Owners and managers of facilities are constantly faced with the need to optimize the financial return from their investments, including all aspects of the life Cycle. Management of critical components of the facility, such as the roof. The selection of the right roof insulation can make the difference between a rolling assembly which needs constant repair and one which performs consistently throughout its normal life cycle.

**FORMULAR® 200 Extruded Poly Styrene Insulation** can provide key solutions to the four critical factors in designing roof longevity:

**MOISTURE RESISTANCE**

Because of its closed cell structure, FORMULAR® 200 Insulation resists moisture uptake. Moisture can enter the roof assembly as a result of high humidity within the building, or from penetration of the roof membrane. The result can be disastrous with insulations which take on moisture — thus reducing structural integrity, degradation of thermal performance, even rot or decay of the roof assembly as a result of high humidity within the building. Insulation resists moisture uptake. Moisture can enter the assembly which needs constant repair and one which performs consistently throughout its normal life cycle.

**HIGH COMPRESSIVE STRENGTH**

FORMULAR 200 Insulation is produced with a compressive strength of 20 psi — higher than some other foamed plastics — often described as “fragile” — or discriminant flex insulations. More importantly, FORMULAR 200 Insulation maintains this high strength for the life of your roof. The result is high resistance to damage from normal roof traffic... during installation and service.

Because FORMULAR 200 Insulation is resistant to moisture uptake, its strength will not diminish in high humidity conditions or even membrane leak situations.

FORMULAR 200 Insulation is a monolithic insulation board and does not require a “facer” skin to give it structural strength. As a result, it is not subject to problems which could arise due to facer deterioration.

**ECONOMY**

FORMULAR 200 Insulation can be used successfully in most conventional assemblies to allow you to design your roof with a budget in mind... without worrying about the concerns discussed above.

**SELECTED VARIATIONS OF CONVENTIONAL ASSEMBLIES**

**LOOSE Laid and Ballasted**

1. FORMULAR 200 Roof Insulation is loose laid on the substrate. The boards must be firmly butted together, with the joints staggered.
2. The single ply membrane shall be applied in accordance with the manufacturer’s specifications. If the membrane is a PVC membrane, a separation sheet must be applied between the insulation and the membrane.
3. Ballast is applied over the membrane at a rate of 12 to 18 lb/ft² (56 to 82 kg/m²) of roof surface. The balls shall be round washed stone from 3/4” to 3 1/2” (19 mm to 38 mm) in diameter, butted together, with the joints staggered. *NOTE: Ballasted roofing assemblies must be mechanically attached to the substrate.*

**VAPOUR RETARDERS**

1. A layer of FORMULAR 350 Insulation is loose laid on top of the membrane and is covered with an approved overlay board. The two components may be secured to the substrate with mechanical fasteners or the overlay board may be mopped with asphalt and capped onto the FORMULAR® 200 Insulation. The slope limit for stone ballasted roofs is 1:6. Ballast shall be round washed stone between 3/4” and 1 1/2” (19 mm and 38 mm) in diameter.

**BITUMINOUS MEMBRANE ASSEMBLIES**

1. In bituminous membrane conventional assemblies, FORMULAR 200 Roof Insulation must be covered with an approved overlay board. The two components may be secured to the substrate with mechanical fasteners or the overlay board may be mopped with asphalt and capped onto the FORMULAR® 200 Insulation. The slope limit for ballasted roofs is 1:4. If a proprietary vapour retarder is to be applied with an adhesive, consult the manufacturer’s specifications to ensure that these materials are compatible with FORMULAR® 200 Insulation.

2. The membrane is then installed according to the manufacturer’s specifications. If asphalt is used to apply the membrane, the layers of the overlay board shall be taped.

**MECHANICALLY FASTENED SINGLE PLY ASSEMBLY**

1. FORMULAR 200 Roof Insulation shall be mechanically attached to the substrate.
2. The single-ply membrane shall be installed as per the manufacturer’s specifications.

**NOTE:** A separation sheet must be installed between the insulation and any PVC membrane.

**MODIFIED CONVENTIONAL/PVIR LITE ASSEMBLY**

1. FORMULAR 200 Roof Insulation is mechanically attached to the substrate.
2. The selected membrane is applied as in a normal conventional assembly.
3. A layer of FORMULAR 200 Insulation is loose laid on top of the membrane and is covered with an approved overlay of FabriPave® V.I.E. filter fabric.
4. Ballast is applied on top of the FabriPave® V.I.E. at a rate of 10 to 15 lb/ft² (50 to 75 kg/m²) of roof surface. The balls shall be round washed stone from 3/4” to 1 1/2” (19 mm to 38 mm) in diameter.
DIMENSIONS

FOAMULAR 200 Insulation is provided in:
24” x 48” (600mm x 1200mm)
Thicknesses:
1”, 1.5”, 2”, 2.5”, 3”, and 4”
(25mm, 38mm, 50mm, 63mm, 76mm, and 100mm)

ADVANTAGES

◊ Reliable R-value for consistent energy savings.
◊ Lightweight and easy to handle during application.
◊ High compressive strength provides excellent resistance to damage from normal roof traffic.
◊ High resistance to moisture absorption from internal or external sources means the insulation will not degrade or disintegrate — as a result there is no significant loss of thermal performance or physical integrity should moisture penetrate into the assembly.
◊ Unique manufacturing process ensures reliable R-value and consistency of the product’s physical properties.

APPLICATIONS

FOAMULAR 200 Extruded Polystyrene Roof Insulation is ideal for use in a wide variety of conventional roofing assemblies in:
• New Roofing Assemblies
• Reroofing Assemblies
• Recovery and Retrofit Assemblies

◊ FOAMULAR 200 Insulation may be used on all types of roof decks and with most popular roofing membranes including single-ply modified bitumen, and built-up conventional systems. The implementation of overlay boards, thermal barriers, and separation sheets are subject to applicable codes, regulations, and manufacturer’s specifications in your region.

SOLUTIONS

SMART SOLUTIONS

Technical suggestions on the use of FOAMULAR 200 Insulation for use in new construction, remodeling or thermal upgrading is available by contacting a local OC CELFORTEC INC. representative or by calling 1-800-387-0303.

Technical advice is available on other CELFORT® Roof, Wall and High Density Insulation products OC CELFORTEC INC. “Smart Solutions” — technical tips on improving standards for the design, construction and maintenance of roofing systems — is available without cost from your local OC CELFORTEC INC. representative.

SMART SOLUTIONS

In an ongoing effort to develop new solutions to roofing concerns OC CELFORTEC INC. has undertaken the “Smart Solutions” Program. Our technical service group will work with outsourced building science consultants to present ideas on a regular basis through our technical publication “Smart Solutions”.

FOAMULAR 200 INSULATION PHYSICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>60 lbs/ft³</td>
<td></td>
</tr>
<tr>
<td>Compressive strength (10% deflection)</td>
<td>300 psf</td>
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</tr>
<tr>
<td>Water Sorption Permeance</td>
<td>0.96</td>
<td>ft³/ft²-h</td>
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<tr>
<td>Thermal Conductivity</td>
<td>0.041</td>
<td>Btu/ft²-h-ISF</td>
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<tr>
<td>Linear Coefficient of Thermal Expansion</td>
<td>3.3 x 10⁻⁵</td>
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<tr>
<td>Dimensional Stability, 80% Linear Change</td>
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<tr>
<td>Water Vapour Permeance</td>
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<tr>
<td>Water Absorption, max. (% by volume)</td>
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</tr>
<tr>
<td>Minimum Operating Temperature</td>
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<td>°F</td>
</tr>
</tbody>
</table>


QUARTERLY TIPS

TECHNICAL SERVICES

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