UL Evaluation Report

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UL Category Code: ULEX

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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 22 00 - Roof and Deck Insulation
Sub-level 4: 07 22 16 - Roof Board Insulation

Sub-level 3: 07 25 00 - Weather Barriers

DIVISION: 31 00 00 - EARTHWORKS
Sub-level 3: 31 23 00 - Excavation and Fill
Sub-level 4: 31 23 23 - Fill

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1. SUBJECT:

INSULFOAM® EPS INSULATION BOARDS

INSULFOAM® PLATINUM EPS INSULATION BOARDS

INSULFOAM® EPS ROOFING INSULATION BOARDS

INSULFOAM® TYPE I IEG INSULATION BOARDS

INSULFOAM® R-TECH™ INSULATION BOARDS

INSULFOAM® R-TECH™ PLATINUM INSULATION BOARDS

INSULFOAM® ONE COAT STUCCO INSULATION BOARDS

INSULFOAM® R-TECH TOTAL WALL INSULATION BOARDS

INSULFOAM® GABLE-GUARD

INSULFOAM GF® GEOFOAM BLOCK

2. SCOPE OF EVALUATION:

- 2012 *International Building Code* ® (IBC)
- 2012 *International Residential Code* ® (IRC)
- 2012 *International Energy Code* ® (IECC)
- 2006 *International Mechanical Code* ® (IMC)
- ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2012
- ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels used as Water Resistive Barriers (AC71), dated February 2003
- ICC-ES Acceptance Criteria for Termite Resistant Foam Plastics (AC239), dated October 2008
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014

The products were evaluated for the following properties, where indicated in Table 1 and elsewhere in this report.

- Surface Burning Characteristics (ANSI/UL723, ASTM E84)
- Physical Properties (ASTM C578)
- Physical Properties (ASTM E2430)
- Physical Properties (ASTM D6817)
- Roof Deck Construction Material With Resistance to Internal Fire Exposure (ANSI/UL1256)
- Roofing Systems for Exterior Fire Exposure (ANSI/UL790, ASTM E108)
- Uplift Tests For Roof Covering Systems, (ANSI/UL1897)
- Fire Test of Interior Finish Material (UL 1715)
- Flammability Testing for Use in Attics and Crawl Spaces (ICC-ES AC12, App. A and B)
- Termite Resistance (ICC-ES AC239)
- Water Resistive Barrier (ICC-ES AC 71)
- For Use on Exterior Commercial Walls (NFPA 285)
- Foam Plastic - Special Approval (ANSI/UL1715)

Table 1 – Properties Evaluated

Product Code *

Properties Evaluated	A	B	C_1	D	E	F	G	H	I	J
Surface Burning Characteristics	X	X	X	X	X	X	X	X	X	X
Physical Properties (ASTM C578)	X	X	X	X	X	X	X	X	X	
Physical Properties (ASTM E2430)		X		X						
Physical Properties (ASTM D6817)										X
Roofing Systems - Exterior Fire Exposure	X	X	X		X	X				
Roof Deck Construction Material - Interior Fire Exposure	X	X	X							
Uplift Tests For Roof Covering Systems[2]	X	X	X							
Flammability Testing for Use in Attics and Crawl Spaces	X	X			X	X		X	X	
Termite Resistance[3]	X	X		X	X	X	X	X	X	X
Water-resistive Barrier					X	X	X	X	X	
Foam Plastic - Special Approval										X
Exterior Walls (NFPA 285)	X	X		X	X	X			X	

[1] Insulfoam EPS Roofing Insulation Boards have various trade names as described in 4.1 and 5.9

[2] Applicable to InsulFoam EPS, InsulTaper EPS, and InsulFoam Tuff Roof/InsulLam

[3] Products containing termite resistant additive are marked with the word "Treated" as part of product name.

*** Product Codes:**

A - INSULFOAM® EPS INSULATION BOARDS

B - INSULFOAM® PLATINUM EPS INSULATION BOARDS

C - INSULFOAM® EPS ROOFING INSULATION BOARDS

D - INSULFOAM® TYPE I IEG INSULATION BOARDS

E - INSULFOAM® R-TECH™ INSULATION BOARDS

F - INSULFOAM® R-TECH™ PLATINUM INSULATION BOARDS

G - INSULFOAM®-ONE COAT STUCCO INSULATION BOARDS

H - INSULFOAM® GABLE-GUARD

I – INSULFOAM® R-TECH™ TOTAL WALL INSULATION BOARDS

J - INSULFOAM GF® GEOFOAM BLOCK

3. REFERENCED DOCUMENTS

- ICC-ES:
  - ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2012
  - ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated December 2014
  - ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water-Resistive Barriers (AC71), dated February 2003
  - ICC-ES Acceptance Criteria for Termite-Resistant Foam Plastics (AC239), dated November 2008
- ANSI/UL:
  - ANSI/UL723 (ASTM E84), Test for Surface Burning Characteristics of Building Materials
  - ANSI/UL790 (ASTM E108), Standard Test Methods for Fire Tests of Roof Coverings
  - ANSI/UL1256, Standard for Fire Test of Roof Deck Constructions
  - ANSI/UL 1897, Uplift Tests for Roof Covering Systems
  - ANSI/UL 1715, Fire Test of Interior Finish Material
- ASTM:
  - ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
  - ASTM D6817, Standard Specification for Rigid Cellular Polystyrene Geofoam
  - ASTM D7180, Standard Guide for Use of Expanded Polystyrene (EPS) Geofoam in Geotechnical Projects
  - ASTM D7557, Standard Practice for Sampling of Expanded Polystyrene Geofoam Specimens
  - ASTM E2430, Standard Specification for Expanded Polystyrene (EPS) Thermal Insulation Boards for Use in Exterior Insulation and Finish Systems (EIFS)
- NFPA:
  - NFPA 285, Standard Fire Test for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Assemblies Containing Combustible Components

4. USES

4.1 General

The products described in this report are used as nonstructural insulation on the interior or exterior of above grade walls, on the interior or exterior of below grade walls, below concrete slabs, around concrete slab edges, or as roof insulation, where indicated in Table 1. Installation shall be in accordance with Section 6.2 of this report.

The insulation, where indicated in Table 1, may be used on walls in attics and crawl spaces when installation is in accordance with Section 6.2.4.

The insulation, where indicated in Table 1, may be used as an alternative to the water-resistive barrier specified in IBC Section 1404.2 and IRC Section R703.2 when installed in accordance with Section 6.2.5 of this report.

The insulation, where indicated in Table 1, may be used as vapor retarders when installation is in accordance with 6.2.2.

When used on the exterior of above grade walls, where indicated in Table 1, the insulation shall be installed in accordance with 6.2.6

The insulation may be used in commercial and residential roofing systems classified for use in Class A, B, and C assemblies, where indicated in Table 1 when installed in accordance with 6.2.3. Refer to UL TGFU Listings for specific classifications. Trade names associated with InsulFoam EPS Roofing Insulation Boards, include:

- InsulTaper EPS
- InsulFoam SP
- InsulFoam HD
- InsulFoam Tuff Roof/InsulLam
- InsulFoam R-TECH Roofing Underlayment

4.2 InsulFoam Type I IEG Insulation Boards

These products are used as a component in Exterior Insulation and Finish Systems (EIFS) and other architectural shapes.

4.3 InsulFoam One Coat Stucco Insulation Boards and InsulFoam R-TECH Total Wall Insulation Boards

These products are used as a component in various stucco wall finishing systems established by manufacturers belonging to the Portland Cement Association and the Ready Mixed Concrete (RMC) Research and Education Foundation.

4.4 InsulFoam Gable-Guard Insulation Boards

These products are used as a component in various stucco wall gable ends. The finishing systems have been established by manufacturers belonging to the Portland Cement Association and the Ready Mixed Concrete (RMC) Research and Education Foundation.

4.5 InsulFoam GF Geofoam Blocks

InsulFoam GF Geofoam Blocks are used as lightweight structural fill in floor cavities. Installation shall be in accordance with Section 6.3 of this report

5. PRODUCT DESCRIPTION

5.1 General

All products covered under this report are 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 IBC Section 2603.3 or IRC Section 316.3, as applicable.

All products described in this report, if marked “Treated”, have been treated for termite resistance in accordance with IBC Section 2603.9 exception 2, or IRC Section R318.4 exception 2, as applicable:

5.2 InsulFoam EPS Insulation Products

All InsulFoam EPS Insulation products described in this report have been found to comply with ASTM C578. Non-Platinum products may be manufactured at minimum densities of 0.70, 0.90, 1.15, 1.35, 1.80, 2.40, and 3.00 lbs/ft^3 and have ASTM C578 designations of Type XI, Type I, Type VIII, Type II, Type IX, Type XIV, and Type XV respectively. However, some products, as described in 5.3-5.10 may only be sold in limited Types.

See excerpt from ASTM C578, Table 2 below for minimum Thermal Resistance values for each Type.

See 5.3 for a description of Platinum products.

See 5.11 for a description of Insulfoam GF Geofoam Blocks.

Table 2 – InsulFoam EPS Insulation Products - Thermal Resistance Values

ASTM C578 TYPE	DENSITY, min., lb/ft^3	THERMAL RESISTANCE [1], min., ° F-ft^2-h/Btu
Type XI	0.70	3.1
Type I	0.90	3.6
Type VIII	1.15	3.8
Type II	1.35	4.0
Type IX	1.80	4.2
Type XIV	2.40	4.2
Type XV	3.00	4.3

[1]Thermal resistance (R) values are based on tested values at 1 inch thickness and 75F mean temperature and must be multiplied by the installed thickness for thicknesses greater than 1 inch.

5.3 InsulFoam Platinum EPS Insulation Boards and R-TECH Platinum EPS Insulation Boards

InsulFoam Platinum EPS Insulation Boards and R-TECH Platinum EPS Insulation Boards have been found to comply with ASTM C578. The boards are manufactured at minimum densities of 0.90, 1.15, 1.35, and 1.80 lbs/ft^3 and have ASTM C578 designations of Type I, Type VIII, Type II, and Type IX, respectively. See Table 3 below for minimum Thermal Resistance values for Platinum products.

Table 3 – InsulFoam Platinum and R-TECH Platinum - Thermal Resistance Values

ASTM TYPE	DENSITY, min., lb/ft^3	THERMAL RESISTANCE [1], min., ° F-ft^2-h/Btu
Type I	0.90	4.3
Type VIII	1.15	4.5
Type II	1.35	4.5
Type IX	1.80	4.6

[1]**Thermal resistance (R) values are based on tested values at 1 inch thickness and 75F mean temperature and must be multiplied by the installed thickness for thicknesses greater than 1 inch.**

5.4 InsulFoam EPS Type I-IEG Insulation Boards

InsulFoam EPS Type I-IEG Insulation Boards are manufactured at a minimum density of 0.90 lbs/ft^3 and have ASTM C578 designation of Type I and meet the Thermal Resistance Value for Type I as described in Table 2.

5.5 InsulFoam R-TECH Insulation Boards

InsulFoam R-TECH Insulation Boards consist of InsulFoam EPS Insulation Boards laminated with polypropylene or polyethylene film on both faces. The facers may also be a metalized polypropylene or polyethylene film. The boards are manufactured at minimum core densities of 0.70, 0.90, 1.15, 1.35, 1.80, 2.40, and 3.00 lbs/ft^3 and have ASTM C578 designations of Type XI, Type I, Type VIII, Type II, Type IX, Type XIV, and Type XV respectively. See excerpt from ASTM C578, Table 2, above for minimum Thermal Resistance values for each Type.

5.6 R-TECH Platinum Insulation Boards

R-TECH Platinum Insulation Boards consist of InsulFoam Platinum EPS Insulation Boards laminated with polypropylene or polyethylene film on both faces. The facers may also be a metalized polypropylene or polyethylene film. The boards are manufactured at minimum core densities of 0.90, 1.15, 1.35, and 1.80 lbs/ft^3 and have ASTM C578 designations of Type I, Type VIII, Type II, and Type IX, respectively. See Table 3, above for minimum Thermal Resistance values for each Type.

5.7 InsulFoam Gable-Gard Insulation Boards

InsulFoam Gable-Gard Insulation Boards consist of InsulFoam EPS with a polymeric facer. The boards are manufactured at a minimum density of 0.90 lbs/ft^3 and have the ASTM C578 designation of Type I.

5.8 InsulFoam R-TECH One Coat Stucco Insulation Boards

InsulFoam R-TECH One Coat Stucco Insulation Boards consist of InsulFoam EPS with a polymeric facer. The boards are manufactured at a minimum density of 0.90 lbs/ft^3 and have the ASTM C578 designation of Type I.

5.9 InsulFoam EPS Roofing Insulation Boards

The following ASTM C578 EPS insulation boards are used in commercial and residential roofing systems as indicated in Table 1.

- InsulFoam EPS Insulation Boards in various ASTM C578 Types
- InsulTaper EPS in various ASTM C578 Types
- InsulFoam HD - Consists of Insulfoam EPS boards of various ASTM C578 Types laminated to high density polyisocyanurate board.
- InsulFoam SP - Consists of ASTM C578 Type II InsulFoam EPS laminated with a fiberglass mat facer.
- InsulFoam Tuff Roof/InsulLam - Consists of InsulFoam EPS of various ASTM C578 Types laminated to OSB or plywood.
- InsulFoam R-TECH Roofing Underlayment – Consists of a low-profile EPS sheathing offered in a fanfold arrangement in various ASTM C578 Types.

5.10 R-Tech Total Wall Insulation Boards

InsulFoam R-TECH Total Wall Insulation Boards consist of InsulFoam EPS Insulation Boards with a polymeric facer. The boards are manufactured at a minimum density of 0.90 lbs/ft3 and have the ASTM C578 designation of Type I.

5.11 InsulFoam GF Geofoam Blocks

InsulFoam GF Geofoam Blocks have been found to comply with ASTM D6817. The blocks are manufactured at minimum densities of 0.70, 0.90, 1.15, 1.35, 1.80, 2.40, and 2.85 lbs/ft^3 and have ASTM D6817 designations of EPS12, EPS15, EPS19, EPS22, EPS29, EPS39, and EPS46 respectively. See excerpt from ASTM D6817, Table 4 below.

Table 4 – ASTM D6817 Physical Property Requirements for RCPS Geofoam

ASTM TYPE	DENSITY, min., lb/ft^3	COMPRESSIVE RESISTANCE, min., psi at 1% Strain
Type EPS12	0.70	2.2
Type EPS15	0.90	3.6
Type EPS19	1.15	5.8
Type EPS22	1.35	7.3
Type EPS29	1.80	10.9
Type EPS39	2.40	15.0
Type EPS46	2.85	18.6

6. INSTALLATION

6.1 General

The products described in this report 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 InsulFoam EPS Insulation Products

6.2.1 General

These products must be attached to the structure in a manner that will hold the insulation securely in place. The insulation boards must not be used structurally to resist transverse, axial or shear loads.

The interior of the building must be separated from the insulation with a thermal barrier as required by IBC Section 2603.4 or IRC Section 316.4, as applicable.

6.2.2 For Use as Vapor Retarders:

These products may be used as vapor retarders based on perm values described in Tables 5 for un-faced products and Table 6 for R-TECH products, when required in accordance with the applicable sections of the IBC, IRC and IECC. Vapor retarders are classified as follows:

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

Table 5– Water Vapor Permeance of InsulFoam EPS Insulation Products and non-R-TECH Insulation Products

ASTM TYPE	DENSITY	MAXIMUM PERMEANCE[1]
Type XI	0.70	5.0
Type I	0.90	5.0
Type VIII	1.15	3.5
Type II	1.35	3.5
Type IX	1.80	2.5
Type XIV	2.40	2.5
Type XV	3.00	2.5

[1]**Water vapor permeance values are based on 1 inch thickness when tested in accordance with ASTM C578 and ASTM E96. Actual water vapor permeance values may be calculated based on insulation thickness, by dividing the perm value shown by the installed thickness in inches.**

Table 6 – Water Vapor Permeance of InsulFoam R-TECH Insulation Products

ASTM TYPE	DENSITY	MAXIMUM PERMEANCE[1]
Type I	0.90	0.3
Type VIII	1.15	0.3
Type II	1.35	0.3
Type IX	1.80	0.3
Type XIV	2.40	0.3
Type XV	3.00	0.3

[1]**Water vapor permeance values are based on 1 inch thickness when tested in accordance with ASTM C578 and ASTM E96. Actual water vapor permeance values vary based on insulation thickness.**

6.2.3 For Use as Roof Insulation:

Where indicated in Table 1, these products are used as a roofing insulation as follows:

- As part of a UL Classified Class A, B, or C roof-covering assembly in accordance with UL 790
- As part of a UL Classified Roof Deck Construction in accordance with UL 1256
- As part of a UL Classified Roofing System, Uplift Resistance, in accordance with UL 1897

6.2.4 For Use in Attics and Crawl Spaces:

Where indicated in Table 1, these products may be used on walls of attics and crawl spaces, without the coverings listed in IBC Section 2603.4.1.6 or IRC Section R316.5.3 and IRC Section R316.5.4.

1. Entry to the attic or crawl space is limited to service of utilities, and no storage is permitted. Utilities include, but are not limited to, mechanical equipment, electrical wiring, fans, plumbing, gas or electric hot water heaters, and gas or electric furnaces.

2. There are no interconnected crawl space areas

3. Air in the attic or crawl space is not circulated to other parts of the building.

4. Under-floor (crawl space) ventilation is provided when required by IBC Section 1203.3 or IRC Section R408.1, as applicable.

5. Combustion air is provided in accordance with IMC Section 701.4 (2006 IMC).

6. InsulFoam EPS Insulation products are limited to a maximum thickness of 4 inches (102 mm) for Type I, a maximum thickness of 3-1/4 inches (82.6 mm) for Type VIII, a maximum thickness of 2-2/3 inches (67.8 mm) for Type II or a maximum thickness of 2 inches (51 mm) for Type IX.

6.2.5 For Use as Water-Resistive Barriers

InsulFoam R-TECH Insulation Boards and InsulFoam R-TECH Platinum Insulation Boards, with a minimum of 1 inch (25.4 mm) thickness, may be used as an alternative to the water-resistive barrier required by IBC Section 1402.2 and IRC Section R703.2 when installed in accordance with this section.

InsulFoam Gable-Gard Insulation Boards, having a minimum ½ inch thickness, may be used as an alternative to the water-resistive barrier required by IBC Section 1402.2 and IRC Section R703.2 when installed in accordance with this section.

InsulFoam R-TECH Insulation Boards and InsulFoam R-TECH Platinum Insulation Boards must be installed directly to framing members spaced a maximum of 24 inches (610 mm) on center. InsulFoam R-TECH and InsulFoam Gable-Gard Insulation Boards must be installed horizontally with tongue edges facing upward or installed vertically with no horizontal joints. Vertical joints must be backed by framing members.

InsulFoam R-TECH Insulation Boards, InsulFoam R-TECH Platinum Insulation Boards, and InsulFoam Gable-Gard Insulation Boards are attached with 1 inch (25.4 mm) wide crown No. 16 gage corrosion-resistant staples spaced 6 inched (152mm) on center. Fastener crowns and joints between boards must be covered with InsulFoam Poly-Gard 136 Tape. A minimum 0.019 inch (0.48 mm) corrosion-resistance weep screed with a vertical attachment flange measuring a minimum of 3-1/2 inches (89mm) must be provided at the bottom of the wall. The installation of the weep screed must be in accordance with IBC Section 2512.1.1 or IRC Section R703.6.2.1, as applicable.

Flashing of flanged window penetrations must be installed in accordance with IBC Section 1405.4. 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 insulation at the front of the window opening. Flashing tape shall be compliant with AC 148.

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

6.2.6 For Use on the Exterior of Above Grade Walls:

Where indicated in Table 1, InsulFoam EPS Insulation products may be used on the exterior of above grade walls as follows:

- Exterior Walls of One- and Two-Family Dwellings in accordance with the 2012 IRC.
- Exterior walls of one story buildings of Types I, II, III, or IV construction in accordance with IBC Section 2603.4.1.4.
- Exterior walls of Type V construction in accordance with IBC Section 2603.2, Section 2603.3, and Section 2603.4.
- Exterior walls of buildings more than one story of Types I, II, III, or IV construction in accordance with Section 2603.5 of the IBC, when part of
    - A UL Classified Exterior Wall System in accordance with NFPA 285. See Section 7.2.
    - An Exterior Wall System in accordance with NFPA 285. See Table 7. Table 7 outlines the list of allowable wall construction elements. Note that one element from each "Wall Component" must be selected, unless "None" is an available selection.

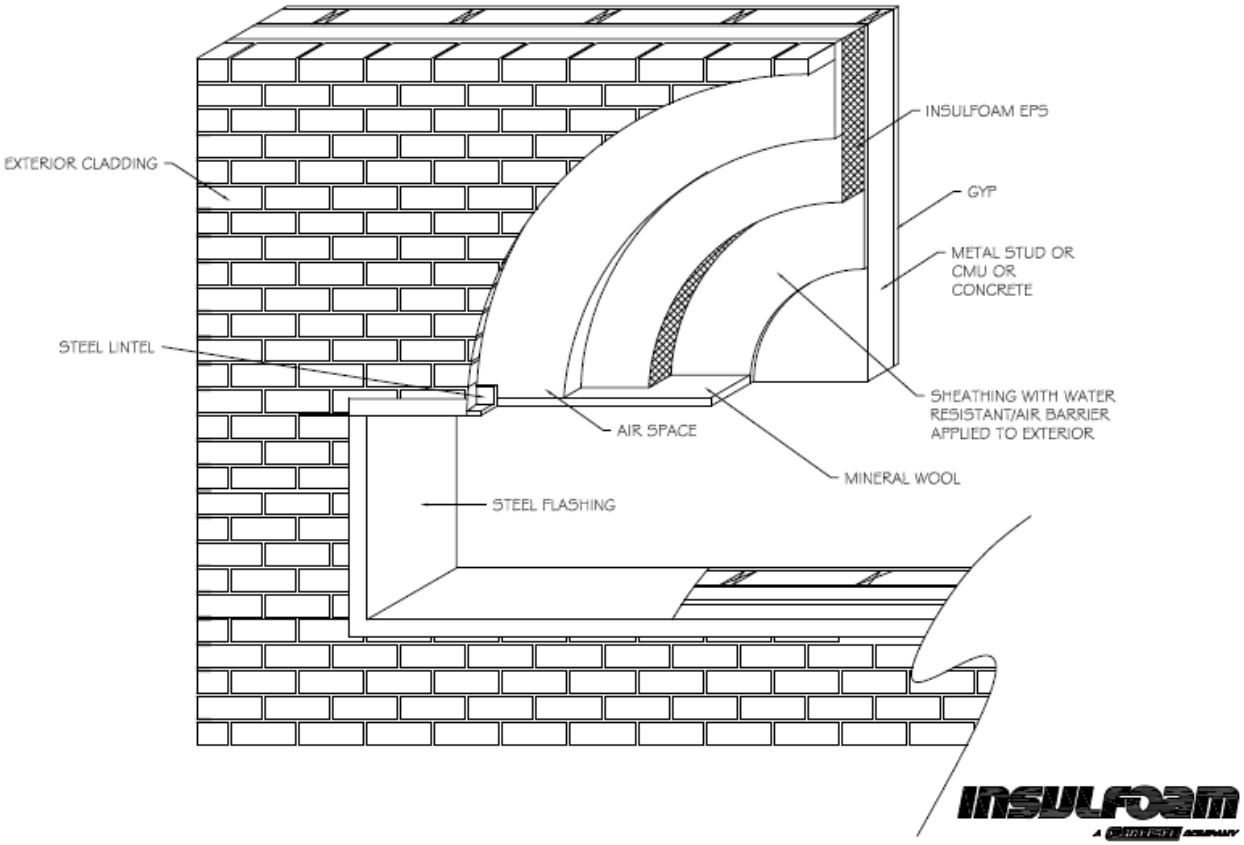

Figure 1 – NFPA 285 Insulfoam Wall Assembly

Table 7 – NFPA 285 Assembly Options – See Figure 1

Wall Component	Options
Base Wall Use 1, 2, or 3	1) Cast Concrete Walls 2) CMU Cast Concrete Walls 3) 25 GA (min) 3-5/8" (min) steel studs spaced 24" oc (max) a. Any 5/8" type X gypsum wallboard interior b. Any ½" Exterior gypsum sheathing c. Lateral bracing every 4 ft. vertically
Fire Stopping at Floor Lines	Any approved 4.0 pcf density mineral fiber based safing insulation in each stud cavity at floor line. Safing thickness must match stud cavity depth. Use mineral fiber insulation manufacturer instructions for installation
Cavity Insulation Use 1, 2, or 3	1) None 2) Any Class A, B, or C Fiberglass batt insulation (faced or unfaced) 3) Any non-combustible insulation
Exterior Sheathing	½" or thicker exterior grade gypsum sheathing
Water Resistive Barrier or Air Barrier over Base Wall Surface Use 1 or 2	1) None 2) Any of the following applied per individual manufacturer instruction: Tremco EXOAir 230 BASF Enershield HP BASF Enershield I Grace Perm-A-Barrier VPS DuPont Fluid Applied WB DuPont Tyvek Commercialwrap (1 or 2 layers) CCW Barritech NP CCW Barritech VP
Exterior Insulation Use 1, 2, 3, 4, 5, 6, or 7	1) None 2) ASTM C578, Type I, 10 ¾ in. maximum thickness 3) ASTM C578, Type VIII, 8 ¼ in. maximum thickness 4) ASTM C578, Type II, 7 in. maximum thickness 5) ASTM C578, Type IX, 5 ¼in. maximum thickness 6) ASTM C578, Type XIV, 4 in. maximum thickness 7) ASTM C578, Type XV, 3 ¼ in. maximum thickness
WRB Over Exterior Insulation	None
Exterior Cladding Use either 1, 2, 3, 4, 5, 6, 7, or 8	1) Brick – nominal 4" clay brick or veneer with maximum 2" air gap cavity behind the cladding. Brick with ties / anchors spaced 24" oc (max) 2) Concrete – minimum 2" thick with a maximum 2" air gap cavity behind the cladding 3) Concrete Masonry Units – minimum 4" thick with maximum 2" air gap cavity behind the cladding 4) Limestone – minimum 2" thick with non-open joints installation technique such as shiplap 5) Natural Stone Veneer – minimum 2" thick with non-open joints installation technique such as shiplap 6) Precast Artificial Stone – minimum 1-1/2" thick complying with ICC-ES AC51 with non-open joint installation technique 7) Terra Cotta Cladding – minimum 1-1/4" thick (solid) with non-open joint installation technique such as shiplap 8) Stucco – minimum ¾" thick exterior cement plaster and lath
Window Header	Flashing composed of 25 GA (min) sheet metal (steel) with 1" thick, 4 pcf mineral wool over the interior of the sheet metal

6.3 InsulFoam GF Geofoam Blocks:

InsulFoam GF Geofoam Blocks are placed loosely on a level surface or existing structural slab. The blocks may be installed in a single layer or in multiple layers.

Structural loads on the InsulFoam GF Geofoam Blocks shall not exceed the compressive resistance at 1% strain in accordance with ASTM D6817. Additional design considerations are included in ASTM D7180 Standard Guide for Use of Expanded Polystyrene (EPS) Geofoam and ASTM D7557 Standard Practice for Sampling of Expanded Polystyrene Geofoam Specimens.

When InsulFoam GF Geofoam Blocks are less than 4 inches in thickness, the interior of the building must be separated from the geofoam blocks with a thermal barrier as required by IBC Section 2603.4 or IRC Section R316.4, as applicable.

When InsulFoam EPS geofoam blocks used in interior applications are greater than 4 inches in thickness, a minimum 1 inch concrete or masonry material must cover the geofoam blocks on all faces.

7. CONDITIONS OF USE

7.1 General:

The products 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 products 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.

In areas where the probability of termite infestation is defined as "very heavy", the products described in this report that have not been treated for termite resistance must be installed in accordance with IBC Section 2603.9 or IRC Section R318.4, as applicable. Products that have been treated for termite resistance and are marked "Treated", are not restricted in areas where the probability of termite infestation is defined as "very heavy" in the IBC and IRC.

The products described in this report must be separated from the building interior with a thermal barrier, such as ½ in. gypsum board, as required by IBC Section 2603.4 or IRC Section 316.4, as applicable.

7.2 InsulFoam Insulation Products

For a listing of applicable UL Certifications for Insulfoam Insulation products described in this report, see the Online Certifications Directory for the following categories:

- See UL Online Certifications Directory for Foamed Plastic, UL Classified for Surface Burning Characteristics in accordance with UL 723 (BRYX).
- See UL Online Certifications Directory for Polystyrene Thermal Insulation, Rigid Cellular, UL Classified in accordance with ASTM C 578 (QORW).
- See UL Online Certifications Directory for Class A, B, or C roof-covering assemblies UL Classified in accordance with UL 790 (TGFU).
- See UL Online Certifications Directory for Roof Deck Constructions for assemblies UL Classified in accordance with UL 1256 (TJBX).
- See UL Online Certifications Directory for Roof Deck Constructions for assemblies UL Classified in accordance with UL 1897 (TGIK).
- See UL Online Certifications Directory for Exterior Walls for assemblies UL Classified in accordance with NFPA 285 (FWFO):
    - Exterior Wall System EWS0014

7.3 InsulFoam GF EPS Geofoam Blocks:

InsulFoam GF Geofoam Blocks less than 4 in. in thickness must be separated from the building interior with a thermal barrier such as ½ in. gypsum board, as required by IBC Section 2603.4 or IRC Section 316.4, as applicable. InsulFoam GF Geofoam Blocks greater than 4 in. in thickness must be separated from the building interior with a minimum, 1 in. thick concrete or masonry on all faces as required by IBC Section 2603.4.1.1.

Design loads to be resisted by the InsulFoam GF Geofoam Blocks must be determined in accordance with the IBC or IRC, as applicable, and must not exceed the allowable loads noted in this report.

All construction documents specifying the InsulFoam GF Geofoam Blocks must comply with the design limitations of this report. Design calculations and details for the specific applications must be furnished to the code official, verifying compliance with this report and applicable codes. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

For a listing of applicable UL Certifications for InsulFoam GF Geofoam Blocks, see the Online Certifications Directory for the following categories:

- See UL Online Certifications Directory for Foamed Plastic, UL Classified for Surface Burning Characteristics in accordance with UL723 (BRYX).
- See UL Online Certifications Directory for Polystyrene Thermal Insulation, Rigid Cellular, UL Classified in accordance with ASTM D6817 (QORW).
- See UL Online Certifications Directory for Foamed Plastic, UL Classified for Interior Building Construction in accordance with UL 1715 (OERU).

7.4 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.
InsulFoam- A Division of Carlisle Construction Materials Inc.	1057 Sunburst Lane Mead, NE 68041	I-41
InsulFoam- A Division of Carlisle Construction Materials Inc.	12601 East 33rd Ave. Unit 110 Aurora, CO 80011	I-42
InsulFoam- A Division of Carlisle Construction Materials Inc.	501 South Emerald Road Tooele, UT 84074	I-43
InsulFoam- A Division of Carlisle Construction Materials Inc.	4500 South Frontage Road Lakeland, FL 33815	I-46
InsulFoam- A Division of Carlisle Construction Materials Inc.	19727 57th Ave. East Puyallup, WA 98375	I-61
InsulFoam- A Division of Carlisle Construction Materials Inc.	628 Western Drive Anchorage, AK 99501	I-62
InsulFoam- A Division of Carlisle Construction Materials Inc.	1155 Business park Drive – Bldg. A Dixon, CA 95620	I-63
InsulFoam- A Division of Carlisle Construction Materials Inc.	5635 Schaefer Avenue Chino, CA 91710	I-64
InsulFoam- A Division of Carlisle Construction Materials Inc.	3401 Cocopah Street Phoenix, AZ 85009	I-65

8. SUPPORTING EVIDENCE

8.1 InsulFoam Insulation Products

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

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

8.1.4 Data in accordance with ICC-ES Acceptance Criteria for Termite Resistant Foam Plastics (AC239), dated October 2008

8.1.5 UL Classification reports in accordance with UL 723, ASTM C578, UL 790, UL 1256, 1897 and NFPA 285. See UL Product Certification Categories (BRYX), (QORW), (TGFU), (TJBX), (TGIK) and (FWFO) respectively.

See links to UL's On-Line Certification Directory in Section 7.2.

8.1.6 Reports and analysis of wall fire tests in accordance with NFPA 285.

8.1.7 Documentation of quality system elements described in AC10.

8.2 InsulFoam GF Geofoam Blocks:

8.2.1 UL Classification reports in accordance with UL 723, ASTM D6817, and UL 1715. See UL Product Certification Categories (BRYX), (QORW) and (OERU), respectively.

See links to UL's On-Line Certification Directory for BRYX and QORW in section 7.3.

8.2.2 Data in accordance with ICC-ES Acceptance Criteria for Termite Resistant Foam Plastics (AC239), dated October 2008

8.2.3 Documentation of quality system elements described in AC10.

9. IDENTIFICATION

The products described in this evaluation report are identified by a marking bearing the report holder's name (InsulFoam LLC), the plant identification, the product name, the ASTM type designation, the UL Classification Mark, and the evaluation report number UL ER14313-01. 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 current status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via our On-Line Certifications Directory at www.ul.com/erdirectory.