

Use

FortefyThermo Insulation is mainly used as the main thermal insulation material in a variety of below and above grade applications. Fortefy Thermo insulation boards have a closed cell structure which provides excellent long term thermal as well as moisture resistance properties. For below grade applications it can be used on the exterior or interior of foundation walls to provide a continuous thermal insulation envelope with no thermal bridges. When used on the exterior of foundation walls it may also provide protection for the damp/water proofing membrane from backfill soils in addition to providing thermal insulation.

FortefyThermo insulation boards can be used under or above a slab on grade to provide continuous thermal insulation and moisture resistance.

For above grade applications, FortefyThermo insulation is used as a continuous exterior thermal insulation envelope for walls and attic ceilings to eliminate thermal bridging and to keep interior occupants warm.

Composition and Materials

FortefyThermo insulation is an inert product. It does not emit any harmful gases, does not decay or decompose and does not provide any nutritional value for mold, fungi or micro-organisms.

FortefyThermo boards are rigid, lightweight, easy to handle and install and the material can be recycled at the end of its lifecycle.

FortefyThermo boards provide a constant R-value and moisture resistance due to its closed cell structure.

Product Size

Typical FortefyThermo insulation board sizes (width x length): 1219 mm x 2438 mm (48 in. x 96 in.), 1219 mm x 1219 mm (48 in. x 48 in.), 610 mm x 2438 mm (24 in. x 96 in.). Other sizes are available as per custom orders.

Typical FortefyThermo insulation board thicknesses range from 12.7 mm (0.5 in.) to 102 mm (4 in.). Additional thicknesses are available upon request.

Fortefy Thermo insulation boards can have butt or shiplap edges depending on client's request.

Limitations

- Expanded polystyrene products such as FortefyThermo boards are combustible and should be kept away from all ignition sources such as open flame, sparks and electrostatic charges during any of its lifecycle phases (including shipping, handling, storage, installation and final application).
- The use of any petroleum based products may cause FortefyThermo insulation board's physical properties, shape and integrity to deteriorate very rapidly. Careful selection of any adhesives and applied coatings or materials is required to ensure compatibility with the product.
- FortefyThermo insulation boards shall be protected from continuous and elongated exposure to direct sunlight using a suitable material such as an opaque polyethylene film.
- The maximum service temperature limit for FortefyThermo insulation is 75 °C (165°F). Exposure beyond this temperature will cause physical properties to change such as warping and shrinking

4. Technical Data

Underwriter's Laboratories of Canada (ULC)

- CAN/ULC S701-11, standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering

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- CAN/ULC S102.2-07, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials
- CAN/ULC S107-03, Fire Tests of Roof Coverings

ASTM International

- ASTM C518, Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM E96, Standard Test Methods for Water Vapor Transmission of Materials
- ASTM D2126, Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
- ASTM C203 Procedure B, Standard Test Method for Breaking Load and Flexural Properties of Block Type Thermal Insulation
- ASTM D2842, Standard Test Method for Water Absorption of Rigid Cellular Plastics
- ASTM D1621 Procedure A, Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- ASTM D2863, Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle Like Combustion of Plastics
- ASTM C578-12b, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM C303, Standard Test Method for Dimensions and Density of Preformed Block and Board Type Thermal Insulation
- ASTM C165, Standard Test Method for Measuring Compressive Properties of Thermal Insulations
- ASTM C272, Standard Test Methods for Water Absorption of Core Materials for Sandwich Construction

Canadian General Standards Board (CGSB)

- CGSB 71-GP-24M, Adhesive, Flexible for Bonding Cellular Polystyrene Insulation

Environmental Considerations

- FortefyThermo insulation is CFC and HCFC free
- FortefyThermo insulation provides a stable R-value (a measure of thermal resistance) and does not need to be adjusted for age
- FortefyThermo insulation is an inert product and does not emit any harmful gases and will not adversely affect indoor air quality
- FortefyThermo insulation contributes towards energy efficient buildings due to its effective insulation and R-value and can contribute to green building recognition in several categories including recycled content, energy efficiency, localized distribution and indoor air quality

Physical Properties

Thermal resistance values below are for 25.4 mm(1 in.) thick FortefyThermo insulation board

Thermal Resistance @ 24 C (75 F) - ASTM C518

- Type 1: 0.65 m².⁰C/W (3.75 ft².hr.⁰F/BTU)
- Type 2: 0.72 m².⁰C/W (4.0 ft².hr.⁰F/BTU)
- Type 3: 0.74 m².⁰C/W (4.2 ft².hr.⁰F/BTU)

Water Vapor Permeance - ASTM E96

- Type 1: 300 ng/pa.s.m²(5.2 perms)
- Type 2: 200 ng/pa.s.m²(3.5 perms)
- Type 3: 130 ng/pa.s.m²(2.3 perms)

Dimensional Stability (1% linear change) 7 days @ 70 ± 2 °C - ASTM D2126

- Type 1: 1.5% max
- Type 2: 1.5% max
- Type 3: 1.5% max

Flexural Strength - ASTM C203 Procedure B

- Type 1: 170 kPa (25 psi)

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- Type 2: 240 kPa (35 psi)
- Type 3: 300 kPa (44 psi)

Water Absorption (% by volume) - ASTM D2842

- Type 1: 6% max
- Type 2: 4% max
- Type 3: 2% max

Compressive Strength minimum @ 10% deformation - ASTM D1621 Procedure A

- Type 1: 70 kPa (10 psi)
- Type 2: 110 kPa (16 psi)
- Type 3: 140 kPa (20 psi)
- Limiting Oxygen Index – ASTM 2863
- Type 1: 24%
- Type 2: 24%
- Type 3: 24%

- Flame Spread and Smoke Developed – CAN/ULC S-102.2
- For minimum thickness 25mm (1 in.) and maximum density of 24 kg/m³ (1.5 pcf) flame spread rating 200 and smoke developed classification over 500

5. Installation

Preparation

Fortefy Thermo insulation boards should be handled with care in order not to break corners off prior to installation. During storage at construction site, secure product bundles from movement due to storms or wind gusts. Cover Fortefy Thermo insulation boards or bundles with an opaque polyethylene sheet if storing in an exposed location for more than 2 weeks before installation.

Application

Installation method of Fortefy Thermo insulation boards varies depending on the specific application (below or above grade, interior or exterior). Please check forteEPS.com or FORTE'S product brochures for more information on different applications methods.

Precautions

- Expanded polystyrene products such as FortefyThermo insulation boards are combustible and should be kept away from all ignition sources such as open flame, sparks and electrostatic charges.
- As per the National Building Code of Canada (2010 edition) Expanded polystyrene products such as Fortefy Thermo insulation boards shall not be left exposed to inhabited space or areas without protecting the same with an appropriate thermal barrier.

Building Code

Installation of Fortefy Thermo insulation boards shall comply with all local, provincial and national building codes having jurisdiction over the construction site location in which they are installed.

6. Availability and Cost

Availability

FORTE EPS Solutions headquarters and manufacturing facility is located in Midland, Ontario, Canada and can be contacted using any of the details given in part 2 of this specification.

Cost

Current pricing information can be obtained by contacting FORTE EPS Solutions using the details given in part 2 of this specification

7. Warranty

FORTE EPS Solutions offers a warranty for the R-value retention of its Fortefy Thermo insulation boards. FORTE EPS Solutions explicitly limits its liability to the replacement of defective products that do not meet the requirements as stated in part 4 of this specification. Claims against defective products shall be made in writing within 30 days from the date of delivery or reasonably should have been discovered by the client.

Contractors are solely responsible for installing Fortefy Thermo insulation boards in accordance with the applicable building codes and the recommendations published by FORTE EPS solutions on its website, brochures or given by its technical representative.

8. Maintenance

Fortefy Thermo insulation boards do not require maintenance following the recommended installation methods published by FORTE EPS Solutions.

9. Technical Services

Contact FORTE EPS Solutions as per the details in part 2 of this specification for any technical assistance required with the design and installation of Fortefy Thermo insulation boards.

10. Filing Systems

Additional information documents related to Fortefy Thermo insulation boards can be furnished upon request by contacting FORTE EPS Solutions as per part 2 of this specification.