

1 Department of Public Service

2 Energy Division

3

4 Adopted Permanent Rules Relating to Thermal Insulation Standards

5

6 Rules as Adopted

7 7640.0110 APPLICABILITY.

8 Subpart 1 to 3. [Unchanged.]

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

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

14 B. to D. [Unchanged.]

15 Subp. 5. [Unchanged.]

16 7640.0120 DEFINITIONS.

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

23 Subp. 2. to 9. [Unchanged.]

24 Subp. 10. [See Repealer.]

25 Subp. 11. FTC. "FTC" means the United States Federal  
26 Trade Commission, Code of Federal Regulations, title 16, part  
27 460, or a standard issued for thermal insulation materials by  
28 that commission.

29 Subp. 12. to 19. [Unchanged.]

30 Subp. 19a. Quality assurance program. "Quality assurance  
31 program" means the collective set of plans, activities, and  
32 events that are provided to ensure that the product or service  
33 will satisfy given needs. A quality assurance program must  
34 ~~include-the-elements-of~~ conform to "Generic Guidelines for  
35 Quality Systems," American National Standards Institute -

1 American Society for Quality Control standard ~~ANSI~~ ANSI/ASQC  
2 Z-1.157-1979.

3 Subp. 20. [Unchanged.]

4 Subp. 20a. **Radiant barrier.** "Radiant barrier" means a  
5 building construct consisting of a low emittance surface bounded  
6 by an open air space.

7 Subp. 20b. **Reflective insulation.** "Reflective insulation"  
8 means a building construct consisting of a low emittance surface  
9 bounded by an enclosed air space.

10 Subp. 21. to 26. [Unchanged.]

11 7640.0130 INSULATION MATERIALS STANDARDS.

12 Subpart 1. [Unchanged.]

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

16 A. [Unchanged.]

17 B. All regulated thermal insulation materials must be  
18 tested for compliance with the standards in this part by April  
19 2, 1986. Testing procedures are as follows:

20 (1) to (3) [Unchanged.]

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

24 (5) Insulation must have flammability  
25 characteristics in accordance with the Uniform Building Code,  
26 1985 Edition, sections 1712 and 1713, for its intended uses.

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

31 (1) [Unchanged.]

32 (2) R-value testing must be performed at the  
33 insulation's representative thickness, and be consistent with  
34 the requirements of the United States Federal Trade Commission.  
35 Unit R per inch must be derived from R-value testing performed

1 to its representative thickness.

2 (3) For polyurethane, polyisocyanurate, and  
3 extruded polystyrene, in accordance with the FTC R-value rule,  
4 section 460.5, R-value tests must be done on samples that fully  
5 reflect the effect of aging on the product's R-value.

6 (4) to (6) [Unchanged.]

7 D. Manufacturers shall have a quality assurance  
8 program in place for all regulated thermal insulation products.  
9 A quality assurance program must be in place for installers of  
10 products whose manufacture is completed at the jobsite.

11 Manufacturers and other industry members must maintain an  
12 in-house quality assurance program in order for products to meet  
13 the required standards.

14 If a manufactured product fails to meet those required  
15 standards, the department shall notify the industry member to  
16 pursue corrective measures.

17 Subp. 3. Cellulose insulation.

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

20 (1) The product must comply with ASTM C 739-86,  
21 Standard Specification for Cellulosic Fiber (wood-base)  
22 Loose-Fill Thermal Insulation or the United States Consumer  
23 Product Safety Commission Interim Safety Standard for Cellulose  
24 Insulation, Code of Federal Regulations, title 16, part 1209  
25 subpart B.

26 (2) All manufacturers shall contract with an  
27 approved laboratory for a follow-up agreement to accomplish the  
28 following:

29 (a) The laboratory shall conduct unannounced  
30 inspections.

31 (b) The inspections must be:

32 (i) monthly, if production is 350,000  
33 pounds or more per month; or

34 (ii) quarterly, if production is less  
35 than 350,000 pounds per month.

36 (c) The inspector shall conduct tests on a

1 sample at the plant laboratory for settled density, smoldering  
2 combustion, critical radiant flux, and corrosiveness (ph).

3 (d) The inspector shall examine the  
4 manufacturer's quality assurance program.

5 (3) [Unchanged.]

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

8 (1) to (4) [Unchanged.]

9 (5) Critical radiant flux and smoldering  
10 combustion must be tested for in accordance with ASTM C 739-86,  
11 part 5, or the CPSC Interim Safety Standard for Cellulose  
12 Insulation, Code of Federal Regulations, title 16, part 1209.  
13 Values achieved must not exceed those established by the CPSC.

14 (6) to (8) [Unchanged.]

15 Subp. 4. [Unchanged.]

16 Subp. 5. Foam plastic insulation.

17 A. and B. [Unchanged.]

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

21 Exception: Aged R-value must be ~~6.0~~ 5.6 per inch or  
22 greater at ~~70~~ 75 degrees Fahrenheit.

23 D. to F. [Unchanged.]

24 G. Foam plastic insulation that conforms to all  
25 requirements of ICBO Evaluation Service Acceptance Criteria for  
26 Foam Plastic, October, 1982, for the intended application, meets  
27 the Minnesota testing standards in this subpart.

28 Subp. 6. [Unchanged.]

29 Subp. 7. Reflective foil insulation.

30 A. The following requirements apply to reflective  
31 foil insulation:

32 (1) Specimens for tests must consist of pieces of  
33 insulation cut to approximately three by six inches, suspended  
34 in a vertical position and heated to a temperature of 180  
35 degrees Fahrenheit (plus or minus five degrees Fahrenheit) for  
36 at least five hours. At the end of the heating period, the

1 tester shall examine the reflective surfaces to determine  
2 whether the adhesive has bled through the surface or whether  
3 delamination has occurred.

4           (2) Except for radiant barrier products, thermal  
5 performance for single or multiple sheet sections must be  
6 determined according to ASTM C 976-82 or ASTM C 236-87. The  
7 test panel must consist of a panel using a wooden frame of  
8 two-by-six inch boards 16 inches apart and at least 24 inches  
9 long, covered with a minimum of 1/2-inch gypsum wallboard or  
10 1/2-inch plywood on each side. For tests in the vertical  
11 position, the test panel must be at least seven feet high at a  
12 mean temperature of 75 degrees Fahrenheit, with a temperature  
13 differential of 30 degrees Fahrenheit. The resultant thermal  
14 performance must be based upon the insulation and the associated  
15 air spaces.

16           (3) Layers of insulation composed of unsupported  
17 foil that is exposed must have a minimum thickness of 0.0004  
18 inch. Unsupported foil that is sandwiched in multilayer sheet  
19 must have a minimum thickness of 0.00035 inch. Foil bonded to  
20 kraft paper must have a minimum thickness of 0.00025 inch.

21           (4) Adhesive used in bonding must be waterproof  
22 and show no sign of bleeding when tested in accordance with the  
23 test procedure identified in section V, part A, of the ICBO  
24 Evaluation Service Acceptance Criteria for Reflective Foil  
25 Insulation, June 1987, section V, part A, for adhesive bleeding  
26 requirements. Bleeding at cut edges may be disregarded.

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

33           (6) Reflective foil insulation that conforms to  
34 all requirements of ICBO Evaluation Service Acceptance Criteria  
35 for Reflective Foil Insulation, June 1987 (with the exception  
36 that thermal performance must be tested in accordance with item

1 B, C, or D), meets the Minnesota testing standards in this  
2 subpart.

3 B. Reflective insulation systems with more than one  
4 sheet must be tested according to ASTM C 976-82 or ASTM C 236-87  
5 to determine the thermal performance in horizontal, upward, and  
6 downward directions. The tested thermal performance in the  
7 heat-flow direction or directions of the intended application  
8 must be labeled on the material. The manufacturer shall test  
9 once in each direction of intended application; except that, for  
10 products labeled with only one heat-flow direction, the  
11 manufacturer shall test two samples in that direction. The  
12 tests must be done at a mean temperature of 75 degrees  
13 Fahrenheit, with a temperature differential of 30 degrees  
14 Fahrenheit.

15 C. Single sheet reflective insulation systems must be  
16 tested with ASTM E 408 or another test method that provides  
17 comparable results. This tests the emissivity of the foil (its  
18 power to radiate heat). To get the R-value for a specific  
19 emissivity level, air space, and direction of heat flow, use the  
20 tables in the most recent edition of the American Society of  
21 Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)  
22 Handbook. The R-value shown for 50 degrees Fahrenheit must be  
23 used, with a temperature differential of 30 degrees Fahrenheit.

24 D. Radiant barrier products must meet the  
25 requirements of the United States Federal Trade Commission in  
26 Code of Federal Regulations, title 16, part 460.5(b) and (c).

27 If the R-value listed on the Federal Trade Commission fact  
28 sheet is not that for a radiant barrier, the Federal Trade  
29 Commission fact sheet must also include the following  
30 statement: "These R-values are not for a radiant barrier and  
31 are likely to differ when the product is installed as a radiant  
32 barrier."

33 Subp. 8. Other insulation. Insulation other than  
34 insulation specified in subparts 1 to 7, to be sold, marketed,  
35 or advertised for use in residential structures in Minnesota  
36 must comply with the requirements in items A to F.

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

3           B. Results of the water absorption test must be  
4 reported.

5           C. If the material is foam in place, a test of the  
6 shrinkage using ASTM C 591-85 951-83, section 8.5 must be used.

7           D. If the material contains formaldehyde, a  
8 formaldehyde content test is necessary.

9           E. The initial report as required by part 7640.0150,  
10 subpart 2, must include a description of other tests applied to  
11 the product.

12           F. The manufacturer shall provide a statement that  
13 the insulation and its intended uses are safe and effective and  
14 do not pose a threat to human health. The manufacturer shall  
15 disclose any known or reasonably suspected attributes of the  
16 product that will adversely affect its safety or effectiveness.

17 7640.0140 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

18           Subpart 1. to 3. [Unchanged.]

19           Subp. 4. Pipe insulation, duct wrap insulation, and water  
20 heater blanket insulation. Pipe insulation, duct wrap  
21 insulation, and water heater blanket insulation must meet the  
22 standards of part 4155.0130, including the flammability  
23 requirements for insulation in part 4155.0130, subpart 2, item  
24 B, clause (6). Water heater blanket products must meet the  
25 flammability requirements of flame spread 50 and smoke developed  
26 100, when tested in accordance with ASTM standard E84-84,  
27 Revision A, Surface Burning Characteristics of Building  
28 Materials.

29           Pipe insulation does not have to be listed with an R-value.  
30 If the R-value is not identified on the label, it does not need  
31 to be tested. If the R-value is identified, it must be  
32 supported by test results as identified in part 7640.0130,  
33 subpart 2, item C.

34 7640.0150 REPORTING REQUIREMENTS.

35           Subpart 1. Applicability. This subpart identifies all

1 industry members to whom subparts 2 and 3 apply.

2 A. and B. [Unchanged.]

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

11 D. Insulation products identified in part 7640.0130,  
12 subparts 3 to 8 that are composed of the identical material, for  
13 example the same chemical make-up, composition, or physical  
14 properties, but that have different dimensional characteristics,  
15 such as width, length, or thickness, ~~or-density~~, need not  
16 undergo additional testing by the same manufacturer once the  
17 initial similar product meets the necessary requirements.

18 Subp. 2. [Unchanged.]

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

20 A. [Unchanged.]

21 B. For each product, the report must include:

22 (1) and (2) [Unchanged.]

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

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

31 (5) a list of three, or as many as available if  
32 less than three, Minnesota purchasers or customers of the  
33 product. The department shall maintain this information with  
34 the strictest confidence.

35 C. [Unchanged.]



## 1 7640.0160 APPLICATION AND INSTALLATION STANDARDS.

2 Subpart 1. [Unchanged.]

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

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

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

11 Installation of reflective insulation must comply with ASTM  
12 standard C 727-72 (reapproved 1978).

13 Subp. 3. [Unchanged.]

## 14 7640.0170 PRODUCT INFORMATION.

15 Subpart 1. **Generally.** Insulation used or offered for sale  
16 in Minnesota must meet the requirements of the United States  
17 Federal Trade Commission in Code of Federal Regulations, title  
18 16, part 460.

19 Subp. 2. **False and misleading statements.** Any false,  
20 misleading, or unsubstantiated statements in a sales  
21 presentation, or on any label, product literature, or product  
22 intended for the purchaser, as identified in Minnesota Statutes,  
23 sections 325F.22, 325F.67, and 325F.69, subdivision 1, are  
24 subject to the state's remedies provided in Minnesota Statutes,  
25 sections 325F.24 and 325F.70.

26 Subp. 3. **Labeling for insulation products with follow-up**  
27 **programs.** Insulation products with a follow-up program must  
28 carry the label of the laboratory indicating that a follow-up  
29 program is being conducted.

## 30 7640.0180 INCORPORATIONS BY REFERENCE AND CITATIONS.

31 Subpart 1. [Unchanged.]

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

34 A. ASTM C 168-88a, Standard Definitions of Terms  
35 Relating to Thermal Insulation Materials.

- 1           B. ASTM C 177-85, Standard Test Method for Steady  
2 State Heat Flux Measurements and Thermal Transmission Properties  
3 by Means of the Guarded Hot Plate Apparatus.
- 4           C. ASTM C 236-87, Standard Test Method for Steady  
5 State Thermal Performance of Building Assemblies by Means of a  
6 Guarded Hot Box.
- 7           D. ASTM C 516-80 (reapproved 1985), Standard  
8 Specification for Vermiculite Loose-Fill Thermal Insulation.
- 9           E. ASTM C 518-85, Standard Test Method for Steady  
10 State Heat Flux Measurements and Thermal Transmission Properties  
11 by Means of the Heat Flow Meter Apparatus.
- 12           F. [Unchanged.]
- 13           G. ASTM C 553-70 (reapproved 1977), Standard  
14 Specification for Mineral Fiber Blanket and Felt Insulation  
15 (Industrial Type).
- 16           H. to J. [Unchanged.]
- 17           K. ASTM C 727-72 (reapproved 1978), Standard  
18 Recommended Practice for Use of Reflective Insulation in  
19 Building Constructions.
- 20           L. ASTM C 739-86, Standard Specification for  
21 Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.
- 22           M. ASTM C 764-84, Standard Specification for Mineral  
23 Fiber Loose-Fill Thermal Insulation.
- 24           N. ASTM C ~~951-85~~ 951-83, Standard Specification for  
25 Urea-Formaldehyde-Based, Foam in Place Insulation.
- 26           O. ASTM C 976-82, Standard Test Method for Thermal  
27 Performance of Building Assemblies by Means of a Calibrated Hot  
28 Box.
- 29           P. ASTM C 1014-84, Standard Specification for  
30 Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.
- 31           Q. ASTM E 84-84 Revision A, Surface Burning  
32 Characteristics of Building Materials.
- 33           R. ASTM C ~~1015-84~~ 1015-84, Standard Practice for  
34 Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal  
35 Insulation.
- 36           S. ASTM C 1029-85, Standard Specification for

1 Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.

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

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

8 Subp. 2a. **Standards.** The following American National  
9 Standards Institute - American Society for Quality Control  
10 standard is incorporated by reference:

11 ~~ANSI~~ ANSI/ASQC standard Z-1.15-1979: Generic Guidelines  
12 for Quality Systems.

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

15 A. to H. [Unchanged.]

16 I. ICBO Evaluation Service Acceptance Criteria for  
17 Foam Plastic, October, 1982.

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

20 Subp. 4. [Unchanged.]

21

22 **REPEALER.** Minnesota Rules, part 7640.0110, subpart 10, is  
23 repealed.