

UL Evaluation Report

UL ER8811-01

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UL Category Code: ULEX

CSI MasterFormat®

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

COMPANY:

OWENS CORNING FOAM INSULATION LLC
ONE OWENS CORNING PARKWAY
TOLEDO, OH 43659
www.owenscorning.com

SUBJECT:

FOAMULAR® 150, 250, 400, 600, AND 1000
EXTRUDED POLYSTYRENE (XPS) INSULATION BOARDS and other Foamular products as listed in
Tables 1a and 1b.



2. SCOPE OF EVALUATION:

- 2012 *International Building Code*® (IBC)
- 2012 *International Residential Code*® (IRC)
- 2012 *International Energy Code*® (IECC)
- 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 Quality Documentation (AC10), dated December 2012

The FOAMULAR XPS Insulation boards were evaluated for the following properties (Also see Table 1a):

- Surface Burning Characteristics (ANSI/UL723, ASTM E84)
- Thermal and Physical Properties (ASTM C578)
- Roofing Systems for Exterior Fire Exposure (ANSI/UL790, ASTM E108)
- Roof Deck Construction Material With Resistance to Internal Fire Exposure (ANSI/UL1256)
- Fire-resistance-rated construction (ANSI/UL263, ASTM E119)
- For Use in Attics and Crawl Spaces (AC12, App. A and B)
- For Use Without a Thermal Barrier – Special Approval (NFPA 286)
- Water-resistive Barrier (AC71)
- For Use on Exterior Commercial Walls (NFPA 285)

Table 1a – Foamular XPS Insulation Properties Evaluated

Foamular Product Name	Physical Properties	Surface Burning	Roofing Systems for Exterior Fire Exposure	Roof Deck Const. for Interior Fire Exposure	Flammability Testing for Use in Attics and Crawl Spaces	Exterior Commercial Walls	Special Approval	Fire Resistance	Air Leakage	Water Penetration
	ASTM C578 Type	UL 723	UL 790	UL 1256	AC12	NFPA 285	NFPA 286	ASTM E119	ASTM E2357	ASTM E331
150	X	•			•		•	•		
250	IV	•			•	•	•	•	•	•
400	VI	•								
600	VII	•								
1000	V	•								
Insulating Sheathing	X	•			•		•			
Propink	X	•			•		•			
Half Inch	X	•			•		•			
Insulpink	X	•								
Insulpink Z	X	•								
CC	X	•				•				
CW15	X	•						•		
CW25	IV	•						•	•	•
Thermapink 18	X	•	•	•				•		
Thermapink 25	IV	•	•	•				•		
Thermapink 40	VI	•	•	•						
Thermapink 60	VII	•	•	•						
C-200	X	•								
C-300	IV	•								
350	IV	•								
404	VI	•	•	•				•		
604	VII	•	•	•				•		
404RB	VI	•	•	•						
604RB	VII	•	•	•						
Durapink	IV	•	•	•						
Durapink FA	IV	•	•	•						
Durapink Plus	IV	•	•	•						
LT30	IV	•								
LT40	VI	•								
Pinkcore	IV	•								
AgTek	IV	•								
CC High R	IV	•				•		•		
High R CW Plus	IV	•				•		•		

Table 1a (continued) – Foamular XPS Insulation Properties Evaluated

Foamular Product Name	Physical Properties ASTM C578 Type	Surface Burning UL 723	Roofing Systems for Exterior Fire Exposure UL 790	Roof Deck Const. for Interior Fire Exposure UL 1256	Flammability Testing for Use in Attics and Crawl Spaces AC12	Exterior Commercial Walls NFPA 285	Special Approval NFPA 286	Fire Resistance ASTM E119	Air Leakage ASTM E2357	Water Penetration ASTM E331
Pinkcore Tight Tolerance 15	X	•								
Pinkcore Tight Tolerance 25	IV	•								
Pinkcore Tight Tolerance 40	VI	•								
Pinkcore Tight Tolerance 60	VII	•								
Pink-Drain	X	•								
Foamular Codebord	X	•								
Foamular CC	X	•								
Foamular Gridboard	IV	•								

Table 1b – Foamular XPS Insulation Boards Applications

CONSTRUCTION APPLICATION	FOAMULAR XPS PRODUCT	ASTM C578 Type	DESCRIPTION
General Purpose	FOAMULAR 150	X	Slab edge, foundation, under light slab, steel stud sheathing, masonry cavity wall, concrete tilt wall, concrete precast. For roofing applications use FOAMULAR THERMAPINK XPS insulation
	FOAMULAR 250	IV	
	C-200	NA	Marketed in Canada
	C-300	NA	
	350	NA	
WALL			
Sheathing	FOAMULAR Insulating Sheathing	X	Laminated film on both sides for added strength
	FOAMULAR Half-Inch	X	Half-inch thick, R-3
	FOAMULAR ProPink	X	Reinforced laminated film on both sides for added strength
Masonry Cavity Wall	FOAMULAR CW15	X	15 and 25 psi, 16" wide, fits between horizontal joint reinforcement and masonry veneer wire ties
	FOAMULARCW25	IV	
	FOAMULAR High R CW Plus	IV	15 and 25 psi, 16" wide. High R per inch.
Commercial Steel Stud	FOAMULAR 250	IV	General steel stud sheathing applications
	FOAMULAR CC	X	Designed for commercial steel stud applications. Includes shiplap edges on the long edges for enhanced joining and watershed at horizontal joints.
	FOAMULAR CC High R	IV	Designed for commercial steel stud applications. Provides higher R per inch. Includes shiplap edges on the long edges for enhanced joining and watershed at horizontal joints.
Furring	FOAMULAR InsulPink	X	Notched to accommodate 1" x 3" wood furring on inside surface of unit masonry or concrete walls
	FOAMULAR InsulPink Z	X	Fits between Z-furring on inside of unit masonry or concrete walls
Insulated Concrete Sandwich Panel	FOAMULAR 250	IV	Used with low conductivity, metal, or other composite grid-type wall ties
	FOAMULAR Gridboard	IV	Used with low conductivity, metal or other composite grid-type wall ties
Exterior Insulation Finish Systems (EIFS)	FOAMULAR 250	IV	Any PM class EIFS system
ROOF			
Low Slope Commercial Roofing and Architectural Metal Roofing	FOAMULAR Thermapink 18	X	18 and 25 psi, used in a variety of commercial roofing systems over a variety of roof deck types
	FOAMULAR Thermapink 25	IV	
Recover Roofing	FOAMULAR Durapink	IV	Used over existing roofing membrane and under a new mechanically attached single-ply roofing membrane
PRMA, Plaza Deck, Waterproofing (under pavers, paver/pedestals)	FOAMULAR 404	VI	40 and 60 psi, with bottom side drainage channels on four edges for use in protected roof membrane assemblies (PRMA)
	FOAMULAR 604	VII	
	FOAMULAR 404RB	VI	40 and 60 psi, with bottom side drainage channels on four edges, and top side ribbed surface for use under concrete pavers in protected roof membrane assemblies (PRMA)
	FOAMULAR 604RB	VII	
	FOAMULAR 400	VI	High load, under plaza deck slabs or pavers or pedestrian or vehicular traffic slabs
	FOAMULAR 600	VII	
FOAMULAR 1000	V		
UNDER SLAB			
Load Bearing, High Strength, Under Industrial Slabs	FOAMULAR 400	VI	40, 60, 100 psi compressive strength. Use engineering design to match Foamular compressive strength needed to the load on the slab and slab strength design. Use ranges from light pedestrian traffic to heavy equipment and storage.
	FOAMULAR 600	VII	
	FOAMULAR 1000	V	
Under Slab, Low Temperature Storage	FOAMULAR LT 30	IV	30 psi. Light to medium load.
	FOAMULAR LT 40	N/A	40 psi. Light to medium load.
FOUNDATION			
Below Grade Walls	FOAMULAR Insul-Drain	IV	Insulates and protects foundation waterproofing, and is filtration fabric faced with drainage channels in outward face of foam
	FOAMULAR Pink-Drain	IV	Insulates and protects foundation waterproofing, with channel design in outward face of foam that prevents soil from clogging channels
	FOAMULAR Fanfold DWB	N/A	Thinner fanfold protection board for use over foundation waterproofing
AGRICULTURE			
	FOAMULAR AgTek	X	Produced extra long for use in sloped roof over purlin construction
SPECIALTY			
	FOAMULAR Pinkcore	X,IV,VI,VII	Tight tolerance board for specialty and engineering applications

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 2012
- ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water-Resistive Barriers (AC71), dated February 2003

■ 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/UL263 (ASTM E119), Fire Tests of Building Construction and Materials

■ ASTM:

- ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM E331, Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference
- ASTM E2357, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

■ NFPA:

- NFPA 286, Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth
- NFPA 285, Standard Fire Test for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Assemblies Containing Combustible Components
- NFPA 259, Standard Test Method for Potential Heat of Building Materials

■ ACI:

- The American Concrete Institute 360, "Guide to the Design of Slabs-on-Ground"

4. USES

4.1 FOAMULAR Insulation Boards (ASTM C578 Types X, IV, VI, VII, V):

FOAMULAR XPS insulation boards are extruded polystyrene foam plastic insulation used as nonstructural insulation on the exterior or interior of above grade walls, door cavities, in ceiling/floor assemblies, on the interior or exterior of below grade walls, below concrete slabs, around concrete slab edges, or as roof insulation.

Insulation Boards may be used on the exterior of above grade walls when installed in accordance with Section 6.2.

The insulation boards may be used as insulation under slabs-on-ground, slabs on decks, concrete pavers, and concrete pavers on pedestals when installation is in accordance with Section 6.8.

In areas where the probability of termite infestation is defined as "very heavy" the insulation must be installed in accordance with IBC or IRC [Section R318.1](#), as applicable.

The insulation boards may be used on walls in attics and crawl spaces without covering when installation is in accordance with Section 6.5 of this report.

The insulation boards may be used on wall, ceiling and floor surfaces, detached garages, pole barns, telecommunication shelters, concrete modular buildings, agricultural buildings, buildings regulated under IBC [Section 312](#) (Utility and Miscellaneous, Group U), or structures constructed in accordance with the IBC or IRC, when installed in accordance with Section 6.6 of this report.

The insulation boards may be used as an alternative to the water-resistive barrier specified in IBC [Section 1404.2](#) and IRC [Section R703.2](#) when installation is in accordance with Section 6.7 of this report.

See Table 1b for further guidance on the intended uses of FOAMULAR XPS insulation boards

5. PRODUCT DESCRIPTION

The FOAMULAR XPS insulation boards are extruded polystyrene foam plastic insulation boards having a flame spread index not exceeding 25 and a smoke developed index not exceeding 450 for thicknesses up to 4 inches and at a maximum density of 3.6 pcf, when tested in accordance with UL723 (ASTM E84) as required by [Section 2603.3](#) of the IBC or [Section R316.3](#) of the IRC, as applicable.

FOAMULAR XPS insulation boards have been found to comply with ASTM C578. The boards are manufactured at minimum densities of 1.30, 1.45, 1.80, 2.20, and 3.00 lbs/ft³ and have ASTM C578 designations of Type X, Type IV, Type VI, Type VII, and Type V respectively. See excerpt from ASTM C578, Table 2 below for minimum thermal resistance and compressive resistance values for each ASTM C578 type. These values apply to all FOAMULAR XPS insulation boards with the exception of thermal resistance for FOAMULAR CC HIGH R and FOAMULAR HIGH R CW PLUS.

Table 2 – Thermal Resistance and Compressive Resistance

ASTM TYPE	DENSITY, min., lb/ft ³	THERMAL RESISTANCE ¹ , min., °F-ft ² -h/Btu	COMPRESSIVE RESISTANCE ³ , min., psi
Type X	1.30	5.0	15.0
Type IV	1.45	5.0	25.0
Type VI	1.80	5.0	40.0
Type VII	2.20	5.0	60.0
Type V	3.00	5.0	100.0
Type IV	1.45	5.6 ²	25.0

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

² FOAMULAR CC HIGH R and FOAMULAR HIGH R CW PLUS Insulation boards

³ Compressive Resistance values are based on yield point or 10% deformation, whichever comes first

6. INSTALLATION

6.1 General:

FOAMULAR XPS insulation boards 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.

FOAMULAR XPS insulation boards 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, vertical or in-plane loads except as described in Section 6.8 of this report. The boards must not be used as exterior stud wall bracing. Wall bracing must be provided in accordance with the applicable code. All walls must be braced in accordance with IBC [Section 2308.9.3](#) and [Section 2308.12.4](#) or IRC [Section R602.10.3](#).

The interior of the building must be separated from the FOAMULAR XPS insulation boards with a thermal barrier as required by [Section 2603.4](#) of the IBC or [Section R316.4](#) of the IRC, as applicable, except as described in Sections 6.5 and 6.6 of this report.

The code official may require an approved vapor retarder to be installed in accordance with IBC [Section 1405.3](#), IRC [Section R702.7](#), or the IECC, as applicable.

A water-resistive barrier in compliance with IBC [Section 1404.2](#) or IRC [Section R703.2](#) is required and, when applied over wood-based sheathing, must comply with IBC [Section 2510.6](#) or IRC [Section R703.6.3](#). Foamular XPS insulation boards with joints taped are a water-resistive barrier when installed in accordance with Section 6.7 of this report.

The insulation boards must not be used as a nailing base for exterior siding materials. All fastening must be made through the boards and either into the wall framing or into structural sheathing, as required by the siding manufacturer's published installation instructions, or in accordance with the applicable code.

6.2 Use on the exterior of above grade walls:

FOAMULAR XPS insulation boards are 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 [Section 2603.4.1.4](#) of the IBC,
- Exterior walls of Type V construction in accordance with [Section 2603.2](#), [Section 2603.3](#), and [Section 2603.4](#) of the IBC, or
- Exterior walls of buildings of Types I, II, III, or IV construction in accordance with [Section 2603.5.5](#) of the IBC, when tested in accordance with NFPA 285:
 - For Systems UL Certified in accordance with NFPA 285 incorporating FOAMULAR XPS insulation boards, see Section 7.2 for a link to the UL Online Certification Directory for systems Certified under the UL Classified Exterior Wall Systems category.
 - For CavityComplete exterior wall systems for buildings of Types I, II, III, or IV construction tested in accordance with NFPA 285, ASTM E2357 and ASTM E331, see below and see Section 7.2 of this report for a link to the UL Online Certification Directory for systems Certified under the UL Classified Exterior Wall for Systems:
 - EWS0008 - CavityComplete for Steel Stud with Masonry Veneer
 - EWS0022 - CavityComplete for CMU with Masonry Veneer

6.3 Use in Roofing:

FOAMULAR XPS insulation boards are used as a roofing insulation as follows:

- As part of a Class A, B or C roof-covering assembly for exterior fire exposure when tested in accordance with UL 790, as specified in [Section 2603.6](#) of the IBC. See Section 7.2 of this report for a link to the UL Online Certifications Directory for Class A, B or C roof-covering assemblies UL Classified in accordance with UL 790 incorporating FOAMULAR XPS insulation boards.
- As part of a Roof Deck Construction for interior fire exposure as specified in [Section 2603.4.1.5](#) of the IBC. See Section 7.2 for a link to the UL Online Certifications Directory for Roof Deck Constructions for assemblies UL Classified in accordance with UL 1256 incorporating FOAMULAR XPS insulation boards.

Recover and Reroofing: New roofing must not be applied over existing roof-covering systems except in compliance with [Section 1510](#) of the IBC and Maintenance & Repair systems as referenced in UL Classified systems described in Section 7.2 of this report. The fire performance of a roof system is directly affected by the materials covering the foam plastic insulation. The components of the existing roofing that are to remain on the roof deck must be inspected in accordance with IBC [Section 1510](#) or IRC [Section R907](#). Unless listed as a Maintenance and Repair system the existing roof-covering membrane and, if necessary, the cover board must be removed before new roofing materials are installed; the new roofing materials must have characteristics specifically described in this report.

6.4 Use in Fire-Resistance Rated Wall and Roof-Ceiling Construction:

FOAMULAR XPS insulation boards are used as part of fire-resistance rated wall construction and roof-ceiling construction as specified in Chapter 7 of the IBC or [Section R302](#) of the IRC. See Section 7.2 of this report for a link to the UL Online Certifications Directory for Fire-Resistance designs UL Classified in accordance with UL 263 incorporating FOAMULAR XPS insulation boards.

For CavityComplete fire-resistance rated wall system construction as specified in Chapter 7 of the IBC see links to the UL Online Certifications Directory for Fire-Resistance designs UL Classified in accordance with UL 263:

- V317 CavityComplete Wall system for Wood Stud with Masonry Veneer
- W429 CavityComplete Wall System for Steel Stud with Masonry Veneer
- U938 Cavitycomplete Wall System for CMU with Masonry Veneer

6.5 Use in Attics and Crawl Spaces:

FOAMULAR XPS insulation boards may be used in attics and crawl spaces, without the coverings listed in [Section 2603.4.1.6](#) of the IBC or [Sections R316.5.3](#) and [Section R316.5.4](#) of the IRC, as follows:

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 [Section 1203.3](#) of the IBC or [Section R408.1](#) of the IRC, as applicable.
5. Combustion air is provided in accordance with International Mechanical Code(IMC) Sections [701](#) and [703](#) (2006 IMC) or Section [701](#) (2012 and 2009 IMC).
6. Foamular XPS insulation boards are limited to a maximum thickness of 3 inches (76.2mm) and a maximum density of 2.0 pcf (32 kg/m³).

6.6 Use Without a Thermal Barrier

FOAMULAR XPS insulation boards with a maximum thickness of 2 in. and a maximum density of 1.80 pcf, may be installed on any or all surfaces (wall, ceiling, floor) of a detached garage, pole barn, telecommunication shelter, concrete modular building, agricultural building, buildings under the IBC Utility and Miscellaneous Group U or other structures under the IBC or IRC, with no thermal or ignition barrier applied to the foam plastics, based on testing in accordance with NFPA 286, and IBC [Section 2603.10](#) or IRC [Section R316.6](#), when all other requirements of the building code for that building are met.

6.7 Use as a Water-Resistive Barrier

FOAMULAR XPS insulation boards with joints sealed using JointSealR Foam Joint Tape and FlashSealR may be used as an alternative to the water-resistive barrier required by IBC [Section 1404.2](#) and IRC [Section R703.2](#) when installed in accordance with this Section. The boards must be covered with an approved exterior wall covering.

FOAMULAR XPS insulation boards measuring 2 feet by 8 feet or 4 feet by 8 feet are installed horizontally or vertically with long joints and end joints in contact with one another. When installed directly on framing members, the insulation boards measuring 2 feet by 8 feet must be installed horizontally and framing members are spaced a maximum of 16 inches on center. For wood framing, the insulation boards are attached using 3/8-inch-diameter-head galvanized nails, 1-inch-crown plastic washers or equivalent fasteners long enough to penetrate framing a minimum of 3/4 inch, or through the sheathing, whichever is less. For steel framing, the insulation boards are attached using No. 6, Type S drywall screws with 1-inch minimum plastic washers long enough to penetrate the framing a minimum of 3/4 inch. Fasteners must not be over-driven. Fasteners must be spaced a minimum of 12 inches on center around the perimeter and 16 inches on center in the field. For window installations, the nailing flange is set against sealant bedding and fastened to the framing with galvanized roofing nails 3 inches from each corner and 8 inches on center. Minimum 3-inch-wide flashing is used to seal the sills of windows and minimum 2-inch-wide (50.8mm) flashing is used to seal jambs and heads. Window installation must be in accordance with the window manufacturer's instructions.

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.

Joints between boards must be covered by minimum 3 ½-inch-wide JointSealR Foam Joint Tape positioned using hand pressure, and finished with a roller. Penetrations in exterior walls must be sealed with a sealant complying with ASTM C920, Type S or M, Grade NS, Class 25, or with expanding spray foam sealant complying with AAMA 812 as part of the penetration flashing procedure.

When the insulation boards are applied over open framing, vertical butt joints must be over framing members. Horizontal joints of foam plastic boards must be tongue-and-groove, or supported by blocking. For cementitious exterior wall coating systems, unbacked joints are permitted only when specified in an approved cementitious exterior wall coating system.

6.8 Use Under Slabs-on-Ground, Slabs on Decks, Concrete Pavers, and Concrete Pavers on Pedestals:

FOAMULAR XPS insulation boards may be used under slabs-on-ground, slabs on decks, concrete pavers, and concrete pavers on pedestals when designed in accordance with strength design, load and resistance factor design, allowable stress design, empirical design or conventional construction methods. ACI 360 provides guidance for the design of floor slabs installed over insulation as a slab-on-ground. The insulation modulus specified in section 13.2.1 of ACI 360 should be determined based on data provided in Table 3.

Table 3 – Foamular XPS Insulation Foundation Properties

ASTM TYPE	Foundation Modulus (pci) ^{1,2,3}						Compressive Stress (psi)		
	1 in Thick	1.5 in Thick	2 in Thick	2.5 in Thick	3 in Thick	4 in Thick	Live ⁵ Recommended	Dead ⁵ Recommended	Ultimate ⁴
Foamular 150 Type X	590	550	500	450	400	300	3	5	15
Foamular 250 Type IV	750	710	675	595	565	510	5	8.3	25
Foamular 400 Type VI	1,100	1,000	900	780	680	650	8	13.3	40
Foamular 600 Type VII	1,520	1,400	1,275	1,150	1,040	790	12	20	60
Foamular 1000 Type V	-	-	2,600	-	-	-	20	33.3	100

1. Foundation modulus is a measure of deflection at given loads, expressed as inches deflection per inch of thickness or “pci”.
2. For insulation installed in multiple layers, assuming the layers are identical, the foundation modulus for the system equals the foundation modulus for one of the layers divided by the total number of layers.
3. For insulation systems that utilize a variety of thicknesses, the system foundation modulus is determined by adding the reciprocal of the foundation modulus of the individual layers. The total is the reciprocal value for the foundation modulus of the entire system.
4. Ultimate compressive stress is measured at 10% deformation or yield, whichever occurs first. For thinner product (1 in.), yield typically occurs first. For thicker products (1.5 in. and thicker), yield typically occurs first with 3% to 4% deformation.
5. Recommended stress (load) levels will limit long term compressive creep to not exceed 2% in 20 years.

7. CONDITIONS OF USE

7.1 General:

The FOAMULAR XPS insulation boards 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 FOAMULAR XPS insulation boards must be produced, identified, and installed in accordance with the manufacturer’s published installation instructions and this report. If there is a conflict between this report and the manufacturer’s instructions this report governs.

FOAMULAR XPS insulation boards must be separated from the building interior with a thermal barrier, such as ½ in. gypsum board, as required by [Section 2603.4](#) of the IBC or [Section R316.4](#) of the IRC, as applicable, except as described in Section 6.5 and 6.6 of this report.

7.2 UL Certifications:

See the UL 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 Class A, B or C roof-covering assemblies, UL Classified in accordance with UL 790 ([TGFU](#)).
- See UL Online Certifications Directory for Class A, B, or C Maintenance and Repair roof-covering assemblies, UL Classified in accordance with UL 790 ([TGFU](#)).
- See UL Online Certifications Directory for Roof Deck Constructions, UL Classified in accordance with UL 1256 ([TJBX](#)).
- See UL Online Certifications Directory for products evaluated as a part of fire-resistance-rated wall assemblies in accordance with UL 263, Foamed Plastic ([CCVW](#)).
- See UL Online Certifications Directory for products evaluated as a part of fire-resistance-rated roof-ceiling assemblies in accordance with UL 263, Foamed Plastic ([CCVW](#)).
- See UL Online Certifications Directory for Exterior Walls for assemblies UL Classified in accordance with NFPA 285 ([FWFO](#)).

7.2 Manufacturing Locations:

The products are manufactured at the following locations described in Table 4 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, AC 10.

Table 4 – Manufacturing Locations

LISTEE	LOCATION	PLANT ID NO.
OWENS CORNING FOAM INSULATION, LLC	18456 NE Wilkes Rd Portland, OR 97230 USA	D
OWENS CORNING FOAM INSULATION, LLC	2710 Laude Dr Rockford, IL 61109 USA	B
OWENS CORNING FOAM INSULATION, LLC	170 South Ave Tallmadge, OH 44278 USA	A
OWENS CORNING FOAM INSULATION, LLC	542 Rue Gaetan Valleyfield, Quebec, J6S 0A7 Canada	C

8. SUPPORTING EVIDENCE

8.1 FOAMULAR Insulation Boards:

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

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

8.1.3 Reports of room corner fire tests in accordance with NFPA 286 and AC12 Appendix A and B.

8.1.4 Reports of fire propagation tests in accordance with NFPA 285.

8.1.5 Reports of air leakage resistance in accordance with ASTM E2357.

8.1.6 Reports of water penetration resistance in accordance with ASTM E331

8.1.7 UL Classification reports in accordance with ANSI/UL 723, ANSI/UL 790, ANSI/UL 1256, ANSI/UL 263 and NFPA 285. See the following UL Product Certification Categories BRYX, TGFU, TJBX, CCVW and FWFO, respectively.

8.1.6 Documentation of quality system elements described in AC10.

9. IDENTIFICATION

The FOAMULAR XPS insulation boards described in this evaluation report are identified by a marking bearing the report holder's name (Owens Corning), the plant identification, the product name, the ASTM type designation, the UL Classification Mark, and the evaluation report number UL ER8811-01. The validity of the evaluation report is contingent upon this identification appearing on the product, product unit wrap, 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:

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