**DuPont™ Styrofoam™ Brand Highload 40, 60 and 100 XPS Foam Insulation**

Tough, Versatile Insulation for Commercial High-Load, Low-Temp and Geotechnical Applications

**FEATURES/BENEFITS**

**Description**

DuPont™ Styrofoam™ Brand Highload Extruded Polystyrene (XPS) Foam Insulation* is a closed-cell foam insulation designed for use in low-temperature (freezer floor) applications, highways, airport runways, bridge abutments, parking decks, utility lines, ice rinks and plaza decks.

Available in compressive strengths of 40, 60 and 100 psi (275, 415 and 690 kPa), Styrofoam™ Brand Highload Insulation features exceptional moisture resistance and R-value** retention. All three Styrofoam™ Brand Highload products resist compressive creep and fatigue, delivering long-term compressive strength.

Like all Styrofoam™ Brand insulation products, Styrofoam™ Brand Highload 40, 60 and 100 are durable, versatile and reusable – making them a preferred choice for a variety of high-load applications.

**Ease of Use**

Styrofoam™ Brand Highload Insulation comes in three different compressive strengths to fit any application. Styrofoam™ Brand Highload:

- Provides superior resistance to water absorption, water vapor transmission and freeze thaw cycling
- Can be used in low-temperature, geotechnical, high-load commercial and other in-ground applications
- Delivers long-term compressive strength in high-load applications
- Features exceptional R-value retention
- Resists compressive creep and fatigue

**Sustainable Solutions**

Styrofoam™ Brand Highload Insulation uses BluEdge™ technology. It is hydrochlorofluorocarbon (HCFC) free with zero ozone depletion potential and is reusable in many applications.

**PROPERTIES**

Styrofoam™ Brand Highload Insulation products exhibit the typical physical properties indicated in Tables 1 and 2 when tested as represented. Review all instructions and (Material) Safety Data Sheet ((M)SDS) before use. Please contact DuPont at 1-866-583-2583 when additional guidance is required for writing specifications that include this product.

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* Styrofoam™ Brand Highload Extruded Polystyrene Foam Insulation is a former product of The Dow Chemical Company.
** R means resistance to heat flow. The higher the R-value or RSI, the greater the insulating power.
### TABLE 1: U.S. Typical Physical Properties of Styrofoam™ Brand Highload 40, 60 and 100 XPS Foam Insulation

<table>
<thead>
<tr>
<th>Property and Test Method</th>
<th>Highload 40</th>
<th>Highload 60</th>
<th>Highload 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Resistance, per inch, ASTM C518, C177, @ 75°F mean temp., ft·h·°F/Btu, R-value, min.</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Compressive Strength&lt;sup&gt;(1)&lt;/sup&gt;, ASTM D1621, psi, min.</td>
<td>40</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Water Absorption, ASTM C272, % by volume, max. (24 hr water immersion)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Water Vapor Permeance&lt;sup&gt;(2)&lt;/sup&gt;, ASTM E96, perms</td>
<td>1.0 (572ng/ Pa.s.m²)</td>
<td>0.8 (45.8ng/Pa.s.m²)</td>
<td>0.8 (45.8ng/Pa.s.m²)</td>
</tr>
<tr>
<td>Maximum Use Temperature, °F</td>
<td>165</td>
<td>165</td>
<td>165</td>
</tr>
<tr>
<td>Coefficient of Linear Thermal Expansion, ASTM D696, in/in·°F</td>
<td>3.5 x 10⁻⁵</td>
<td>3.5 x 10⁻⁵</td>
<td>3.5 x 10⁻⁵</td>
</tr>
<tr>
<td>Flexural Strength, ASTM C203, psi, min.</td>
<td>60</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>Compressive Modulus (typical), ASTM D 1621, psi (kPa)</td>
<td>1,400 (9,650)</td>
<td>2,200 (15,170)</td>
<td>3,700 (25,510)</td>
</tr>
<tr>
<td>Complies with ASTM C578, Type</td>
<td>VI</td>
<td>VII</td>
<td>V</td>
</tr>
</tbody>
</table>

<sup>(1)</sup>Vertical compressive strength is measured at 5 percent deformation or at yield, whichever occurs first. Since Styrofoam insulations are visco-elastic materials, adequate design safety factors should be used to prevent long-term creep. For static loads, 3:1 is suggested. For dynamic loads, call 1-866-583-2583 for safety factor recommendation.

<sup>(2)</sup>Water vapor permeance varies with product type and thickness. Values are based on the desiccant method and they apply to insulation 1” or greater in thickness.

<sup>(3)</sup>These numerical flame-spread and smoke-developed ratings are not intended to reflect hazards presented by this or any other material under actual fire condition. Refer to UL for details on foam thickness and maximum density evaluated.

### TABLE 2: Canadian Typical Physical Properties of Styrofoam™ Brand Highload 40, 60 and 100 XPS Foam Insulation

<table>
<thead>
<tr>
<th>Property and Test Method</th>
<th>Highload 40</th>
<th>Highload 60</th>
<th>Highload 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Resistance, per inch (25 mm), ASTM C518, C177, @ 75°F (24°C) mean temp., ft·h·°F/Btu (m²·°C/W), R-value [R5], min.</td>
<td>5.0 (.88)</td>
<td>5.0 (.88)</td>
<td>5.0 (.88)</td>
</tr>
<tr>
<td>Compressive Strength&lt;sup&gt;(1)&lt;/sup&gt;, ASTM D1621, psi (kPa), min.</td>
<td>40 (275)</td>
<td>60 (415)</td>
<td>100 (690)</td>
</tr>
<tr>
<td>Water Absorption, ASTM D2842, % by volume, max. (96 hr water immersion)</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Water Vapor Permeance&lt;sup&gt;(2)&lt;/sup&gt;, ASTM E96, perms (ng/Pa·s·m²)</td>
<td>1.0 (572ng/ Pa·s·m²)</td>
<td>0.8 (45.8ng/Pa·s·m²)</td>
<td>0.8 (45.8ng/Pa·s·m²)</td>
</tr>
<tr>
<td>Maximum Use Temperature, °F</td>
<td>165 (74)</td>
<td>165 (74)</td>
<td>165 (74)</td>
</tr>
<tr>
<td>Coefficient of Linear Thermal Expansion, ASTM D696, mm/m·°C (in/in·°F)</td>
<td>3.5 x 10⁻⁵ (6.3 x 10⁻⁵)</td>
<td>3.5 x 10⁻⁵ (6.3 x 10⁻⁵)</td>
<td>3.5 x 10⁻⁵ (6.3 x 10⁻⁵)</td>
</tr>
<tr>
<td>Flexural Strength, ASTM C203, psi, min.</td>
<td>70 (480)</td>
<td>85 (585)</td>
<td>100 (585)</td>
</tr>
<tr>
<td>Compressive Modulus (typical), ASTM D 1621, psi (kPa)</td>
<td>1,400 (9,650)</td>
<td>2,200 (15,170)</td>
<td>3,700 (25,510)</td>
</tr>
<tr>
<td>Complies with CAN/ULC S701, Type</td>
<td>IV</td>
<td>IV</td>
<td>IV</td>
</tr>
<tr>
<td>Surface Burning Characteristics, CAN/ULC S102.2 for both foam core and finished product&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flame Spread</td>
<td>&lt;300</td>
<td>&lt;300</td>
<td>&lt;300</td>
</tr>
<tr>
<td>Smoke Developed</td>
<td>&lt;700</td>
<td>&lt;700</td>
<td>&lt;700</td>
</tr>
</tbody>
</table>

<sup>(1)</sup>Vertical compressive strength is measured at 5 percent deformation or at yield, whichever occurs first. Since Styrofoam insulations are visco-elastic materials, adequate design safety factors should be used to prevent long-term creep. For static loads, 3:1 is suggested. For dynamic loads, call 1-866-583-2583 for safety factor recommendation.

<sup>(2)</sup>Water vapor permeance varies with product type and thickness. Values are based on the desiccant method and they apply to insulation 1” (25 mm) or greater in thickness.

<sup>(3)</sup>Tested per CAN/ULC S102.2. Refer to UL and CCMC listings for details on foam thickness and maximum density evaluated.
TESTING

Applicable Standards

• D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics
• D2842 – Standard Test Method for Water Absorption of Rigid Cellular Plastics
• E96 – Standard Test Methods for Water Vapor Transmission of Materials
• C272 - Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions
• D696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30˚C and 30˚C With a Vitreous Silica Dilatometer
• C203 – Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation Cellular Plastics

• D4716 – Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
• CAN/ULC S701 Type 4

Notice
Styrofoam™ Brand Highload Insulation complies with the following codes:

• International Residential Code (IRC) and International Building Code (IBC); see ICC-ES ESR 2142 (excluding STYROFOAM™ HIGHLOAD 100)
• California Std. Reg. #CA T-064
• Underwriters Laboratories, see Classification Certificate D369
• Underwriters Laboratories Verified to ESR 2142
• CCMC – EVALUATION 04888-L

Warranty
In the United States, a 50-year thermal limited warranty is available on Styrofoam™ Brand Insulation products 1.5 inches and greater. For thickness less than 1.5 inches, other warranties may apply. Visit building.dupont.com/warranties or contact your DuPont representative for details.

HANDLING

WARNING: For Professional Use Only – Read and follow the entire Handling section and the Safety Data Sheets (SDSs, formerly MSDSs or Material Safety Data Sheets) carefully before use. The information below is designed to protect the user and allow for safe use and handling of Styrofoam™ Brand products. Follow all applicable federal, state, local and employer regulations.

Precautionary Statements
• Before installation, roof substrate must be clean, dry, smooth and free from oil, grease, rust, frost and snow. Since dust would impair the performance of adhesives and finishes, dusty surfaces should be brushed off before products are applied.
• Styrofoam™ Brand Highload 40, 60 and 100 Insulation are combustible; protect from high heat sources.

• Local building codes may require a protective or thermal barrier. For more information, consult (M)SDS, call DuPont at 1-866-583-2583 or contact your local building inspector.
• Dispose of any residual Styrofoam™ Brand product, coated debris, or solvent in accordance with applicable federal, state, and local government regulations.
NOTICE: No freedom from any patent owned by DuPont or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer’s use and for ensuring that Customer’s workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where DuPont is represented. The claims made may not have been approved for use in all countries or regions. DuPont assumes no obligation or liability for the information in this document. References to “DuPont” or the “Company” mean the DuPont legal entity selling the products to Customer unless otherwise expressly noted. NO EXPRESS WARRANTIES ARE GIVEN EXCEPT FOR ANY APPLICABLE WRITTEN WARRANTIES SPECIFICALLY PROVIDED BY DUPONT. ALL IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. The buyer assumes all risks as to the use of the material. Buyer’s exclusive remedy or any claim (including without limitation, negligence, strict liability, or tort) shall be limited to the refund of the purchase price of the material. Failure to strictly adhere to any recommended procedures shall release DuPont Specialty Products USA, LLC or its affiliates, of all liability with respect to the materials or the use thereof. The information herein is not intended for use by non-professional designers, applicators or other persons who do not purchase or utilize this product in the normal course of their business.

DuPont™ Styrofoam™ Brand Extruded Polystyrene Foam Insulation

CAUTION: This product is combustible. Protect from high heat sources. A protective barrier or thermal barrier may be required as specified in the appropriate building code. For more information, consult (Material) Safety Data Sheet (MSDS), call DuPont at 1-866-583-2583 or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3771 in Canada.

WARNING: Rigid foam insulation does not constitute a working walkable surface or qualify as a fall protection product. Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mold formation. No material supplier including DuPont can give assurance that mold will not develop in any specific system.

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