.0 (104)	25.0 (173)	25.0 (173)	40.0 (276)	60.0 (414)	100.0 (690)
Flexural strength, min, psi (kPa)	10.0 (70)	25.0 (173)	30.0 (208)	40.0 (276)	40.0 (276)	50.0 (345)	50.0 (345)	60.0 (414)	75.0 (517)	100.0 (690)
Water vapor permeance of 1.00 in. (25.4 mm) thickness, max, perm (ng/Pa·s·m²)	5.0 (287)	5.0 (287)	3.5 (201)	3.5 (201)	1.1 (63)	1.1 (63)	2.0 (115)	1.1 (63)	1.1 (63)	1.1 (63)
Water absorption by total immersion, max, volume %	4.0	4.0	3.0	3.0	0.3	0.3	2.0	0.3	0.3	0.3
Dimensional stability (change in dimensions), max, %	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Oxygen index, min, volume %	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Classification	Type XI	Type I	Type VIII	Type II	Type X	Type IV	Type IX	Type VI	Type VII	Type V

TABLE 2 Dimensions of Cellular Polystyrene Insulation

Type	XI, I, VIII, II, IX	X, IV	VI, VII	V
Width, in. (mm)	12 to 48 (305 to 1219)	16, 24, 48 (406, 610, 1219)	24 (610)	16 (406)
Length, in. (mm)	48 to 192 (1219 to 4877)	48, 96 108 (1219, 2438, 2743)	48, 96, (1219, 2438)	96 (2438)
Thickness, in. (mm)	⅜ to 24 (9.5 to 610)	½ to 4 (13 to 102)	1 to 4 (25 to 102)	1 to 4 (25 to 102)

5.1.3.1 *Thermal Resistance/Thickness Relationship*—the thermal resistance (*R*-value) of RCPS thermal insulation will vary with thickness. Therefore, when ordering, specify the *R*-value or the thickness, or both. For additional information, see Test Method C 177 or Test Method C 518,

5.1.4 Tolerance, if other than specified (see 8.2),

5.1.5 Length and width required (see Table 2),

5.1.6 If other than straight edges are required (see 8.3),

5.1.7 If either ship-lap or tongue-and-groove edges are required (see 8.6),

5.1.8 *Tapered Insulation*—special ordering information. In addition to other applicable requirements in Section 5 (Note 1), acquisition documents for tapered RCPS thermal insulation shall specify the following:

5.1.8.1 Minimum starting thickness,

5.1.8.2 Slope, in./ft (mm/m),

5.1.8.3 Average *R*-value,

5.1.8.4 Minimum thickness,

5.1.8.5 *Shop Drawings*—the tapered insulation supplier shall provide shop drawings to illustrate installation patterns and dimensions for each tapered module,

5.1.9 Sampling, if different (see 10.1),

5.1.10 If a certificate of compliance is required (see 14.1), and

5.1.11 If marking is other than specified (see 15.1).

NOTE 1—Physical properties of tapered insulation should be determined on blocks of RCPS thermal insulation before the insulation is tapered.

6. Materials and Manufacture

6.1 RCPS thermal insulation shall be formed by the expansion of polystyrene resin beads or granules in a closed mold, or by the expansion of polystyrene base resin in an extrusion process. RCPS thermal insulation shall be of uniform density and have essentially closed cells. All RCPS thermal insulation shall contain sufficient flame retardants to meet the oxygen index requirements of Table 1.

7. Physical Requirements

7.1 *Inspection Requirements:*

7.1.1 The physical requirements listed in this section are defined as inspection requirements (refer to Criteria C 390).

7.1.2 All dimensional requirements are described in Section 8.

7.1.3 All workmanship, finish, and appearance requirements are described in Section 9.

7.1.4 Density shall be in accordance with Table 1.

7.2 *Qualification Requirements:*

7.2.1 The physical properties listed in this section of the specification are defined as qualification requirements (refer to Criteria C 390). Thermal resistance, compressive resistance, flexural strength, water vapor permeance, water absorption, dimensional stability and oxygen index shall be in accordance with Table 1.

7.2.2 Compliance with qualification requirements shall be in accordance with Criteria C 390.

7.3 Table 1 describes ten types of RCPS thermal insulation. However, it does not cover all available products on the market. The values stated in Table 1 should not be used as design values. It is the buyer's responsibility to specify design requirements and obtain supporting documentation from the material supplier.

7.4 *Combustibility Characteristics*—RCPS thermal insulation is an organic material and is, therefore, combustible. It should not be exposed to flames or other ignition sources. The values obtained by the oxygen index test (see Table 1 and 11.10) do not necessarily indicate or describe the fire risk of the materials and are used in this specification primarily to distinguish between insulations formulated with flame retardants and those not so formulated.

8. Dimensions and Permissible Variations

8.1 The materials covered by this specification are available in the sizes shown in Table 2.

8.2 *Dimensional Tolerances*—Unless otherwise specified, the length tolerance shall not exceed ±1/32 in./ft (±2.6 mm/m) of length; the width tolerance shall not exceed ±1/16 in./ft (±5.2 mm/m) of width; and the thickness tolerance shall not exceed ±1/16 in./in. (±62.5 mm/m) of thickness. For products less than 1.00 in. (25.4 mm) in thickness, the thickness tolerance shall not exceed ±1/16 in. (1.6 mm).

8.3 *Edge Trueness*—Unless otherwise specified, RCPS thermal insulation shall be furnished with true edges. Edges shall not deviate more than 1/32 in./ft (2.6 mm/m) of length or width.

8.4 *Face Trueness*—RCPS thermal insulation shall not deviate from absolute trueness by more than 1/32 in./ft (2.6 mm/m) of length or width.

8.5 *Squareness*—RCPS thermal insulation shall not deviate from squareness by more than 1/16 in./ft (5.2 mm/m) of length or width.

8.6 *Ship-Lap and Tongue-and-Groove Edges*—When specified, RCPS thermal insulation shall be furnished with either ship-lap or tongue-and-groove edges.

8.6.1 For RCPS thermal insulation manufactured with ship-lap edges, the depth of the ship-lap cut shall be one half the board thickness +1/16, −0 in. (+1.6, −0 mm). The minimum width of the cut for RCPS thermal insulation of 1.00 in. (25.4 mm) thickness or greater shall be 1/2 ± 1/16 in. (12.7 ± 1.6 mm). For RCPS thermal insulation less than 1.00 in. (25.4 mm) in thickness, the minimum width of the cut shall be 1/4 ± 1/16 in. (6.4 ± 1.6 mm). The ship-lap cut shall be made on opposite faces of the board for both length and width. The resulting joint shall be smooth and uniform.

8.6.2 For RCPS thermal insulation manufactured with tongue-and-groove edges, the tongue of one shall fit snugly into the groove of a second. The resulting joint shall be smooth and uniform.

9. Workmanship, Finish, and Appearance

9.1 *Defects*—RCPS thermal insulation shall have no defects that will adversely affect its service qualities. RCPS thermal insulation shall be of uniform texture and free of foreign inclusions, broken edges and corners, slits, and objectionable odors.

9.2 *Crushing and Depressions*—RCPS thermal insulation shall have no crushed or depressed areas on any surface exceeding 1/8 in. (3.2 mm) in depth on more than 10 % of the total surface area.

9.3 *Voids*—RCPS thermal insulation shall have no more than eight voids with dimensions larger than 1/8 by 1/8 by 1/8 in./8 ft^2 (3.2 by 3.2 by 3.2 mm/0.86 m^2) of surface area.

10. Sampling

10.1 Unless otherwise specified in the purchase order or contract, the material shall be sampled in accordance with Criteria C 390.

11. Test Methods

11.1 *Conditioning and Aging:*

11.1.1 Samples shall be conditioned as required by the test method to either preconditioned moisture equilibrium or conditioned moisture equilibrium, using procedures defined by Practice C 870. Samples shall be held at equilibrium conditions until they are transferred into the testing equipment. Samples to be used for density test, dimensional stability test, and water vapor transmission test shall be conditioned at 73.4 ± 4°F (23 ± 2°C) and 50 ± 5 % relative humidity for a minimum of 40 h prior to the start of tests. Samples to be used for the compressive resistance test, oxygen index test, water absorption test, flexural strength test, and thermal resistance test shall be conditioned as specified in the applicable test procedure.

11.1.2 RCPS thermal insulations that incorporate a blowing agent other than air or pentane shall be aged for either 90 days at 140 ± 2°F (60 ± 1°C) or six months at ambient conditions prior to conditioning and thermal resistance testing. Air circulation shall be provided so that all surfaces of the insulation are exposed to the surrounding environmental conditions.

11.1.3 Where boards are tested with skins-in-place, this condition shall be noted in the test report.

11.2 *Dimensions and Density*—Test in accordance with Test Method C 303 or Test Method D 1622.

11.3 *Trueness and Squareness*—Test in accordance with Practice C 550.

11.4 *Thermal Resistance*—Test in accordance with Test Method C 177 or Test Method C 518. Tests shall be conducted with a temperature differential of 50 ± 2°F (28 ± 1°C).

11.5 *Compressive Resistance*—Test in accordance with Method C 165, Procedure A, at a crosshead speed of 0.1 in./min/in. of thickness (100 mm/min/m) at yield or 10 % deformation, whichever occurs first (with skins intact), or test in accordance with Test Method D 1621.

11.6 *Flexural Strength*—Test in accordance with Test Methods C 203, Method I, Procedure A. All test specimens shall be 1.00 in. ± 1/16 in. (25.4 ± 1.6 mm) or less in thickness. For samples less than or equal to 1.00 in. ± 1/16 in. (25.4 ± 1.6 mm) in thickness (Note 2), cut test specimens from samples keeping both original major surfaces intact. If skins are present on only one major surface, test specimens with that surface in tension. For samples of greater thickness, trim test specimens to 1.00 in. ± 1/16 in. (25.4 ± 1.6 mm) thickness retaining one original major surface. Specimens shall be tested with the original major surface in tension. For

anisotropic products run the tests for both the length and cross directions of the sample. Report the average of these two series of tests as the value for flexural strength.

NOTE 2—Thin specimens may continue to flex without specimen failure (break). In such cases, flexural strength testing shall be performed using thicker specimens and the thickness shall be noted in the test report.

11.7 *Water Vapor Permeance*—Test in accordance with Test Methods E 96, using anhydrous calcium chloride as the desiccant at 73.4 ± 4°F (23 ± 2°C).

11.8 *Water Absorption*—Test in accordance with Test Method C 272. The immersion time shall be 24 h and the test specimens shall be 12 by 12 by 1 in. (305 by 305 by 25 mm).

11.9 *Dimensional Stability*—Test in accordance with Test Method D 2126 for 7 days (168 h) using Procedures C and E.

Temperature, °F (°C)	Relative Humidity, %
Procedure C 158 ± 4 (70 ± 2)	97 ± 3
Procedure E −40 ± −6 (−40 ± −3)	ambient

11.10 *Oxygen Index*—Test in accordance with Method D 2863.

12. Inspection

12.1 Unless otherwise specified, Criteria C 390 shall govern the inspection of material for conformance to inspection requirements. Exceptions to these requirements shall be stated in the purchase contract.

13. Rejection and Rehearing

13.1 Material that fails to conform to the requirements of this specification may be rejected. Rejection should be reported to the producer or supplier promptly and in writing. In case of dissatisfaction with the results of any test, the producer shall have the right to reinspect the rejected shipment and resubmit the lot after removal of that portion not conforming to requirements.

14. Certification

14.1 Unless otherwise specified in the purchase order or contract, Criteria C 390 shall be the basis for the certification. When specified in the purchase order or contract, a report of the test results shall be furnished.

15. Product Marking

15.1 The following shall be marked on each shipping container, bundle, or board:

15.1.1 Insulation specification number,

15.1.2 Type,

15.1.3 Manufacturer's name or trademark, and

15.1.4 *R*-value.

15.1.5 Instructions governing the *R*-value at 75°F (23.9°C) mean temperature for the thermal insulation thickness supplied, as follows: *R* means the resistance to heat flow; the higher the value, the greater the insulation power. This insulation must be installed properly to get the marked *R*-value. Follow the manufacturer's instructions carefully. If a manufacturer's fact sheet is not provided with the material shipment, request this and review it carefully.

16. Hazards

16.1 *Health and Safety*—Each manufacturer has a duty to warn when shipment, storage, installation, use or ultimate disposal of a product may expose individuals to health or safety hazards. The manufacturer shall provide the user with appropriate information regarding any known hazards associated with the recommended handling and use of the product, and shall recommend the protective measures to be employed in its safe utilization.

APPENDIX

Nonmandatory Information

X1. END-USE CONSIDERATIONS

X1.1 Combustibility Characteristics

X1.1.1 The fire performance of the material should be addressed through standard end-use fire test methods established by the appropriate governing documents.

X1.2 Test Method E 84/UBC Standard No. 42-1

X1.2.1 These tests do not define the hazard that may be presented by RCPS thermal insulation under actual fire conditions. It is retained for reference in this standard as lab test data required by some building codes.

X1.3 Water Vapor Transmission

X1.3.1 Most thermal insulations function where there is both a temperature and moisture vapor pressure differential across the insulation. The water vapor permeability of RCPS thermal insulation may be a significant element to be considered when developing the specification for the vapor retarder component of the thermal package for a specific end use condition.

X1.4 Water Absorption

X1.4.1 This characteristic may have significance when this specification is used to purchase material for end uses requiring extended exposure to water. The water absorption of thermal insulations is an important property to the degree that significant content can degrade thermal performance.

X1.5 Freeze/Thaw Exposure

X1.5.1 RCPS insulating boardstock is often used in applications that may subject the insulation to various types of freeze/thaw exposure conditions. These conditions may vary significantly in service. Exposure conditions to be considered include actual temperatures, liquid water availability, and freeze/thaw cycle frequency and duration. Boardstock integrity, as well as thermal/physical property retention may be

affected by actual end-use conditions. Consult manufacturer for specific product, insulation system, and application recommendations.

X1.6 Specification C 578/HH-I-524C Cross Reference

X1.6.1 Federal Specification HH-I-524C has been cancelled. For the convenience of specifiers who may have contracts written in terms of HH-I-524C, the following is a cross reference table. The letters NA indicate that the type designation has been deleted because products meeting the requirements are no longer available.

HH-I-524C Type Designation	Specification C 578 Type Designation
I	I
II	II
III	NA
IV	IV
V	V

X1.6.2 Additional type designations have been established since the cancellation of HH-I-524C to better define the variety of RCPS thermal insulations available.

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, 1916 Race St., Philadelphia, PA 19103.

November 1988

A SURVEY OF MINNESOTA HOME EXTERIOR FOUNDATION WALL INSULATION: MOISTURE CONTENT AND THERMAL PERFORMANCE

Energy Division
Minnesota Department of Public Service
900 American Center Building
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

EXECUTIVE SUMMARY

A study of materials in use as exterior foundation wall insulation on cold climate residential buildings was conducted between April 7 and June 15, 1988. Specimens were taken from 59 houses in the Minneapolis-St. Paul metropolitan area. Five types of insulation materials were included in the study: extruded polystyrene, mineral fiber board, molded expanded polystyrene, polyisocyanurate and spray-applied urethane. All of these materials are used as exterior foundation wall insulation in Minnesota.

The insulation specimens were tested for moisture content, density and, when possible, thermal conductivity of dried specimens. Soil specimens were also collected from each site for determination of moisture content and the classification of soil type. In addition, information on factors which may have an influence on the insulation performance was recorded for each site.

Caution is advised in the interpretation and use of the findings of this study. This is because the condition of the insulation specimens in the spring may not be representative of winter conditions, few specimens were surveyed for most of the insulation types and specimens were all taken from one depth (6 to 24 inches) on the foundation walls which may not be indicative of the condition of the insulation at other depths.

1) At several sites the exterior foundation wall insulation did not extend over the entire above grade exposed foundation wall. This lack of complete covering may have contributed to higher insulation moisture levels in some specimens.

2) Some of the insulation had no protective coating above grade. Exposed insulation was found to be deteriorating. Above grade protective coatings of treated plywood or fiberglass panels found were in good shape. The spray-applied bitumen or paint used as above grade protective coating for spray-applied urethane were found to be flaking and gouged in many cases. Cement coatings used to protect insulation above grade sometimes worked well and at other times did not.

3) Below grade protective coatings of spray applied bitumen for spray urethane and aluminum foil for polyisocyanurate were found to be gouged in some cases. This may have contributed to increased moisture levels in some specimens.

4) The moisture content of the insulation was not found to be a function of surrounding soil moisture content or soil type. Most of the below grade insulation specimens appeared to be in good shape, with no apparent degradation after at least two years in the grade.

5) There were too few specimens collected to generalize many of the findings of this study. It is assumed that specimens with much above average moisture contents are outliers representing unusual conditions that could be corrected in future installations.

6) Inadequate protective covering and gaps between the bottom of the siding and the top of the insulation, were observed in many cases. In several cases this appeared to contribute to high moisture levels in the insulation.

7) Orientation of the wall from which the specimens were collected may have affected their moisture content. Most of the higher moisture containing specimens were collected from Easterly facing walls.

8) Considering only the effect of moisture content of the insulation, most specimens were calculated to have lost little insulating value. Generally the lost R-value due to moisture was less than 5 percent. In a few cases it was greater than 10 percent, with the greatest loss at 34 percent. Loss of moisture from the insulation specimens between collection and laboratory weighing may have resulted in under calculation of moisture content.

9) Some specimens of spray-applied urethane, when exposed to conditions for which there is yet only partial explanation, had absorbed much more moisture than other materials in this survey. The loss of R-value per inch due to moisture was above 10 percent for fourteen percent of the spray-applied urethane specimens, as compared to less than 6 percent R-value per inch loss for all but one specimen of all other materials. The one other specimen which lost more than 10 percent of its R-value per inch due to moisture was polyisocyanurate, which is similar to urethane.

10) The average R-value per inch of room-dried insulation specimens was within 10 percent of nominal values for all insulation types.

11) Of the few specimens collected, mineral fiber board and polyisocyanurate materials appeared to retain their R-value per inch best. The net loss in R-value per inch of the extruded polystyrene specimens was less than 5 percent. The average net loss in R-value per inch for both the molded expanded polystyrene sample and the spray-applied urethane sample was higher, but still less than 10 percent. The total R-value of the specimens could not be determined because there was no characterization of the materials as installed.

12) More study of the performance of in-service exterior foundation wall insulation is needed to determine appropriate protective coatings, how to avoid moisture absorption in spray-applied urethane and to measure the effects of compression on overall insulating performance.

MINNESOTA
Department of Public Service

Energy Division
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900 American Center
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Celebrate MINNESOTA 1990

Notes from meeting to discuss revision of the Minnesota Insulation Standards Rules relating to exterior foundation wall insulation.

November 15, 1989
St. Paul, MN

Attendees:

Doug Gilbertson	Celotex Corp.
Steve Slavik	DiversiFoam Products
Jeff Eggen	EMPRO
Bob Benedict	General Fibergalss Supply
Gene Berner	General Fiberglass Supply
Larry Jamison	Kavi-T-Foamers
Joan M. Archer	Minn. State Builders Association
John Daugherty	Owens Corning Fiberglas
Bruce Nelson	Public Service, Energy Division
Narvel Somdahl	Public Service, Energy Division
Dianne Brown	Public Service, Energy Division
Karl A. Hipchen	Stepan Company
Mike Maretich	Stepan Company
Alan Mann	Styrotech, Inc.
Glenn Strand	

The listing of attendees represents the following insulation industry interests: extruded polystyrene manufacture, fiberglass board manufacture, molded EPS manufacture, polyisocyanurate manufacture, spray urethane manufacture and spray urethane application.

The purpose for this meeting was to provide suggestions for revisions of the Minnesota Insulation Standards Rules relating insulation for exterior below grade use. The meeting agenda followed the outline of Minnesota Rules part 7640.0140, as do these notes.

The titles of subparts 1, 2 and 3 need to be editorially revised to more clearly indicate to subject content of their respective subparts. Revised titles are used in these notes.

Subpart 1. Physical requirements for insulation materials designed for exterior, underground use.

AN EQUAL OPPORTUNITY EMPLOYER

Item A. In-service testing

o Below grade insulation cannot be tested as described in the rules because there are no test standards. Laboratory facilities exist for testing insulation in exterior foundation wall applications, but there are no recognized test procedures, and no pass-fail criteria have been established.

o The in-service testing should be done in a climate representative of a Minnesota winter. The testing should also be no less than one year duration.

o Questions on procedures for in service testing:
-Would a generic test of similar products be applicable to all products on identical nature (issue related to Item E)? If a product is more durable (?) than one that has already been in-service tested, than an in-service test should not have to be repeated.
-In the past, the department has accepted in-service tests of products in actual houses instead of controlled test facilities. Is this procedure adequate?
-The variables of the soil, moisture content, period of time, and handling of the sample should be identified in the rule.
-The proper installation of the product may have effect on the outcome of the tests.

o Will a lab facility soon be able to perform specific tests for the below grade insulation?
- If the lab would set up this testing it would be necessary to have more than one test - depending on the type of insulation, and other variables (soil, moisture etc.).
- It would need to be determined which test applies to each insulation.
- The sample collection and testing should be handled by an independent testing company.
- Time delays between sample collection and testing will effect the test results. The rule should establish a test procedure.

Item B. Alternate test

o There is no "approved" laboratory.

o Products should be required to both undergo a field test and, by a review of its physical characteristics, be shown to be suitable for exterior below ground application.

o Item B should be stricken.

Item C Physical requirements

o Although no test criteria exist, the manufacturer should show that his product is suitable for exterior below grade application.

o A suggested pass-fail criteria is whether the combination of effect of the listed conditions result in not more than 10% loss of advertised R-value. The value of 10% is suggested because this if what the FTC R-value rule specifies. The Minnesota research on exterior foundation wall insulation indicates that most may fall within this range.
-Criteria for a test standard for exterior below ground application needs to be

set up - but knowledge does not exist to be able to do this.
-The test standard pass-fail criteria must be different for the different types of insulation.

Clause 1) Moisture absorption - there are ASTM tests, and known effects of moisture on R-value. Moisture absorption is vera relevant to this application.

Clause 2) Mechanical durability under freeze thaw cycling conditions -
The only test is an ASTM test for concrete piers. The test should consist of taking the R-value before and after at least five freeze thaw cycles.

Clause 3) Soil compatibility - This is a site consideration. Some building sites may be polluted, such as with oil, making a material unsuitable for use below grade.

Clause 4) Flexural strength or compression - Standards exist for measuring compressive strength. This is a relevant criteria in this application.

Clause 5) Moisture diffusion is an irrelevant issue for this application - delete.

Item D. Manufacturer choice
o Manufacturers should be subject to uniform requirements - delete.

Item E. Association testing
o How would the rules be interpreted for a new product comparable with one that has already completed a filing for below ground use?

o Manufacturer should have the burden of proof that the new product is of equal or greater durability than the similar product in this application.

Item F. Filing
o Should be moved to filing requirements.

Subpart 2. Requirements for installation instructions for underground use.

Item A. Application
o Delete the word "optimal."

o Instructions for application should accompany insulation - possibly being printed on insulation.

o The product manufacturer should label all products to prevent use of substandard product that appears the same as the better product.

o The State should try to improve the labeling of products.
-FTC R-value rule requires that retailers have fact sheets indicating who was the manufacturer and what is the R-value of products -- there is widespread violation of this.

Item B. Drainage - ok, if required by the insulation.

Item C. damproofing - ok

Item D. Soil
o Will vary according to the building site.

Item E. Temperature
o Ambient temperature has definite effect of application of certain insulation.

Item F. Backfill
o Delete the word "optimal."

o It is the responsibility of the building contractor to assure the proper backfill with the proper material. The manufacturer cannot be held accountable for damage due to reckless backfill. Notice of backfill requirements should be included in the State Building Code, as well as in the installation instructions.

Item G. Warranty
o This would be nice to be able to compare different insulations, but is unrealistic -- delete.

o The last paragraph should be dealt with in Subpart 2, Item A.

Subpart 3. Installation requirements for exterior above ground and underground use.

Item A. Vertical/horizontal
o This should be dealt with in subpart 2.

Item B. Above grade
o Insulation extending above the grade must be protected from sunlight and physical abuse only.

o Exterior exposed insulation must be protected from physical abuse. This is dependent on the site and usage of the building.

o Protective coating should be at least as durable as the siding on the building?

o It is also the responsibility of the building contractor to assure the proper protective coating. Notice of above grade protective coating requirements should be included in the State Building Code, as well as in the installation instructions.

Item C. Polyurethane and polyisocyanurate
Clause 1) Redundant - delete.

Clause 2)
o Should all insulation be required to have a protective coating below grade?

o Other insulations appear to do ok without protection below grade.

Item D, Mineral fiber board
Clause 1) Move to Subpart 1.

Clause 2) ok.

General concerns and questions:
- The rules establish a level of protection for the public.
- Need to keep the rules within the scope for new small businesses.
- Need to inform lumber yards of requirements to carry fact sheets.
- When should products have third party certification.
- Need to keep in mind that extra labeling will add to costs.

JUN 2 1 1988

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ORNL/Sub/86-72143/1

BUILDING FOUNDATION DESIGN HANDBOOK

OAK RIDGE NATIONAL LABORATORY

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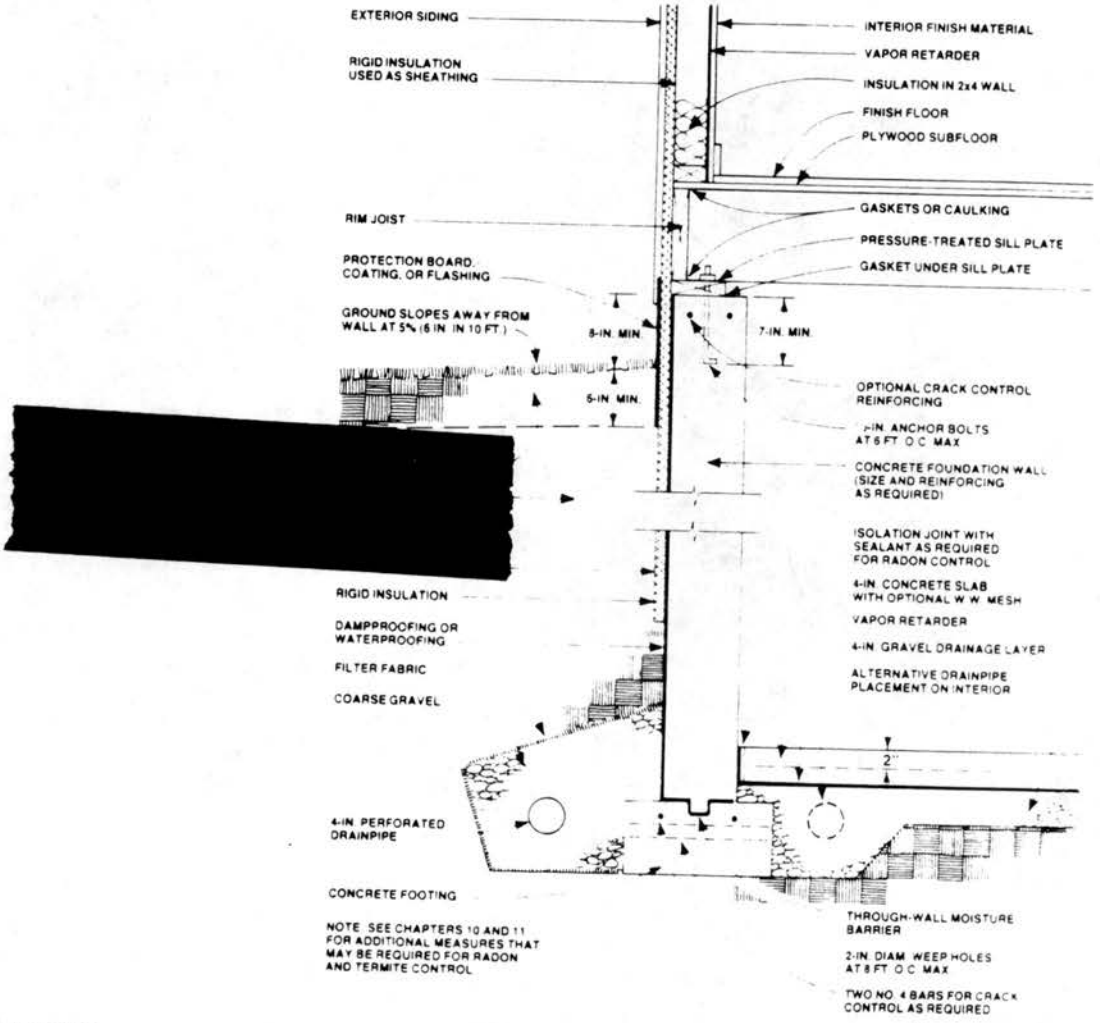
Prepared by the
Underground Space Center, University of Minnesota



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FOR THE UNITED STATES

Table 7-4: General Characteristics and Typical Bearing Capacities of Soils

Group Symbols	Typical Names	Drainage Characteristics	Frost Heave Potential	Volume Change	Backfill Potential	Typical Bearing Capacity	Range (psi)	
GW	well-graded gravels and gravel-sand mixtures, little or no fines	excellent	low	low	best	8000 psf	1500 psf to 20 tons ft	
GP	poorly-graded gravels and gravel-sand mixtures little or no fines	excellent	low	low	excellent	6000 psf	1500 psf to 20 tons ft	
GM	silty gravels, gravel-sand silt mixtures	good	medium	low	good	4000 psf	1500 psf to 20 tons ft	
GC	clayey gravels, gravel-sand-clay mixtures	fair	medium	low	good	3500 psf	1500 psf to 10 tons ft	
SW	well-graded sands and gravelly sands, little or no fines	good	low	low	good	5000 psf	1500 psf to 15 tons ft	
SP	poorly-graded sand and gravelly sands, little or no fines	good	low	low	good	4000 psf	1500 psf to 10 tons ft	
SM	silty sands, sand-silt mixtures	good	medium	low	fair	3500 psf	1500 psf to 5 tons ft	
SC	clayey sands, sand-clay mixtures	fair	medium	low	fair	3000 psf	1000 psf to 8000 psf	
ML	inorganic silts, very fine sands, rock flour silty or clayey fine sands	fair	high	low	fair	2000 psf	1000 psf to 8000 psf	
CL	inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	fair	medium	medium	fair	2000 psf	500 psf to 5000 psf	
MH	inorganic silts, micaceous or diatomaceous fine sands or silts elastic silts	poor	high	high	poor	1500 psf	500 psf to 4000 psf	
CH	inorganic clays of medium to high plasticity	poor	medium	high	bad	1500 psf	500 psf to 4000 psf	
OL	organic silts and organic silty clays of low plasticity	poor	medium	medium	poor	400 psf or remove	generally remove soil	
OH	organic clays of medium to high plasticity	no good	medium	high	no good	remove	—	
PT	peat, muck and other highly organic soils	no good	—	high	no good	remove	—	

The Society of the
Plastics Industry, Inc.

Polyurethane Foam Contractors Division

1275 K Street N.W. – Suite 400
Washington, DC 20005
202-371-5200 800-523-6154

August 30, 1989

Bruce Nelson, Senior Engineer
Energy Division
Minnesota Department of Public Service
900 American Center
150 East Kellogg Boulevard
St. Paul, MN 55101

Re: Minnesota Residential Insulation Standards Program

Dear Mr. Nelson:

I am in receipt of the revision of the Insulation Standards rules, Chapter 7640, dated August 2, 1989.

We at PFCD represent industry members consisting of both polyurethane foam manufacturers and contractors and/or applicators of "final form" spray polyurethane foam insulation.

I would refer to 7640.0120, Definitions, Subparagraph 17, "Manufacturer of Insulation." It is my interpretation of the latter part of the paragraph, which states "...or spray urethane foam insulation manufacturer of the component resins and catalysts used for in situ foaming," means that the contractor/installer/applicator is the on site manufacturer.

The contractor/applicator is an installer of the component resins and catalysts furnished by the manufacturer, who must not and will not deviate from the manufacturer's formulation and/or the manufacturer's application specifications.

Therefore, the proper terminology for this applicator would be contractor or fabricator, not manufacturer.

This revision is based on an Industry request and I would appreciate your acknowledgement.

If you have any questions, please contact me at (800) 523-6154.

Sincerely,

Daniel L. Benedict
SPI/PFCD

DLB/rjs

cc: G. Sievert

cases, negligible and in other instances, beneficial. An extremely limited number of business and governmental entities are affected at all by the guideline.

For the above reasons, EPA certifies that the proposed guideline is not expected to have a significant economic impact on a substantial number of small entities. As a result, the guideline does not require a Regulatory Flexibility Analysis.

List of Subjects in 40 CFR Part 248

Commercial item descriptions, Government procurement, Insulation, Military specifications, Postconsumer materials, Recovered materials, Recycling, Resource recovery.

Dated: July 27, 1988.

Lee M. Thomas,

Administrator.

For the reasons set out in the preamble, it is proposed to amend Title 40 of the Code of Federal Regulations by adding a new Part 248 reading as follows:

PART 248—GUIDELINE FOR FEDERAL PROCUREMENT OF BUILDING INSULATION PRODUCTS CONTAINING RECOVERED MATERIALS

Subpart A—General

Sec.
248.1 Purpose.
248.2 Designation.
248.3 Applicability.
248.4 Definitions.

Subpart B—Specifications

248.10 Revisions.
248.11 Recommendations.

Subpart C—Affirmative Procurement Program

248.20 General.
248.21 Preference program.
248.22 Promotion program.
248.23 Estimates, certification, and verification.
248.24 Annual review and monitoring.
248.25 Implementation.

Authority: 42 U.S.C. 6912(a) and 6962.

Subpart A—General

§ 248.1 Purpose.

(a) The purpose of this guideline is to assist procuring agencies in complying with the requirements of section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA or the Act), as amended, 42 U.S.C. 6962, as that section applies to procurement of building insulation products designated in § 248.2 of this Part.

(b) This guideline contains recommendations for use in implementing the requirements of section 6002, including revision of specifications, purchasing activities and procurement.

(c) EPA believes that adherence to the recommendations in the guideline constitutes compliance with section 6002. However, procuring agencies may adopt other types of procurement programs consistent with section 6002.

§ 248.2 Designation.

EPA designates building insulation products as items which are or can be produced with recovered materials and whose procurement by procuring agencies will carry out the objectives of section 6002 of RCRA.

§ 248.3 Applicability.

(a)(1) This guideline applies to all procuring agencies and to all procurement actions involving building insulation products where the procuring agency purchases $10,000 or more worth of one of these items during the course of a fiscal year, or where the cost of such items or of functionally equivalent items purchased during the preceding fiscal year was $10,000 or more. For purposes of the $10,000 threshold, functional equivalency extends to all building insulation products used for ceilings, floors, foundations, and walls. All building insulation products are considered to be functionally equivalent and include the following product types and materials:

(i) Loose-fill insulation, including but not limited to cellulose fiber, mineral fibers (fiberglass and rock wool), vermiculite, and perlite;

(ii) Blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool);

(iii) Board (sheathing, roof decking, wall panel) insulation, including but not limited to cellulose fiberboard, glass fiberboard, foam glass, perlite, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites; and

(iv) Spray-in-place insulation, including but no limited to foam-in-place polyurethane and polyisocyanurate, and spray-on cellulose.

(2) This guideline applies to Federal agencies, to State or local agencies using appropriated Federal funds, and to persons contracting with any such agencies with respect to work performed under such contracts. Federal agencies should note that the requirements of RCRA section 6002 apply to them whether or not appropriated Federal funds are used for procurement of items designated by EPA.

(3) The $10,000 threshold applies to procuring agencies as a whole rather than to agency subgroups such as regional offices or subagencies.

(b) The term "procurement actions" includes purchases made directly by a procuring agency and purchases made indirectly by any person in support of work being performed for a procuring agency (e.g., by a contractor).

(c) This guideline does not apply to purchases which are not the direct result of a contract, grant, loan, funds disbursement, or agreement with a procuring agency.

§ 248.4 Definitions.

As used in this guideline:

(a) "Act" or "RCRA" means the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901 *et seq.*

(b) "Blanket insulation" means relatively flat and flexible insulation in coherent sheet form, furnished in units of substantial area. Batt insulation is included in this term.

(c) "Board insulation" means semi-rigid insulation preformed into rectangular units having a degree of suppleness, particularly related to their geometrical dimensions.

(d) "Building insulation" means a material, primarily designed to resist heat flow, which is installed between the conditioned volume of a building and adjacent unconditioned volumes or the outside. This term includes but is not limited to insulation products such as blanket, board, spray-in-place, and loose-fill that are used as ceiling, floor, foundation, and wall insulation.

(e) "Ceiling Insulation" means a material, primarily designed to resist heat flow, which is installed between the conditioned area of a building and an unconditioned attic as well as common ceiling floor assemblies between separately conditioned units in multi-unit structures. Where the conditioned area of a building extends to the roof, ceiling insulation includes such a material used between the underside and upperside of the roof.

(f) "Cellular polyisocyanurate insulation" means insulation produced principally by the polymerization of polymeric polyisocyanates, usually in the presence of polyhydroxl compounds with the addition of catalysts, cell stabilizers and blowing agents.

(g) "Cellular polystyrene insulation" means an organic foam composed principally of polymerized styrene resin processed to form a homogenous rigid mass of cells.

(h) "Cellular polyurethane insulation" means insulation composed principally of the catalyzed reaction product of polyisocyanurates and polyhydroxl compounds, processed usually with a blowing agent to form a rigid foam

having a predominantly closed cell structure.

(i) "Cellulose fiber" means insulation composed principally of cellulose fibers usually derived from paper, paperboard stock or wood, with or without binders.

(j) "Cellulose fiber loose-fill" means a basic material of recycled wood-based cellulosic fiber made from selected paper, paperboard stock or ground wood stock, excluding contaminated materials which may reasonably be expected to be retained in the finished product, with suitable chemicals introduced to provide properties such as flame resistance, processing and handling characteristics. The basic cellulosic material may be processed into a form suitable for installation by pneumatic or pouring methods.

(k) "Cellulose fiberboard" means fibrous felted, homogenous, or laminated board, principally composed of cellulose fibers (usually derived from paper, paperboard stock, wood or cane), with or without binders, which provides thermal resistance among other properties.

(l) "Commercial Item Descriptions" are a series of simplified item descriptions under the Federal specifications-and-standards program used in the acquisition of commercial off-the-shelf and commercial type products.

(m) "Conditioned" means heated and/or mechanically cooled.

(n) "Federal agency" means any department, agency, or other instrumentality of the Federal government; any independent agency or establishment of the Federal government including any government corporation; and the Government Printing Office.

(o) "Floor insulation" means a material, primarily designed to resist heat flow, which is installed between the first level conditioned area of a building and an unconditioned basement, a crawl space, or the outside beneath it. Where the first level conditioned area of a building is on a ground level concrete slab, floor insulation includes such a material installed around the perimeter of or on the slab. In the case of mobile homes, floor insulation also means skirting to enclose the space between the building and the ground.

(p) "Foam-in-place insulation" foam is rigid cellular foam produced by catalyzed chemical reactions that hardens at the site of the work. The term includes spray-applied and injected applications such as spray-in-place and pour-in-place.

(q) "Foundation insulation" means a material, primarily designed to resist heat flow, which is installed in foundation walls between conditioned volumes and unconditioned volumes and the outside or surrounding earth, at the perimeters of concrete slab-on-grade foundations, and at common foundation wall assembles between conditioned basement volumes.

(r) "Invitation For Bids" is the solicitation for prospective suppliers by a purchaser requesting their competitive price quotations.

(s) "Loose-fill insulation" means insulation in granular, nodular, fibrous, powdery, or similar form, designed to be installed by pouring, blowing or hand placement.

(t) "Mineral fiber insulation" means insulation (rock wool or fiberglass) which is composed principally of fibers manufactured from rock, slag or glass, with or without binders.

(u) "Person" means an individual, trust, firm, joint stock company, corporation (including a government corporation), partnership, association, Federal agency, State, municipality, commission, political subdivision of a State, or any interstate body.

(v) "Phenolic insulation" means insulation made with phenolic plastics which are plastics based on resins made by the condensation of phenols, such as phenol or cresol, with aldehydes.

(w) "Plastic rigid foam insulation" means cellular polyurethane, cellular polyisocyanurate, cellular polystyrene, and phenolic foam insulation.

(x) "Postconsumer recovered materials" means any product generated by a business or a consumer which has served its intended end use, and which has been separated from solid waste for the purposes of collection, recycling, or disposition, and which does not include secondary (or manufacturing waste) material.

(y) "Postconsumer recovered paper" means (1) paper, paperboard and fibrous wastes from retail stores, office buildings, homes and so forth, after they have passed through their end-usage as a consumer item including: Used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards and used cordage; and (2) all paper, paperboard and fibrous wastes that enter and are collected from municipal solid waste.

(z) "Practicable" means capable of being used consistent with: performance in accordance with applicable specifications, availability at a reasonable price, availability within a reasonable period of time, and maintenance of a satisfactory level of competition.

(aa) "Procurement item" means any device, good, substance, material, product, or other item, whether real or personal property, which is the subject of any purchase, barter, or other exchange made to procure such item.

(bb) "Procuring agency" means any Federal agency, or any State agency or agency of a political subdivision of a State which is using appropriated Federal funds for such procurement, or any person contracting with any such agency with respect to work performed under such contract.

(cc) "Purchasing" means the act of and the function of responsibility for the acquisition of equipment, materials, supplies, and services, including: Buying, determining the need, selecting the supplier, arriving at a fair and reasonable price and terms and conditions, preparing the contract or purchase order, and follow up.

(dd) "Purchasing activities" means all activities included in the purchasing function.

(ee) "Recovered materials" means waste material and byproducts which have been recovered or diverted from solid waste, but such term does not include those materials and byproducts generated from, and commonly reused within, an original manufacturing process.

(ff) "Request for Proposal" is a request for an offer by one party to another of terms and conditions with references to some work of undertaking; the initial overture or preliminary statement for consideration by the other party to a proposed agreement.

(gg) "Specification" means a description of the technical requirements for a material, product, or service that includes the criteria for determining whether these requirements are met. In general, specifications are in the form of written commercial designations, industry standards, and other descriptive references.

(hh) "Spray-in-place insulation" means insulation material that is sprayed onto a surface or into cavities and includes cellulose fiber spray-on as well as plastic rigid foam products.

(ii) "Spray-in-place (foam-in-place) foam" is rigid cellular polyurethane or polyisocyanurate foam produced by catalyzed chemical reactions that hardens at the site of the work. The term includes spray-applied and injected applications.

(jj) "Wall insulation" means a material, primarily designed to resist heat flow, which is installed within or on the walls between conditioned areas of a building and unconditioned areas of a building or the outside, as well as common wall assemblies between

separately conditioned units in multiple unit structures.

Subpart B—Specifications

§ 248.10 Revisions.

(a) Federal agencies that have the responsibility for drafting or reviewing specifications for procurement items procured by Federal agencies were required to revise their specifications, by May 8, 1986, to eliminate any exclusion of recovered materials and any requirement that items be manufactured from virgin materials.

(b) Within one year after the effective date of this guideline, each procuring agency must assure that its specifications for building insulation products require the use of recovered materials to the maximum extent possible without jeopardizing the intended end use of these items.

§ 248.11 Recommendations.

(a) Procuring agencies should continue to reference Commercial Item Descriptions or appropriate standards when purchasing building insulation products, after such Commercial Item Descriptions and industry standards (and specifications which are referenced) have been reviewed to be certain that the use of recovered materials is allowed.

(b) Procuring agencies should include minimum content standards or substantially equivalent methods to prefer recovered materials content in their invitations for bids and requests for proposals when purchasing building insulation products or causing the purchase of building insulation products in any contract.

(c) If a procuring agency determines that a building insulation product containing recovered materials cannot meet reasonable performance standards, then the agency can exclude the product on a case-by-case basis. Procuring agencies should document such determinations, and the documentation should reference the particular tests used to judge performance. Procuring agencies should also reference such documentation in subsequent solicitations for the specific item to avoid repetition of previously documented findings.

(d)(1) Procuring agencies should assure that language in new specifications for new insulation products, and for existing products which are introduced with recovered materials content, allows recovered materials content. Methods to monitor the introduction of new or adapted products are detailed in §§ 248.21 and 248.24 of this Part.

(2) As new building insulation products containing or capable of containing recovered materials are identified, minimum content standards or equivalent preferences for recovered material content should be inserted in invitations for bids and requests for proposals whenever such products could be offered.

Subpart C—Affirmative Procurement Program

§ 248.20 General.

Within one year after the date of publication of this guideline as a final rule, each procuring agency which procures building insulation products must establish an affirmative program for procuring such items containing recovered materials. The program must meet the requirements of section 6002(i) of RCRA, including the establishment of a preference program; a promotion program; procedures for obtaining estimates and certification of recovered materials content and for verifying the estimates and certifications; and an annual review and monitoring program. This subpart provides recommendations for implementing section 6002(i).

§ 248.21 Preference program.

(a)(1) EPA recommends that procuring agencies establish minimum recovered material content standards for building insulation products commercially available with recovered materials content, subject to the limitations described in paragraphs (a)(2) and (c) of this section, so as to achieve procurement of building insulation products containing recovered materials to the maximum extent practicable.

(2) EPA recommends the establishment of minimum postconsumer recovered paper content standards for building insulation products made with cellulose fiber in accordance with RCRA section 6002(i).

(3) EPA recommends that minimum content standards (i) be based on insulation material type, (ii) be based on the weight of component parts, (iii) refer only to the core insulation material and exclude from consideration any facing, binding or other materials surrounding or attached to the core, and (iv) include any insulation material that is used in composite products.

(4) EPA recommends that the following minimum content standards be used:

Material type	Percent by weight
Cellulose loose-fill and spray-on.	75% postconsumer recovered paper material.
Cellulose fiberboard	50% postconsumer recovered paper material.
Perlite composite board	23% postconsumer recovered paper material.
Polyisocyanurate: polyurethane:	
Rigid foam board	9% recovered material.
Foam-in-place	5% recovered material.
Phenolic rigid foams	4% recovered material.
Rock wool	50% recovered material.

(b)(1) In those cases where recovered material content is not yet, or may not be consistently, available, EPA recommends that a case-by-case approach be used.

(2) The case-by-case approach as described in RCRA section 6002(i)(3)(A) of RCRA allows procuring agencies to make an award to a vendor offering items with less than the minimum content standard. All other things being equal, the vendor offering the highest percentage of recovered material content must be awarded the bid. EPA recommends that procuring agencies use the case-by-case approach to purchase building insulation products in three instances:

(i) When an item can technically contain recovered materials content but is not commercially available, or is not consistently available,

(ii) When the item cannot be obtained with the standard minimum content for recovered material and no other method can be used to establish a new minimum content standard, or

(iii) When an item becomes unavailable with recovered material content. Use of the case-by-case approach should continue in this instance until it is proven that the recovered material will no longer be available for the item or until a new minimum content standard can be set.

(c) The recommendations in paragraphs (a) and (b) of this section, as well as any other substantially equivalent affirmative procurement program that an agency may adopt, are subject to the following limitations listed in section 6002(c)(1) of RCRA:

(1) Maintenance of a satisfactory level of competition;

(2) Availability within a reasonable period of time;

(3) Ability to meet the specifications in the invitation for bids;

(4) Availability at a reasonable price.

(d) EPA recommends that if procuring agencies have difficulty obtaining a building insulation product for the reasons listed in paragraph (c) of this

section, the procuring agencies should re-evaluate the minimum content standard.

(e) Procuring agencies should examine their purchasing practices and eliminate those which would inhibit the purchase of building insulation products containing recovered materials (e.g., bids for "all or none" when a broad range of insulation products are required).

(f) Procuring agencies should make determinations regarding competition and availability in accordance with the Federal Acquisition Regulation (FAR), 48 CFR Ch. 1 *et seq.*

§ 248.22 Promotion program.

EPA recommends that procuring agencies use the following methods, at a minimum, to promote their preference programs:

(a) Place a statement in procurement invitations in the *Commerce Business Daily* or similar publications describing the preference program.

(b) Describe the preference program in solicitations or invitations for bids for or which include building insulation.

(c) Discuss the preference program at bidders' conferences.

(d) Inform industry trade associations about the preference program.

(e) Publicize preferences for building insulation products made with recovered materials in all product-related services and publications (e.g., Department of Housing and Urban development publications and product-related services developed in compliance with section 521 of the National Housing Act, such as: National Building Codes, Bulletins, Materials Releases, Engineering Bulletins, and Use of Materials Information).

(f) Issue press releases describing the affirmative procurement program to recycling industry publications.

§ 248.23 Estimates, certification, and verification.

Each procuring agency must develop estimation, certification and verification procedures:

(a) When a vendor supplies a building insulation product, the contracting officer must require the vendor to estimate the total percentage of recovered material content in that insulation product. EPA recommends that procuring agencies maintain records of these estimates for three years by type of product, quantity purchased, and price paid.

(b)(1) When a procurement solicitation or invitation for bid requires a minimum recovered materials content, procuring agencies must require offerors or bidders to certify that the percentage of recovered material to be used in the performance of the contract will be at least the amount required by the solicitation or invitation for bid.

(2) When using the case-by-case approach, a procuring agency must require offerors or bidders to certify that the percentage of recovered materials to be used in the performance of the contract will be at least the minimum percentage described in the offer in response to the invitation for bids.

(c)(1) EPA recommends that procuring agencies develop verification procedures for certifications and estimates of recovered materials content in building insulation products that require access only to manufacturers' records of recovered materials and comparable virgin materials used in each batch. Verification need not include review of records of other ingredients used in small percentages, which could include confidential business information.

(2) EPA recommends that the average of recovered materials used in a specific insulation product over a one-month period be used, if necessary, for verification of estimates of recovered materials content actually utilized in insulation products supplied to a procuring agency.

§ 248.24 Annual review and monitoring.

(a) Each procuring agency must conduct an annual review and monitoring of the effectiveness of its affirmative procurement program.

(b) EPA recommends that the annual review include the following items:

(1) An estimate of the quantity of building insulation with recovered material content purchased and the total quantity of building insulation products purchased.

(2) An assessment of the effectiveness of the promotion program.

(3) An assessment of any remaining barriers to purchase of insulation with recovered content to determine whether they are internal (e.g., resistance to use) or external (e.g., unavailability).

(4) A review of the range of estimates and certifications of recovered materials content in building insulation products provided by vendors during the year to determine whether minimum content standards should be raised or lowered, or whether a change from the case-by-case approach to the minimum content standard approach is necessary.

(5) A program to gather statistics. Procuring agencies should monitor their procurements to provide data on the following:

(i) The percentages of recovered materials content in the products procured or offered;

(ii) Comparative price information on competitive procurements;

(iii) The quantity of each item procured over a fiscal year;

(iv) The availability of the insulation products to procuring agencies;

(v) Type of performance tests conducted, together with the type of building insulation product containing recovered materials content that failed the tests, the percentages of total virgin products and products containing recovered materials content supplied that failed each test, and the nature of the failure;

(vi) Agency experience with the performance of the procured products.

(c) Procuring agencies should prepare a report on their annual review and monitoring of the effectiveness of their procurement programs and make these reports available to the public. The reports should contain the following information:

(1) If the case-by-case approach or a substantially equivalent alternative is being used, a discussion of how the procuring agency's approach procures building insulation products containing recovered materials to the maximum extent practicable. The basis for this discussion should be a review of the data compiled on recovered materials content, price, availability, and performance, as well as a comparison of estimates and certifications provided by the vendors.

(2) If the minimum content standards approach is being used, a discussion of whether the minimum content standards in use should be raised, lowered, or remain constant for each item. The basis for this discussion should be a review of the data compiled on recovered materials content, price, availability, and performance, as well as a comparison of estimates and certifications provided by the vendors.

(3) Documentation of specification revisions made during the year.

§ 248.25 Implementation.

Procuring agencies must begin procurement of building insulation products, in compliance with this guideline, one year from [the date of publication of the final guideline].

[FR Doc. 88-17332 Filed 8-1-88; 8:45 am]
BILLING CODE 6560-50-M

STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

In the Matter of the Proposed Amendments to Rules of the Minnesota Department of Public Service Governing Residential Thermal Insulation Standards, Minn. Rules ch. 7640	NOTICE OF SUBMISSION OF RULE AMENDMENTS ADOPTED WITHOUT PUBLIC HEARING TO THE ATTORNEY GENERAL

Pursuant to your request and in accordance with Minn. Stat. § 14.26 (1988):

PLEASE TAKE NOTICE that the above-captioned rule amendments as adopted have been submitted to the Office of the Attorney General on this date, April 5, 1990, for review as to legality and form to the extent form relates to legality. The proposed rule amendments, the rule amendments as adopted, all the notices, the Statement of Need and Reasonableness, all written comments and requests for hearing received, and other required documents also have been submitted to the Attorney General.

The proposed rule amendments which were published in the State Register and made available to the public on February 26, 1990, have been modified. A free copy of the rule amendments as modified as well as the findings of fact, conclusions, and order explaining the amendments and adopting the rules is available from Bruce Nelson, Minnesota Department of Public Service, Energy Division, 900 American Center Building, 150 East Kellogg Boulevard, St. Paul, Minnesota 55101, telephone (612) 297-2313.

The rule amendments must be approved or disapproved by the Attorney General within 14 calendar days of the date of the submission to the Attorney General. You may submit written comments to the Attorney General on the legality of the rule amendments. Any written comments must be submitted within eight calendar days of the date of the submission of the rule amendments to the Attorney General. Your comments must address only the issue of legality of the rule amendments or the legality of the specific parts of or subparts of the rule amendments. The Attorney General standards for review are set forth in Minnesota Rules pt. 2010.1000. You may receive a copy of the Attorney General decision upon written request to the Attorney General. Your comments or requests for the decision must be directed to:

Office of the Attorney General
404 Capitol Office Building
525 Park Street
St. Paul, MN 55103
Telephone: (612) 296-9715

Any written comments submitted to the Attorney General must be submitted simultaneously to Bruce Nelson at the address stated above.

Dated: April 5, 1990

Joselyn F. Olson

JOCELYN F. OLSON
Assistant Attorney

Attorney for the Minnesota Department of Public Service

STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

In the Matter of the Proposed Amendments to Rules of the Minnesota Department of Public Service Governing Residential Thermal Insulation Standards, Minn. Rules ch. 7640	AFFIDAVIT OF MAILING NOTICE OF SUBMISSION OF RULE AMENDMENTS ADOPTED WITHOUT PUBLIC HEARING TO THE ATTORNEY GENERAL

Margaret Esty, being duly sworn, says:

That on the 5th day of April, 1990, 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 United States Mail for first class mailing a copy thereof, with postage prepaid, to all persons and associations on the attached list who requested notice that the rule amendments in the above-entitled matter have been submitted to the Attorney General, as follows:

Richard J. Ray
Manville Sales Corporation
P.O Box 5108
Denver, CO 80217-5108

Margaret A. Esty

Subscribed and sworn to before
me this 5th day of April, 1990.

Susan M. Oesterreich
Notary Public

SUSAN M. OESTERREICH
NOTARY PUBLIC-MINNESOTA
DAKOTA COUNTY
MY COMMISSION EXPIRES SEPTEMBER 7, 1990

STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE

In the Matter of the Proposed
Amendments to Rules of the Minnesota,
Department of Public Service
Governing Residential Thermal
Insulation Standards, Minn. Rules
ch. 7640

DECLARATION OF COUNSEL

I, Jocelyn F. Olson, Assistant Attorney General, do hereby declare that I have examined the above-captioned rule, and the supporting rulemaking record, and that, based on my examination, the Administrative Procedure Act and Minnesota Rules, chapter 2010 have been followed. Any exceptions are listed below. For Attorney General billing purposes, the four digit docket client code is 0730.

Jocelyn F. Olson

JOCELYN F. OLSON
Assistant Attorney General

Dated: April 5, 1990