



FOAMULAR®

Energy-Saving, Moisture Resistant Extruded Polystyrene Rigid Insulation

**SUSTAINABLE
BUILDING**
WITH FOAMULAR® XPS
THE SINGLE LARGEST POINT
SCORING OPPORTUNITY IN LEED®+

TOP TO BOTTOM
WE'VE GOT YOU COVERED



Demand for proven commercial building insulation systems is increasing. At Owens Corning, we deliver advanced insulation solutions and leading-edge commercial design and construction tools designed to help our customers maximize their investment — today, tomorrow and for future generations.

Our mission — to deliver value capable of driving our customers' business growth — is achieved through understanding how to maximize commercial building capital investment through building protection systems including insulation.

Supported by our team of building science experts, our complete line of FOAMULAR® Extruded Polystyrene Rigid Insulation products provide advanced commercial building solutions. From below grade and under slab to exterior walls and roof applications, our insulation products deliver:

- Long-term thermal performance minimum of R-5 per inch
- Exceptional moisture resistance
- Compressive strength that ranges from 20 psi to 100 psi

www.owenscorning.ca



FOAMULAR®
Energy-Saving, Moisture Resistant Extruded Polystyrene Rigid Insulation

TRUST

Delivering insulation performance you can trust



COVERED

Top to bottom, we've got you covered



GREEN

FOAMULAR® Insulation is perfect for green roofing



PERFORM

FOAMULAR® Insulation is tested, proven and ready to perform



Cover photo by Bob Dolmetsch





DELIVERING INSULATION PERFORMANCE YOU CAN TRUST



Owens Corning World Headquarters
Owens Corning is a leader in delivering energy-saving products and services.

FOAMULAR® Extruded Polystyrene Insulation maintains its thermal resistance over time. Its exceptional moisture resistance and high compressive strength make it an excellent choice for an energy-efficient and durable building envelope.

LONG-TERM THERMAL RESISTANCE (LTTR)

Regardless of the manufacturing process, all foam insulations have a higher thermal resistance when first manufactured, which drops for a period of time and then levels off over the life of the product.

The following table lists the minimum LTTR values for FOAMULAR® Extruded Polystyrene Rigid Insulation when tested according to CAN/ULC S770-03.

Thickness		Aged Thermal Resistance		OC recommended aged thermal resistance (design)	
in	mm	R/in	RSI/25 mm	R/in	RSI/25 mm
1	25	5.0	0.88	5.0	0.88
2	51	5.3	0.93	5.0	0.88
3	76	5.4	0.95	5.0	0.88

Note:

In accordance with the revisions to CAN/ULC S770, the following information on bias is given: The bias of this test method has not been determined. Some preliminary data reported by the industry are showing that in certain cases, the bias could be an over prediction.

Owens Corning's historical data recommends that an R-value of 5 per inch (RSI 0.88/25 mm) be used for all design purposes.

MOISTURE PROTECTION

Water — an ever present element in building construction — gets in by design in applications like rain screen systems or as a result of natural aging, design or construction flaws. Almost all construction applications, at some time, must resist water in the form of a liquid, vapour or solid ice.



Not all insulations, however, provide adequate water resistance necessary to meet real world construction applications. Insulation that absorbs water loses R-value and other important physical properties resulting in costly customer complaints, call-backs and damaged reputations.

Significant differences in water absorption occur when different test methods are used to measure the same property. Compared with other types of foam insulation, FOAMULAR® Insulation delivers the lowest water absorption via its moisture-resistant, uniform hydrophobic polymer cells with continuous walls.

FOAMULAR® Board Resists Moisture

Extruded Polystyrene Insulation is a closed cell, homogeneous board structure recognized for its proven durability and ability to resist moisture.

EPS Board Can Absorb Moisture

Expanded Polystyrene (EPS) insulation allows water and air to penetrate its board structure through air spaces between beads, resulting in lower R-value, greater moisture penetration and less resistance to degradation from freeze/thaw cycles.

ISO Board Can Allow Moisture Penetration

Polyisocyanurate (ISO) insulation — comprised of an irregular, brittle, open-cell structure with an inherent hydrophilic tendency—can allow water penetration.

COMPRESSIVE STRENGTH

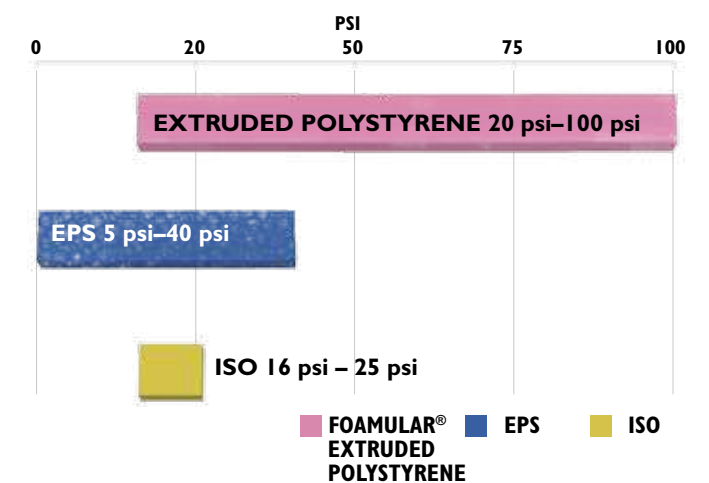
The compressive strength of FOAMULAR® Insulation, which ranges from 20 psi to 100 psi, allows designers to select an appropriate strength that may not be available with other types of foam insulation.



FOAMULAR® Insulation accepts its design load with little deformation and is available in a wide variety of strengths suitable for many applications.

Unlike brittle ISO products, which tend to fracture and crush at load limits, FOAMULAR® Insulation holds its strength.

Compressive Strength Comparison Chart

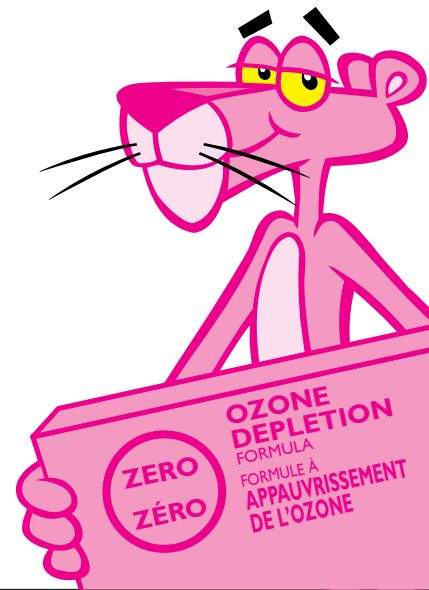


PERFORMANCE TOOLS

The commercial and residential building environment is changing. The design/build industry has a new set of drivers created as a result of:

- Escalating energy costs
- Growing evidence that energy efficient buildings are starting to command a premium price
- Changing energy codes which mandate higher levels of insulation and continuous insulation over the wall structure
- The demand for more sustainable products

At Owens Corning, not only do we guarantee proven performance, we provide the technical expertise and assistance to propose and evaluate efficient specification/construction options, with pay-back analysis and strengthen sustainable product recommendations. Consult your local technical representative for expert advice and to schedule lunch-and-learn training sessions.



STANDARD SIZES FOAMULAR® EXTRUDED POLYSTYRENE RIGID INSULATION							FOAMULAR® HIGH DENSITY SERIES			
STANDARD SIZES ⁽¹⁾	FOAMULAR® INSULPINK®	FOAMULAR® CEL-LOK® SYSTEM	FOAMULAR® CODEBORD®	FOAMULAR® C-200	FOAMULAR® THERMAPINK®	FOAMULAR® C-300 ⁽²⁾	400	600	1000	350 ⁽²⁾
1 x 24 x 96" 25 x 610 x 2438 mm		X	X	X		X	X	X		
1½ x 24 x 96" 38 x 610 x 2438 mm		X	X	X		X	X	X	X	X
2 x 24 x 96" 51 x 610 x 2438 mm	X	X	X	X	X	X	X	X	X	X
2½ x 24 x 96" 64 x 610 x 2438 mm	X			X		X				X
3 x 24 x 96" 76 x 610 x 2438 mm				X	X	X	X	X		X
3.25 x 24 x 96" 83 x 610 x 2438 mm	X									
3½ x 24 x 96" 89 x 610 x 2438 mm				X		X				
4 x 24 x 96" 102 x 610 x 2438 mm				X	X	X	X			X
1 x 48 x 96 or 108" 25 x 1220 x 2438 or 2743 mm			X							
1½ x 48 x 96 or 108" 38 x 1220 x 2438 or 2743 mm			X							
2 x 48 x 96 or 108" 51 x 1220 x 2438 or 2743 mm			X							
CAN/ULC-S701 ⁽³⁾	Type 3	Type 3	Type 3	Type 3	Type 3	Type 4	Type 4	Type 4	Type 4	Type 4
CCMC Evaluation No.	I3431-L	I3431-L	I3431-L	I3431-L	I3431-L	I3430-L				I3430-L

(1) Enquiries on non-standard sizes are welcome (2) Standard sizes for Foamular® 350 are thickness by 24" x 48" (3) Replaces CAN/CGSB-51.20-M

PRODUCT SELECTION GUIDE FOAMULAR® EXTRUDED POLYSTYRENE RIGID INSULATION					
PRODUCT	COMPRESSIVE STRENGTH	TYPE PER CAN/ULC S701	SCS CERTIFIED	GG CERTIFIED	CONSTRUCTION APPLICATION
WALLS					
FOAMULAR® C-200	20 lbs/in ²	3	20%	X	Masonry walls, steel stud walls, wood stud walls
FOAMULAR® CodeBord®	20 lbs/in ²	3	20%	X	
FOAMULAR® Cel-Lok® System	20 lbs/in ²	3	20%	X	Interior of concrete or masonry foundation walls
FOAMULAR® C-300	30 lbs/in ²	4	20%	X	Perimeter of concrete or masonry foundation walls
FOAMULAR® INSULPINK®	20 lbs/in ²	3	20%	X	Interior of concrete or masonry or exterior walls to attach siding
ROOFS					
FOAMULAR® 350	35 lbs/in ²	4	20%	X	Inverted roofs, terraces
FOAMULAR® THERMAPINK®	20 lbs/in ²	3	20%	X	Conventional roofs
HIGH DENSITY SERIES					
FOAMULAR® 400	40 lbs/in ²	4	20%	X	High compressive strength, under roads, concrete slabs
FOAMULAR® 600	60 lbs/in ²	4	20%	X	
FOAMULAR® 1000	100 lbs/in ²	4	20%	X	

**INSULATION PHYSICAL PROPERTIES
FOAMULAR® EXTRUDED POLYSTYRENE RIGID INSULATION**

HIGH DENSITY SERIES

PROPERTIES	ASTM Method	FOAMULAR® INSULPINK®	FOAMULAR® Cel-Lok® System ⁽²⁾	FOAMULAR® CodeBord®	FOAMULAR® C-200 ⁽²⁾	FOAMULAR® THERMAPINK®	FOAMULAR® C-300	FOAMULAR® 400	FOAMULAR® 600	FOAMULAR® 1000	FOAMULAR® 350
THERMAL RESISTANCE ⁽¹⁾ (ft ² hr °F/BTU) (m ² °C/W)	C518 C177	5.0 0.88	5.0 0.88	5.0 0.88	5.0 0.88	5.0 0.88	5.0 0.88	5.0 0.88	5.0 0.88	5.0 0.88	5.0 0.88
COMPRESSIVE STRENGTH, min. ⁽³⁾ (psi) (kPa)	D1621	20 140	20 140	20 140	20 140	20 140	30 210	40 275	60 415	100 690	35 240
COMPRESSIVE MODULUS: (psi) (kPa)							1350 9310	1100 7584	1520 10480	3700 ⁽⁴⁾ 25510 ⁽⁴⁾	
WATER ABSORPTION, max. (% by volume)	D2842	0.70	0.70	0.70	0.70	0.70	0.70	0.60	0.55	0.50	0.70
WATER VAPOUR PERMEANCE, max. (perms) (ng/Pa.s.m ²)	E96	0.85 45	0.85 45	0.85 45	0.85 45	0.85 45	0.60 35	- -	- -	- -	0.60 35
WATER CAPILLARITY	-	None	None	None	None	None	None	None	None	None	None
WATER AFFINITY	-	Hydrophobic	Hydrophobic	Hydrophobic	Hydrophobic	Hydrophobic	Hydrophobic	Hydrophobic	Hydrophobic	Hydrophobic	Hydrophobic
FLEXURAL STRENGTH, typical (psi) (kPa)	C203	44 300	44 300	44 300	44 300	44 300	60 415	75 517	105 725	150 1035	60 415
LINEAR COEFFICIENT OF THERMAL EXPANSION (in/in/°F) (mm/mm/°C)	D696	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵	2.7 X 10 ⁻⁵ 4.9 X 10 ⁻⁵
DIMENSIONAL STABILITY, max. (% linear change)	D2126	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
MAXIMUM OPERATING TEMP. (°F) (°C)	- -	165 74	165 74	165 74	165 74	165 74	165 74	165 74	165 74	165 74	165 74
LIMITING OXYGEN INDEX	(min.) D2863	24	24	24	24	24	24	24	24	24	24
Thermal Resistance: ft ² hr °F/BTU; (m ² °C/W)											
@75 °F (24° Celcius)		5.0 (0.88)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)
@40 °F (4.4° Celcius)		5.4 (0.95)	5.4 (0.95)	5.4 (0.95)	5.4 (0.95)	5.4 (0.95)	5.4 (0.95)	5.4 (0.95)	5.4 (0.95)	5.4 (0.95)	5.4 (0.95)
@25 °F (-4° Celcius)		5.6 (0.99)	5.6 (0.99)	5.6 (0.99)	5.6 (0.99)	5.6 (0.99)	5.6 (0.99)	5.6 (0.99)	5.6 (0.99)	5.6 (0.99)	5.6 (0.99)

(1) Thermal resistance for 1 inch (25 mm) thickness (2) C-200 and Cel-Lok® System have the same properties (3) At 10% deformation or yield (4) Value for 2" (50 mm) thickness

- Certified Performance – Owens Corning Canada, Inc. will provide test certification for published physical properties pertaining to FOAMULAR® Insulation products.
- Jobsite Handling – To protect FOAMULAR® Insulation and to prevent discoloration and/or surface deterioration caused by excessive exposure to direct sunlight, it is recommended that in exterior applications, the product be covered as soon as practicable.
- Vapour Retarders – Assemblies should be evaluated for effectiveness and location of vapour retarders to avoid condensation and subsequent damage to structures. Vapour retarders shall be chosen and applied in accordance to applicable Codes for desired assembly.

- Air and Water Infiltration – All air and water infiltration requirements for a designed assembly shall conform to applicable building codes.
- Flame Spread Classification – ULC flame spread classification of greater than 25 and less than 500 according to CAN/ULC-S102.2 (tunnel floor test).
- Warning: Combustible – FOAMULAR® Insulations are combustible and can be a fire hazard if improperly used or installed. Though they contain a flame retardant to inhibit ignition they will ignite if exposed to fire of sufficient intensity. Do not expose them to open flame or other ignition sources during shipping, handling, storage, installation or use.
- Interior Protection – When used in buildings for human occupancy, FOAMULAR® Insulation must be protected by a minimum

- 1/2" (12.7mm) thick gypsum board, or approved equal, covering surfaces exposed after installation. Boards must be mechanically fastened in place as prescribed by the applicable building code.
- Adhesives/Sealants – Some of these products contain solvents that attack polystyrene insulation. Consult manufacturer to verify the chemical compatibility of solvents/sealants with FOAMULAR® Insulation.
- Chemicals – FOAMULAR® Insulation has good chemical resistance to many acids, caustics, salts, cements and mortars and poor resistance to some hydrocarbons and a number of other petroleum derivatives. Be sure to check with the supplier of the item regarding chemical compatibility.

Notice: We trust the information given herein will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the user's consideration, investigation and verification. Please read all statements, recommendations or suggestions in conjunction with out conditions of sale which apply to all materials supplied by us. We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of our material is not in accordance with our current printed instructions or for other than their intended use. Our liability is expressed limited to replacement of defective goods. Any claim shall be deemed waived unless made to us in writing within thirty (30) days from the date when the basis for it was, or reasonably should have been, discovered.



TOP TO BOTTOM WE'VE GOT YOU COVERED



Owens Corning is the leader in developing high performance building envelopes.

Durability, reusability, moisture resistance and the ability to retain R-value in the presence of water enable FOAMULAR® Insulation to be used in a wide variety of building applications from roof insulation to below-grade use where the insulation will be in constant contact with moisture.

COVERED

TOP TO BOTTOM, WE'VE GOT YOU COVERED

Establishing the Right Foundation

On foundations, moisture resistant FOAMULAR® Insulation insulates while at the same time its durability protects waterproofing membranes from backfilling damage, putting one more obstacle in water's path (soil to foundation).

Going Under Slab

For use under slabs, in a variety of compressive strengths suitable for the lightest residential to the heaviest industrial floor loads, FOAMULAR® Insulation is durable enough to be walked on while placing slab reinforcing and concrete.

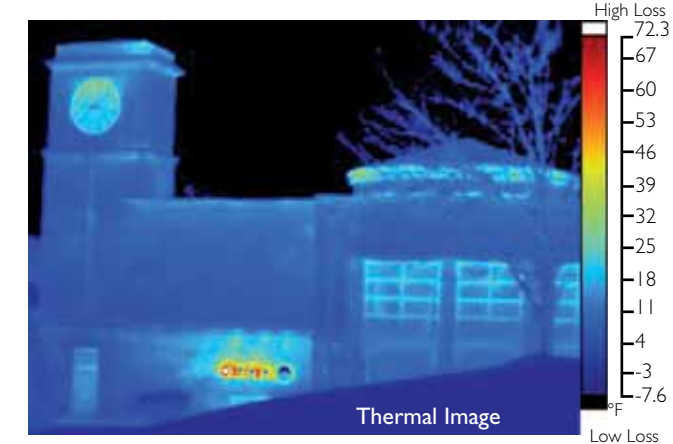
Insulating Below Grade

In below grade applications, FOAMULAR® Insulation's high resistance to water absorption makes it stand out as the best choice to protect against constant and relentless moisture threats present throughout a building's lifecycle.

Sheathing and Masonry Wall

FOAMULAR® sheathing and masonry wall insulation products are highly water resistant for cavity applications. They maintain their R-value over the life of the building and provide a "continuous insulation" layer to eliminate thermal bridges and heat loss through the structure.

Continuous Insulation



Continuous insulation reduces energy loss due to thermal bridging.

FOAMULAR® continuous insulation (ci), an important part of the prescriptive insulation packages specified in ASHRAE 90.1, is intended to minimize the effects of thermal bridging through steel studs or solid masonry construction.

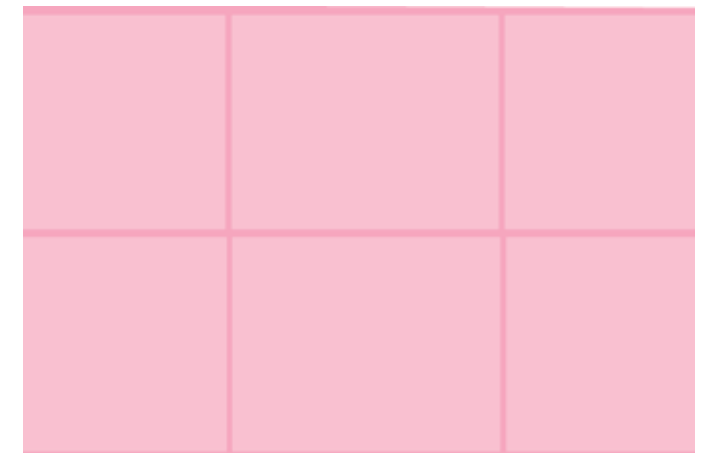
The absence of red thermal imaging — a sign of heat loss — at wall studs in this steel stud and masonry veneer wall system (pictured above), prove the clear advantage of continuous insulation. Continuous wall insulation has become a critical part of energy codes and associated compliant designs throughout North America due to ever rising energy costs.

Versatile Configurations

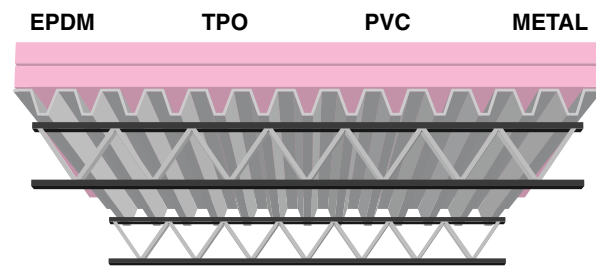
FOAMULAR® Insulation is available in a range of thicknesses (1 to 4 inches; 25 mm–102 mm). The boards are available in 2 ft (600 mm) x 8 ft (2400 mm) and 4 ft (1200 mm) x 8 ft (2400 mm) or 9 ft (2700 mm) with butt or ship lap edges.

ROOFING

FOAMULAR® 350 Insulation



- Used in Protected Membrane Roof (PMR) assemblies.
- May be used in conjunction with all popular membranes including single-ply, modified, and built up PMR assemblies.
- Reliable long term thermal performance for consistent energy savings.
- High compressive strength provides excellent resistance to damage from normal roof traffic, even in areas under wood decks, pavers, and planters.
- High resistance to moisture absorption means the insulation will not degrade in wet conditions even after repeated freeze-thaw cycles.



FOAMULAR® THERMAPINK® Extruded Polystyrene Rigid Insulation

- Used in conventional roofing assemblies.
- Very high moisture resistance for years of excellent insulation performance. Can be reused, instead of discarded, when replacing a worn out roof.
- Initial R-value of 5 per inch and negligible drift of R-value; high performance remains steady for years.
- Acceptable for direct application to steel deck of roof assemblies meeting the requirements of the National Building Code (3.1.14.2.).
- Ship lap edges reduce heat loss compared to plain-edge foam board panels. Generally, use of one layer of foam board with ship lap edges saves installation time.

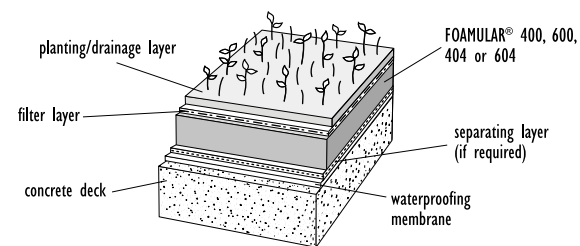
RE-ROOFING

When today's roof reaches the end of its useful life, it must be replaced. Install FOAMULAR® Insulation today and avoid replacement costs tomorrow. Unlike other roofing insulation, FOAMULAR® Insulation's high moisture resistance supports reuse, saving tear off labour, disposal fees and environmental costs.

OTHER APPLICATIONS

Durability, reusability, superior water resistance properties and the ability to retain R-value in the presence of water enable FOAMULAR® Insulation to be used as frost protection in many structural applications, such as under foundations, roadways and runways, as lightweight fill in geotechnical applications, and as concrete forming aids.

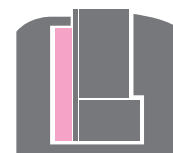
Vegetated System



Protecting Shallow Foundations

When used as frost protection FOAMULAR® insulates the ground, slowing the rate of heat loss and delaying the onset of freezing. Properly designed and installed, FOAMULAR® Insulation can prevent sub-grade freezing altogether around protected foundations making it a suitable system for building shallow foundations (foundations above the frost line). See FOAMULAR® High Density Extruded Polystyrene Rigid Insulation brochure for details.

Insulating Paved Surfaces



Used below pavement surfaces, FOAMULAR® Insulation increases the time needed for the sub-grade to freeze. It also delays thawing, thus reducing freeze-thaw cycles and reducing stress on paved surfaces.

FOAMULAR® High Density Insulation meets the requirements of MTQ standard 14301, Types A & B for insulated road construction.

Protecting Shallow Utilities & Tunnels



When sub-grade conditions prevent deep burial of utility lines that are subject to freezing, FOAMULAR® Insulation can be used to thermally protect utilities in shallow-cover situations. FOAMULAR®

Insulation's durability and R-value retention in the presence of ground moisture make it ideal for below grade insulation projects.

Protecting Waterproofing



FOAMULAR® Insulation is used to protect below grade waterproofing, even when insulating qualities are not needed. It is durable and light compared to asphalt board or other types of protective board often used.

Preserving Void Spaces



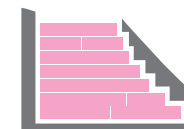
Some construction forming systems need void space inside the form. Durable and reusable FOAMULAR® Insulation can be used to preserve such void spaces. It can be used during the concrete forming process to preserve a void space under grade beam foundations installed over expansive soils.



FOAMULAR® Insulation can also be used inside traditional concrete forms to create the voids needed to form brick ledges.

In grade beams, the foam can be left in place. In brick ledge forming — after the concrete is placed and the forms removed — reusable FOAMULAR® Insulation can be removed, leaving the formed ledge needed to support placement of brick veneer.

GEOTECHNICAL APPLICATIONS



Durable, water resistant FOAMULAR® Insulation is often used as lightweight fill for building and road construction, or as a lightweight replacement for soil. FOAMULAR® can be stacked to create contours and landscape features on vegetated plaza decks. It can also be used to replace the overburden on soft and unstable soil, for ground stabilization, pavement or sub-slab insulation.





FOAMULAR® INSULATION IS PERFECT FOR GREEN ROOFING



FOAMULAR® Insulation makes possible the design of energy efficient building envelopes that can achieve LEED® energy efficiency goals. Durable and water resistant, extruded polystyrene insulates even when buried under wet soil and enables the creation of vegetated roofs. FOAMULAR® Insulation is the only extruded polystyrene insulation that is certified for both recycled content and indoor air quality.

Photo: Antonio Vernon.

GREEN

SUSTAINABLE BUILDING

FOAMULAR® Insulation is durable and recyclable with a history of removal and reuse, eliminating hauling and landfill fees and the associated environmental impact.

With FOAMULAR® Insulation, new insulation does not need to be manufactured, shipped and installed, unlike other types of foam insulation that don't have the water resistance and durability necessary to be removed and reused.

THIRD PARTY CERTIFICATION



RECYCLED CONTENT

FOAMULAR® Insulation is SCS certified for its recycled content of at least 20%.¹ It helps make possible the design of energy efficient building envelopes, and it contributes to the total recycled content of projects.

Production Facts

- 100% scrap reclamation
- Zero Landfill waste



AIR QUALITY

GREENGUARD Indoor Air Quality Certified®

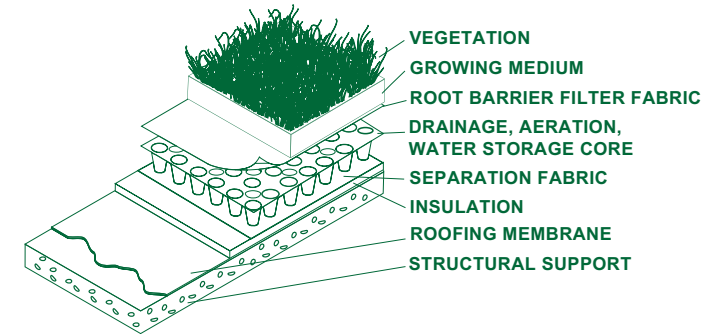
FOAMULAR® Insulation is the only extruded polystyrene insulation product certified by the GREENGUARD Environmental Institute under the GREENGUARD Standard for Low Emitting Products.

60% of the companies that submit products for GREENGUARD Children & Schools certification do not get certified.

FOAMULAR® ENVIRONMENTAL BENEFITS

- Manufactured without CFC or HCFCs and is compliant to the Montreal Protocol (2010).
- Zero ozone depletion.
- No VOCs (volatile organic compounds).
- 70% lower global warming potential.

RAISING THE ROOF ON GREEN STANDARDS



FOAMULAR® Insulation supports energy efficient building design, enabling innovative roof surfaces that help manage storm water run-off and contribute to the total recycled content of projects.

Durable and water resistant, FOAMULAR® Insulation works even when buried under wet soil, and enables the creation of vegetated roofs, a critical component of sustainable design.

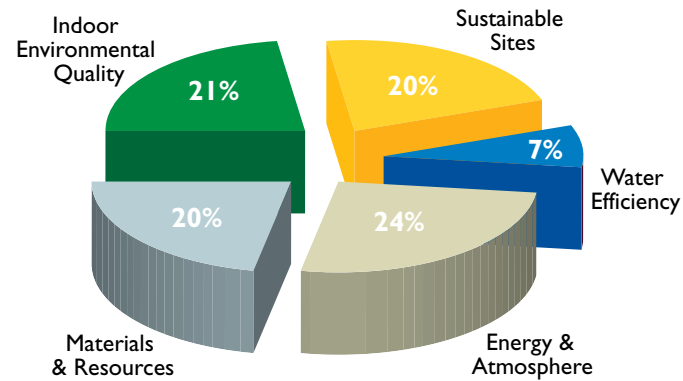
1. Scientific Certification Systems— independent, third-party and certification service for recycled content—certified FOAMULAR® Insulation to have at least 20% pre-consumer recycled polystyrene based on a weighted 3-plant average. See www.scs-certified.com



PERFECT FOR GREEN BUILDINGS

The single largest point scoring opportunity in the LEED® Green Building Rating System is in levels of energy performance above that prescribed in ASHRAE 90.1 or Model National Energy Code of Canada for Buildings 1997. FOAMULAR® continuous insulation sheathing over steel studs, or in masonry walls, enables buildings to achieve LEED® energy efficiency design goals and standards.

FOAMULAR® Insulation Can Help Achieve Valuable LEED® Credits



Within LEED®, there are five major categories where various points can be attained for aspects of the building project. And, within each category are individual point credits with some categories and/or individual point credits having prerequisite requirements that must be met before points can be taken for the specific category or individual credit.

Owens Corning Insulation Contribution to the LEED® Canada Requirements

Note: No single material can obtain points for LEED® Certification credits because each category depends on the combined materials and their relation scaled to the total cost in dollars of all materials.

LEED® Canada Credit Category	LEED® Canada Requirement	Insulation Contribution	Additional Comments
EA (Energy & Atmosphere) Credit 1: Optimize Energy Performance MR (Materials & Resources) Credits 4.1 & 4.2 for recycled materials content	1–10 points dependent on % of reduction energy use based on MNECB-1997 or ASHRAE 90.1-1999. 1 point 7.5% or 2 points 15% (post-consumer % + 1/2 post-industrial % aggregate weight average recycled contents) for insulation and all other construction materials.	Insulation contributes significantly to the reduction of a building's energy demand. Global contribution depends on the design RSI value. Glass batts (Candiac & Edmonton 70+% p-c, 0% p-i; Toronto 55+% p-c, 15% p-i). Glass bds (Newark 26+% p-i, 9% p-c) Foam (20+% p-i, 0% p-c). (Abbreviations: p-c = post-consumer; p-i = post-industrial or pre-consumer)	Project team responsible for the energy analysis concerning the global energy efficiency of the building (e.g. LEED® standard form letter). Recycled content certifications by Scientific Certification Systems for foam (>20%) and for glass fibre (>40% North American average; minimum 70% average for Canadian manufacturing plants).
MR (Materials and Resources) Credits 5.1 & 5.2 for locally or regionally manufactured materials	1–2 points for products with 80% of mass being manufactured and installed regionally within 800 km radius of project by truck or within 2400 km by railcar for total representing 10% or 20% of all materials.	Products from 3 Canadian glass plants and 1 Canadian foam plant may contribute to category points if installed locally.	Verify with local sales representative to determine the product's origin.
ID (Innovation & Design Process) Credit 1	1–4 points dependent on effectiveness of innovation being applied.	The acoustical performance of glass fibre insulation is effective in reducing noise transfer through building assemblies.	Credit applicable only when glass fibre insulation is used in acoustical applications.



FOAMULAR® INSULATION IS TESTED, PROVEN AND READY TO PERFORM



LCBO, Barrie, Ontario. Products used: FOAMULAR® C-300 and R-28 PINK FIBERGLAS® Insulation batts

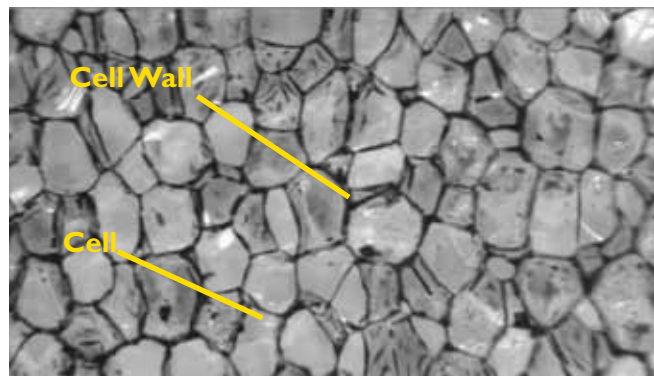
Rigid board foam insulation must be strong, moisture resistant and maintain its R-value for the life of the building in conditions that are sometimes hostile. When comparing the ability of foam insulation to do these things it is helpful to know the basic types of foam and their properties.

COMPARING RIGID FOAM INSULATIONS

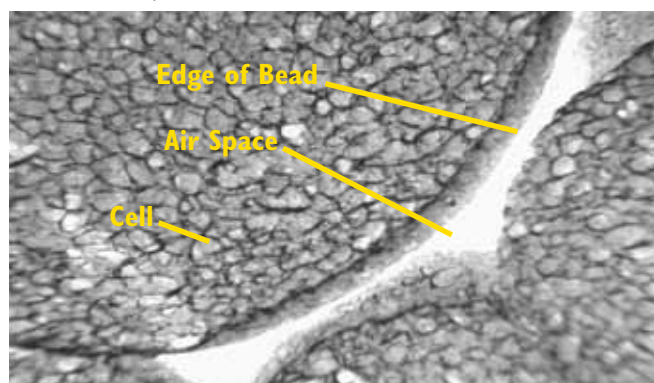
Rigid board foam plastic insulation must be strong, moisture resistant and maintain its R-value for the life of the building in conditions that are sometimes unfavourable.

The three types of rigid foam insulation are very different:

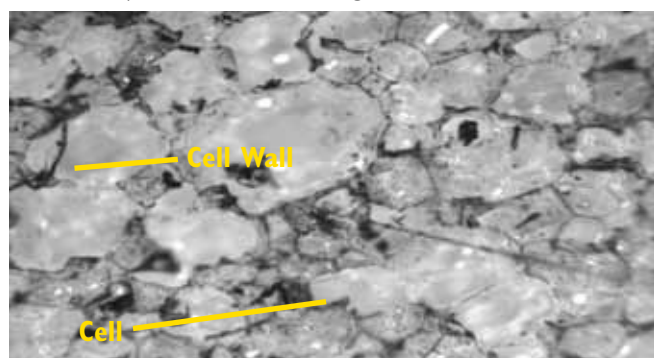
- **FOAMULAR® Extruded Polystyrene (XPS) Rigid Insulation** is a thermoplastic polystyrene board made in an extrusion process resulting in a durable homogenous cross-section.



- **Expanded Polystyrene (EPS)** is a collection of thermoplastic beads pressed together in a mold under heat and pressure.



- **ISO or Polyiso** is a thermoset plastic manufactured in a continuous lamination process using liquid raw material that expands between facing materials.



Extruded Polystyrene (XPS), which includes FOAMULAR® Insulation, does not have individual beads like EPS that can fall apart. It is not brittle like ISO, and it does not depend on facers for certain properties as ISO does. Facers may de-laminate and cause installation and durability problems.

Expanded Polystyrene (EPS) insulation has air spaces between its beads, allowing water and air to penetrate the board structure, which lowers the R-value of the board.

Polyiso (ISO) insulation has an irregular, more open cell structure that, combined with the material's hydrophilic chemical tendency, results in higher water absorption compared to FOAMULAR® Insulation.

Due to their high levels of water absorption, both polyiso and EPS are not reusable when they become wet due to roofs leaks.

All foam plastic insulations are combustible. Although they do contain a flame-retardant additive to inhibit ignition from small fire sources, if exposed to fire of sufficient heat and intensity, FOAMULAR® insulation and other foam plastic insulations will ignite. Do not expose these products to open flame during shipping, storage, installation or use. A code compliant thermal barrier must be used to separate foam plastic insulation from the building interior. Consult local applicable Building Code for specific requirements and acceptable thermal barriers.

Comparing Test Methods



Published properties for foam plastic insulations are not always directly comparable. Different test methods may be used to measure the same properties for different types of insulation. To fully understand how the materials compare, ask questions. If different methods are used to measure performance, they should be identified because not doing so may conceal significant differences in properties or performance. Materials must be tested in accordance to the test methods defined in the Canadian material standard CAN/ULC-S701 and referenced in the applicable Building Code.



**FOAMULAR® INSULATION
MAY BE THE PERFECT CHOICE
PERFECT**



For decades, countless building designers and engineers have found FOAMULAR® Extruded Polystyrene Insulation to be the perfect choice for a myriad of applications. FOAMULAR® Insulation has a long-term stable thermal resistance of R-5 per inch, measured after real time aging. It has a high resistance to moisture because it is closed cell and composed of hydrophobic polystyrene polymer, achieving its resistance to water without relying on facers. FOAMULAR® Insulation has a wide range of compressive strengths and it enables sustainable building design concepts. FOAMULAR® is an air barrier material and can be used as the principal component in an exterior air barrier system. Seal joints and penetrations around openings with compatible air barrier sealant to achieve continuity of the air barrier plane. For details refer to data sheet FOAMULAR® C-200/CodeBord™ Air Barrier System 07 27 23.13 OCC .

Choose FOAMULAR® Insulation for your current and future projects.

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Consult our website at www.owenscorning.ca
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