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The Subcommittee on Evaluation has reviewed the data submitted for compliance with the Standard Building Code and International One and Two Family Dwelling Code and submits to the Building Official or other authority having jurisdiction the following report. The Subcommittee on Evaluation, ICC-ES and its staff are not responsible for any errors or omissions to any documents, calculations, drawings, specifications, tests or summaries prepared and submitted by the design professional or preparer of record that are listed in the Substantiating Data Section of this report.

REPORT NO.: 2131

EXPIRES: See the current EVALUATION REPORT INDEX

CATEGORY: INSULATION

SUBMITTED BY:

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1. PRODUCT TRADE NAME

InsulBloc® Masonry Cavity Wall Insulation (NCFI 362-91)

2. SCOPE OF EVALUATION

- 2.1 Surface burning characteristics
2.2 Insulation R-Values
2.3 Air infiltration barrier
2.4 Moisture protection barrier

3. USES

InsulBloc Masonry Cavity Wall Insulation (NCFI 362-91) is used as a wall insulation and air infiltration barrier and/or moisture protection barrier in exterior masonry cavity walls of buildings of Type V or Type VI Construction.

4. DESCRIPTION

4.1 General

InsulBloc Masonry Cavity Wall Insulation (NCFI 362-91) is a polyurethane foam that is spray applied to the exterior of concrete masonry wall units (CMU) used as a component of a masonry cavity wall. The foam insulation provides a continuous

seamless barrier over the CMU and fills voids, cracks, and expansion joints on the wall. The foam insulation is covered with anchored masonry veneer. The material is a two component (1:1 ratio) system closed cell polyurethane foam with a nominal density of 2.0 pcf (32.04 kg/m³) and a maximum thickness of 2 inches (50.8 mm) installed.

4.2 Surface Burning Characteristics

NCFI 362-91 was tested for surface burning characteristics under ASTM E 84 at a maximum thickness of 2 Inches (50.8 mm) and density of 2.0 pcf (32.04 kg/m³) and demonstrated a flame spread index (FSI) of less than 25 and a smoke developed index (SDI) of less than 450 when tested under ASTM E 84.

4.3 Thermal Resistance R-Values

NCFI 362-91 was tested for thermal transmission under ASTM C 518 and demonstrated the R-values noted in Table 1 below.

TABLE 1

Table with 2 columns: Thickness (inches) and R Value¹. Rows: 1/2 inch (3.5), 1 inch (7.0), 2 inches (14).

Notes Table 1:

- 1. R-Value units is F°•hr•ft²/Btu
2. SI Units conversion:
1 inch = 25.4 mm,
1 F°•hr•ft²/Btu = 0.176 K°•m²/W

4.4 Water Vapor Transmission Rate

NCFI 362-91 demonstrated a water vapor transmission rating of 0.898 perms when tested under ASTM E 96 Method B.

4.5 Air Infiltration Barrier, Moisture Protection Barrier on CMU

NCFI 362-91 was tested for water vapor transmission, tensile bond to CMU and gypsum board, hydrostatic head water resistance and air infiltration as a component of a wall assembly. The testing demonstrated that NCFI 362-91 may be used as a moisture protection barrier and air infiltration barrier for CMU wall construction.

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5. INSTALLATION

5.1 General

InsulBloc® Masonry Cavity Wall Insulation (NCFI 362-91) is installed in accordance with the manufacturer's published installation instructions and this report. NCFI 362-91 is installed by applicators approved by North Carolina Foam Industries.

The manufacturer's published installation instructions and this report shall be strictly adhered to and a copy of these instructions shall be available at all times on the job site during installation.

The instructions within this report govern if there are any conflicts between the manufacturer's instructions and this report.

5.2 Application

NCFI 362-91 is installed in the cavity of exterior masonry cavity walls consisting of a CMU wall with anchored masonry veneer. The CMU wall is constructed in accordance with the *Code* and masonry anchors are installed in the CMU in accordance with section 1403.2.6 SBC. The foam is spray applied in a continuous seamless layer to the exterior face of the CMU walls. The masonry veneer is then constructed in accordance with the *Code* with a 1 inch (25.4 mm) minimum air space maintained between the anchored masonry veneer and the foam plastic. NCFI 362-91 is applied at a nominal density of 2.0 pcf (32.04 kg/m³) and a maximum thickness of 2 inches (50.8 mm).

NCFI 362-91 is spray applied on the job site using standard polyurethane spray equipment with proportioning pump ratio of 1 to 1. The components shall not be stored at a temperatures below 59° F (15° C) and above 85° F (30° C) before installation. NCFI 362-91 shall not be used in areas which have a maximum service temperature greater than 180° F (82° C).

The foam shall not be used in electrical outlet or junction boxes or in direct contact with rain, water or soil. The foam shall not be sprayed onto a substrate which is wet, covered with frost or ice, loose scales, rust, oil or grease. The foam insulation shall be protected from the weather after application.

5.3 Wood Construction in Areas of Very Heavy Termite Infestation

Where foam plastic insulation is used with wood construction, the foam plastic shall be installed in accordance with Section 2603.3 of the *Standard Building Code*®.

6. SUBSTANTIATING DATA

- 6.1 Manufacturer's descriptive literature, specifications, and installation instructions:
 - 6.1.1 Specifications, Section 07200, spray Polyurethane Foam Insulation.
 - 6.1.2 Details, Dwgs. #1-01, 02, 03, 04, dated 1/18/2001.
 - 6.1.3 Data Sheet with Application Information, NCFI Spray System 362-91, 11/98
 - 6.1.4 Insulation Fact Sheet, NCFI Spray System 362-91
 - 6.1.5 Installation Guide, NCFI 362-91
- 6.2 Test report on thermal transmission value under ASTM C 518, Center for Applied Engineering, Inc. (Celotex), MTS Job No. 257802A, September 25, 1996, signed by Russell W. Woltemar and Stanley D. Gatland II.

- 6.3 Test report on surface burning characteristics under ASTM E 84, SGS U.S. Testing Company, Inc., Report No. 119287-2, February 25, 1999, signed by Arthur D. Fiorino and Hiten Pandya. Letter, thickness and density of sprayed foam, March 6, 2001, signed by Dominick Lepore.
- 6.4 Test reports on physical properties, Certified Testing Laboratories, signed by Christopher Bennett and signed and sealed by Ramesh Patel, P.E.
 - 6.4.1 ASTM E 285, air leakage, 16 gage steel frame with ½ inch gypsum sheathing, CTLA-589W, October 4, 2000.
 - 6.4.2 ASTM E 283, air leakage, CMU material, CTLA-589W-1, October 5, 2000.
 - 6.4.3 ASTM C 297, tensile bond, masonry, CTLA-589W, October 4, 2000.
 - 6.4.4 ASTM C 297, tensile ½ inch bond gypsum board, CTLA-59W, September 22, 2000.
 - 6.4.5 ASTM E 96, WVT rating, CTLA -589W-2, October 9, 2000.
 - 6.4.6 AATCC 127, hydrostatic head, CTLA-589W-3, November 20, 2000.
 - 6.4.7 Summary of Testing, November 20, 2000.
 - 6.4.8 Letter, spray foam thickness and density tested, April 2, 2001, signed by James Blakely.
- 6.5 Quality Control Manual, North Carolina Foam Industries, February 1, 2001.
- 6.6 Letter report, initiation of surface burning characteristics third party classification, Underwriters Laboratories Inc., March 14, 2001, signed by Robert Sanders and Dwayne Sloan.

7. CODE REFERENCES

Standard Building Code® - 1999 Edition

Section 103.7	Alternate Materials and Methods
Section 607	Type V Construction
Section 608	Type VI Construction
Section 708	Thermal Insulating Materials
Chapter 14	Exterior Wall Covering
Section 1403	Veneered Walls
Section 1403.1	General
Section 1403.2	Anchored Masonry Veneer
Section 1403.2.6	Masonry veneer anchored to masonry or concrete walls
Chapter 21	Masonry
Section 2303.3	Moisture Protection
Section 2603	Foam Plastic Insulation

International One and Two Family Dwelling Code - 1998 Edition

Section 108	Alternate Materials and Systems
Section 317	Foam Plastic
Section 318	Flame Spread and Smoke Development
Section 319	Insulation
Section 323.4	Protection Against Termites - Foam Plastic Protection
Section 604	General masonry Construction
Section 605	Unit Masonry
Section 701	Wall Covering - General
Section 703	Exterior Covering
Section 703.2	Weather-Resistant Sheathing Paper
Table 703.4	Weather-Resistant Siding Attachment and Minimum Thickness

Section 703.7	Masonry Veneer, General
Figure 703.7	Masonry Veneered Wall Detail
Section 703.8	Flashing

8. COMMITTEE FINDINGS

The Subcommittee on Evaluation in review of the data submitted finds that, in their opinion, the InsulBloc® Masonry Cavity Wall Insulation (NCFI 362-91) as described in this report conform with or are suitable alternates to that specified in the *Standard Building Code*® and the International One and Two Family Dwelling Code or Supplements thereto.

9. LIMITATIONS

- 9.1 This Legacy Evaluation Report and the installation instructions, when required by the building official, shall be submitted at the time of permit application.
- 9.2 NCFI 362-91 shall only be installed by applicators approved and certified by North Carolina Foam Industries.
- 9.3 NCFI 362-91 shall be separated from the interior of the building by an approved 15 minute thermal barrier.
- 9.4 NCFI 362-91 shall not exceed a nominal density of 2.0 pcf (32.04 kg/m³) and a maximum thickness of 2 inches (50.8 mm) installed.
- 9.5 NCFI 362-91 shall not be used to add to the structural strength of any wall assembly or used as a nailing base.
- 9.6 NCFI 362-91 shall not be used as a component of a fire resistive wall or floor/ceiling assembly unless test reports from an approved third party testing laboratory is submitted to the building official.
- 9.7 NCFI 362-91 has not been evaluated for weather resistance, for use as a firestopping material, or through-penetration fire stop system. The insulation shall be protected from the weather after application.
- 9.8 When the foam plastic is used with wood construction, see Section 5.3 of this report.
- 9.9 NCFI 362-91 shall not be installed on the exterior of exterior walls of buildings of Type I, II, III, or IV construction.

10. IDENTIFICATION

Each package of components for InsulBloc Masonry Cavity Wall Insulation (NCFI 362-91) covered by this report shall be labeled with the manufacturer's name and/or trademark, the SBCCI Public Safety Testing and Evaluation Services Inc. Seal or initials (SBCCI PST & ESI), and the number of this report for field identification.

11. PERIOD OF ISSUANCE

SEE THE CURRENT EVALUATION REPORT INDEX FOR STATUS OF THIS LEGACY EVALUATION REPORT.

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