STYROFOAM™ Highload 40, 60 and 100 Extruded Polystyrene Insulation

Manufacturer
The Dow Chemical Company
Building Solutions
200 Larkin
Midland, MI 48674
1-866-583-BLUE (2583)
Fax 1-989-832-1465
www.dowstyrofoam.com/architect

Dow Chemical Canada Inc.
Building Solutions
250 – 6th Ave. SW, Suite 2200
Calgary, AB T2P 3H7
1-866-583-BLUE (2583) (English)
1-800-363-6210 (French)
www.dowstyrofoam.ca/4architects

Product Description
STYROFOAM™ Highload extruded polystyrene 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 superior 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 the preferred choices for a variety of high-load applications.

Basic Use
STYROFOAM™ Highload insulation is ideal 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.

Sizes
IN THE U.S.:
Butt Edge
Thickness:
2" or 3" STYROFOAM™ Highload 40 and 60
2" STYROFOAM™ Highload 100
Width and length:
2' x 8' STYROFOAM Highload 40, 60 and 100
4' x 8' STYROFOAM Highload 40

IN CANADA:
Butt Edge
Thickness:
1", 1.5", 2" or 3" (25 mm, 38 mm, 50 mm or 75 mm) STYROFOAM Highload 40 and 60
2" or 3" (50 mm or 75 mm) STYROFOAM Highload 100
Width and length:
2' x 8' (600 mm x 2,400 mm) STYROFOAM Highload 40, 60 and 100

Physical Properties of STYROFOAM™ Highload 40, 60 and 100 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(1), 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(2), ASTM D1621, psi, min.</td>
<td>40</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Water Absorption, ASTM C272, % by volume, max. (24hr water immersion)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Water Vapor Permeance(3), ASTM E96, perms</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</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 10⁴</td>
<td>3.5 x 10⁴</td>
<td>3.5 x 10⁴</td>
</tr>
<tr>
<td>Flexural Strength, ASTM C203, psi, min.</td>
<td>60</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>Complies with ASTM C578, Type</td>
<td>VI</td>
<td>VII</td>
<td>V</td>
</tr>
</tbody>
</table>

(1) For 1" material
(2) 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.
(3) 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.
TABLE 3

<table>
<thead>
<tr>
<th>Physical Properties of STYROFOAM™ Highload 40, 60 and 100 Insulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property and Test Method</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Thermal Resistance(1), per inch (25 mm), ASTM C518, C177, @ 75°F (24°C) mean temp., R-[ft^2•°F/Btu (m^2•°C/W)], R-value (RSI), min.</td>
</tr>
<tr>
<td>Compressive Strength(2), ASTM D1621, psi (kPa), min.</td>
</tr>
<tr>
<td>Water Absorption, ASTM D2842, % by volume, max. (96hr water immersion)</td>
</tr>
<tr>
<td>Water Vapour Permeance(3), ASTM E96, perms (ng/Pa•s•m^2), max. (96hr water immersion)</td>
</tr>
<tr>
<td>Maximum Use Temperature, °F (°C)</td>
</tr>
<tr>
<td>Coefficient of Linear Thermal Expansion, ASTM D696, in/in•°F (mm/m•°C)</td>
</tr>
<tr>
<td>Flexural Strength, ASTM C203, psi (kPa), min.</td>
</tr>
<tr>
<td>Compressive Modulus (typical), ASTM D1621, psi (kPa)</td>
</tr>
<tr>
<td>Complies with CAN/ULC S701, Type</td>
</tr>
</tbody>
</table>

(1) For 1” (25 mm) material
(2) 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.
(3) 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.

TABLE 2

<table>
<thead>
<tr>
<th>Chemical Resistance(4) of STYROFOAM™ Highload 40, 60 and 100 Insulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid, inorganic, weak</td>
</tr>
<tr>
<td>Acid, inorganic, strong</td>
</tr>
<tr>
<td>Acid, organic, weak</td>
</tr>
<tr>
<td>Acid, organic, strong</td>
</tr>
<tr>
<td>Bases</td>
</tr>
<tr>
<td>Alcohols, including isopropyl alcohol</td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
</tr>
<tr>
<td>Polyglycols, including propylene glycol</td>
</tr>
<tr>
<td>Hydrocarbons</td>
</tr>
<tr>
<td>Salts</td>
</tr>
<tr>
<td>Insecticides</td>
</tr>
<tr>
<td>Kerosene</td>
</tr>
<tr>
<td>Mineral oil USP</td>
</tr>
<tr>
<td>Naphtha (VMP)</td>
</tr>
<tr>
<td>Turpentine</td>
</tr>
<tr>
<td>Beer</td>
</tr>
<tr>
<td>Gasoline</td>
</tr>
<tr>
<td>Fruit juices</td>
</tr>
</tbody>
</table>

(4) Explanation of ratings:
- Excellent = The plastic was unaffected for the duration of the test.
- Good = A very slight clouding or discoloration of the plastic.
- Poor = Considerable change in plastic during exposure.
- Not recommended = Severe attack of the plastic. Became soft and unusable after a few hours of exposure.

NOTE: This table should be used as a guide only. For design purposes, specific test data on the intended application may be needed.

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:
- D2842 – Standard Test Methods for Water Absorption of Rigid Cellular Plastics
- C203 – Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- ICBO-ES ER-2275
- Calif. Std. Reg. #CA T064
- Underwriters Laboratories, Inc. (UL) Classified, see Classification Certificate D369

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 NER-699, BOCA-ES RR 21-02
- Contact your Dow sales representative or local authorities for state/provincial and local building code requirements and related acceptances.

©Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow
PHYSICAL/CHEMICAL PROPERTIES
STYROFOAM™ Highload 40, 60 and 100 insulation products exhibit the physical properties indicated in Tables 1 and 2 when tested as represented.

For chemical resistance properties of STYROFOAM Highload 40, 60 and 100 insulation products, see Table 3.

ENVIRONMENTAL DATA
STYROFOAM™ Highload 40, 60 and 100 insulation is manufactured with HCFC blowing agents which have 94 percent less ozone depletion potential than standard CFC blowing agents. STYROFOAM extruded polystyrene insulation products are 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 MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector.

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.dowstyrofoam.com/architect or www.dowstyrofoam.ca/4architects for more specific instructions.

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 15-year limited thermal warranty is available.

8 Maintenance
Not applicable.

9 Technical Services
Dow can provide technical information to help address questions when using STYROFOAM™ 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.dowstyrofoam.com/architect
• www.dowstyrofoam.ca/4architects
• www.sweets.com
IN THE U.S.:
• For Technical Information: 1-866-583-BLUE (2583)
• For Sales Information: 1-800-232-2436
THE DOW CHEMICAL COMPANY
• Building Solutions • 200 Larkin • Midland, MI 48674
www.dowstyrofoam.com/architect

IN CANADA:
• For Technical Information: 1-866-583-BLUE (2583) (English); 1-800-363-6210 (French)
• For Sales Information: 1-800-232-2436 (English); 1-800-566-1255 (French)
DOW CHEMICAL CANADA INC.
• Building Solutions • Suite 2200 • 250 – 6th Ave. SW • Calgary, AB T2P 3H7
www.dowstyrofoam.ca/4architects

NOTICE. No freedom from any patent owned by Dow 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. Dow assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

COMBUSTIBLE: Protect from high heat sources. Local building codes may require a protective or thermal barrier. For more information, consult MSDS, 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.

Printed in U.S.A.

Form No. 179-02548X-0807DM 178-00202X-0807DM
McKay189699

Habitat for Humanity is a registered service mark owned by Habitat for Humanity International

®™Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

Habitat for Humanity is a registered service mark owned by Habitat for Humanity International