



STYROFOAM™ HIGHLOAD 40, 60 and 100 Extruded Polystyrene Insulation

1. PRODUCT NAME

STYROFOAM™ HIGHLOAD Extruded Polystyrene Foam Insulation

2. MANUFACTURER

The Dow Chemical Company
Dow Building Solutions
200 Larkin Center
Midland, MI 48674
1-866-583-BLUE (2583)
Fax 1-989-832-1465

Dow Chemical Canada ULC
Dow Building Solutions
450 – 1st St. SW, Suite 2100
Calgary, AB T2P 5H1
1-866-583-BLUE (2583) (English)
1-800-363-6210 (French)
dowbuildingsolutions.com

3. PRODUCT DESCRIPTION

STYROFOAM™ HIGHLOAD Extruded Polystyrene Foam Insulation is a closed-cell foam insulation. Available in compressive strengths of 40, 60 and 100 psi (275, 415 and 690 kPa), STYROFOAM™ HIGHLOAD insulation features exceptional moisture resistance and R-value* retention. All three STYROFOAM™ HIGHLOAD insulation products resist compressive creep and fatigue, delivering long-term compressive strength. Like all STYROFOAM™ insulation products, STYROFOAM™ HIGHLOAD 40, 60 and 100 are durable, versatile and reusable – making them a preferred choice for a variety of high-load applications

Basic Use

STYROFOAM™ HIGHLOAD insulation is designed for use in low-temperature (freezer floor) applications, highways, airport runways, bridge abutments, parking decks, utility lines, ice rinks and plaza decks. It is the responsibility of the designer to select the proper STYROFOAM™ HIGHLOAD insulation product based on the dead and live loads expected in the application.

4. TECHNICAL DATA

Applicable Standards

STYROFOAM™ HIGHLOAD 40, 60 and 100 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

Code Compliance

STYROFOAM™ HIGHLOAD 40, 60 and 100 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

Contact your Dow sales representative or local authorities for state/provincial and local building code requirements and related acceptances.

TABLE 1: U.S. VALUES AND TYPICAL PHYSICAL PROPERTIES OF STYROFOAM™ HIGHLOAD 40, 60 AND 100 INSULATION

| Property and Test Method | HIGHLOAD 40 | HIGHLOAD 60 | HIGHLOAD 100 |
|--|------------------------------------|------------------------------------|------------------------------------|
| Thermal Resistance, per inch, ASTM C518, C177, @ 75°F mean temp., ft ² •h•°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) | 0.3 | 0.3 | 0.3 |
| Water Vapor Permeance ⁽²⁾ , ASTM E96, perms | 1.0 (57.2 ng/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 × 10 ⁻⁵ | 3.5 × 10 ⁻⁵ | 3.5 × 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-BLUE (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.

* R means resistance to heat flow. The higher the R-value or RSI, the greater the insulating power.

Typical Physical Properties

STYROFOAM™ HIGHLOAD 40, 60 and 100 insulation products exhibit the typical physical properties indicated in Tables 1 and 2 when tested as represented.

Environmental Data

STYROFOAM™ Brand HIGHLOAD 40, 60, 100 Insulation is hydrochlorofluorocarbon (HCFC) free with zero ozone-depletion potential.

STYROFOAM™ Brand HIGHLOAD 40, 60, 100 Insulation is reusable in many applications.

Fire Protection

STYROFOAM™ HIGHLOAD 40, 60 and 100 insulation is combustible; protect from high heat sources. Local building codes may require a protective or thermal barrier. For more information, consult (M)SDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector.

5. INSTALLATION

STYROFOAM™ HIGHLOAD 40, 60 and 100 insulation boards are easy to handle and install. They can be cut with a utility knife or any sharp blade. Contact a local Dow representative or access the literature library at www.dowbuildingsolutions.com for more specific instructions.

6. AVAILABILITY

STYROFOAM™ HIGHLOAD 40, 60 and 100 insulation products are distributed through an extensive network. For more information, call: 1-800-232-2436 (English)
1-800-565-1255 (French)

7. WARRANTY

In the United States, a 50-year thermal limited warranty is available on STYROFOAM™ Insulation products 1.5 inches and greater. For thickness less than 1.5 inches, other warranties may apply. Warranties are available as described at www.dbswarranties.com.

8. MAINTENANCE

Not applicable.

9. TECHNICAL SERVICES

Dow can provide technical information to help address questions when using STYROFOAM™ HIGHLOAD 40, 60 and 100 insulation products. Technical personnel are available to assist with any insulation project. For technical assistance call: 1-866-583-BLUE (2583) (English)
1-800-363-6210 (French)

10. FILING SYSTEMS

www.dowbuildingsolutions.com

TABLE 2: CANADA VALUES AND TYPICAL PHYSICAL PROPERTIES OF STYROFOAM™ HIGHLOAD 40, 60 AND 100 INSULATION

| Property and Test Method | HIGHLOAD 40 | HIGHLOAD 60 | HIGHLOAD 100 |
|--|--|--|--|
| Thermal Resistance, per inch (25 mm), ASTM C518, C177, @ 75°F (24°C) mean temp., ft ² •h•°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) | 0.6 | 0.55 | 0.5 |
| Water Vapour Permeance ⁽²⁾ , ASTM E96, perms (ng/Pa•s•m ²) | 1.0 (57.2 ng/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 (°C) | 165 (74) | 165 (74) | 165 (74) |
| Coefficient of Linear Thermal Expansion, ASTM D696, in/in•°F (mm/m•°C) | 3.5 × 10 ⁻⁵ (6.3 × 10 ⁻²) | 3.5 × 10 ⁻⁵ (6.3 × 10 ⁻²) | 3.5 × 10 ⁻⁵ (6.3 × 10 ⁻²) |
| Flexural Strength, ASTM C203, psi (kPa), min. | 70 (480) | 85 (585) | 100 (585) |
| Compressive Modulus (typical), ASTM D1621, psi (kPa) | 1,400 (9,650) | 2,200 (15,170) | 3,700 (25,510) |
| Complies with CAN/ULC S701, Type | 4 | 4 | 4 |

(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-BLUE (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.



In the U.S.

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Technical Information

1-866-583-BLUE (2583) (English)
1-800-363-6210 (French)

Sales Information

1-800-232-2436 (English)
1-800-565-1255 (French)

In Canada

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COMBUSTIBLE: Protect from high heat sources. Local building codes may require a protective or thermal barrier. For more information, consult (M)SDS, call Dow at 1-866-583-BLUE (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.

Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mold formation. No material supplier including Dow can give assurance that mold will not develop in any specific system.