Tech-Crete®

CFI® Concrete Faced Insulated Wall Panels

Using CAN/ULC - S701 Type 4 Insulation

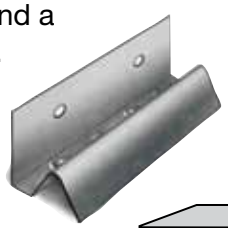
INSTALLATION GUIDELINES

for CFI® Insulated Wall Panels

Refrigeration Plant, Whistler B.C.

DESCRIPTION:

CFI® wall panels are a pre-finished “one-step” exterior perimeter foundation or low-rise wall insulating panel consisting of STYROFOAM™ brand foam insulation with a factory applied 5/16” (8 mm) thick latex modified concrete facing, with a slightly broomed finish. **CFI**® wall panels are installed using specially designed galvanized steel mounting clips, included with each shipment. Panel size is 2'x 4' (610 mm x 1220 mm) with a tongue and groove profile along the 4' edge. A 1/8” (3 mm) relief score line is cut into the concrete facing mid way on the 4' edge. Standard foam insulation thicknesses are 2" (50 mm), 3" (75 mm), and 4" (100 mm). **CFI**® wall panels provide superior insulation and a durable finish in one installation. They can be installed in any weather, with moderately skilled labour.



DESIGN CONSIDERATIONS:

1. Ensure the building envelope meets applicable building codes before installing **CFI**® wall panels. This includes damp-proofing as required.
2. **CFI**® wall panels can be installed below or above grade on any concrete, block or brick wall not exceeding 36' (11 m).
3. **CFI**® wall panels are not suitable for irregularly shaped buildings with curved surfaces or for installation over walls with severe surface irregularities.
4. For perimeter foundation applications, or walls with irregularities, it is recommended that the **CFI**® wall panels be installed vertically. This will reduce bridging over surface irregularities or protrusions and minimize or eliminate random cracking in the concrete surface.
5. For low-rise wall applications it is recommended that the **CFI**® wall panels be installed horizontally.
6. As with any cementitious product, colour variation, efflorescence, and/or hairline cracking may occur on the cement facing. These phenomenon will not affect the performance of the **CFI**® wall panels.
7. If uniform colour is required, or a specific colour is desired, a quality latex or acrylic-latex masonry coating can be applied. Follow manufactures recommendations.

Tech-Crete Processors Ltd.®

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HANDLING & STORAGE:

CFI® wall panels should be stored under cover until installed to minimize efflorescent discoloration due to condensation moisture. If panels do become wet and freeze, they may stick together. The frozen lift should be allowed to thaw before the panels are removed and care should be taken in separating them.

Use reasonable care when unloading and/or transporting at the job site. Protect corners when crane-sling unloading.

Do not rest panels on their corners at any time during transport or placement. Place panels into position, by hand. Do not drop panels into position.

The Whistler Sliding Centre, Whistler B.C.

MATERIAL CHECKLIST:

To install **CFI**® wall panels, the following tools are recommended:

- Scraper to remove wall surface irregularities or protrusions
- Measuring tape
- Transit or builders level
- 4' level
- Chalk line
- Drill
- Rotary hammer drill (SDS drill & drive system recommended)
- 11/64" or 3/16" concrete drill bit (11/64" for masonry, 3/16" for concrete)
- Appropriate flashing
- Masonry saw
- Hand ratchet with 3/8" hex head socket
- Polystyrene compatible caulking or sealant (optional)
- Backer rods (optional)

VERTICAL INSTALLATION:

Recommended for foundation wall applications

1. Prepare Foundation Wall

a) Remove any masonry irregularities or protrusions on the wall surface.

b) Ensure the wall is properly damp proofed according to local building codes. Allow damp proofing to fully cure before installing **CFI®** wall panels.

2. Install First row of CFI® Wall Panels

a) Determine and mark the lowest installation point on the foundation wall. A level ledger plate can be installed, or make a level chalk line on the wall where the top of the panel will line up with.

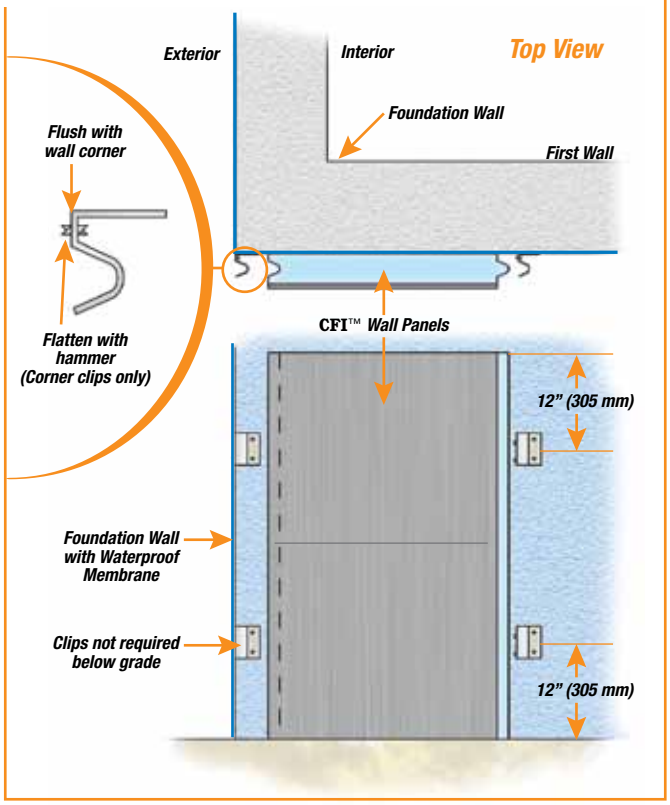
b) Start at one corner with groove edge of panel facing outside of wall. With external prongs flattened (tapped down with hammer), fasten the first set of clips on wall corner, flush with adjacent face, spaced approximately 12" (305 mm) from the end of the panel. Two clips per panel.

Fasten clips using the ¼" x 1 ¼" self-tapping concrete screws provided. Ensure correct counter-drill sizes are used, 3/16" for concrete and 11/64" for masonry. Drill hole must be at least 25% deeper than the length of screw being used. Do not over tighten fasteners.

c) Slide panel along ledger or chalk line into the installed mounting clips. Ensure internal prongs on mounting clip are fully embedded into the groove side of the foam.

d) Fasten tongue side clips to wall, ensuring prongs are fully embedded.

Vertical Installation
First Row of CFI Wall Panels



e) For the next panel, and each subsequent panel, slide panel along ledger or chalk line ensuring that the top edge of the panel lines up with the previously installed panel. Mate panels snugly before fastening tongue side clips to wall.

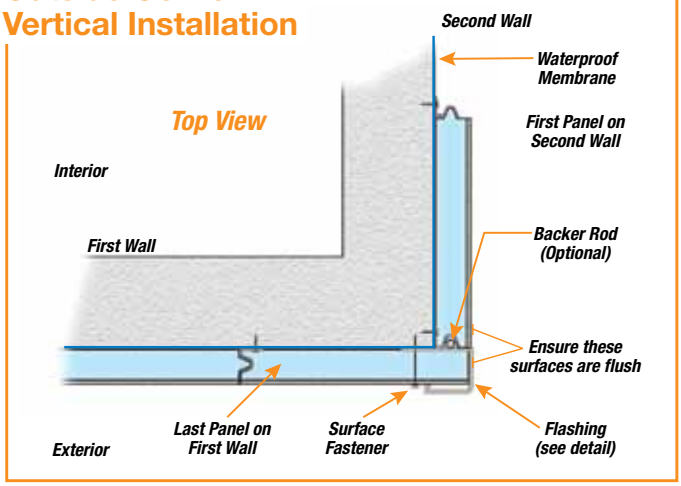
f) Cut **CFI®** wall panels to fit snugly around protrusions. Caulk or flash to seal. Fill voids with backer rods if necessary.

g) Repeat above procedure until the first row of panels is complete with only one full or partial panel remaining.

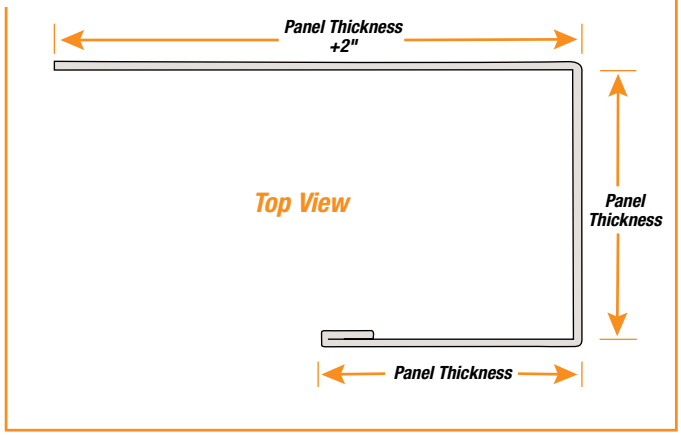
h) Install last panel according to the recommended inside or outside corner detail shown in sections 3 and 4.

Note: recommended minimum panel width is 6" (150 mm). Partial panels, if required, should be located at corners to avoid having to secure with surface fasteners.

Outside Corner Vertical Installation



Recommended Flashing Outside Corner



3. Outside Corner - Vertical Installation

a) With external prongs flattened, fasten clips to the second wall, flush with the corner.

b) Install first panel on second wall as described in section 2.

c) Install last panel on first wall, ensuring it extends flush to the mortar surface on the first panel on second wall.

d) Drill holes through the surface of last panel on first wall approximately 12" (305 mm) from top and bottom and 3" (75 mm) from edge. Surface fasten this **CFI**® wall panel using self-tapping concrete screws of appropriate length.

*Surface fasten panels using the ¼" x 3 ¼" (or longer) self-tapping concrete screws provided. Ensure correct counter-drill sizes are used, 3/16" for concrete and 11/64" for masonry. Drill hole must be at least 25% deeper than the length of screw being used. Hammer type drills, explosive or other impact-actuated fastening systems must not be used for surface fastening the **CFI**® wall panels. Do not over tighten fasteners.*

e) Cut a "V" groove in flashing in the location of the surface fasteners. Slide flashing in along corner. Alternatively, surface fasteners can also be installed through flashing, pre-drilling flashing may be required.

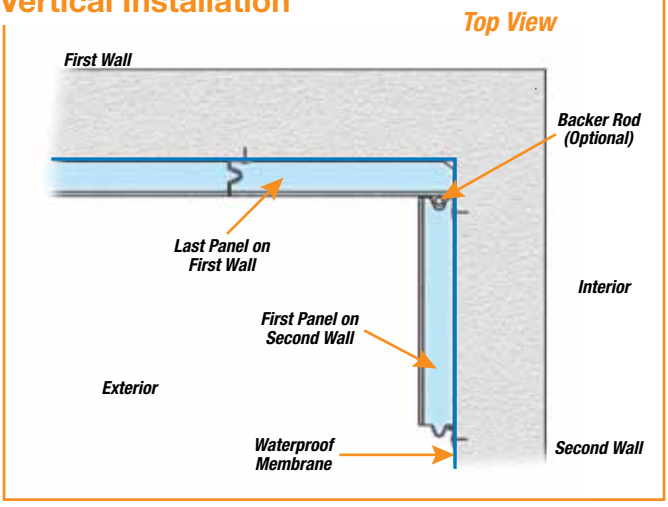
4. Inside Corner - Vertical Installation

a) Cut last panel as required, insert groove into tongue of installed panel and rotate into place. It may be necessary to chamfer the foam of this last panel to allow it to swivel into place, tight against the second wall.

b) With external prongs flattened, fasten clips to the second wall, tight against the mortar surface of the last panel on first wall.

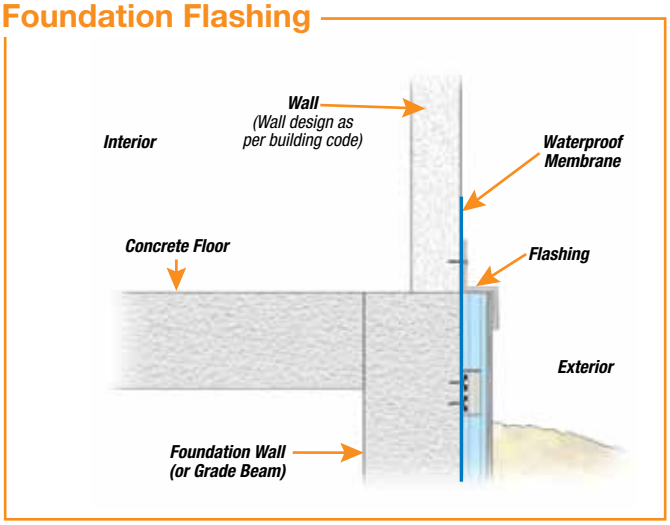
c) Slide panel along ledger or chalk line into the installed mounting clips. Ensure internal prongs on mounting clip are fully embedded into the groove side of the foam.

Inside Corner Vertical Installation



d) Fasten tongue side clips to wall, ensuring prongs are fully embedded. Install remaining panels as described in section 2.

Foundation Flashing



5. Foundation Flashing

Install flashing along top of **CFI®** wall panels as required to provide adequate protection against water infiltration.

HORIZONTAL INSTALLATION:

Recommended for low rise wall applications, 36' (11 m) or less in height

1. Prepare Wall Surface

a) Remove any masonry irregularities or protrusions on the wall surface.

b) Ensure the wall has a proper air/vapor barrier installed according to local building codes.

2. Install First Row of CFI® Wall Panels

a) Determine and mark the lowest installation point on the wall. Mark a level chalk line and install a row of base clips such that the **CFI®** wall panels are orientated with the groove edge facing down. Fasten the first clip approximately 12" (305 mm) from the corner, and the remaining clips spaced approximately 24" (610 mm) apart.

Fasten clips using the ¼" x 1 ¼" self-tapping concrete screws provided. Ensure correct counter-drill sizes are used, 3/16" for concrete and 11/64" for masonry. Drill hole must be at least 25% deeper than the length of screw being used.
Do not over tighten fasteners.

b) Install first panel, groove side facing down. Ensure the panel is flush with the corner of the wall.

c) Position two clips on the tongue edge of the panel, ensuring that the prongs are fully embedded, and fasten to the wall.

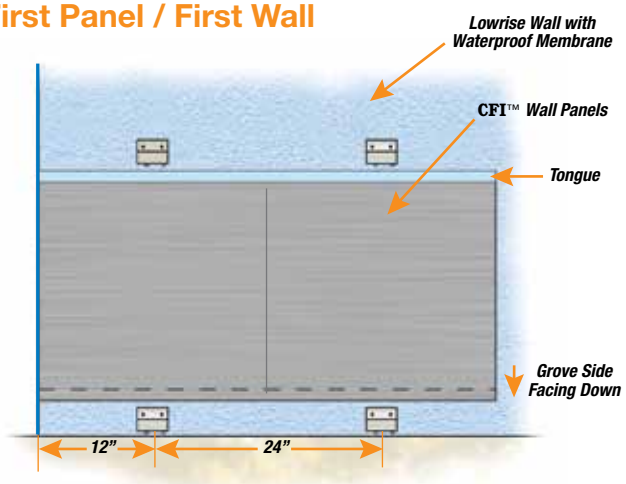
d) Repeat above procedure until the first row of panels is complete with only one full or partial panel remaining.

e) Install last panel according to the recommended inside or outside corner detail shown in sections 3 and 4.

Note: recommended minimum panel width is 6" (150 mm). Partial panels, if required, should be located at corners to avoid having to secure with surface fasteners

f) Additional rows of panels can be now be installed. For the second row, start with a half panel to ensure panel ends are staggered. Alternate starting subsequent rows

Horizontal Installation
First Panel / First Wall



with full and have panels. **CFI®** wall panels are scored mid way along the 4' edge to help with alignment.

3. Outside Corner - Horizontal Installation

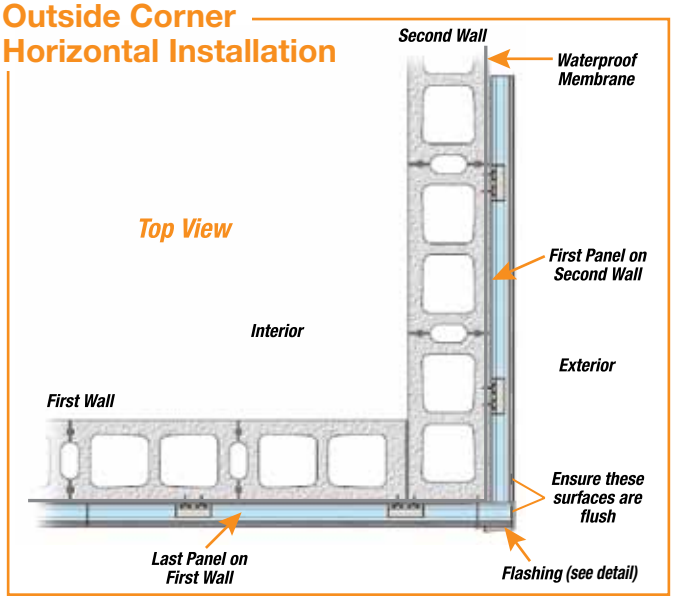
a) Install first panel on second wall as described in section 2.

b) Install the last panel on the first wall, ensuring it extends flush to the mortar surface on the first panel on the second wall.

c) Drill holes through the surface of last panel on first wall approximately 12" (305 mm) from top and bottom and 3" (75 mm) from edge. Surface fasten this **CFI®** wall panel using self-tapping concrete screws of appropriate length.

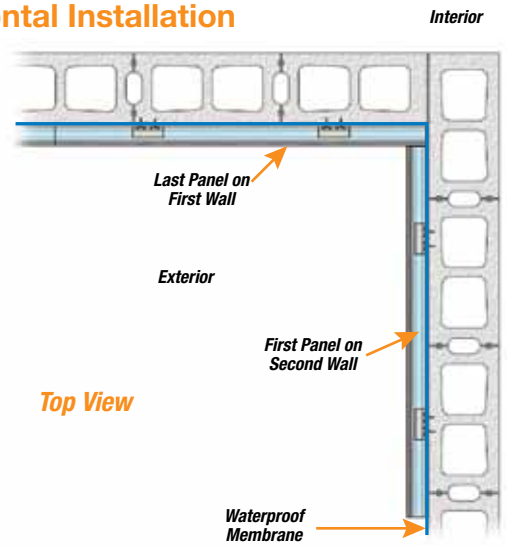
*Surface fasten panels using the ¼" x 3 ¼" (or longer) self-tapping concrete screws provided. Ensure correct counter-drill sizes are used, 3/16" for concrete and 11/64" for masonry. Drill hole must be at least 25% deeper than the length of screw being used. Hammer type drills, explosive or other impact-actuated fastening systems must not be used for surface fastening the **CFI®** wall panels. Do not over tighten fasteners.*

Outside Corner Horizontal Installation



d) Cut a "V" groove in flashing in the location of the surface fasteners. Slide flashing in along corner. Alternatively, surface fasteners can also be installed through flashing, pre-drilling flashing may be required.

Inside Corner Horizontal Installation



4. Inside Corner - Horizontal Installation

a) Cut last panel (as required) to length and insert into place, groove side facing down.

b) Fasten clips on tongue side of panel. Ensure prongs are fully embedded.

c) Fasten all the base clips on the second wall according to section 2(a).

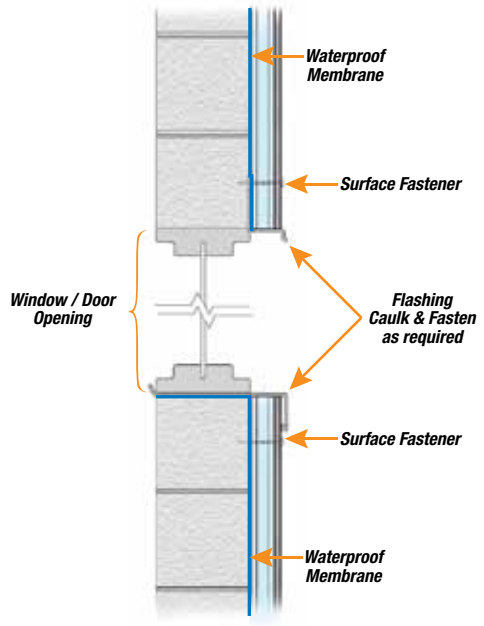
d) Install first panel, groove side facing down. Ensure the panel is tight against the last panel on first wall.

e) Position two clips on the tongue edge of the panel, ensuring that the prongs are fully embedded, and fasten to the wall. Continue installation according to section 2.

5. Installing around Windows and Doors

a) Cut **CFI®** wall panels to fit around window and door frames. Maintain drainage slope away from openings.

Window / Door Opening

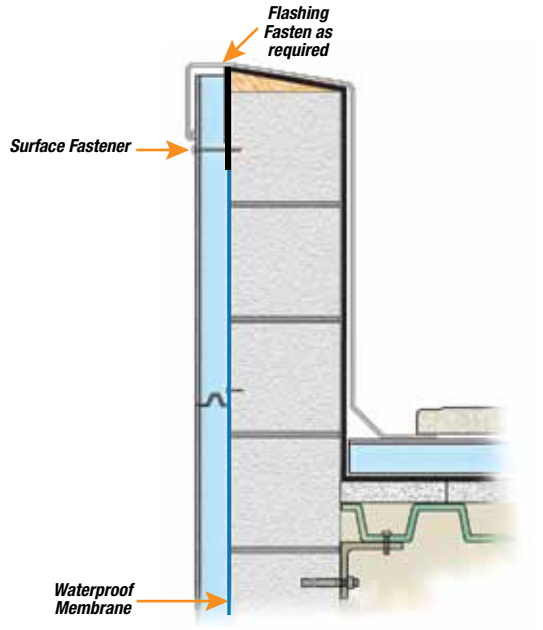


b) Install flashing around the window or door opening and over the **CFI**® wall panels.

c) Apply caulking at the frame and seams to seal.

Note: Retrofits may require block outs at openings. Flashing details will be job specific.

Top of Wall



6. Top of Wall

a) The top row of panels should be fastened with the appropriately sized surface fasteners. Fasteners should be placed 2"-3" (25-75 mm) from the top edge of the panel.

Surface fasten panels using the ¼" x 3 ¼" (or longer) self-tapping concrete screws provided. Ensure correct counter-drill sizes are used, 3/16" for concrete and 11/64" for masonry. Drill hole must be at least 25% deeper than the length of screw being used. Do not over tighten fasteners.

Note: recommended minimum panel width is 6" (150 mm).

CUTTING:

CFI® wall panels can be cut or scored with a masonry saw and holes can be drilled with a masonry bit.

BRIDGING PEAKS AND VALLEYS:

CFI® wall panels are able to span minor surface anomalies, however, must not bridge anomalies or imperfections larger than ~1/8" x 1". Larger anomalies or imperfections can be accommodated for by removing an equivalent amount of foam from the underside of the panel. Measure the approximate location of the anomaly or imperfection relative to the edge of the panel to be placed. Using a rasp, wood carving tool or hot knife, remove an equivalent amount of foam from the underside of the panel. Place the panel into position and ensure the panel sits flat and is in full contact with the wall. This procedure will reduce or eliminate random cracking in the concrete surface caused by uneven wall surfaces.

MICRO CRACKING AND REPAIRS:

The latex modified concrete facing on **CFI®** wall panels is an attractive, tough and durable surface, designed to protect the insulation. However, like any cementitious wearing surface, this facing is subject to micro-cracking. Extensive testing and in-service experience has shown that cracking in the panel surface will not delaminate or compromise the integrity of the system.

Unevenness in the wall surface can create stress points on the panel or result in “bridging”. During panel installation, these peaks and valleys, as well as improper or careless handling of the panels, may cause random micro-cracking. Micro-cracking can be minimized by adhering to the storage, handling and installation recommendations.

Repair minor damage to the concrete facing with a quality latex modified pre-mixed exterior patching cement. For best results, inspect panels before installation and set damaged panels aside to use for fills or in areas where special cutting is required.

REPLACING DAMAGED PANELS:

CFI® wall panels can be easily removed and replaced without harming the panels or the wall.

a) Insert a knife or saw blade between two adjacent panels, along the 4' (1220 mm) edge, and cut off the tongue of the damaged panel.

   The tongue is facing up on horizontal installations.

b) Pry out the damaged panel.

c) Remove the tongue from the replacement panel

d) Install the replacement panel and surface fasten with appropriate fasteners.

Note: In most cases of impact damage, a latex modified patching repair compound can be used to refinish the mortar surface without having to replace the entire panel. Smaller impact cracks can be repaired with a suitable latex caulking.

SIDEWALK TRANSITION

- Ensure control joints in sidewalk line up with panel joints.
- An expansion / contraction control joint is required between **CFI®** wall panels and any cast-in-place concrete

Warning

STYROFOAM™ brand foam insulation is combustible and may constitute a fire hazard if improperly used or installed. The insulation contains a flame-retardant additive to help inhibit ignition from small fire sources. During shipping, storage, installation and use, this material should not be exposed to open flames or other ignition sources.

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