UL Evaluation Report

UL ER11812-03

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UL Category Code: ULEX

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DIVISION: 06 00 00 - WOOD, PLASTICS, AND COMPOSITES
Sub-level 2: 06 12 00 - Structural Panels
Sub-level 3: 06 12 19 - Shear Wall Panels

Sub-level 2: 06 16 00 - Sheathing

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION
Sub-level 2: 07 20 00 - Thermal Protection
Sub-level 3: 07 21 00 - Thermal Insulation
Sub-level 4: 07 21 13 - Board Insulation

Sub-level 3: 07 25 00 - Weather Barriers

Sub-level 3: 07 27 00 - Air Barriers

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1. SUBJECT:

FOAM-CONTROL® NAILBASE

FOAM-CONTROL® NAILBASE 2-Ci

FOAM-CONTROL® R-SHIELD 3-Ci

2. SCOPE OF EVALUATION:

- 2018 and 2015 *International Building Code* ® (IBC)
- 2018 and 2015 *International Residential Code* ® (IRC)
- 2018 and 2015 *International Energy Code* ® (IECC)
- ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)
- ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels used as Water Resistive Barriers (AC71)
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014

The products were evaluated for the following properties

Foam-Control Nailbase:

- Surface Burning Characteristics –Insulation Component (ANSI/UL723, ASTM E84)
- Physical Properties –Insulation Component (ASTM C578)
- Roofing Systems for Exterior Fire Exposure (ANSI/UL790, ASTM E108)
- Uplift Tests For Roof Covering Systems, (ANSI/UL1897)

Foam-Control Nailbase 2-Ci:

- Surface Burning Characteristics –Insulation Component (ANSI/UL723, ASTM E84)
- Physical Properties –Insulation Component (ASTM C578)

Foam-Control R-SHIELD 3-Ci:

- Surface Burning Characteristics –Insulation Component (ANSI/UL723, ASTM E84)
- Physical Properties –Insulation Component (ASTM C578)
- Water Resistive Barrier –Insulation Component (AC71)
- Air Barrier –Insulation Component (ASTM E2178)

3. REFERENCED DOCUMENTS

- ICC-ES:
  - ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2015 (editorially revised May 2016)
  - ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014
  - ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water-Resistive Barriers (AC71), dated February 2003 (editorially revised Jun 2016)
- ANSI/UL:
  - ANSI/UL723 (ASTM E84), 10th Edition, Test for Surface Burning Characteristics of Building Materials
- ASTM:
  - ASTM C578-15b, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
  - ASTM E2178, Standard Test Method for Air Permeance of Building Materials
- U.S. Department of Commerce:
  - DOC PS-2, Performance Standard for Wood-Based Structural-Use Panels

4. USES

4.1 Foam-Control Nailbase:

Foam-Control Nailbase is used as insulation on the interior or exterior of above grade walls or as roof insulation. Installation shall be in accordance with Section 6.2 of this report.

4.2 Foam-Control Nailbase 2-Ci:

Foam-Control Nailbase 2-Ci is used as insulation on the interior or exterior of above grade walls. Installation shall be in accordance with Section 6.3 or Section 6.5 of this report.

4.3 Foam-Control R-SHIELD 3-Ci:

Foam-Control R-SHIELD 3-Ci is used as insulation on the interior or exterior of above grade walls. Installation shall be in accordance with Section 6.4 or Section 6.5 of this report.

The insulation may be used as an alternative to the water-resistive barrier specified in Section 1403.2 of the 2018 IBC, Section 1404.2 of the 2015 IBC, and Section R703.2 of the 2018 and 2015 IRC when installation is in accordance with Section 6.6 of this report.

The insulation may be used as an air barrier to limit air infiltration in accordance with Section C402.5.1 of the 2018 and 2015 IECC when installation is in accordance with Section 6.6 of this report.

5. PRODUCT DESCRIPTION

5.1 General:

Foam-Control Nailbase, Foam-Control Nailbase 2-Ci and Foam-Control R-SHIELD 3-Ci are insulation products consisting of ASTM C578 Type I Foam-Control Expanded Polystyrene (EPS) laminated to Oriented Strand Board (OSB).

ASTM C578 Type I Foam Control EPS is recognized in UL ER11812-01 and is a molded, closed-cell expanded polystyrene having a flame spread index not exceeding 25 and a smoke developed index not exceeding 450 for thicknesses up to 5 inches, when tested in accordance with UL723 (ASTM E84) as required by Section 2603.3 of the 2018 and 2015 IBC or Section R316.3 of the 2018 and 2015 IRC, as applicable.

The OSB facer is $^{7}/_{16}$-inch thick in compliance with U.S. Department of Commerce, DOC PS-2, Performance Standard for Wood-Based Structural-Use Panels.

5.2 Foam-Control Nailbase:

Foam-Control Nailbase consists of Type I Foam-Control EPS laminated to a 7/16-inch OSB facing. Foam-Control Nailbase is available in thicknesses of 2, 4, 6, 7-¾, 9-¾, and 11-¾ inches.

Table 1 –Thermal Resistance of Foam-Control Nailbase

THICKNESS, in.	THERMAL RESISTANCE[1], min., °F-ft²-h/Btu
2	6.2
4	13.4
6	20.6
7-¾	26.9
9-¾	34.1
11-¾	41.3

[1]Overall R-value is calculated based on a combination of the R-value of the OSB and the EPS at 75°F mean temperature

5.3 Foam-Control Nailbase 2-Ci:

Foam-Control Nailbase 2-Ci consists of Type I Foam-Control EPS laminated to a 7/16-inch OSB facing.

Foam-Control Nailbase 2-Ci is available in thicknesses of 1-5/16, 1-9/16, 2-¼, and 2-⅞ inches.

Table 2 – Thermal Resistance of Foam-Control Nailbase 2-Ci

THICKNESS, in.	THERMAL RESISTANCE[1], min., °F-ft²-h/Btu
1-5/16	3.8
1-9/16	5.1
2-¼	7.6
2-⅞	10.1

[1]Overall R-value is calculated based on a combination of the R-value of the OSB and the EPS at 75°F mean temperature

5.4 Foam-Control R-SHIELD 3-Ci:

Foam-Control R-SHIELD 3-Ci consists of Type I Foam-Control EPS laminated to a 7/16-inch OSB facing on one side and polymeric film on the other side.

Foam-Control R-SHIELD 3-Ci is available in thicknesses of 1-5/16, 1-9/16, 2-¼, and 2-⅞ inches.

Table 3 – Thermal Resistance of Foam-Control R-SHIELD 3-Ci

THICKNESS, in.	THERMAL RESISTANCE[1], min., °F-ft²-h/Btu
1-5/16	3.8
1-9/16	5.1
2-¼	7.6
2-⅞	10.1

[1]Overall R-value is calculated based on a combination of the R-value of the OSB and the EPS at 75°F mean temperature

6. INSTALLATION

6.1 General:

Foam-Control Nailbase, Foam-Control Nailbase 2-Ci, and Foam-Control R-SHIELD 3-Ci are installed in accordance with the manufacturer's published installation instructions and this evaluation report. The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of the instructions shall be available on the jobsite during installation.

6.2 Foam-Control Nailbase:

Foam-Control Nailbase must be attached to the structure in a manner that will hold the insulation securely in place.

The interior of the building must be separated from the EPS component of Foam-Control Nailbase Boards with a thermal barrier as required by Section 2603.4 of the 2018 and 2015 IBC or Section R316.4 of the 2018 and 2015 IRC, as applicable.

Foam-Control Nailbase may be used as vapor retarders based on perm values described in Tables 4 when required in accordance with the applicable sections of the IBC, IRC and IECC. Vapor retarders are Certified as follows:

Class I: 0.1 perm or less Class II: 0.1 <perm ≤ 1.0 Class III: 1.0 <perm ≤ 10 perm

Table 4 – Water Vapor Permeance of Foam-Control Nailbase

THICKNESS,+- in.	PERMEANCE[1], max., perms
2	1.2
4	0.8
6	0.6
7-¾	0.5
9-¾	0.4
11-¾	0.4

[1]Overall Perm Rating is calculated based on a combination of the perm rating of the OSB (at 50% RH) and the EPS

6.2.1 Foam-Control Nailbase Used in Roofing:

Foam-Control Nailbase may be used as a roofing insulation as follows:

- As part of a UL Certified Class A, B or C roof-covering assembly in accordance with UL 790,
- As part of a UL Certified Roofing System, Uplift Resistance, in accordance with UL 1897.

6.3 Foam-Control Nailbase 2-Ci:

Foam-Control Nailbase 2-Ci must be attached to the structure in a manner that will hold the insulation securely in place.

The interior of the building must be separated from the EPS component of Foam-Control Nailbase 2-Ci boards with a thermal barrier as required by Section 2603.4 of the 2018 and 2015 IBC or Section R316.4 of the 2018 and 2015 IRC, as applicable.

Foam-Control Nailbase 2-Ci may be used as vapor retarders based on perm values described in Tables 5 when required in accordance with the applicable sections of the IBC, IRC and IECC. Vapor retarders are Certified as follows:

Class I: 0.1 perm or less Class II: 0.1 <perm ≤ 1.0 Class III: 1.0 <perm ≤ 10 perm

Table 5 – Water Vapor Permeance of Foam-Control Nailbase 2-Ci

THICKNESS, in.	PERMEANCE[1], max., perms
1-5/16	1.5
1-9/16	1.3
2-¼	1.1
2-⅞	1.0

[1]Overall Perm Rating is calculated based on a combination of the perm rating of the OSB (at 50% RH) and the EPS

6.4 Foam-Control R-SHIELD 3-Ci:

Foam-Control R-SHIELD 3-Ci must be attached to the structure in a manner that will hold the insulation securely in place.

The interior of the building must be separated from the EPS component of Foam-Control Nailbase 3-Ci boards with a thermal barrier as required by Section 2603.4 of the 2018 and 2015 IBC or Section R316.4 of the 2018 and 2015 IRC, as applicable.

Foam-Control R-SHIELD 3-Ci may be used as vapor retarders based on perm values described in Table 5 when required in accordance with the applicable sections of the IBC, IRC and IECC. Vapor retarders are Certified as follows:

Class I: 0.1 perm or less Class II: 0.1 <perm ≤ 1.0 Class III: 1.0 <perm ≤ 10 perm

Table 4 – Water Vapor Permeance of Foam-Control R-SHIELD 3-Ci

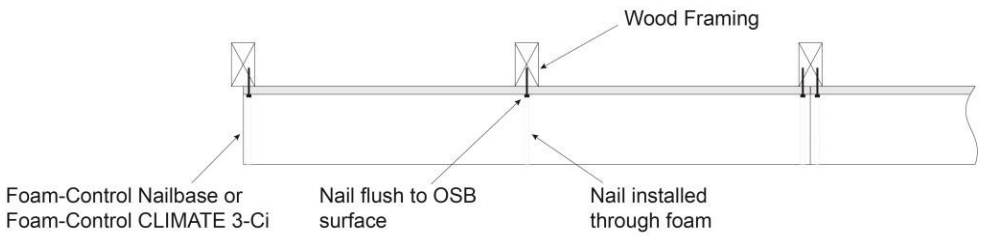
THICKNESS, in.	PERMEANCE[1], max., perms
1-5/16	0.2
1-9/16	0.2
2-¼	0.2
2-⅞	0.2

[1]Overall Perm Rating is calculated based on a combination of the perm rating of the OSB (at 50% RH) and the EPS

6.5 Foam-Control 2-Ci and Foam-Control R-SHIELD 3-Ci Used as Wall Bracing:

Foam-Control Nailbase 2-Ci and Foam-Control R-SHIELD 3-Ci are used as a wall bracing material for exterior walls when installed with the OSB side applied directly to wood framing members. Installation requires a specialty nail gun which installs code specified diameter fasteners through the insulation and flush against the OSB surface. Minimum fastener diameter must be 0.113 inch. Minimum fastener penetration into framing members must be 1-½ inch.

Figure 1 – Installation of Foam-Control Nailbase 2-Ci and Foam-Control R-SHIELD 3-Ci as Wall Bracing



When installed in accordance with Figure 1, Foam-Control Nailbase 2-Ci and Foam-Control R-SHIELD 3-Ci are sheathing alternatives to:

- IRC bracing methods using wood structural panels (WSP), including portal frames, in accordance with Section R602.10 and R602.12 of the 2018 and 2015 IRC.
- IBC Conventional Wall Bracing provisions, Section 2308.9.3 for Type V construction and the alternative bracing methods in accordance with Section 2308.6.5.
- IBC performance-based provisions, Section 2306.1 and 2306.3 of the 2018 and 2015 IBC for light-frame wood wall assemblies

6.6 Foam-Control R-SHIELD 3-Ci Used as a Water-Resistive Barrier

Foam-Control R-SHIELD 3-Ci may be used as an alternative to the water-resistive barrier required by Section 1403.2 of the 2018 IBC, Section 1404.2 of the 2015 IBC, and Section R703.2 of the 2018 and 2015 IRC when installed in accordance with this Section.

Holes from fastener installation and joints between boards must be covered with Foam-Control R-SHIELD Tape.

A minimum 0.019-inch (0.48 mm) corrosion-resistance weep screed with a vertical attachment flange measuring a minimum of 3-½ inches (89mm) must be provided at the bottom of the wall. The installation of the weep screed must be in accordance with Section 2512.1.2 of the 2018 and 2015 IBC or Section R703.7.2.1 of the 2018 and 2015 IRC, as applicable.

Flashing of flanged window penetrations must be installed in accordance with Section 1404.4 of the 2018 IBC and Section 1405.4 of the 2015 IBC. The flashing tape must completely cover the framing sill and extend a minimum of 8 inches (203 mm) up the sides of the opening and 6 inches (152 mm) onto the face of the Foam-Control R-SHIELD 3-Ci at the front of the window opening.

Flashing of small penetrations (e.g. pipes) must be with a silicone sealant complying with ASTM C920.

7. CONDITIONS OF USE

7.1 General:

The Foam-Control Nailbase, Foam-Control Nailbase 2-Ci, and Foam-Control R-SHIELD 3-Ci described in this report comply with, or are suitable alternatives to, what is specified in those codes listed in Section 2 of this report, subject to the following conditions. The Foam-Control Nailbase, Foam-Control Nailbase 2- Ci, and Foam-Control R-SHIELD 3-Ci must be produced, identified, and installed in accordance with the manufacturer's published installation instructions. If there is a conflict between this report and the manufacturer's instructions this report governs.

7.2 Foam-Control Nailbase, Foam-Control Nailbase 2-Ci, and Foam-Control R-SHIELD 3-Ci:

The EPS component of Foam-Control Nailbase, Foam-Control Nailbase 2-Ci, and Foam-Control R-SHIELD 3-Ci must be separated from the building interior with a thermal barrier, such as ½-inch thick gypsum board, as required by Section 2603.4 of the 2018 and 2015 IBC or Section R316.4 of the 2018 and 2015 IRC, as applicable.

For a listing of applicable UL Certifications, see the Product iQ™ database for the following categories.

- Foamed Plastic, UL Certified for Surface Burning Characteristics in accordance with UL723 (BRYX) for the Foam-Control EPS component of Foam-Control Nailbase, Foam-Control Nailbase 2-Ci, and Foam-Control R-SHIELD 3-Ci.
- Class A, B or C roof-covering assemblies UL Certified in accordance with UL 790 (TGFU) for Foam-Control Nailbase.
- Roof Deck Constructions for assemblies UL Certified in accordance with UL 1897 (TGIK) for Foam-Control Nailbase.
- Polystyrene Thermal Insulation, Rigid Cellular, UL Certified in accordance with ASTM C578 (QORW) for the Foam-Control EPS component of Foam-Control Nailbase, Foam-Control Nailbase 2-Ci, and Foam-Control R-SHIELD 3-Ci.

7.3 Manufacturing Locations:

The products are manufactured at the following locations described in Table 6 under the UL LLC Listing or Classification and Follow-Up Service Program, which includes audits in accordance with ICC-ES Acceptance Criteria for Quality Documentation, AC10.

Table 6 – Manufacturing Locations

LISTEE	LOCATION	PLANT ID NO.
Atlas Molded Products	5250 North Sherman Street Denver, Colorado 80216	U-1
Atlas Molded Products	13695 Mt. Anderson Street Reno, NV 89506	U-53
Atlas Molded Products	445 Industrial Park Drive Ridgeway, Virginia 24148	U-68
Big Sky Insulations, Inc.	15 Arden Drive Belgrade, Montana 59714	U-30
Branch River Plastics, Inc.	15 Thurber Boulevard Smithfield, Rhode Island 02917	U-6
PFB Manufacturing LLC, dba Plasti-Fab EPS Product Solutions	116 Pine Street South Lester Prairie, Minnesota 55354	U-22
Therma Foam, LLC	1240 Hwy 77 N Hillsboro, Texas 76645	U-25
ThermaFoam Arkansas, LLC	203 South Redmond Road Jacksonville, AR 72076	U-72
Thermal Foams, Inc.	2101 Kenmore Ave Buffalo, NY 14207	U-26

8. SUPPORTING EVIDENCE

8.1 Foam-Control Nailbase:

8.1.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2012.

8.1.2 Documentation of quality system elements described in AC10.

8.2 Foam-Control Nailbase 2-Ci:

8.2.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2012.

8.2.2 Documentation of quality system elements described in AC10.

8.3 Foam-Control R-SHIELD 3-Ci:

8.3.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2012.

8.3.2 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels used as Water Resistive Barriers (AC71), dated February 2003.

8.3.3 Data in accordance with ASTM E2178 Standard Test Method for Air Permeance of Building Materials.

8.3.4 Documentation of quality system elements described in AC10.

9. IDENTIFICATION

The Foam-Control Nailbase, Foam-Control Nailbase 2-Ci, and Foam-Control R-SHIELD 3-Ci described in this evaluation report are identified by a marking bearing the report holder's name (AFM), the plant identification, the product name, the UL Classification Mark, and the evaluation report number UL ER11812-03. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Classification Mark certificate.

10. USE OF UL EVALUATION REPORT

10.1 The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.

10.2 UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.

10.3 The status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via the Product iQ™ database.