


THE NATIONAL INSULATION ASSOCIATION

NIA Certified Faced Insulation® Standard 404.01-2022

The Thermal Standard For Flexible-Faced Insulation Used in Metal Buildings



National Insulation Association (NIA) is a nonprofit service organization dedicated to mechanical and specialty insulation contractors, distributors, fabricators, manufacturers, and metal building insulation

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Thermal Standard for Flexible-Faced Insulation Used in Metal Buildings

A standard product specification for use by laminators of metal building insulation systems.

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1.0 Scope

1.1 This specification covers the classification, composition, and the physical properties of flexible-faced fiberglass insulation intended for use in the roofs and the walls of manufactured metal buildings.

1.2 The thermal insulation values in this specification are for the insulation only and do not include the effects of facings, air film surface resistances, compression of insulation at the framing members of the building, through-metal conductance of fasteners, and other parallel heat transfer paths due to design or installation techniques.

2.0 Applicable Standards and Documents

2.1 ASTM International Standards Applicable to Fiberglass Insulation being manufactured for the specific purpose to be laminated for Metal Buildings.

- C167—Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations
- C168—Terminology Relating to Thermal Insulation Materials
- C177—Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
- C390—Criteria for Sampling and Acceptance of Preformed Thermal Insulation Lots
- C518—Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- C653—Guide for Determination of the Thermal Resistance of Low-Density Blanket-Type Mineral Fiber Insulation
- C991—Specification for Flexible Fibrous Glass Insulation for Metal Buildings
- C1045—Standard Practice for Calculating Thermal Transmission Properties Under Steady-State Conditions
- C1338—Method for Determining Fungi Resistance of Insulation Materials and Facings
- E84—Standard Test Method for Surface Burning Characteristics of Building Materials

2.2 North American Insulation Manufacturers Association

- NAIMA 202-96® (Rev. 2000) Standard Product Specification for Fiber Glass Designed to be Laminated ([Click to view this Standard.](#))
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3.0 Classification

3.1 The flexible insulation is furnished as glass processed from the molten state into fibrous form, bonded with a thermosetting resin, and formed into a resilient flexible blanket. A suitable vapor retarder or facing is adhered to one surface.

4.0 Ordering Information

4.1 Material to be ordered should include specifying thermal resistance (R-value), insulation length and width, type of facing, the permeance of facing, facing tab width, and the number of tabs.

5.0 Physical Requirements of Faced Fiberglass

5.1 The unfaced fiberglass insulation blanket to be laminated must be fiberglass insulation manufactured for specific use in metal buildings as per section 2.1 (C991) or 2.2 above ([NAIMA 202-96® \(Rev. 2000\)](#))

5.2 The thermal resistance of the faced insulation at 75°F mean temperature shall be determined in accordance with ASTM C653. Use thermal conductivity tests per ASTM C177 or C518 with a temperature differential of 40°F. Thickness recoveries shall be determined in accordance with subsection 8.1

Below is a list of the most commonly available product R-values. Manufacturers may manufacture and certify other R-values not listed below. R-10

- R-11
- R-13
- R-19
- R-25
- R-30

5.2.1 Thermal Resistance Tolerance—The R-value, determined from the average of a three-roll sample, shall not be less than 95% of the nominal R-value for each inspection.

5.3 Surface Burning Characteristics—The surface burning characteristics shall be determined in accordance with ASTM E84.

This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used—to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, the results of this test may be used as elements of a fire risk assessment, which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.

5.3.1 The classification of the faced insulation shall be no greater than a flame spread index of 25 and a smoke-developed index of 50 when tested on the facing side.

5.4 Fungi Resistance—The adhesive (used to affix the vapor retard/facing to the fiberglass) shall be certified by the adhesive supplier as tested separately per ASTM C1338 and shall exhibit no growth.

5.5 Integrity—Laminated insulation shall not exhibit obvious oxidation/corrosion, discoloration, or delamination of facing, nor exhibit a lack of adhesion of facing to insulation when inspected visually.

5.6 Dimensional Tolerances—The average measured length and width shall not differ from the manufacturer's standard dimensions when determined in accordance with paragraph 8.1, by more than the following:

Length, -0, +1/2 inch

Width, +/- 1/4 inch

Normally, a slight excess in all dimensions will be permitted. However, the purchaser may elect to specify a maximum tolerance to meet further processing requirements.

6.0 Workmanship

6.1 The material shall indicate good workmanship and shall not have visible defects which adversely affect its serviceability. Vapor retarders or facings should not be torn or punctured. Tears and or punctures in the vapor retarder or facing shall be repaired or replaced.

7.0 Sampling and Inspection

7.1 The laminator's normal sampling and inspection procedures shall be acceptable as outlined in Section No. 4 of ASTM C390, unless agreed otherwise.

8.0 Test Methods

8.1 Thickness Measurement

8.1.1 Sample Preparation—A representative roll of insulation, at least 25 feet in length, is rolled on a flat surface. When roll lengths are in excess of 75 feet, it is permissible to cut the roll into two equal lengths for ease of handling. The test roll is then flipped over for its entire length. Finally, after grasping one end, the material is pulled back over itself until the original surface is again facing up and allowed to rest for 15 minutes.

8.1.2 Test Procedure—Five thickness measurements are then taken, using a pin and disc gauge per ASTM C167 on each third of the roll starting five feet in from the roll ends. The five thickness checks should be spaced uniformly over each third of the roll, sampling the full width but not closer than 1/10 of the width from the edges.

8.1.3 Calculation and report—Calculate the average of 15 thickness recovery checks from the roll. The average thickness recovery value can be used to calculate the thermal resistance in 5.1, providing the thermal conductivity of the material is known or has been supplied by the manufacturer.

8.2 Length and Width Measurement

8.2.1 Sample Preparation—A representative roll of insulation is completely unrolled on a flat surface.

8.2.2 Test Procedure—A steel measuring tape of sufficient length shall be used to measure the entire length and width of the fiberglass insulation roll. An alternate method may be used where the flat surface has been previously ruled out to facilitate ease of measurement.

8.2.3 Calculation and Report—Determine the length and width in several locations and record the average values.

9.0 Inspection

9.1 Inspection of the laminated material should be agreed upon by the purchaser and the supplier/laminator as part of the purchase contract.

10.0 Rejection

10.1 The process for rejection, as set out in the remainder of section 10, states the laminated material should be agreed upon by the purchaser and the supplier/laminator as part of the purchase contract.

10.2 If inspection of the sample shows a failure to conform to the requirements of this specification, a second sample from the same lot shall be tested, and the results of this secondary averaged with the results of the original test.

10.3 Upon the results as described in 10.1, if the product fails to conform to this specification, the results shall constitute grounds for rejection of the lot of the same lamination date printed on or in the packaging of the tested rolls.

10.4 In case of rejection, the laminator or seller shall have the right to inspect the rejected shipment or resubmit the lot after the removal of that portion of the shipment not conforming to the specified requirements.

11.0 Product Certification

11.1 Thermal Certification—Samples of this product are tested quarterly by a nationally recognized independent, third-party laboratory and determined to meet the stated dimensions and thermal resistance in accordance with this Certified Faced Insulation Standard. The laminator shall represent that the product being presented for testing has been produced to the standard.

11.2 Surface Burning Characteristics Certification—Samples of this product, selected randomly, are to be tested and/or verified quarterly by a nationally recognized independent, third-party laboratory and determined if they meet the stated flame-spread-and smoke-developed index values in accordance with this Certified Faced Insulation Standard.

12.0 Product Marking

12.1 Unless otherwise specified, the seller's name and designation, length, width, thickness, R-value, the total number of square feet, manufacturing date code, surface burning characteristics, and type of facing shall be noted on the package label.

12.2 The package shall also be marked with the label(s) of the appropriate certifying laboratory for thermal certification and surface burning characteristics.

13.0 Packaging of Faced Fiberglass

13.1 Unless otherwise agreed or specified between the purchaser and the laminator or the purchaser and the seller, the insulation shall be packed in a standard commercial container.

13.2 If there is residual moisture in the product at the time of packaging, the package shall be suitably vented to allow for evaporation of the moisture.

14.0 Storage

14.1 The material shall be stored in such a manner as to protect the package from direct sunlight, weather, temperature extremes, and extreme compression.

14.2 Shelf life shall be agreed upon between the laminator/seller and the purchaser.

15.0 Moisture

15.1 Long service life and optimum performance characteristics of fiberglass insulations are predicated on the requirements that dry insulation is applied to clean and dry surfaces, and that they are protected against the incursion of water during installation and by adequate design and maintenance after installation.

15.2 Wet insulation provides depreciated thermal performance in comparison to dry insulation; once installed, it is difficult to dry insulation completely. The incursion of water may also introduce compounds and organisms which may accelerate the corrosion of metals and may permit mold or mildew growth and odors.

15.3 Tests conducted under laboratory conditions on relatively small specimens of fiberglass artificially wetted with distilled water in the liquid phase and thoroughly dried under conditions free of shear or compressive forces indicate no adverse effect on the apparent thermal conductivity. This would suggest that insulation wetted in service could regain most of its thermal resistance, provided it could be dried without a significant loss of thickness. However, there is no assurance that the drying method used or the forces acting on the wet insulation will not result in loss of thickness or that contaminants in the water may not contribute to corrosion, mold or mildew growth, or odors.

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