1. Product Name

FOAMULAR® Brand Extruded Polystyrene (XPS) Rigid Foam Insulation, including:

- FOAMULAR® 150 XPS Rigid Foam Insulation
- FOAMULAR® 250 XPS Rigid Foam Insulation
- FOAMULAR® 400 XPS Rigid Foam Insulation
- FOAMULAR® 600 XPS Rigid Foam Insulation
- FOAMULAR® 1000 XPS Rigid Foam Insulation
- FOAMULAR® CW15 XPS Rigid Foam Insulation
- FOAMULAR® CW25 XPS Rigid Foam Insulation
- PINKCORE® XPS Rigid Foam Insulation and Low-conductivity Ties
- PINKFORM XTRA® Insulation Concrete Forming System

2. Manufacturer

Owens Corning World Headquarters
One Owens Corning Parkway
Toledo, OH 43659
(800) 438-7465
(800) GET-PINK
Fax: (419) 248-8052
www.owenscorning.com

3. Product Description

BASIC USE

FOAMULAR is an extremely lightweight closed cell polystyrene panel used to insulate residential and commercial structures of all kinds. It is an all-purpose foam panel insulation for masonry, cast-in-place concrete and other applications. FOAMULAR is well suited for use in masonry cavity walls, wall furring and perimeter, foundation and underslab applications in most types of residential and commercial buildings.

COMPOSITION & MATERIALS

Owens Corning's patented Hydrovac™ process technology makes the unique closed cell polystyrene structure of FOAMULAR insulation highly resistant to moisture while retaining its initial R-value year after year even following prolonged exposure to humidity, condensation, ground water and freeze/thaw cycling. FOAMULAR's superior R-value of 5 per inch (5 per 25.4 mm) of product thickness, outstanding moisture resistance for long-term performance and tough compressive strength are significant performance benefits of these products.

Masonry Cavity Walls

Quickly and easily placed between wall ties, FOAMULAR CW15, FOAMULAR CW25 (16" (406 mm) wide boards), FOAMULAR 150 and FOAMULAR 250 scored square edge (SSE) offer low thermal conductivity for energy savings in cavity wall applications. Since FOAMULAR is a rigid foam insulation, that is, practically impervious to the effects of moisture, its insulating effectiveness will not deteriorate over time. It also will not settle like blown or poured types of insulation. Use of FOAMULAR extruded polystyrene insulation can reduce fuel and equipment costs and increase occupant comfort.

Note - The SSE designation indicates that the FOAMULAR board is scored at 16" (406 mm) widths for easy jobsite fit between masonry ties.

Wall Furring

Used with concrete block, cast-in-place concrete or masonry walls, INSULPINK for standard wood furring or INSULPINK-Z for metal furring installs vertically at 24" (610 mm) maximum oc, along with FOAMULAR 150 or 250, to the interior side of the wall. The furring system attaches directly to the walls with conventional masonry anchors that hold the FOAMULAR in place and serve as a positive attachment for gypsum panels. Depending upon local climatic conditions, a vapor retarder may be required. The result is an attractive, energy efficient system.

Perimeter/Foundation/Underslab

FOAMULAR provides excellent thermal and mechanical properties even when used below grade in perimeter and foundation applications, or on grade directly beneath the concrete slab. Applied from the footing to the top of the foundation, FOAMULAR complements the insulating sheathing envelope around the building framing. Installed around a concrete block exterior foundation, FOAMULAR is mechanically or adhesively attached, or held in place with backfill. FOAMULAR's built-in rigidity and strength permit it to withstand the pressures of heavy loads. FOAMULAR is resistant to common soil acids and decay, and retains its insulating performance even after prolonged exposure to moisture.

SIZES

See Table 1.

COLORS

FOAMULAR can be recognized by its characteristic PINK® color.

LIMITATIONS

FOAMULAR is practical for buildings with normal temperature conditions but should not come in contact with chimneys, heater vents, steam pipes or other surfaces where temperatures exceed 150 degrees F (66 degrees C). Not recommended for applications where sustained temperatures exceed 165 degrees F (74 degrees C).

All construction should be evaluated by a qualified design professional for the necessity of providing vapor retarders to avoid condensation and subsequent damage to the structure. See current ASHRAE *Handbook of Fundamentals* for more information.

Provisions should be made to protect insulation from excessive exposure to direct sunlight by covering the insulation as soon as possible. FOAMULAR must be separated from the building interior by a code compliant thermal barrier.

Some plastic or oil based adhesives and many solvent laden mastics are not compatible with polystyrene based rigid foam insulation.

FOAMULAR is a nonstructural material and must be installed on framing or other substrate that is independently structurally adequate to meet required construction and service loading conditions.

4. Technical Data

APPLICABLE STANDARDS

American Society for Testing & Materials (ASTM)

- ASTM C203 Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- ASTM C272 Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions
- ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM D1621 Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- ASTM D2126 Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
- ASTM D2863 Standard Test Method for Measuring Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials

- ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials

APPROVALS

Building Officials & Code Administrators International Inc. (BOCA) - BOCA Research Report No. 96-24

International Conference of Building Officials (ICBO) - ICBO Evaluation Report No. 3628

Southern Building Code Congress, International, Inc. (SBCCI) - SBCCI PST and ESI Report No. 9727

Underwriters Laboratories, Inc., (UL) Classification Certificate U-197

U.S. Department of Urban Development, Federal Housing Administration - Meets HUD/FHA Use of Materials Bulletin No. 71

ENVIRONMENTAL CONSIDERATIONS

Conserving energy through effective insulation lowers fuel consumption and resultant operating cost.

PHYSICAL & CHEMICAL PROPERTIES

Test reports and additional information are available upon request.

- Flexural Strength of 60 - 140 psi (413 - 965 kPa) min
- Water Absorption of 0.10% by volume max
- Thermal Conductivity k-value of 0.20 at 75 degrees F (24 degrees C)
- Thermal Conductivity k-value of 0.18 at 40 degrees F (4 degrees C)
- Compressive Strength of 15 - 100 psi (103 - 689 kPa) min SI version
- Dimensional Stability of 2% linear change max
- Oxygen Index, 24 min
- Flamespread, 5
- Smoke Developed, 45 - 175
- Water Vapor Permeance, 1.1 perm max

5. Installation

PREPARATORY WORK

Handle and store product according to Owens Corning recommendations. Materials should be delivered in their original unopened units, stored off the ground, protected from direct sunlight with a light colored opaque polyethylene film and ventilated to prevent excessive temperature. Damaged or deteriorated materials should be removed from the premises.

METHODS OF APPLICATION

Cavity Wall Application

Place insulation between wall ties with long edge horizontal and ends and edges butted. Install insulation against back up wall allowing 1" (25.4 mm) minimum air space between insulation and outer wall. Cut insulation with saw or sharp knife to fit tightly around vents, louvers, pipes, conduit and other wall penetrations.

Wall Furring Application

The 2' (610 mm) wide FOAMULAR product is installed vertically with the tongue on the side to accept the furring strip. Close all joints tightly. All areas of the wall requiring insulation should be covered with FOAMULAR insulation. Fasten the FOAMULAR insulation to the masonry wall using a quality furring channel spaced 24" (610 mm) oc (maximum) using metallic fasteners driven manually, or by pneumatic or electric gun, or by powder actuated charge. Fastener length should be sufficient to penetrate substrate wall a minimum of 3/4" (19.1 mm) for precast or prestressed concrete and 1" (25.4 mm) for concrete block. Furring channels should be placed adjacent to all openings, i.e., doors, windows and corners, to secure finishing panel systems. Install finish (gypsum) panels in accordance with manufacturer's latest printed instructions and attach using the recommended fastener to the furring channel.

Note - 4' (1219 mm) wide boards are not used in wall furring applications because furring strips are 24" (610 mm) oc, maximum.

Foundation/Perimeter Application

Before backfilling, install FOAMULAR insulation to the exterior of all foundation walls from top of footing upwards. Adhere insulation to clean surfaces with long edges horizontal, edges tightly butted and vertical joints staggered. Secure insulation with adhesive applied to back of panels with 1/4" - 3/8" (6.4 - 9.5 mm) continuous beads spaced 16" (406 mm) oc or 1 1/2" (38 mm) diameter, 1 1/2" (38 mm) high spots in rows 8" (203 mm) apart and spaced 16" (406 mm) oc. Apply insulation to wall within 15 minutes after adhesive is applied. Backfill carefully to prevent damage to insulation. Where insulation is exposed between ground level and bottom of exterior finish, apply reinforced stucco, painted weatherproof board or other suitable protective coating over insulation.

Crawlspace Application

Securely attach FOAMULAR insulation to inside face of foundation wall using approved adhesive, impaling pins, or furring strips spaced 24" (610 mm) oc maximum. Most codes allow FOAMULAR to be exposed in a crawlspace. When required by building codes, cover insulation completely with gypsum panels or approved protection.

Below Floor Slab Application

Install FOAMULAR insulation after gravel fill has been built up to grade and thoroughly compacted, and vapor retarder placed. Lay insulation in place with edges pressed together and butting foundation wall or adjacent vertical insulation. Pour concrete slab to cover all insulation.

PRECAUTIONS

Caution - Combustible

FOAMULAR insulation will ignite if exposed to fire of sufficient heat and intensity, although it does contain a flame retardant additive to inhibit ignition from small fire sources. Products intended for wall applications should be installed only with a thermal barrier on the interior side of the wall. During shipping, storage, installation and use, this product should not be exposed to open flame or other ignition sources.

BUILDING CODES

Current data on building code requirements and product compliance may be obtained from Owens Corning technical support specialists. Installation must comply with the requirements of all applicable local, state and national code jurisdictions.

6. Availability & Cost

AVAILABILITY

FOAMULAR products are available through a network of Owens Corning distributors throughout the country. Contact manufacturer for more information.

Note - All products and sizes may not be available in all markets. For information about nonstandard products, consult a local sales representative.

COST

Budget installed cost information may be obtained from a local Owens Corning distributor or from the manufacturer.

7. Warranty

It is the responsibility of the contractor to install FOAMULAR in accordance with Owens Corning's published recommendations. The presence of an Owens Corning representative at the jobsite does not relieve the contractor from the responsibility to follow these instructions. Owens Corning is not responsible for any liability resulting from a failure to follow these instructions. The manufacturer offers a warranty on retention of R-value over time. The manufacturer's liability is

TABLE 1 FOAMULAR TECHNICAL DATA

Applications	150 XPS Multipurpose	250 XPS Multipurpose	400 XPS High strength; geofoam	600 XPS High strength; geofoam	1000 XPS High strength; geofoam	CW15 XPS Cavity wall	CW25 XPS Cavity wall	PINKCORE XPS Tilt-up, precast, modular precast	PINKCORE XTRA Insulated concrete form systems
Types, ASTM C578	X	IV	VI	VII	V	X	IV	IV	IV
Compressive resistance, min	15 psi (103 kPa)	25 psi (172 kPa)	40 psi (276 kPa)	60 psi (413 kPa)	100 psi (689 kPa)	15 psi (103 kPa)	25 psi (172 kPa)	25 psi (172 kPa)	25 psi (172 kPa)
Thickness, inches (mm)									
24" x 96" (610 x 2438 mm)	1 (25.4) 1 1/2 (38) 2 (51) 2 1/2 (64) 3 (76) 3 1/2 (89)		1 1/2 (38) 2 (51) 2 1/2 (64) 3 (76) 3 1/2 (89) 4 (102)			1 (25.4) 1 1/2 (38) 2 (51) 2 1/2 (64)		1 1/2 (38) 2 (51) 2 1/2 (64) 3 (76) 3 1/2 (89) 4 (102)	
48" x 96" (1219 x 2438 mm)	1 (25.4) 1 1/2 (38) 2 (51) 2 1/2 (64) 3 (76)								
48" x 108" (1219 x 2743 mm)	1 (25.4)								

expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to the manufacturer within 30 days from the date it was, or reasonably should have been, discovered. Further information on warranty conditions, duration and remedies may be obtained from Owens Corning.

8. Maintenance

These products are maintenance-free when installed according to the manufacturer's published recommendations.

9. Technical Services

A staff of trained service personnel offers design assistance and technical support. For technical assistance, contact Owens Corning.

10. Filing Systems

- First Source for Products
- MANU-SPEC®
- Sweet's Catalog Files
- Additional product information is available from the manufacturer upon request.

FOAMULAR Extruded Polystyrene Insulation
Typical Physical Properties(1)

Property	ASTM Method(2)	Product Values FOAMULAR 150	FOAMULAR 250	FOAMULAR 400	FOAMULAR 600
R Value (1) (3)	C 518	5.0	5.0	5.0	5.0
Thermal Conductivity – "k" (Btu x in/ft² x hr x °F, max)(3) @ 75°F mean temperature @ 40°F mean temperature	C 518	0.20 0.18	0.20 0.18	0.20 0.18	0.20 0.18
Compressive Strength minimum value (lb/in²)(4)	D 1621	15.0	25.0	40.0	60.0
Flexural Strength (lb/in², min.)(5)	C 203	60	75	115	140
Water by Absorption (% by volume, max.)(6)	C 272	0.10	0.10	0.05	0.05
Water Vapor Permeance (perm, max.)(7)	E 96	1.10	1.10	1.10	1.10
Water Affinity	—	hydrophobic	hydrophobic	hydrophobic	hydrophobic
Water Capillarity	—	none	none	none	none
Dimensional Stability (% linear change, max.)(8)	D 2126	2.0	2.0	2.0	2.0
Linear Coefficient of Thermal Expansion (m/in/°F, max.)	—	2.7×10^{-5}	2.7×10^{-5}	2.7×10^{-5}	2.7×10^{-5}
Flame Spread(9)(10)	E 84	5	5	5	5
Smoke Developed(9)(10)(11)	E 84	45-175	45-175	45-175	45-175
Oxygen Index, min(9)	D 2863	24	24	24	24
Type Classifications	C 578	Type X	Type IV	Type VI	Type VII

(1) Properties shown are representative values for 1" thick material based upon most recent product quality audit data. (2) Modified as required to meet ASTM C 578. (3) Thermal resistance (R) – (hr x ft² x °F/Btu) – of a 1" thickness 5.0 (at 75°F mean temperature), 5.4 (at 40°F mean temperature). (4) Value at yield or 10%, whichever occurs first. (5) Value at yield or 5%, whichever occurs first. (6) Data ranges from 0.00 to value shown, due to the level of precision of the test method. (7) Actual water vapor permeance data decreases as thickness increases. (8) Data ranges from 0.0 to value shown. (9) These laboratory tests are not intended to describe the hazard presented by this material under actual fire conditions. (10) Data from Underwriters Laboratories, Inc. Classified. See Classification Certificate U-197. (11) ASTM E 84 is thickness-dependent therefore a range of values is given.