



PINK® INSULATION FIBER GLASS & FOAM

A Guide to Home Insulation
and Noise Control



INNOVATIONS FOR LIVING.™



Endorsed by
Environment Canada



For more information, call
I-800-GET-PINK®
www.owenscorning.com

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BE PINK® AND GREEN.



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INNOVATIONS FOR LIVING.™

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Owens Corning invented fiber glass insulation. For over 55 years, we've been the insulation industry leader by improving, innovating and even re-inventing home insulation to provide you with the products that deliver year-round energy savings* and comfort. We not only manufacture **PINK® Insulation** products but also provide building systems and solutions – **System Thinking™** products that work together to achieve the most energy efficient houses.

Our fiber glass insulation and acoustic batts retain their quality over time – because the fibers won't deteriorate with age, and won't absorb moisture.

Owens Corning is listed under the Environmental Choice Program with permission to apply ECOLOGO labelling because of its commitment to recycling and re-use of glass materials. We've recycled more glass in manufacturing our products than any insulation company in North America. As the technology leader, we continue to search for ways to meet our customers' needs for quality products that not only provide healthy living and are friendly to the environment, but are also made right here in Canada.



*Insulating residential structures to well above building code levels should result in net energy savings, over time, above the cost of the insulation. Savings vary with application and the amount of existing insulation. Higher R-values mean greater insulating power.



More than bricks and mortar, every home represents a multitude of interconnected parts. From the foundation to rooftop, however, every home is more than the sum of those parts – it is a system.

Owens Corning System Thinking™ is about getting the most from your home insulation products, and that means having them work

together. Take our **PINK® Thermal Wall** for example. It features **CodeBord™ Extruded Polystyrene Insulation** in combination with **PINK® Insulation batts** and **FoamSealR™ Sill Gasket** in a 2x6 or 2x4 wall assembly.



CodeBord™ takes care of the outside by covering the entire exterior frame, even the studs, through which most heat escapes in traditional wood sheathing wall assemblies. The inside of the wall is insulated with our tried and true **PINK®** batts, with **FoamSealR™ Sill Gasket** filling any cracks and holes, inside and out. Together they provide a more durable and energy-efficient wall and home so you'll be happy and comfy while saving money on energy bills.

Now, that's **System Thinking™!**

PINK® SYSTEM FOR EVERY

THINKING™ PRODUCTS INSULATION JOB!



raft-R-mate™
Attic Rafter Vents



R-20 PINK® Fiber Glass
Insulation for 2x6 Exterior Walls



R-40 PINK® Fiber Glass
Attic Insulation



R-12 PINK® Fiber Glass
Insulation for 2x4 Walls



PROPINK™
Loosefill Fiber Glass
Insulation



CodeBord™ Extruded
Polystyrene Insulation
Sheathing



Celfort® 200 Cel-Lok®
System Extruded Polystyrene
Insulation



FoamSealR™
Sill Gasket



QuietZone®
Acoustical Batts



Celfort® 200
Extruded Polystyrene Insulation

INSULATION COSTS LESS THAN ENERGY*



*Insulating residential structures to well above building code levels should result in net energy savings, over time, above the cost of the insulation. Savings vary with application and the amount of existing insulation. Higher R-values mean greater insulating power. THE PINK PANTHER™ & © 2002 United Artists Corporation. All rights reserved. The colour PINK® is a registered trademark of Owens Corning. © 2002 Owens Corning. All rights reserved. INNOVATIONS FOR LIVING™ is a trademark of Owens Corning. System Thinking Home™ is a trademark of Owens Corning.



INNOVATIONS FOR LIVING™

PINK® THERMAL WALL

The Ultimate Wall Assembly

Today's high energy costs drive the demand for ever greater energy efficiency and lower heating bills. Once again, Owens Corning provides an innovative solution. The PINK® Thermal Wall is a comprehensive system of maximum insulation that wraps your new house in a near-airtight envelope. This ensures that your home is warmer in winter, cooler in summer – saving you money all year-round.

- Maximized energy efficiency for increased comfort at reduced cost
- A warmer, drier home that contributes to a healthier environment
- A home that requires low maintenance and is built to last
- Greater potential re-sale value for your home



PINK® Fiber Glass R-20 Insulation for 2x6 Exterior Walls*

- Forms a solid thermal barrier between studs
- Conserves energy to reduce heating and air conditioning costs



CEL-FORT
CODEBORD™

CodeBord™ Extruded Polystyrene Insulation for Exterior Sheathing

- Insulates entire face of wall, even behind studs
- Saves money on your home energy bills



FoamSealR™ Sill Gasket

- Fills gaps between sill plate and top of foundation walls
- Reduces energy loss as well as moisture and insect infiltration



*Available for 2x4 walls with R-12 insulation where applicable



Most of us come home for some peace and quiet. Get it with the **Owens Corning QuietZone® Noise Control System.**

QuietZone® Acoustical Batts installed within interior walls absorb household noises. Minimize sound transmission between floors and ceilings. Between bedrooms and adjoining bathrooms. Around the home office and recreation rooms. Or between laundry and furnace. In new construction or renovation, a little forward thinking will assure you of plenty of **PINK®** and quiet.

Improve a Wall's Acoustic Performance

Install Resilient Channels

Install metal strips to prevent noise from moving from wood studs through the drywall.

Choose Sealed Electrical Boxes

Sealing units reduces noise transfer.

Apply Acoustic Caulking

Reduce sound transmission by sealing all gaps.

More ways to create a quiet home:

- Install **QuietZone® Acoustic Floor Mat**
- Caulk around sealed electrical boxes with **QuietZone® Acoustic Sealant**
- Add an extra layer of gypsum board
- Stagger wood studs or use resilient channels in new wall construction
- Use non-hardening caulking such as **QuietZone® Acoustic Sealant** around walls, doors and windows
- Use weather stripped solid wood doors
- Light switches and outlets should not be constructed back-to-back
- Install pipes with swing arms so expansion and contraction can occur without binding

Improve a Floor's Acoustic Performance

Install QuietZone® Acoustic Floor Mat*

Install floor mat to greatly reduce noise through tiled or hardwood floors. Also reduces structure-borne noises to make adjacent rooms quieter.

Install Resilient Channels

Install metal strips to prevent noise from moving from wood studs through the drywall.

Apply Acoustic Caulking

Reduce sound transmission by sealing all gaps.

*Where available

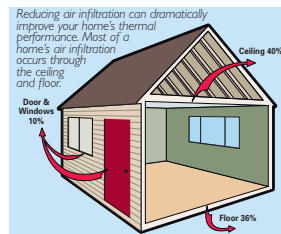
Thermal Performance

Save on heating and cooling costs*

All insulation materials respond to a single basic principle: heat moves from warmer areas to cooler areas. On cold days, heat from inside tries to get out. And on warm days, the heat outside tries to get in. Insulation slows the process. Properly installed **PINK® Insulation** products protect your home with a thermal barrier that helps reduce costly fuel bills during heating and cooling seasons.

R-value explained

The insulation performance of all insulation products is measured by a common standard: **R-value** measures resistance to heat flow. The higher the R-value the greater the insulating power. R-value is usually determined by the thickness and density of the insulation. In both fiber glass and



foam insulation, tiny air pockets trapped in the insulation resist the passage of heat – heat loss in the winter and heat gain in the summer. Generally, the thicker or denser the insulation, the more air pockets and the higher the R-value.

Air Infiltration

Before you can insulate, you must control air leakage. Doing so can result in annual energy cost savings of a whopping 10%.

Cold windy days are the best time to check for air leaks. Simply attach a piece of tissue or light paper to a string. Then hold it close to areas where you suspect a draft. If the tissue moves, you've found a leak.

Savings vary. Higher R-values means greater insulating power.

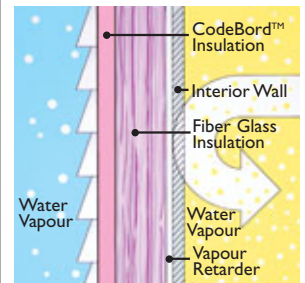


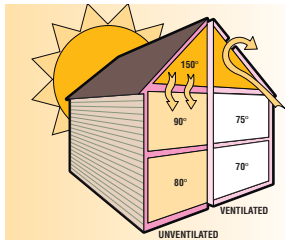
Problem areas include the edges of doors and windows, plumbing and electrical wiring access through walls, floors and ceilings. Weather-stripping, caulking and sealing doors, windows, cracks and openings can reduce or even stop air infiltration in these areas.

Other ways to keep air from penetrating and escaping through your home's walls is by applying an exterior housewrap beneath siding when building a new home, remodeling or re-siding. Or using **CodeBord™** foam insulation sheathing on exterior walls.

Moisture Control

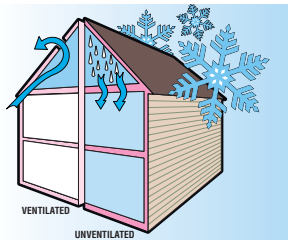
Showers, cooking, washing and even breathing can put a surprising amount of moisture into the home – from 5 to 10 pounds a day. Washing and drying clothes indoors can add another 30 pounds. Vapour retarders help control the amount of moisture passing through insulation, minimizing condensation within exterior walls, ceilings and floors. In winter, moisture that passes through to these surfaces can accumulate and condense on the cold inner sides of exterior surfaces. Eventually, this condensation may blister the outside paint, form stains on drywall ceilings





IN SUMMER

In hot weather, proper ventilation prevents the attic from becoming a hot-box that spills unwanted heat down through the attic floor (even if the attic is insulated) into the living area.



IN WINTER

In cold weather, proper ventilation helps prevent moisture from condensing on the insulation, rafters or roof deck.

or walls, or even damage your house structure. The vapour retarder is always installed toward the warm-in-winter side (living area) of the house.

A separate 6 mil polyethylene film should be applied over installed insulation to help control the amount of moisture passing through insulation, minimizing condensation.

In addition to controlling moisture from internal sources it is important to recognize that other unwanted sources of moisture can enter the structure and cause damage including mould growth. As manufactured, fiber glass insulation is inherently resistant to mould growth¹. However, mould growth can occur on building materials, including insulation, when it becomes contaminated with organic material and when water is present. To avoid mould growth on fiber glass insulation, remove any water that has accumulated and correct or repair the source of that water as soon as possible. Insulation that has become wet should be inspected for evidence of residual moisture and contamination, and any insulation that is contaminated should be promptly removed and replaced.

¹ASTM C-1338-96 Fungi Resistance of Insulation Materials and Facings

Ventilation

When your attic or crawlspace is properly ventilated, a positive airflow is created, allowing the house to breathe thus preventing moisture build up.

In the Attic

Soffit vents – openings under the eaves – combined with roof vents or gable vents create positive

movement of air out of the attic. Always provide at least two vent openings allowing air to flow in one and out the top. As a general rule, one square foot of free vent area should provide for each 150 square feet of attic floor area when no vapour retarder is used. As a general rule, one square foot of free vent area should provide ventilation for each 300 square feet of attic ceiling area, is recommended and a vapour barrier is to be used.

Batts and loosefill insulation in attics must not restrict the ventilation air at eaves. **raft-R-mate™** baffles retain the insulation and provide passage for ventilation air. The number of **raft-R-mate™** sections required along each eave is defined by need for 50% ± 25% of the required free vent area to be at the eaves with each 22-½" wide **raft-R-mate™ Attic Vent** providing 26.5 square inches or 0.184 sq.ft. of vent area and each 11-½", half **raft-R-mate™ Attic Vent** providing 12.75 square inches or 0.089 sq.ft. of free vent area.

In a crawlspace:

The dirt floor of crawl spaces should be covered with a 6 mil polyethylene vapour retarder. One square foot of free vent area is recommended for every 1500 square feet of floor area and a vapour retarder is required on the warm-in-winter side of the insulation.



General Questions

Q: What is R-value?

R-value refers to insulation's resistance to heat flow. Insulation is actually a system of tiny air pockets. It is these air pockets that resist the passage of heat, like heat gain in summer and heat loss in winter. The higher the insulation's R-value, the greater the insulating power.

Q: Which R-value should I choose for my project?

New and retrofit insulation projects must always meet local building code insulation levels and to address potential future high energy costs and environmental guidelines R-2000 insulation levels are recommended. See page 15 for recommended insulation levels.

Q: Do higher insulation levels create condensation problems?

No. Insulation is not a source of condensation problems. Ventilation, vapour barriers/retarders and air sealing are the general solutions.

Q: What is a vapour barrier/retarder?

A vapour barrier/retarder is any material located on the warm side of the insulation that will keep condensation from occurring on its surface or within wall or attic spaces behind it. Polyethylene is the typical vapour barrier permitted by building codes

and is available everywhere.

Q: Does polyethylene film used as a vapour barrier cause a structure to "sweat"?

No. It is generally a lack of proper ventilation that allows water vapour to condense and cause "sweating".

Q: I know insulation helps keep heat in during the winter months, but is there any benefit to having it during summer months?

Yes. Traditionally, insulation has been perceived as a cold climate product that is effective in helping reduce winter heating bills. But the fact is insulation can be just as effective in helping cut air-conditioning costs during the hot summer months.

Regardless of outside or inside temperatures, the main concern is heat. Whenever there is a temperature difference between outside and inside, there will be heat flow.

Insulation helps slow the process of summer heat entering the home, which helps keep the inside cool and lessens the need for continuous air-conditioning. Similarly, in winter, insulation helps keep the house warm by reducing the escape of interior heat.

Q: I am in the middle of an insulation project, but I accidentally tore the vapour barrier. Is repair necessary?

Yes, the polyethylene generally fills both air barrier and vapour barrier functions so all tears and punctures must be sealed with red contractor sheathing tape or duct tape.

Attic Questions

Q: My attic currently has about six inches of loosefill insulation (loose insulation pieces) and no vapour barrier. If I want to add another six inches of insulation, what type should I use?

QUESTIONS AND ANSWERS

Before installing a 6" to 9¼" layer of unfaced batts or having a contractor install loosefill insulation, check roof sheathing for evidence of moisture accumulations and seal any leaks into the attic at light fixtures (by taping all edges of a piece of poly over fixture to back of ceiling finish) and by installing a foam gasket around any hatches. If your attic has existing insulation but no vapour barrier; you will need one square foot of free vent area for each 150 square feet of attic floor area. (To add ventilation, consider a combination of soffit and roof vents.)

Q: How do I add additional layers of attic insulation to a joist cavity that is only half full?

If joist cavity is only half full and the recommended insulation level in your area is R-40 (equivalent to 12" of fiber glass batt insulation), fill the joist cavity (flush with the top of the joist) with the appropriate thickness of fiber glass insulation. Then lay a second layer of insulation (perpendicular to the existing layer) over that to give a total of 12" (or an R-value of 40) in the joist cavity. If a first layer of retrofit insulation is not available in an appropriate thickness to come flush with the top of joists, install appropriate width layers of batts between and parallel with the joists. Covering the attic joists with the second layer will reduce heat loss through the wood.

Q: If I install a vapour barrier in my attic, do I still need ventilation?

Yes. Even with a good vapour barrier; proper ventilation is considered essential to prevent harmful condensation. Eave vent openings at the roof overhang combined with a ridge vent, roof vent, or gable vents, are effective ways to create a positive

movement of air in and out of the attic. As a general rule, when a vapour barrier is used, 1 sq. ft. of free vent area per 300 sq. ft. above floor area is recommended.

Q: In winter, I notice a wet spot on my ceiling where it meets the inside of the exterior wall. My attic area above this room is insulated. What might be causing this moisture problem?

Check to see if your attic insulation completely covers your ceiling area (attic insulation should extend out over the wall top plate, but not over the eave). You may have a cold spot caused by a lack of insulation over this area, or you may have a ventilation problem or "ice damming".

Insulation should extend out over the exterior wall, right up to the roofline, but should not cover the eave vents. Install eave baffles wherever there are eave vents to assure airflow. For additional ventilation, install roof vents.

Crawlspace Questions

Q: If my crawlspace is ventilated, can I still insulate the walls of the crawlspace, or is it better to insulate the floor?

If you have a vented crawlspace with pipes and uninsulated ducts, it is better to insulate the crawlspace walls. If there are insulated ducts and no pipes, the best course of action is to insulate the floor above. The vents should be closed in the winter and open in the summer.

QuietZone® Questions

Q: What is QuietZone®?

QuietZone® is a fiber glass acoustic batt designed to help control sound between interior walls and floors.

QUESTIONS AND ANSWERS

Q: What are the acoustical qualities of QuietZone® acoustic batts compared to R-12 batt insulation?

The acoustical performance of QuietZone® acoustic batts are similar to R-12. Note: if QuietZone® acoustic batts are not available in your area, R-12 fiber glass insulation would be an acceptable substitute.

Wall Questions

Q: Since fiber glass blankets compress so easily, can I increase the effectiveness of my insulation by squeezing a 5½", R-22 blanket into a 2x4 wall instead of using 3½", R-12 batt?

No. Compressing thick fiber glass batt insulation into a smaller wall space will not necessarily increase your insulation's efficiency and the stress on drywall may result in nail pops or bends in the drywall (at some point in the future when the relative humidity is high and the drywall has been weakened). Fiber glass insulation works on the principle of trapped air pockets. R-12 fiber glass insulation is designed for 2x4 walls; higher performance R-13 or R-14 insulations may also be available in your area. 6" thick R-20 fiber glass insulation is designed to be compressed into 5.5" 2x6 studs (giving R-19); or higher performance 5.5" thick R-22 batts may also be available in your area.

Q: What is the difference between Celfort® 200 and 300 and CodeBord™ Extruded Polystyrene Insulation?

Celfort® 200 is a general purpose moisture resistant rigid foam insulation that can be used for many applications above and below grade. It is lightweight, durable and impact resistant making it easy to handle, saw, cut and score.

Celfort® 300 is a higher strength product for heavy duty applications

where higher compressive strength is important to withstand the pressures of heavy loads without compromising thermal insulation performance. CodeBord™ is a moisture resistant rigid foam insulation that is installed on the exterior of 2X4 and 2X6 stud walls. As an exterior insulating sheathing it keeps the cavity and studs warmer; thereby reducing the potential for moisture accumulation in the cavity, which can lead to deterioration of structural elements and other moisture concerns.

Q: Why should I use 2x4 or 2x6 stud walls?

New construction, to meet local building code insulation levels, can use 2x4 stud walls insulated with CodeBord™ Extruded Polystyrene Insulation instead of 2x6 walls, which means increased living area and generally results in reduced construction costs. On page 15 recommended R-2000 insulation levels generally utilize 2x6 stud walls with CodeBord™ Extruded Polystyrene Insulation instead of OSB sheathing.

Basement Questions

Q: What is the Cel-Lok® System?

The Cel-Lok® Insulating System eliminates the need for stud framing in a basement. Metal channels fit into specially grooved Celfort® 200 Extruded Polystyrene Insulation. Applied directly to the basement wall, drywall can then be attached to it.

Q: How many metal channels will I need when installing the Cel-Lok® system?

You will require one metal channel per insulation sheet and one additional metal channel per wall. Add one channel for each window and three channels for each door.

HOW MUCH INSULATION?

Calculate how many packages you need

It's easy to calculate the number of insulation packages you'll need to complete your project.

- Multiply the wall or attic length times width to determine total square footage to be installed.
- Measure the distance between joists to determine correct insulation width for the job (15" or 23").
- Choose appropriate insulation product (R-value and width) for your home insulation project.

(Choose insulation product width to match distance between joists 15"/16" or 23"/24"). If the joist cavity is full insulation width is irrelevant as batts will be installed across the top of joists.

- Divide total square footage to be insulated by square footage per package, then round up to the next whole number to determine the total number of packages required.



EXAMPLE

	Example	Your Home
Attic Length	22 feet	_____
Attic Width	× 40 Feet	_____
Total Square feet	= 880 feet	= _____
Divided by sq ft per pkg (R-20/15" width = 49.0 sq.ft.)	÷ 49	÷ _____
Number of pkgs	18	_____

If your attic has loosefill insulation, upgrade insulation should be Owens Corning PROPINK™ Loosefill Fiber Glass Insulation installed by a contractor. If the existing insulation in your attic

is batts, you or your contractor may upgrade the insulation level using recommendations on page 15 and always ensure eave ventilation is maintained.

WHAT TOOLS WILL YOU NEED?

Find the proper tools and materials at your local home improvement store

The first step is to understand that you're seeking solutions for an entire project, not just buying a single product. Just as in any given home upgrade project, you'll probably need several different tools that are available in the store where you get your Owens Corning insulation products. Thinking ahead will save trips. Remember, if you can't find what you need to know from in-store information call us at Owens Corning at 1-800-GET-PINK®.

Insulating is a safe job when the insulation is installed properly. Refer to the following tool check list before beginning your home insulation projects.

Basic Tools

- Tape Measure
- Utility Knife
- Straightedge or 2x4 (for cutting insulation)
- Lightweight, squeeze type stapler
- Hammer and appropriate fasteners (when applying interior finish)

Special equipment

- Portable work light
- Boards or plywood sheets (provide a safe place to sit or kneel in an unfinished attic and a surface on which to cut the insulation)
- Insulation supports
- Pole or rake (for pushing insulation into out of the way places in the attic/flat ceilings)

Protective Gear

- Work Gloves
- Loose-fitting long-sleeved shirt
- Approved safety glasses
- Disposable dust mask.



WHAT LEVEL OF INSULATION DO YOU NEED FOR YOUR PROJECT?

It's best to get the biggest energy savings at the lowest installed cost. That's why we offer several types of insulation materials, each designed to do the best possible job in a specific application. In this brochure, insulation thickness is given to help you work out the space needed to accommodate it. Remember, if it's packed too tightly, compressed to less than its designed thickness, if there are gaps, or if it gets wet, then the actual in-place R-value will be less than that shown.

PINK® Fiber Glass Insulation

Owens Corning PINK® Insulation is non-combustible (except for R-14 and R-22).

Measuring insulation

When you look at insulation, always go by its R-value and its thickness. These numbers indicate a material's resistance to heat flow—with the larger number representing greater resistance.

Recommended R-values to generally meet:	Code*	R-2000**
Attics	40	50
Cathedral ceilings	28	35
Exterior walls	20	25
Basement walls - framed, full height	20	25
Basement walls - masonry, full height	12	20
Floors over unheated spaces	28	31
No basement: heated crawl space	12	20
No basement: concrete slab on ground	12.5	12.5
No basement: heated slab	15	15

*Check your local building code to determine minimum R-values in your region

**An R-2000 evaluator will determine the necessary R-values for certification of a given house design and location.



Valuables In The Attic. No, we're not talking about the dusty old steamer trunk filled with Ming vases and Picasso prints. We're talking about the PINK® Fiber Glass Insulation that not only can save you precious dollars on your home's heating and cooling costs, but can also add considerably to the re-sale value of your home. There are several options that can help you achieve dramatic improvements in your home's energy efficiency. Read on over the next few pages for all the valuable details.

HOW TO INSULATE YOUR ATTIC

Recommended Products



PINK® FIBER GLASS BATT INSULATION

Value R	Thickness		Widths		Lengths	
	mm	in.	mm	in.	mm	in.
20"	152	6	381	15	1194	47'
			584	23		
28	216	8½	406	16	1219	48
			609	24		
31	235	9¼	406	16	1219	48
			609	24		
35	251	9¾	406	16	1219	48
			609	24		
40	265	10⅝	406	16	1219	48
			609	24		

*1.219 m (48") in Quebec
 "R-20 attic insulation may be compressed into 2x6 stud construction giving R-19 thermal performance

Simply push these batts between standard framing members on 406 mm (16") or 609 mm (24") centres without compressing the insulation. Friction fit holds the batts in place. Use a 0.15 mm (6 mil) polyethylene film on the warm-in-winter side as a vapour retarder.



raft-R-mate™ ATTIC RAFTER VENTS

Size	Vents per carton
572mm x 1.2m x 51mm (22½"x48"x2")	75

raft-R-mate™ is a rigid extruded polystyrene foam rafter vent that assures the unrestricted flow of fresh air from the soffit to the attic through the thickest part of the fibrous or loose-fill insulation.

It offers year-round performance by aiding cross-ventilation in summer for increased comfort and reduced cooling requirements, and by helping to prevent ice dams in winter.

raft-R-mate™'s high resistance to moisture means it will not rot or decay over time. Years later, the product will perform as effectively as it did the day it was installed.

HOW TO INSULATE YOUR ATTIC

Recommended Products



PROPINK™ LOOSEFILL FIBER GLASS INSULATION

Bag Weight	RSI/m	Blown Density
15.9 kg (35 lb.) bag	20.59 (2.97 R/inch)	11.21 kg/m³ (0.7 lb/cf)

PROPINK™ insulation is made of a thermally-efficient fiber, that produces a fast blow rate with less dust and static making installation fast and easy. Note: PROPINK™ Loosefill Fiber Glass Insulation is installed by an insulation professional applicator using pneumatic blowing equipment.

To obtain the thermal resistance value shown, the applicator must install the correct number of bags to meet both the minimum thickness and minimum mass per unit area requirements listed in the following chart.

Thermal Resistance	Minimum Thickness(1)		Maximum Coverage per Bag(2)		Minimum Number of Bags per Unit Area		Minimum Mass per Unit Area	
	R-value	mm	in.	m²	ft²	100 m²	1000 ft²	kg/m²
11	92	3¾	15.3	165.1	6.5	6.1	1.03	0.21
12	102	4	13.9	149.4	7.2	6.7	1.14	0.23
16	136	5¼	10.4	112.0	9.6	8.9	1.52	0.31
19	160	6¼	8.8	95.1	11.3	10.5	1.80	0.37
20	170	6¾	8.3	89.6	12.0	11.2	1.91	0.39
22	185	7¼	7.7	82.6	13.0	12.1	2.07	0.42
24	204	8	6.9	74.7	14.4	13.4	2.29	0.47
28	238	9¼	5.9	64.0	16.8	15.6	2.67	0.55
30	257	10¼	5.5	59.2	18.2	16.9	2.89	0.59
32	272	10¾	5.2	56.0	19.2	17.8	3.05	0.62
34	291	11½	4.9	52.3	20.6	19.1	3.27	0.67
36	306	12	4.6	49.8	21.6	20.1	3.43	0.70
38	325	12¾	4.4	46.8	23.0	21.4	3.65	0.75
40	340	13½	4.2	44.8	24.0	22.3	3.81	0.78
44	374	14¾	3.8	40.7	26.4	24.5	4.19	0.86
48	408	16	3.5	37.3	28.8	26.8	4.57	0.94
49	418	16½	3.4	36.5	29.5	27.4	4.68	0.96
50	427	16¾	3.3	35.7	30.2	28.0	4.79	0.98
52	442	17½	3.2	34.5	31.2	29.0	4.95	1.01
56	476	18¾	3.0	32.0	33.6	31.2	5.33	1.09
60	510	20	2.8	29.9	36.0	33.5	5.72	1.17

(1) Measured in areas where thickness is not obstructed by roof slope or other obstructions.
 (2) Coverage per bag may be increased 2% to 10% depending on joist spacings and depths using correction factors.

HOW TO INSULATE YOUR ATTIC

Adding Insulation to an Attic

Recommended Products

R-20	Fiber Glass Insulation	6"
R-28	Fiber Glass Insulation	8½"
R-31	Fiber Glass Insulation	9¼"
R-35	Fiber Glass Insulation	9¾"
R-40	Fiber Glass Insulation	10¾"
35 lb. bag	PROPINK™ Loosefill Insulation	

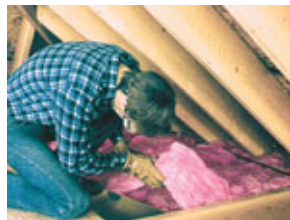
For uninsulated attics or for when you're retrofitting an existing attic space where some loose fill insulation has already been installed consider having a contractor bring your R-value up to recommended levels using **PROPINK™ Loosefill Fiber Glass Insulation**. Installation of batts is deemed satisfactory by the attic being empty, having existing batts or having loosefill which just comes up to the top of framing members (which can be walked on and for placement of temporary boards) which will not be disturbed by retrofit operations. First fill the space between the joists with batts to the depth of the wood and then place any further layers of batts at right angles to the joists. Alternatively or if there is no insulation of appropriate thickness to bring the batts up to the top of the wood joists, you can install one thick layer or two thinner layers of proper width batts to fit between the ceiling joists or bottom truss members.

Installation Procedure



1. Give yourself ample light and make sure you have something safe to walk and kneel on to reach the

outside of the ceiling area. Are you dressed properly? Do you have the tools you need? Bring enough bundles of insulation into the area to provide enough batts to do the job.



Leave the bundles intact and open only one at a time; simply slash the wrapper with your knife and the highly compressed insulation will quickly expand to its correct dimensions

2. If the joist cavities are completely filled to the top of the joists lay the new insulation in long runs perpendicular to the directions of the joists, and use the leftover pieces for small spaces. If the cavity is not completely filled, you can install one thick layer or two thinner layers of proper width batts to fit between the ceiling joists or bottom truss members.

Start by laying batts at the outer edge of the area, placing them so that they cover the top plate of the wall. Do not block the ventilation space leading up from the eave vents. For best results, install **raft-R-mate™ Attic Rafter Vents** as you go.



Finish laying the outer batts along the sides of the building and then work toward the middle of

HOW TO INSULATE YOUR ATTIC

Adding Insulation to an Attic

the attic. This will give you more headroom when it comes to cutting and fitting. Be sure to push each batt firmly up against the end of the preceding batt so that there is no gap allowing heat to escape. Cut batts so that they fit closely up against cross-bracing members.

3. When insulating around electric wiring, or plumbing, split the batt and fit it around the wire or pipe so that there is no gap in the insulation. Take care not to pull or kink electric cables.



If your electrician has left slack in the wires for this purpose, simply lift them up enough to slip the batts underneath, leaving the wire resting on top of them. An alternative approach is to install wiring along the top edge of joists and along the rafters so that it does not interfere with the insulation.

Be very careful around recessed light fixtures such as pot lights. Some modern wiring uses fixtures marked "IC" for insulated ceiling. If you're sure the fixture is this type, you can safely place insulation close around it. But if a fixture is not rated "IC", keep all insulation at least 76mm (3") away from it.

4. Check manufacturers'



instructions and local codes regarding insulation around metal or masonry chimneys, and flues. Most requirements call for a 51 mm (2") space between insulation and the chimney structure or stainless steel insulated flue. Never place insulation in contact with an old-fashioned single layer metal flue. Remember that your objective is to prevent the chimney from developing hot spots that could overheat and cause a fire.

Where contact with non-combustible insulation is permitted, **PINK® Fiber Glass Batts** or **Loosefill Insulation** meets the requirements for non-combustibility with the exception of R-14 and R-22 batts.

Loosefill Installation Procedure

PROPINK™ Loosefill Fiber Glass Insulation is installed by a professional applicator using pneumatic blowing equipment. By the applicator's installing both the coverage chart minimum thickness and the proper number of bags per unit area (see page 18), the specified insulation thermal performance is guaranteed.



HOW TO INSULATE YOUR ATTIC

The Uninsulated Attic

Recommended Products

R-20	Fiber Glass Insulation	6"
R-28	Fiber Glass Insulation	8½"
R-31	Fiber Glass Insulation	9¼"
R-35	Fiber Glass Insulation	9¾"
R-40	Fiber Glass Insulation	10¾"
<i>raft-R-mate™</i> Attic Rafter Vents		

Installation Procedure

The attic is one of the most important areas to insulate in newly constructed homes or in remodeling projects – and in homes with no insulation presently in the attic. It's worth installing at least 304 mm (12") of PINK® Fiber Glass R-20 Insulation, using two layers of 152 mm (6") batts over every part of the attic floor. The first row goes in between the joists, the second row may run across them, only if the first layer fills to top of joists. This thickness will give you the recommended R-40 rating. Alternately, you can install single R-40 (10-3/8" thick) batts over the same area.



1. Give yourself ample light and make sure you have something safe to walk and kneel on to reach the outside of the ceiling area. Are you dressed properly? Do you have the tools you need?

Bring enough bundles of insulation into the area to provide enough batts to do the job. Leave the bundles intact and open only one at a time; simply slash the wrapper with your knife and the highly compressed insulation will quickly expand to its correct dimensions.



2. A vapour retarder is strongly recommended for ceilings. Lengths of 6-mil poly 102mm (4") wider than spacing between joists may be placed in the bottom of cavities and stapled to the sides of the joists. Lap end joints 152mm (6") or tape.



Start by laying batts at the outer edge of the area, placing them so that they cover the top plate of the wall. Do not block the ventilation space leading up from the eave vents. For best results, install *raft-R-mate™* Attic Rafter Vents as you go.

Finish laying the outer batts along the sides of the building and then work toward the middle of the attic. This will give you more headroom when it comes to cutting and fitting. Be sure to push each batt firmly up against the end of the preceding batt so that there is no gap allowing heat to escape. Cut batts so that they fit closely up against cross-bracing members.

HOW TO INSULATE YOUR ATTIC

The Uninsulated Attic

3. When insulating around electric wiring or plumbing, split the batt and fit it around the wire or pipe so that there is no gap in the insulation. Take care not to pull or kink electric cables.

If your electrician has left slack in the wires for this purpose, simply lift them up enough to slip the batts underneath, leaving the wire resting on top of them. An alternative approach is to install wiring along the top edge of joists and along the rafters so that it does not interfere with the insulation.



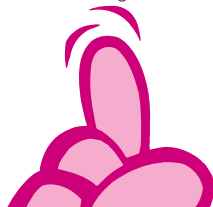
Be very careful around recessed light fixtures such as pot lights. Some modern wiring uses fixtures marked "IC" for insulated ceiling. If you're sure the fixture is this type you can safely place insulation close around it. But if a fixture is

not rated "IC", keep all insulation at least 76mm (3") away from it.



4. Check manufacturers' instructions and local codes regarding insulation around metal or masonry chimneys and flues. Most requirements call for a 51 mm (2") space between insulation and the chimney structure or stainless steel insulated flue. Never place insulation in contact with an old-fashioned single layer metal flue. Remember that your objective is to prevent the chimney from developing hot spots that could overheat and cause a fire.

Where contact with non-combustible insulation is permitted, PINK® Fiber Glass Batt or Loosefill Insulation meets the requirements for non-combustibility with the exception of R-14 and R-22 batts.



HOW TO INSULATE YOUR ATTIC

The Finished Attic

To increase the living space in their homes, more and more people are taking advantage of their large attics. A large attic can be a great place to remodel in order to create an extra bedroom, game room, or home office. And **PINK® Fiber Glass Insulation** from **Owens Corning** can help keep a finished attic comfortable year-round.

Recommended Products

R-20 Fiber Glass Insulation	6"
R-28 Fiber Glass Insulation	8½"
R-31 Fiber Glass Insulation	9¼"
R-35 Fiber Glass Insulation	9¾"
R-40 Fiber Glass Insulation	10"
<i>raft-R-mate™</i> Attic Rafter Vents	

Installation Procedure



1. Use separate pieces of fiber glass insulation for rafters and collar beams. Trying to fit a continuous length of insulation where collar beams and rafters meet may result in hard to fill gaps.



2. When selecting insulation thickness and installing insulation for the rafter portion, the building code requires 2-½" of ventilation air space between the insulation and the roof sheathing with no obstructions (such as permitted cross furring) bringing this space to less than one inch. New construction may incorporate

HOW TO INSULATE YOUR ATTIC

The Finished Attic

cross furring over the rafters to achieve the maximum batt thermal resistance while still keeping the top surface of the batts at least one inch below the top of the rafters and cross furring.

(**Celfort® 200** insulation boards may also be installed below the rafters to achieve maximum assembly thermal resistance while maintaining ventilation space above the installed batts. It is a good practice to fasten strapping through the foam boards to the rafters for easy fastening of interior vapour barrier poly and drywall or other interior finish.) To install the batt insulation, the material is pushed up between the rafters until it's flush with the bottom edge of the wood. If needed install eave vents such as **Owens Corning raft-R-mate™** attic rafter vents and soffit and ridge vents.

3. If space permits use either R-35 or R-28 Attic batt insulation. This will automatically provide the required space when properly installed. See package instructions.



4. If a flat ceiling is to be installed, place fiber glass insulation between joists. Place the vapour retarder toward the warm-in-winter side of the living area of the house in heating climates.

5. Install **PINK® Fiber Glass Insulation** in end and kneel walls, and insert cut strips into narrow details but minimal expanding foam is best for sealing and insulating around windows. (Be sure that you have fitted all necessary gable and roof vents before placing the insulation.)



6. As soon as the insulation has been installed, finish the walls and ceiling with an approved interior finish, such as gypsum wallboard.



HOW TO INSULATE YOUR ATTIC

Cathedral and Flat Ceilings

Recommended Products

R-20 Fiber Glass Insulation	6"
R-22 Fiber Glass Insulation	5½"
R-28 Fiber Glass Insulation	8½"
R-31 Fiber Glass Insulation	9¼"
R-35 Fiber Glass Insulation	9¾"
R-40 Fiber Glass Insulation	10¾"
<i>raft-R-mate</i> ™ Attic Rafter Vents	

The rafters in cathedral ceilings are usually made of 2x10's or 2x12's, and **Owens Corning** has installation products designed specifically for these rafters. They help prevent moisture damage and help assure long life by providing 1" to 2½" of ventilation air space between the insulation and the roof deck.

Installation Procedure



1. Before insulating begins, a ventilation baffle like **Owens Corning *raft-R-mate*™** should be installed at the eaves of every joist to make sure ventilation space is not blocked by the insulation.



2. When selecting insulation thickness and installing insulation for the rafter portion, the building code requires 2-½" of ventilation air space between the insulation and the roof sheathing with no

obstructions (such as permitted cross furring) bringing this space to less than one inch.

New construction may incorporate cross furring over the rafters to achieve the maximum batt thermal resistance while still keeping the top surface of the batts at least one inch below the top of the rafters and cross furring.

(**Celfort**® 200 insulation boards may also be installed below the rafters to achieve maximum assembly thermal resistance while maintaining ventilation space above the installed batts. It is a good practice to fasten strapping through the foam boards to the rafters for easy fastening of interior vapour barrier poly and drywall or other interior finish.) To install the batt insulation, the material is pushed up between the rafters until it's flush with the bottom edge of the wood. If needed install eave vents such as **Owens Corning *raft-R-mate*™** attic rafter vents and soffit and ridge vents.



3. If there are recessed lighting fixtures, unless they're I.C. rated the insulation should be cut so that it's 76 mm (3") away from the fixture.

4. A 6 mil polyethylene vapour retarder should then be installed on the underside of the rafters. Remember to overlap the joint by at least 6" and caulk.



HOW TO INSULATE EXTERIOR WALLS

The first line of defense. The buck stops here. For greater comfort and reduced heating and cooling costs every exterior wall in your home should be insulated to the maximum R-value possible. If the project is a new home or re-modeling addition you have the opportunity to maximize your energy savings by installing **CodeBord™ Extruded Polystyrene Insulation** sheathing directly to the outside of the entire stud wall frame and by filling the walls with **PINK® Fiber Glass Insulation** to the greatest possible R-value. For walls with existing interior and exterior finishes you should have a contractor inject **PROPINK™ Loosefill Fiber Glass Insulation** into the stud cavities. The contractor's bag count and Technical Bulletin B-3-9 permits an estimation of the average installed R-value.

HOW TO INSULATE EXTERIOR WALLS

Recommended Products



PINK® FIBER GLASS BATT INSULATION

Value R	Thickness		Widths		Lengths	
	mm	in.	mm	in.	mm	in.
12	89	3½	381	15	1194	47"
			584	23		
13*	89	3½	375	14¾	1194	47
			584	22¾		
14	89	3½	381	15	1194	47
			584	23		
20***	152	6	381	15	1194	47"
			584	23		
22*	140	5½	375	14¾	1194	47
			584	22¾		

*where available

**1.219 m (48") in Quebec

***R-20 attic insulation may be compressed into 2x6 stud construction giving R-19 thermal performance

Simply push these batts between standard framing members on 406 mm (16") or 609 mm (24") centres without compressing the insulation. Friction fit holds the batts in place. Use a 0.15 mm (6 mil) polyethylene film on the warm-in-winter side as a vapour retarder.

HOW TO INSULATE EXTERIOR WALLS

Recommended Products



CODEBORD™ EXTRUDED POLYSTYRENE INSULATION

Size	Available Thicknesses
1.2 m W x 2.4 m L (4' W x 8' L)	25.4, 38, 51 mm (1", 1½", 2")
1.2 m W x 2.7 m L (4' W x 9' L)	25.4, 38, 51 mm (1", 1½", 2")

CodeBord™ is a rigid foam insulation that is installed on the exterior of 2x4 or 2x6 wood stud walls. It has a thermal resistance of R-5 per inch of thickness that blankets the exterior frame, reducing heat loss through the stud walls and saving money on energy bills. CodeBord™ is lightweight, yet strong and easy to handle and trim. Installation is faster because the ship-lap joints eliminate the need for sheathing paper or for taping the joints.

Note: According to the National Building Code of Canada (NBCC), permanent bracing is not required where walls are finished on the interior with 13mm (½") gypsum board, or a similar material conforming to NBCC requirements. When the interior of the framed wall is not finished or when additional bracing is desired, please consult NBCC 9.23.10.2. or local codes for bracing requirements, as its sentence (3) method is the basis for equivalency claims of alternative systems. Since CodeBord™ is a non-structural insulating sheathing, it may be necessary to provide temporary bracing during wall construction.

HOW TO INSULATE EXTERIOR WALLS

Basic Wall Insulation

Recommended Products

R-12 Fiber Glass Insulation	3½"
R-13 Fiber Glass Insulation	3½"
R-14 Fiber Glass Insulation	3½"
R-20 Fiber Glass Insulation	6"
R-22 Fiber Glass Insulation	5½"

Installation Procedure

1. Press the friction fit batts between the studs, (R-12, R-13 or R-14 for 2x4 walls, compressed R-20 or uncompressed R-22 for 2x6 walls) taking care not to compress the insulation beyond the edges of the studs, and then cover the entire wall with a 6 mil



polyethylene sheet, stapling it to the edge of the studs and plates. Overlap joints by at least 152 mm (6"). Be sure to make the vapour barrier continuous across the joint between wall and upper floor ceilings – so that there is no route for moisture to escape up into the attic.

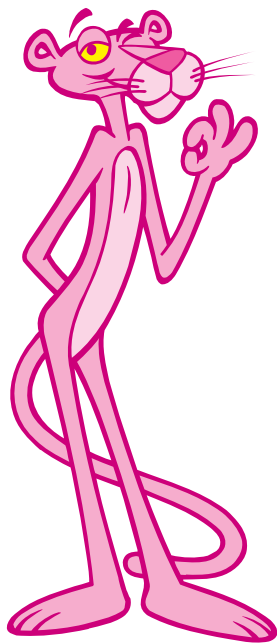


2. Keep your insulation at its full thickness everywhere, splitting the batts to get it both behind and in front of wiring cables. Use small strips for narrow areas and stuff small pieces behind electrical boxes but for sealing and insulating around windows and doors minimal expanding foam sealant

works best. There should be a vapour barrier around and behind outlet or junction boxes to keep it continuous and prevent drafts from coming out of light switches and receptacles.



3. Do not leave insulation or polyethylene exposed. Apply an approved wall finish, such as drywall, directly to the studs as soon as you have finished installing the insulation and vapour barrier.



HOW TO INSULATE EXTERIOR WALLS

Extra Insulating Power

Recommended Products

4'x8' CodeBord™ Insulation Sheathing	
4'x9' CodeBord™ Insulation Sheathing	
R-20 Fiber Glass Insulation	6"
R-22 Fiber Glass Insulation	5½"

Installation Procedure



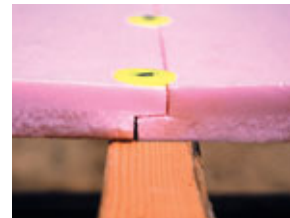
1. CodeBord™ should be installed vertically with the printed side on the exterior of the wall to take advantage of the stud-finder lines printed on each panel



2. Whenever possible, begin installation on a corner of the wall. Trim off the ship-lap edge of the board so it is flush with the outer edge of the stud.



3. Fasten insulation to framing with appropriate nails and washers, or roofing nails at 152 mm (6") max. centres on the vertical edges of the panels and at 304 mm (12") on intermediate stud supports.



4. Slide the next panel beside the one just installed. Whether stud framing is spaced at 406 mm (16") or 609 mm (24") on centre, the vertical edges of the 1,219 mm (4") wide panels should always meet at and be supported by a stud. CodeBord™ has a ship-lap edge which provides a tight fit at the joint, so no taping is required.



5. To prevent discolouration caused by excessive exposure to direct sunlight, exterior finish should be applied as soon as is practical.

According to the 1995 NBCC, building paper is no longer required over sheathings such as CodeBord™.



6. Press the friction fit batts between the studs, (R-12, R-13 or R-14 for 2x4 walls, compressed R-20 or uncompressed R-22 for 2x6 walls) taking care not to compress the insulation beyond the edges of the studs, and then

HOW TO INSULATE EXTERIOR WALLS

Extra Insulating Power



cover the entire wall with a 6 mil polyethylene sheet, stapling it to the edge of the studs and plates. Overlap joints by at least 152 mm (6"). Be sure to make the vapour barrier continuous across the joint between wall and upper floor ceilings – so that there is no route for moisture to escape up into the attic.



7. Keep your insulation at its full thickness everywhere, splitting the

batts to get it both behind and in front of wiring cables. Use small pieces to stuff behind outlet boxes and into small spaces around windows and doors. There should be a vapour barrier around and behind outlet or junction boxes to keep it continuous and prevent drafts from coming out of light switches and receptacles.



8. Do not leave insulation or polyethylene exposed. Apply an approved wall finish, such as drywall, directly to the studs as soon as you have finished installing the insulation and vapour barrier.



HOW TO INSULATE BASEMENT WALLS

Turning a basement into a lower living area. A basement is often thought of as the place where your furnace rumbles or where you store all the stuff you don't know what to do with. Why not turn it into a comfort-filled family room, a relaxing rec room, a hard working hobby shop, or even a snug extra bedroom? The difference is **PINK® insulation** – either fiber glass or rigid foam. Before insulating, make sure that the exterior surfaces of the basement walls have been properly sealed. If the insides of the walls have any wet spots or show signs of dampness, you should have the foundations checked and treated by a professional.

HOW TO INSULATE BASEMENT WALLS

Recommended Products



FRICITION FIT BATTS

Value R	Thickness		Widths		Lengths	
	mm	in.	mm	in.	mm	in.
12	89	3½	381	15	1194	47'
			584	23		
20"	152	6	381	15	1194	47"
			584	23		

*1.219 m (48") in Quebec
 "R-20 attic insulation may be compressed into 2x6 stud construction giving R-19 thermal performance

Simply push these batts between standard framing members on 406 mm (16") or 609 mm (24") centres taking care not to compress the insulation beyond the edges of the studs. Friction fit holds the batts in place. Use a 0.15 mm (6 mil) polyethylene film on the warm-in-winter side as a vapour retarder.



FoamSealR™ SILL GASKET

Size 6 mm thick (¼")	Rolls per bag
89 mm W x 15.2 m L (3½" W x 82' L)	12
140 mm W x 15.2 m L (5½" W x 82' L)	8

Much of a building's heat loss can be directly attributed to air infiltration. A significant part of this loss can be prevented by using **FoamSealR™ Sill Gasket** to fill the gap between the sill plate and foundation wall for a tight, uniform fit. As a polyethylene foam, **FoamSealR™** is durable and moisture-resistant so it will remain intact for years of energy-saving performance.

HOW TO INSULATE BASEMENT WALLS

Recommended Products



CELFORT® 200 CEL-LOK® SYSTEM EXTRUDED POLYSTYRENE INSULATION

Size	Available Thicknesses
0.6 m W x 2.4 m L (2' W x 8' L)	38, 51 mm (1½", 2")

The **Cel-Lok®** System is made up of pre-grooved rigid foam insulation panels that can be applied directly to basement walls. Drywall can then be installed directly over the insulation, eliminating the need for studs, saving time, money and adding more square feet to the room. **Cel-Lok®** has a thermal resistance of R-5 per inch of thickness so it packs maximum insulation value into minimum thickness.

Note: Metal channels are sold separately.

HOW TO INSULATE BASEMENT WALLS

With Fiber Glass Batt Insulation

Recommended Products

R-12 Fiber Glass Insulation	3½"
R-13 Fiber Glass Insulation	3½"
R-14 Fiber Glass Insulation	3½"
R-20 Fiber Glass Insulation	6"
R-22 Fiber Glass Insulation	5½"

Installation Procedure



1. If an air-gap membrane is not installed on the outside of the foundation or if a local authority having jurisdiction requires it, apply a polyethylene moisture barrier against the inside of the concrete wall from the floor up to the finished level of the ground outside.



2. Build a standard frame wall, using studs, all around the basement and place it against the concrete wall. Fasten to joists above and to the floor. Stud spacings can be 609 mm (24") as there is no loading to worry about and you don't need double plates or blocking for wood framing.



3. Place batts between the studs

as for a regular exterior wall. Install R-20 batts – in 2x6 stud knee walls bearing on masonry foundation walls and between full height 2x4 frame walls spaced out from masonry walls to permit full 152 mm (6") batt thickness. Full height R-12 batts may be used at reduced energy savings. Always ensure the inner surface of the batts is flush with the inside surfaces of the studs and in contact with the vapour retarder and interior finish.



4. Cut pieces of insulation to fit the band joists between the top plate and the underside of the floor. Fit these carefully in each space between joists (header) area, taking care not to compress the insulation. On walls that run parallel to the joists, simply run a long length of insulation right along the band joist. Pay particular attention to these top-of-the-wall areas as they are major routes for heat to escape.



5. Install a continuous vapour retarder over the entire wall surface, stapling the polyethylene sheet to the studs with at least a 152 mm (6") overlap at joints. Be sure to install vapour retarder in band joist (header) area.

HOW TO INSULATE BASEMENT WALLS

With Rigid Foam Insulation

Recommended Products

2'x8' Celfort® 200 Cel-Lok®
1½" or 2" Thickness

Installation Procedure

1. Ensure that the wall is as flat and even as possible by hammering off any rough concrete areas.



2. Measure the height of the wall to be insulated. Trim a panel of Celfort® 200 Cel-Lok® and the metal channel to the correct length.



3. Place the first panel vertically on the wall starting in a corner and ensure that it is plumb. Trim off the shiplap edge so the full thickness fits against the corner.

4. In the centre of the steel channel, choose one of the prepunched holes and drill your first pilot hole for the self-tapping fastener (ensure at least 1" penetration into the masonry). Drive in the self-tapping masonry fastener.



5. Repeat drilling and fastening at

floor and ceiling levels. Use a minimum of three fasteners per



metal channel. Use more fasteners per channel if the wall will support loads (e.g. bookshelves, etc.).



6. Add the next panel of pre-trimmed insulation. Insert the metal channel into the grooves along the edges of the two panels where they meet. Repeat fastening procedure, steps 4 and 5.



7. Install electrical boxes and wiring. Install junction box for electrical outlets in ceiling joists above.

7a) Cut out an opening in the insulation, at the location of the electrical outlet in order to receive the electrical box and a 51 mm x



HOW TO INSULATE BASEMENT WALLS

With Rigid Foam Insulation

76mm x 152mm (2"x3"x6") piece of wood.

7b) Fasten the 2"x3"x6" wood piece to the foundation wall.

7c) For 38 mm (1-1/2") thick panels, fasten the electrical box to the side of the 2"x3"x6" wood piece. The electrical box must exceed the 2"x3"x6" by 13 mm (1/2") or by the thickness of the drywall finish. The drywall should be flush with the electrical box. For 51 mm (2") thick panels, repeat the above described procedure while adding a 13 mm (1/2") thick spacer behind the 2"x3"x6" wood piece, to ensure that it remains flush with the insulation panel.



7d) Widen one of the two existing grooves at the centre of the insulation panel to receive the electrical wire coming from the junction box to the outlet. Make a knife cut into the back of the groove and insert electrical wire into it. Embedment of wire should be 13 mm (1/2") minimum (i.e. electrical wire should be at least 25.4 mm (1") from drywall surface).

7e) Set electrical wire into groove leading to outlet.

7f) Connect the wire to the electrical box.*

7g) Use foam sealant to fill the enlarged groove, the area behind the electrical box and the perimeter of the 2"x3"x6" piece of wood and the electrical box.



7h) Fill in joint at the perimeter of the insulated wall as well as all perforations made in the insulating panel (for example, electrical boxes, windows) using foam sealant.

7i) Cut off protruding foam sealant with a knife or hacksaw blade to ensure gypsum board can be installed properly.

8. When installation is complete, cover the insulation with 13 mm (1/2") gypsum board attaching it with self tapping drywall screws to the metal channel. (Screws should be spaced 8" on centre.) Measure the distance between metal channels to insure that the drywall joints occur at the centre of the channels. It may be necessary to cut the drywall panels occasionally to assure this. Finish the drywall according to manufacturers instructions. Consult the National Building Code for requirements when using other finishes.

*Note: Electrical installation laws and requirements may vary from province to province. Some laws prohibit non-licensed people from installing their own electrical work and some allow it providing a permit is obtained. Consult the National Electrical Code for electrical requirements. Owens Corning recommends that all electrical work be done by qualified people only.

HOW TO INSULATE YOUR CRAWL SPACE

Stoop to Conquer. A crawlspace is not just a place to store away holiday decorations for another year. It's a major energy drain. It's well worth the effort – and the backache – to insulate a heated crawlspace or one with uninsulated ducts or water pipes. Again, our **PINK® Fiber Glass Insulation** batts applied to the walls of this often overlooked area can bring a greater degree of energy savings, as well as make the area directly above the crawlspace more comfortable.

HOW TO INSULATE YOUR CRAWL SPACE

Recommended Products



FRICITION FIT BATTS

Value	Thickness		Widths		Lengths	
	mm	in.	mm	in.	mm	in.
R 12	89	3½	381	15	1194	47**
			584	23		
R 13*	89	3½	375	14¾	1194	47
			584	22¾		
R 14	89	3½	381	15	1194	47
			584	23		
R 20***	152	6	381	15	1194	47**
			584	23		
R 22*	140	5½	375	14¾	1194	47
			584	22¾		

*where available

**1.219 m (48") in Quebec

***R-20 attic insulation may be compressed into 2x6 stud construction giving R-19 thermal performance.

Simply push these batts between standard framing members on 406 mm (16") or 609 mm (24") centres taking care not to compress the insulation beyond the edges of the studs. Friction fit holds the batts in place. Use a 0.15 mm (6 mil) polyethylene film on the warm-in-winter side as a vapour retarder.

HOW TO INSULATE YOUR CRAWL SPACE

Recommended Products

R-12	Fiber Glass Insulation	3½"
R-13	Fiber Glass Insulation	3½"
R-20	Fiber Glass Insulation	6"
R-22	Fiber Glass Insulation	5½"

Installation Procedure

1. Spread 0.15 mm (6 mil) polyethylene film over the floor area overlapping sheets by 304 mm (12").



2. Measure and cut small pieces of insulation to fit into the spaces between joists up against the band joist (header).

3. Cut pieces of insulation long enough to hang down the wall and extend out about 609 mm (24") over the floor of the crawl space.



Use long furring strips to attach the pieces of insulation to the

edge of the sill. Allow the top ends of the insulation to extend above the sill, trimming them to fit snugly around the bottom edges of the joists. Just drive the nails in far enough to hold the furring strip securely – the insulation should not be compressed to less than half its thickness.

On the walls that run parallel to the joists, just use longer lengths of insulation and secure them directly to the band joist with furring strips.



4. Install vapour barrier over all wall and floor insulation, slitting and closely stapling the poly at joists and floor sheathing of headers and taping all joints of the poly. Tape edge of vapour retarder to ground cover poly, at edge of horizontal insulation.



HOW TO INSULATE YOUR FLOORS

Recommended Products



FRICITION FIT BATTS OVER UNHEATED AREAS

Value R	Thickness		Widths		Lengths	
	mm	in.	mm	in.	mm	in.
20"	152	6	381	15	1194	47"
			584	23		
28	216	8½	406	16	1219	48
			609	24		
31	235	9¼	406	16	1219	48
			609	24		
35	251	9¾	406	16	1219	48
			609	24		
40	265	10¾	406	16	1219	48
			609	24		

*1.219 m (48") in Quebec

**Two layers of R-20 insulation may be installed between 2x12 floor joists.

Simply push these batts between standard floor joist members on 406 mm (16") or 609 mm (24") centres without compressing the insulation. Friction fit holds the batts in place. Use 4" wider strips than joist spacing stapled on each side at the top of joist cavities. Use a 0.15 mm (6 mil) polyethylene film on the warm-in-winter side as a vapour retarder.



CELFORT® 200 EXTRUDED POLYSTYRENE INSULATION FOR CONCRETE BASEMENT FLOORS

Size	Available Thicknesses
0.6 m W x 2.4 m L (2' W x 8' L)	25.4, 38, 51, 63.5, 76 & 102 mm (1", 1½", 2", 2½", 3" & 4")

Celfort® 200 is a moisture resistant, rigid foam insulation that can be installed below grade on the exterior of a home or in the basement under concrete floor slabs. With a thermal resistance of R-5 per inch of thickness it will help save money on home energy bills. Celfort® 200 is lightweight, durable and impact resistant making it easy to handle, saw, cut and score.

HOW TO INSULATE FLOORS

No time for cold feet. Not only will a cold floor freeze your tootsies, it will also rob your home of precious energy. Get to the bottom of the problem with **PINK® Fiber Glass Insulation**. Especially important for floors over unheated garages, basements, energy robbing crawlspaces, wherever the floor is cold to the touch.

In the case of a basement floor, it is wise to insulate with **PINK® Rigid Foam** before you pour the concrete in a new home or for a basement renovation.

HOW TO INSULATE YOUR FLOORS

Over Unheated Areas

Recommended Products

R-28	Fiber Glass Insulation	8½"
R-31	Fiber Glass Insulation	9¼"
R-35	Fiber Glass Insulation	9¾"
R-40	Fiber Glass Insulation	10¾"

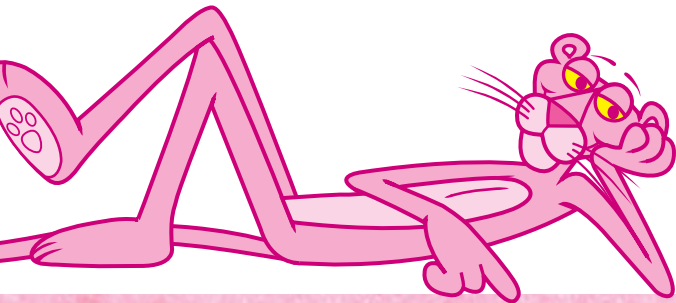
Installation Procedure



1. Place batts between the floor joists where they will hold temporarily by friction fit. Insulation must fit snugly against the band joist and overlap the bottom plate. Batt's must be snug up against underside of floor.



2. Nail one roll width of wire mesh at right angles to floor joists, making sure every row of insulation is properly supported. Move along the insulated area, applying adjacent strips of mesh one at a time. An alternate method of holding insulation in place is to use criss-crossed wire, metal tiger teeth rods or housewrap.



HOW TO INSULATE YOUR FLOORS

Concrete Basement Floors

Recommended Products

2'x8' CelFort® 200 Extruded Polystyrene Insulation
1", 1½", 2", 2½", 3" & 4" Thicknesses

New Construction of Concrete Basement Floors

A basement floor can be a cold, damp place. CelFort® 200 Extruded Polystyrene Insulation offers exceptional resistance to moisture of all types (ground water, condensation, water leakage). The foam maintains a long term R-value of R-5 per inch. This contributes to a healthier and more comfortable environment because a warm and dry floor does not foster the growth and development of moulds, fungi or other biological organisms.

Installation Procedure



1. Place 102 mm (4") minimum of coarse, clean, granular material on top of the undisturbed native soil. Ensure that the gravel is level.
2. Place a polyethylene vapour barrier 0.15 mm (6 mil) thickness over the granular material. The vapour barrier should extend up the

vertical walls to a distance of 76 mm (3"). The polyethylene vapour barrier inhibits the entry of water vapour and other gases into the interior basement space from the soil below.
3. Install the CelFort® 200 panels directly on top of the gravel and polyethylene film. Ensure the panels butt together as tight as possible. It may be necessary to rearrange the gravel below to make panels level.

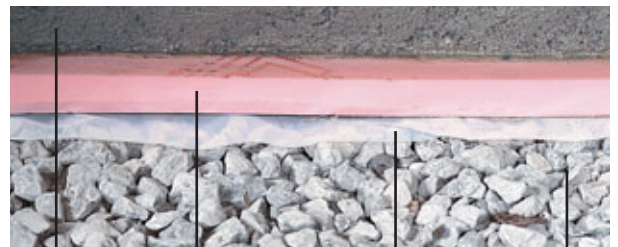
Suggested thickness of CelFort® 200 thermal insulation under residential concrete basement floors:

- 25.4 mm (1 inch) – for an economical improvement,
- 38 mm (1.5 inches) – for enhanced performance (preferred min. thickness),
- 51 mm (2 inches) – for maximum comfort.



4. Pour the concrete directly on top of the CelFort® 200 panels to an even and level depth of 102 mm (4").

Note: The local Building Code and building official should be consulted regarding minimum construction requirements in a specific municipality.



Concrete CelFort® 200 Vapour Barrier (6 mil) Gravel



OW TO CONTROL NOISE IN YOUR HOME

Silence isn't golden, it's PINK. If your kids are into loud music and you're into quiet moments, you should also be into QuietZone®. Acoustical batts, that is. Made from the same PINK® Fiber Glass renowned for its insulating abilities, QuietZone® is ideal for blocking and absorbing all the irritating sounds, which travel throughout the home. Tucked between interior walls and floors, QuietZone® offers you privacy and freedom to relax in peace within your own home. Now a laundry room, home office or even a home theatre needn't cause a domestic disturbance.

HOW TO CONTROL NOISE IN YOUR HOME

Recommended Products



QUIETZONE® ACOUSTICAL BATTS

	Size (mm)	(in.)	Area/Pkg (m ²)	(sq.ft.)
Wood Stud	381 x 1219 x 89	(15 x 48 x 3½)	10.22	(110.00)
	406 x 1219 x 63.5	(16 x 48 x 2½)	15.84	(170.40)
Steel Stud	609 x 1219 x 63.5	(24 x 48 x 2½)	23.79	(256.00)
	406 x 1219 x 89	(16 x 48 x 3½)	11.89	(128.00)

QuietZone® Acoustical Batt's are specially created for noise control and recover to their designed thickness after installation, providing the best possible reduction of the travel of sound through walls and floors.



PINK® FIBER GLASS BATT INSULATION

Value	Thickness		Widths		Lengths	
	mm	in.	mm	in.	mm	in.
12	89	3½	381	15	1194	47**
			584	23		
13*	89	3½	375	14¾	1194	47
			584	22¾		

*where available
**1.219 m (48") in Quebec

Simply push these batts between standard framing members on 406 mm (16") or 609 mm (24") centres without compressing the insulation. Friction fit holds the batts in place.

HOW TO CONTROL NOISE IN YOUR HOME

Recommended Products

QuietZone® Acoustical Batts

QuietZone® Acoustic Floor Mat

QuietZone® Acoustic Sealant

R-12 Fiber Glass Insulation

R-13 Fiber Glass Insulation

QuietZone® Acoustical Batts in the interior walls between rooms such as bedrooms and adjoining bathrooms, or between a recreation room and a den or study, will help keep the noise level between rooms way down. And don't forget the floors—install QuietZone® in the ceiling of a basement room or a ground floor room used for noisy activities such as games, children's play, loud music and group entertainment. Wherever you want peace and quiet: insulate!

Installation Procedure

1. The first step in a noise control project is to seal all penetrations in the walls, such as those for electrical wires and outlets, using an application of caulking or foam sealant around the sill plates. Any place where air leaks through is a place where sound can also leak through.

2. Place PINK® Fiber Glass Batts between exterior wall studs and QuietZone® Acoustical Batts between interior wall studs in the usual way. Then fasten resilient metal channels across the studs according to the manufacturer's instructions. These light metal strips provide a break to minimize sound waves passing through the studs into the drywall. For added sound reduction, perform the same application to the ceiling.



3. Fasten the drywall to the resilient channels with screws. Ensure that screws do not come in contact with framing.



4. To increase noise control performance of a ceiling, place batts up between the floor joists and then attach the resilient channels and complete the job with drywall. Use QuietZone® Acoustic Floor Mat* on the floor above to further reduce noise transmission. For a basement suspended ceiling system, install batts between joists, staple a poly to the bottom of the joists, then attach the suspension wires for track system to bottom of joists.

5. Foam sealant should also be used to fill larger holes or gaps around outlets and switches. Holes drilled through studs or around pipes or wires running from room to room or floor to floor should also be filled. Use QuietZone® Acoustic Sealant* to fill gaps, openings or other penetrations.

*where available

HOW TO CONTROL NOISE IN YOUR HOME

WAYS TO CONTROL SOUND LEAKS

Increasing Mass

Heavier materials generally block sound better than light weight materials. For example, adding another layer of gypsum board can provide a significant decrease in sound transmission.

Breaking Vibration Paths

Walls transmit sound vibrations from one face to another through structural elements such as metal or wood studs. An effective silencing technique is to stagger wood studs, reducing sound transmission through them. Resilient metal channels can also be used between gypsum wall board and the stud to break the vibration path. Metal studs are more resilient than wood studs and reduce the transmission of vibrations between one wall surface and the other.

Cavity Absorption

The sound transmission loss of a wall can also be noticeably improved by filling the wall cavity with sound absorbing materials such as QuietZone® Acoustical Batts. The key point to remember is that the insulation is absorbing sound. Within a range of densities from 0.60 to 6.00 pounds per cu. ft. for cavity insulation, there is no noticeable difference in the Sound Transmission Class properties for a given insulation thickness.

WHAT ELSE CAN YOU DO?

Use non-hardening caulking such as QuietZone® Acoustic Sealant* around the perimeter of the wall to provide a proper acoustical seal. Joint compound and tape will seal effectively in corners.

Doors

Where optimum noise control is desired, use weather-stripped solid core wood doors. Avoid sliding doors. In hallways, place doors so that they do not open across from one another.

Windows

To help block noise use thick or insulated glass as well as double- or triple-glazed windows with at least ½ inch air space between glazings.

Electrical

Avoid back-to-back placement of light switches and outlets. Use only surface-mounted ceiling fixtures. Seal all openings around boxes. Install all distribution panels only on well-insulated interior walls.

Plumbing

Plumbing noise can be reduced by designing pipe runs with swing arms so expansion and contraction can occur without binding. Isolate piping from surrounding structures with resilient mounts. Air chambers at each outlet will eliminate water hammer. Caulk all openings made in walls and floors with QuietZone® Acoustic Sealant*.

Ducts

Since ducts can easily transmit sound, due consideration should be given to design. Installation of duct liner insulation and the use of duct wrap materials will reduce side-wall transmission of unwanted sound as well as fan noise in the duct. The use of quality, quiet appliances, air conditioners and furnaces with well-balanced motors and fans is recommended to decrease noise transmission along the ducts.

*where available

HOW TO SAVE EVEN MORE ENERGY

Saving the buck does not stop here. To this point, we've covered the biggest and most obvious ways to insulate and save energy, but the savings can add up even more when you attend to some of the smaller details around your home.

Following are some smart tips on other places you can use **PINK® Fiber Glass Insulation** to not only lessen heating and cooling costs, but also contribute to making your home a more comfortable place to be.

HOW TO SAVE EVEN MORE ENERGY

Recommended Products



MULTI-PURPOSE INSULATION

Size

63.5 mm T x 381 mm W x 14.6 m L
(2½" T x 15" W x 48' L)

The same great insulation as our tried-and-true batts but in a small bag. It's a handy size to insulate around pipes and heating or cooling ducts and to insulate gaps around air-conditioners (use poly and red tape to achieve air and vapour barrier seal).



FRICION FIT BATTS

Value R	Thickness		Widths		Lengths	
	mm	in.	mm	in.	mm	in.
12	89	3½	381	15	1194	47'
			584	23		
20"	152	6	381	15	1194	47'
			584	23		
40	265	10¾	406	16	1219	48
			609	24		

***1.219 m (48") in Quebec**

****R-20 attic insulation may be compressed into 2x6 stud construction giving R-19 thermal performance**

Simply push these batts between standard framing members on 406 mm (16") or 609 mm (24") centres taking care not to compress the insulation beyond the edges of the studs. Friction fit holds the batts in place. Use a 0.15 mm (6 mil) polyethylene film on the warm-in-winter side as a vapour retarder.

HOW TO SAVE EVEN MORE ENERGY

Small Insulation Projects

Recommended Products

Multi-Purpose Insulation

R-12 Fiber Glass Insulation	6"
R-20 Fiber Glass Insulation	5½"
R-40 Fiber Glass Insulation	10½"

Installation Procedures



1. Wrap ductwork with batt insulation and poly, with taping of the poly to hold into position. Patch rips or tears in vapour retarders before installing the interior finish.



2. Use small strips for narrow areas and stuff small pieces behind electrical boxes but for sealing and insulating around windows and doors minimal expanding foam sealant works best. Cover with poly and tape all joints and edges to achieve an air tight seal.

3. Wrap water heater with a fiber glass water heater blanket. (Use fiber glass water heater top on electric water heaters only!)



4. The first step in an exterior wall or noise control project is to seal all

penetrations in the walls, such as those for electrical wires and outlets, using an application of foam sealant. Any place that air could leak through is a place where noise could leak through also.

Note: Use two small applications of only minimal expanding sealant around windows and doors or jamming or misalignment may occur.



5. Insulation must be fitted properly around pipes, wiring electrical boxes and heating ducts. On the exterior walls, the insulation must always be installed behind the water supply pipes. There should be no gaps or spaces between insulation pieces. These are places where energy would be lost for the life of the house.



6. The hatchway into an attic is a common source of heat loss. Be sure to insulate the board itself by fastening insulation on it with adhesive. If you have a pull-down stairway, lay batts on and around a built-up framework over the opening. Foam gaskets around hatch are also required.

HOW TO SAVE EVEN MORE ENERGY

Environmental Choices

Solar energy

Think about that big heater that travels across the sky during many cold winter days. Orient windows to take advantage of this free heat, and place furniture or masonry features to soak it up for your comfort. The sun's low position in the winter sky lets its rays pass well into the interior through virtually any window position.

Shade

To prevent this same sun from overheating your home in summer, construct an overhang on south facing walls to block out the rays when the sun is higher in the sky and much hotter. The cost of an extended overhang adds little to initial construction but is effective in reducing summer cooling.

HOW TO SAVE MORE ENERGY

Fireplaces

Fireplaces are not the most efficient heating devices, although they do add a sense of cosy comfort to any room. To prevent unnecessary heat loss up the chimney when the fire is not lit, use a tight damper and keep the glass doors closed.

For an effective fire and freedom from drafts, supply combustion air from outside the house.

Furnaces

An energy efficient house is much better sealed than an older building using standard construction. This means you must provide ample combustion air to all types of fuel burning equipment.

If these devices do not get enough air they will not operate efficiently. Worse, they may emit toxic fumes or even reverse flue action to bring smoke and gases into your house.

Sufficient combustion air may be provided in several ways, the simplest being an air duct from outside. Check with the manufacturer or installer of your furnace or with other heating authorities in your area.

Colour

Roof colour over flat roofs or cathedral ceilings can affect the temperature inside. Even on conventional roofs, attic temperature can be altered by roof colour.

A dark roof will tend to absorb heat from the sun, while a light coloured roof will reflect the sun's rays, helping to reduce heat gain.

Landscaping

If you have the opportunity to plant trees, locate them where they will add to your comfort. A tree that loses its leaves in winter will provide welcome shade in summer without blocking the sun's warmth in winter. Smaller trees near a deck or patio will catch the summer breeze and add a pleasant cooling effect.

Conifers planted in a row will help break chilly winds and deflect their full force from the walls of your house. Earth berms have a similar effect by lifting the wind up and over a building. Check out the prevailing winter wind and protect your house as much as possible.



FOR FURTHER INFORMATION

The suggestions and guidelines presented in this booklet conform to established practices used throughout the building construction industry. We offer them in the belief that, if followed, they will result in a well insulated home that delivers significant energy savings.

However, every house is different and **Owens Corning Canada Inc.** offers no guarantee that the results of your insulating project will achieve the energy savings you may expect. You must use your judgement in planning and installing insulation to gain the best possible results.

If you are unsure about something, ask your building supply dealer about the **PINK® Fiber Glass** and **Extruded Polystyrene** insulating products you buy and follow your dealer's guidance about the best ways to install them.

This booklet is based on normal modern construction practices.

All materials recommended in this booklet are available from your building supply dealer.

If you would like further guidance or are interested in advanced low energy building, using special construction approaches, please contact **Owens Corning Canada Inc.** for further information.

