



RESIDENTIAL



SHEATHING

EXTERIOR

WALLS

New Construction Edition



Styrofoam
Cladmate[®]
Brand Insulation

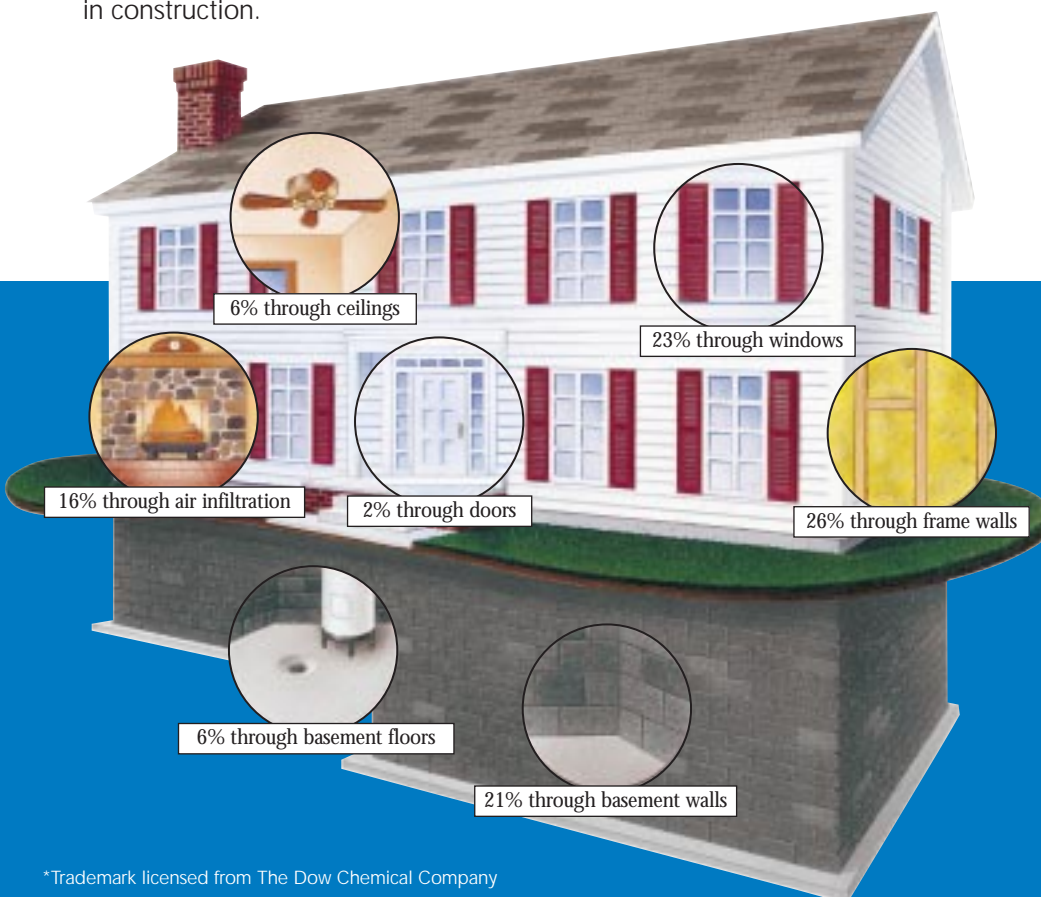
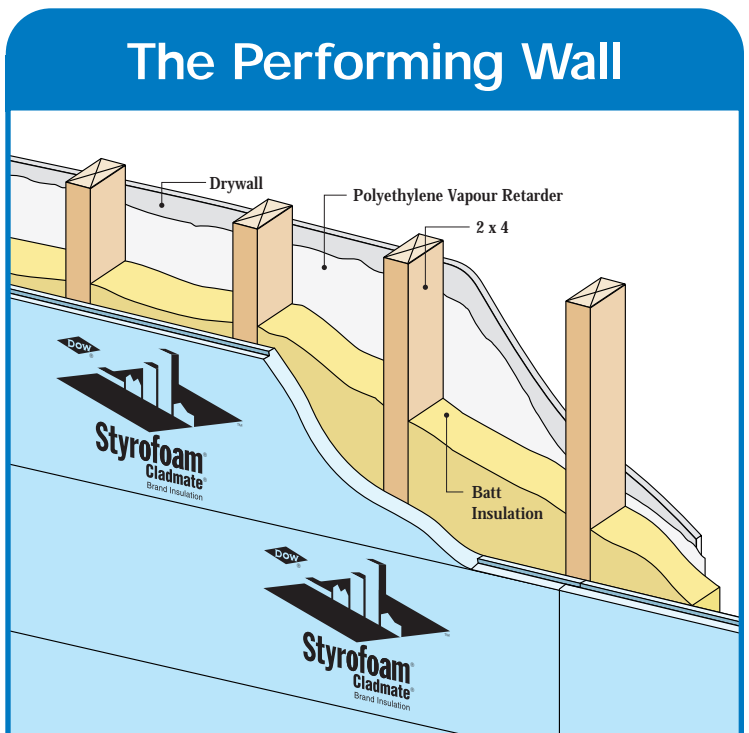
STYROFOAM CLADMATE brand insulation provides homes with Performing Wall advantages

The Performing Wall concept provides homes with a complete, integrated system that improves thermal and moisture resistance, and controls air infiltration, while delivering structural integrity and economic advantages. All by just using one product, STYROFOAM* CLADMATE* brand insulation, and without changing any building trade practices.

Very simply, a Performing Wall is one that is blanketed with STYROFOAM CLADMATE brand insulation in place of conventional non-insulated sheathing. Fibrous batts are installed as usual between the studs. STYROFOAM CLADMATE brand insulation, in effect, wraps the home in an envelope of high-performance insulation, minimizing drafts and gaps. This double layer of insulation adds warmth and comfort, as well as savings on monthly energy bills.

The result is a wall that reduces thermal bridging by insulating the entire wall including the wood studs. This decreases the potential for condensation in the wall that can cause mould, mildew, odours, and wood rot, as well as many other moisture-caused problems.

The Performing Wall is an enticing feature to present to a prospective home buyer. And, since it lets a 2 x 4 wall surpass the thermal performance of a 2 x 6 wall with uninsulated sheathing, it can help you save costs in construction.



How a conventionally insulated house loses heat.

A conventionally insulated house loses 26% of its heat through frame walls and 16% through air infiltration. STYROFOAM CLADMATE brand insulating sheathing can significantly lower those numbers.

Note: Percentages based on a Hot 2000 energy analysis calculation on a typical two-storey home built with RSI=2.11 (R=12) batt insulation and fibreboard sheathing, RSI=4.93 (R=28) ceiling insulation and RSI=1.41 (R=8) insulated concrete basement walls to 600 mm (24") below grade. Air infiltration based on 0.9 air changes per hour. Percentages will vary with changes in R-value, house size, design, and orientation.

STYROFOAM CLADMATE brand insulation – reduces heat loss in a number of ways

1. Preventing Heat Loss Through Framing:

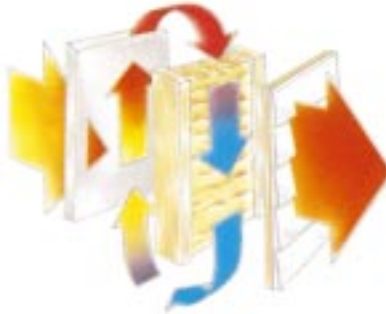
Framing: With conventional, uninsulated sheathing, up to 40% of wall heat loss and heat gain flows around the batts and travels directly through the framing lumber. STYROFOAM CLADMATE brand insulation reduces thermal bridging through the framing, correcting this thermal deficiency in both 2 x 4 and 2 x 6 stud applications.

2. Reducing Air Infiltration: 15% to 20% of a typical home's heat loss is caused by air entering and exiting through cracks and crevices. This can be very costly. In winter, cold, dry air must be heated and humidified; in summer, hot, humid air must be cooled and dehumidified. STYROFOAM CLADMATE brand insulation provides an extremely effective air barrier/retarder over the entire wall, leaving no gaps or cracks where air penetration can occur. In fact, STYROFOAM CLADMATE brand insulation meets the 1995 National Building Code's air permeance properties that make it suitable for use as an air barrier material, effectively blocking wind-driven rain and air infiltration.

3. Minimizing Convective Looping:

During the heating season, convective currents can rob your home of heat. Warm air on the interior side of the wall cavity tends to rise; cold air on the exterior side tends to fall. This moving air forms a convective loop that releases heat to the outside of the wall. STYROFOAM CLADMATE brand insulation on the exterior wall helps warm the cavity, thus reducing the looping effect. This not only cuts heat loss but also reduces the potential for condensation to build up in the walls, helping to prevent mould, mildew, wood rot and odours.

In summer, the above process is reversed. STYROFOAM CLADMATE brand insulation helps cool the cavity, reducing the looping effect, keeping the cool air in and the hot air out.



Convective looping

STYROFOAM CLADMATE brand insulation – easy to work with

STYROFOAM CLADMATE brand insulation is available in 2' and 4' widths.

Cutting is easy, either by sawing, or by scoring and snapping.

STYROFOAM CLADMATE brand insulation has high compressive strength. It doesn't rot, sag or crumble. STYROFOAM CLADMATE brand insulation goes up and stays up, delivering high insulation value year after year.

And, because STYROFOAM CLADMATE brand insulation is water resistant, it stores easily outside (on the jobsite), even in wet weather.

Application of STYROFOAM CLADMATE brand insulation

STYROFOAM CLADMATE brand insulation should be installed to assure a tight fit of all edges. The 2' boards should be attached horizontally with staggered joints to the outside surface of the stud frame. The 4' boards should be attached vertically. Vertical joints should occur at stud positions. The shiplap/tongue & groove edge treatments on STYROFOAM CLADMATE brand insulation provide a tight joint, so taping or caulking of joints is not required.

Wall sill plates should be positioned flush with the exterior face of the box header to permit continuous placement of the STYROFOAM CLADMATE brand insulation sheathing over the box plate and box header.

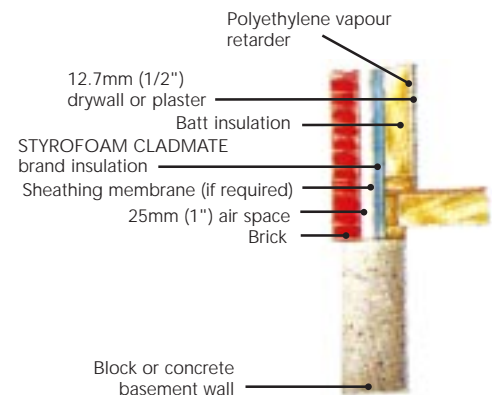
Plastic capped "insulation nails" are recommended and the most common fasteners used. Fasteners should have heads or washers at least 25mm (1") in diameter.

STYROFOAM CLADMATE brand insulation should be fastened to framing at not less than 150mm (6") centres along its vertical edges and on not less than a 300mm x 600mm (12" x 24") grid for the remainder of each sheet.

The length of the fastener for securing the plastic foam sheathing should be a minimum of 25mm (1") longer than the thickness of sheathing used. The length of the fastener used to secure the exterior siding or finish panel over the foam should be a minimum 25mm (1") longer than the combined thickness of sheathing and siding. (Consult exterior siding manufacturer for attachment specifications.)

STYROFOAM CLADMATE brand insulation is nonstructural. Provide adequate corner bracing such as diagonal 19mm x 89mm (1 x 4) let-in

Brick veneer detail: Exterior basement or foundation application

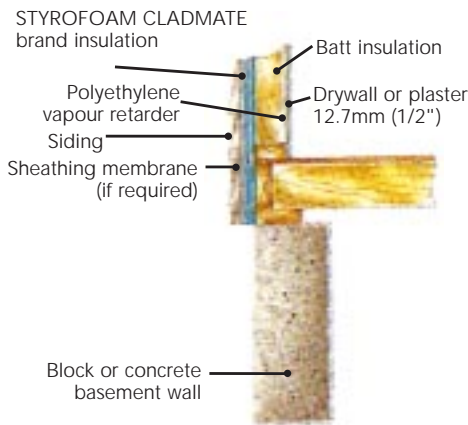


wood bracing, flat or profiled steel bracing, or plywood at corners overlaid with foam sheathing.

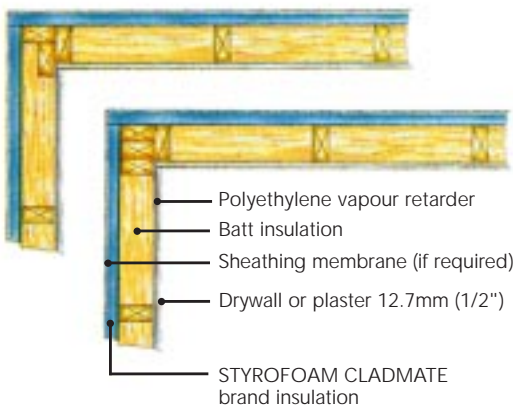
Batts are installed between the studs, and a continuous Type 1 vapour barrier is applied to the interior to cover all framing and batts, with well-lapped joints and careful application around all wall openings.

Building Codes may require the use of sheathing membrane over sheathing materials. Consult your local Codes for their requirement over STYROFOAM CLADMATE brand insulation.

Siding detail: Exterior basement or foundation application



Corner post: Detail



Elevation of wall corner: diagonal let-in wood brace



Behind the built-in benefits of STYROFOAM brand insulation products

Many of Canada's leading builders of energy-efficient homes use STYROFOAM brand insulation products, putting millions of board feet in both new and retrofit construction each year. The distinctive Blue¹ colour and familiar STYROFOAM brand insulation marking on each board are billboards of quality.

STYROFOAM CLADMATE brand insulation – a member of the STYROFOAM brand insulation family of products – is a nonstructural sheathing made of extruded polystyrene. Using it in place of other conventional sheathing products (fibreboard, plywood, gypsum and waferboard) has distinct advantages. It's like an upgrade, adding value to the home without adding cost or labour time.

A) STYROFOAM CLADMATE brand insulation reduces thermal bridging by insulating the entire wall, including the wood studs. Since wood studs can be as much as 30% of the entire wall surface, this allows 2 x 4 stud walls to surpass the thermal efficiency of 2 x 6 walls with uninsulated sheathing.

B) Walls sheathed with STYROFOAM CLADMATE brand insulation have less potential for concealed condensation. It has high moisture resistance so it retains R-value, keeping wall cavities warmer and above the condensation dew point. This helps prevent mould, mildew, odours, and wood rot, and helps reduce exterior paint peeling and interior wall bowing.

C) STYROFOAM CLADMATE brand insulation meets the requirements of the 1995 National Building Code as a suitable material for use in an air retarder system. Its shiplapped and tongue & groove edges fit together to reduce air leakage and form an effective barrier against wind driven rain and air infiltration, eliminating the need for an additional sheathing membrane.

D) STYROFOAM CLADMATE brand insulation with 2 x 4 framing and let-in wood or metal "T" cross-bracing provides racking strength comparable to a 2 x 6 wall with uninsulated sheathing, but with much more thermal efficiency and reduced weight. 2 x 4 framing with STYROFOAM CLADMATE brand insulation can be used in the upper 2 storeys of 3-storey construction.

E) STYROFOAM CLADMATE brand insulation provides economic advantages, letting builders build quality homes and reduce building expenses. It reduces moisture problems, minimizing costly callbacks and repairs. It eliminates the need for additional sheathing membranes. It reduces costs by allowing 2 x 4 walls with thinner batt insulation rather than 2 x 6 walls. And its price stability compared to wood leads to more accurate estimates.

STYROFOAM CLADMATE brand insulation is CFC-free**

STYROFOAM CLADMATE Brand Exterior Wall Sheathing Insulation

CAN/ULC S-701 TYPE 2 CCMC LISTING 12084-L

Thermal resistance		ASTM C-518-91 C-177-97		R 5.0ft ² hr °F/BTU-in RSI 0.87 m ² °C/W-25mm		
Flexural strength (min)		ASTM C-203-92		35 psi 240 kPa		
Compressive strength (min) ¹		ASTM D1621-94		16 psi 110 kPa		
Water vapour permeance		ASTM E96-95		max 1.5 perm @1" max 90 ng/Pa-s-m ² @ 25mm		
Thickness ²	RSI	R-value ³	Board Size	Edge Treatment		
				Shiplapped	Buttedged	Tongue & Groove
.5"	0.44	R-2.5	2' x 8'	No	Yes	No
.75"	0.66	R-3.75	2' x 8'	Yes	No	No
.8"	0.70	R-4.0	2' x 8'	Yes	No	No
1.0"	0.88	R-5.0	2' x 8'	Yes	No	No
1.0" ^{††}	0.88	R-5.0	4' x 8'	No	No	Yes
1.1"	0.96	R-5.5	2' x 8'	Yes	No	No
1.3"	1.14	R-6.5	2' x 8'	Yes	No	No
1.4"	1.23	R-7.0	2' x 8'	Yes	Yes	No
1.5" ^{††}	1.32	R-7.5	4' x 8'	No	No	Yes

¹At 10% deformation or yield, whichever comes first.

²Not all thicknesses are available in all areas of Canada.

³As per CAN/ULC S-701-97 (Supersedes CAN/CGSB 51.20-M87).

[†]The colour Blue is a trademark licensed from The Dow Chemical Company.

^{††}Available in 9' lengths

**STYROFOAM brand insulation products are manufactured with HCFC blowing agents which have ozone depletion potentials that are 93.5% less than standard CFC blowing agents.

STYROFOAM CLADMATE brand insulation, the sheathing for every exterior finish

STYROFOAM CLADMATE brand insulation works well with all siding products, including aluminum, steel, cement board, vinyl, wood, hardboard, brick veneer and stucco.

For regular stucco finishes, a non-corroding stucco mesh should first be attached through the foam to the framing. For shingles or vertical siding, horizontal furring strips or plywood should first be installed over the STYROFOAM CLADMATE brand insulation.

Sidings and finishes must be fastened to the studs through the building paper and STYROFOAM CLADMATE brand insulation sheathing.

Shingles, shakes or vertical siding require nailing strips or girts. These are applied over the STYROFOAM CLADMATE brand insulation and are fastened to the framing.

Refer to local applicable building codes for application of all exterior finishes.

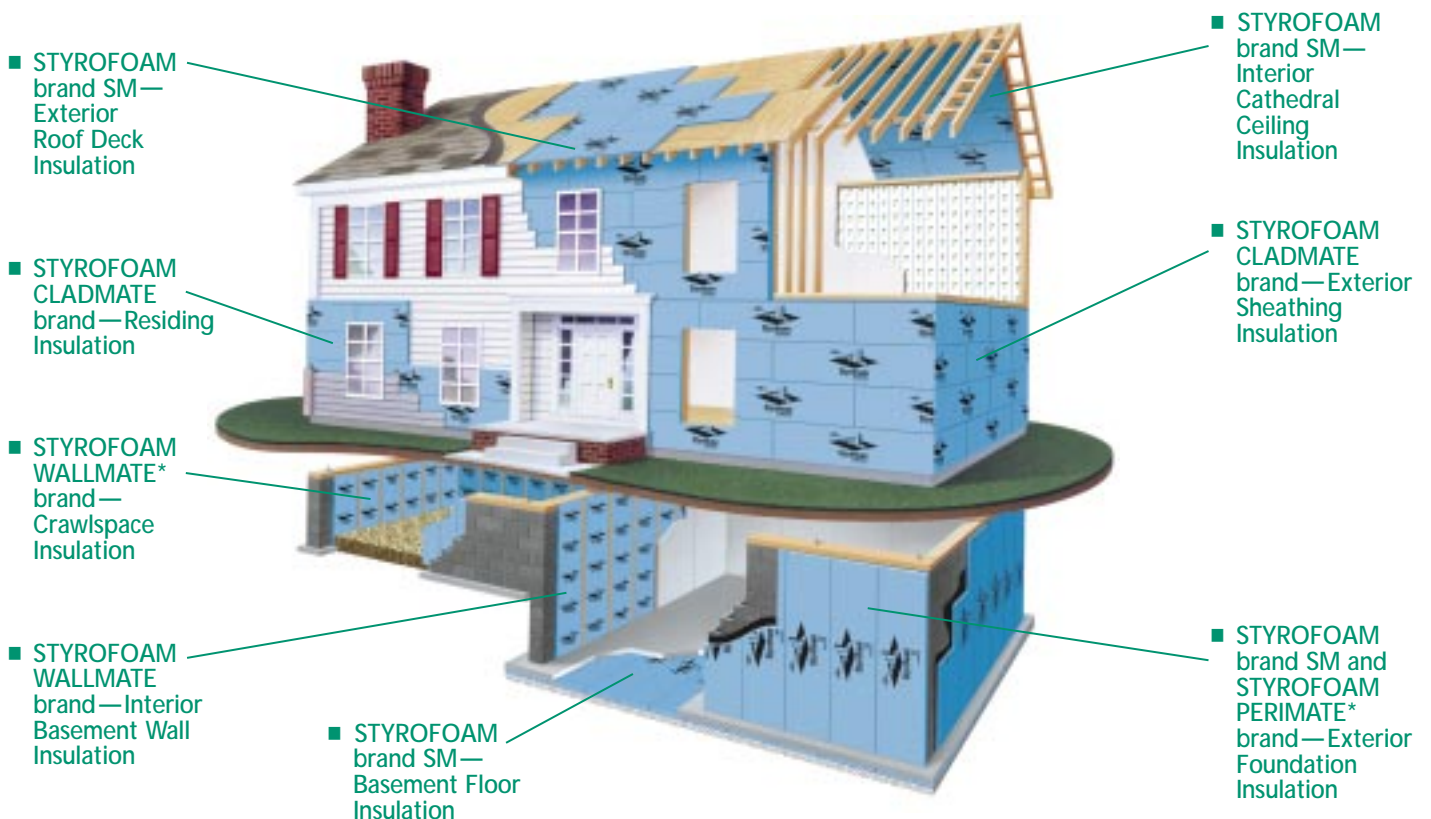
“No sweat”

STYROFOAM CLADMATE brand insulation, when used as exterior sheathing and installed according to the National Building Code and Dow Chemical Canada Inc. recommendations, will not cause moisture build-up in residential wood frame stud walls or related problems such as wood rot.

Dow has been manufacturing extruded polystyrene insulation for over 50 years. During that time, home builders in North America have used STYROFOAM brand insulation products in millions of homes with complete satisfaction.

There are STYROFOAM brand insulation products for every job – specially designed insulation products that will save you time, money and aggravation.

It stands to reason that different jobs call for different insulation products. So make sure you ask for the right STYROFOAM brand insulation product by name.





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For more information, call:

English: 1-800-268-4840

French: 1-800-363-6210

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