

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.

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.

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

* 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

Property and Test Method	Highload	Highload	Highload
	40	60	100
Thermal Resistance, per inch, ASTM C518, C177, @ 75°F mean temp., ft ² ·h ² ·°F/Btu, R-value, min.	5.0	5.0	5.0
Compressive Strength ⁽¹⁾ , ASTM D1621, psi, min.	40	60	100
Water Absorption, ASTM C272, % by volume, max. (24 hr water immersion)	0.1	0.1	0.1
Water Vapor Permeance ⁽²⁾ , ASTM E96, perms	1.0 (57.2ng/ Pa.s.m ²)	0.8 (45.8 ng/Pa.s.m ²)	0.8 (45.8 ng/Pa.s.m ²)
Maximum Use Temperature, °F	165	165	165
Coefficient of Linear Thermal Expansion, ASTM D696, in/in·°F	3.5 x 10 ⁻⁵	3.5 x 10 ⁻⁵	3.5 x 10 ⁻⁵
Flexural Strength, ASTM C203, psi, min.	60	75	100
Compressive Modulus (typical), ASTM D 1621, psi (kPa)	1,400 (9,650)	2,200 (15,170)	3,700 (25,510)
Complies with ASTM C578, Type	VI	VII	V

⁽¹⁾ 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.

⁽²⁾ 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.

⁽³⁾ 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

Property and Test Method	Highload	Highload	Highload
	40	60	100
Thermal Resistance, per inch (25 mm), ASTM C518, C177, @ 75°F (24°C) mean temp., ft ² ·h ² ·°F/Btu (m ² ·°C/W), R-value (RSI), min.	5.0 (.88)	5.0 (.88)	5.0 (.88)
Compressive Strength ⁽¹⁾ , ASTM D1621, psi (kPa), min.	40 (275)	60 (415)	100 (690)
Water Absorption, ASTM D2842, % by volume, max. (96 hr water immersion)	0.3	0.3	0.3
Water Vapour Permeance ⁽²⁾ , ASTM E96, perms (ng/Pa.s.m ²)	1.0 (57.2ng/ Pa.s.m ²)	0.8 (45.8ng/Pa.s.m ²)	0.8 (45.8ng/Pa.s.m ²)
Maximum Use Temperature, °F	165 (74)	165 (74)	165 (74)
Coefficient of Linear Thermal Expansion, ASTM D696, mm/m·C (in/in·°F)	3.5 x 10 ⁻⁵ (6.3 x 10 ⁻²)	3.5 x 10 ⁻⁵ (6.3 x 10 ⁻²)	3.5 x 10 ⁻⁵ (6.3 x 10 ⁻²)
Flexural Strength, ASTM C203, psi, min.	70 (480)	85 (585)	100 (585)
Compressive Modulus (typical), ASTM D 1621, psi (kPa)	1,400 (9,650)	2,200 (15,170)	3,700 (25,510)
Complies with CAN/ULC S701, Type	4	4	4
Surface Burning Characteristics, CAN/ULC S102.2 for both foam core and finished product ³			
Flame Spread	<300	<300	<300
Smoke Developed	<700	<700	<700

⁽¹⁾ 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.

⁽²⁾ Water vapour 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.

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

TESTING

Applicable Standards

DuPont™ Styrofoam™ Brand Highload Extruded Polystyrene (XPS) Foam Insulation meets ASTM C578 – Standard Specification for Rigid Cellular Polystyrene Thermal Insulation. Applicable ASTM standards include:

- **C518** – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- **C177** – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
- **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.



**For more information visit us at
styrofoam.com
or call 1-866-583-2583**

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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 ((M)SDS), 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 1-519-339-3711 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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