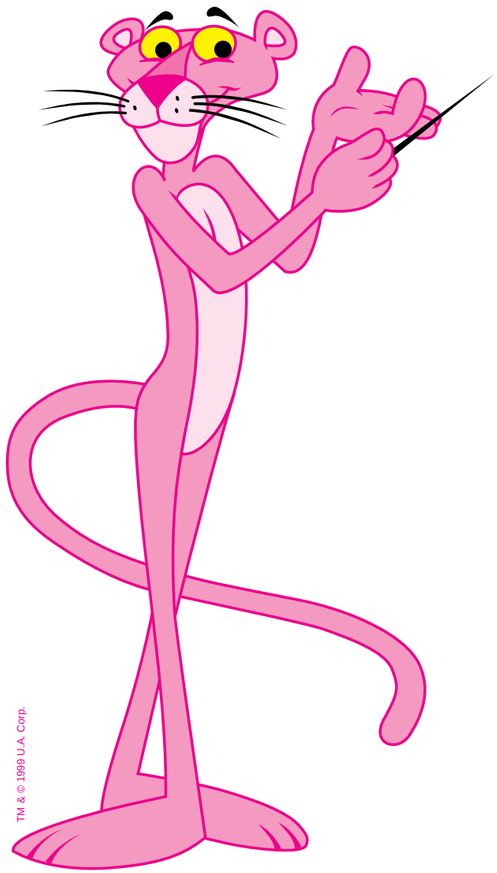
SYSTEM THINKING WITH PINK® INSULATION

TM & © 1999 U.A. Corp.

The System Thinking Home™

OWENS CORNING®

The suggestions and information in this guide are based on currently available data and normal construction practices. To the best of our knowledge, they are accurate and appropriate. However, since Owens Corning Canada Inc. cannot control the use of this information or the actual installation of its products, we cannot warrant the results achieved. Before you begin a major weatherproofing or insulating project, check the appropriate section of this brochure, add your own judgement and experience and consult with the local building code officials. As mentioned, this brochure is based on normal construction practices. If the reader is interested in low energy houses that entail departures from normal practices, please contact Owens Corning Canada Inc. for further information.



THINK SYSTEM THINKING!™

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*.

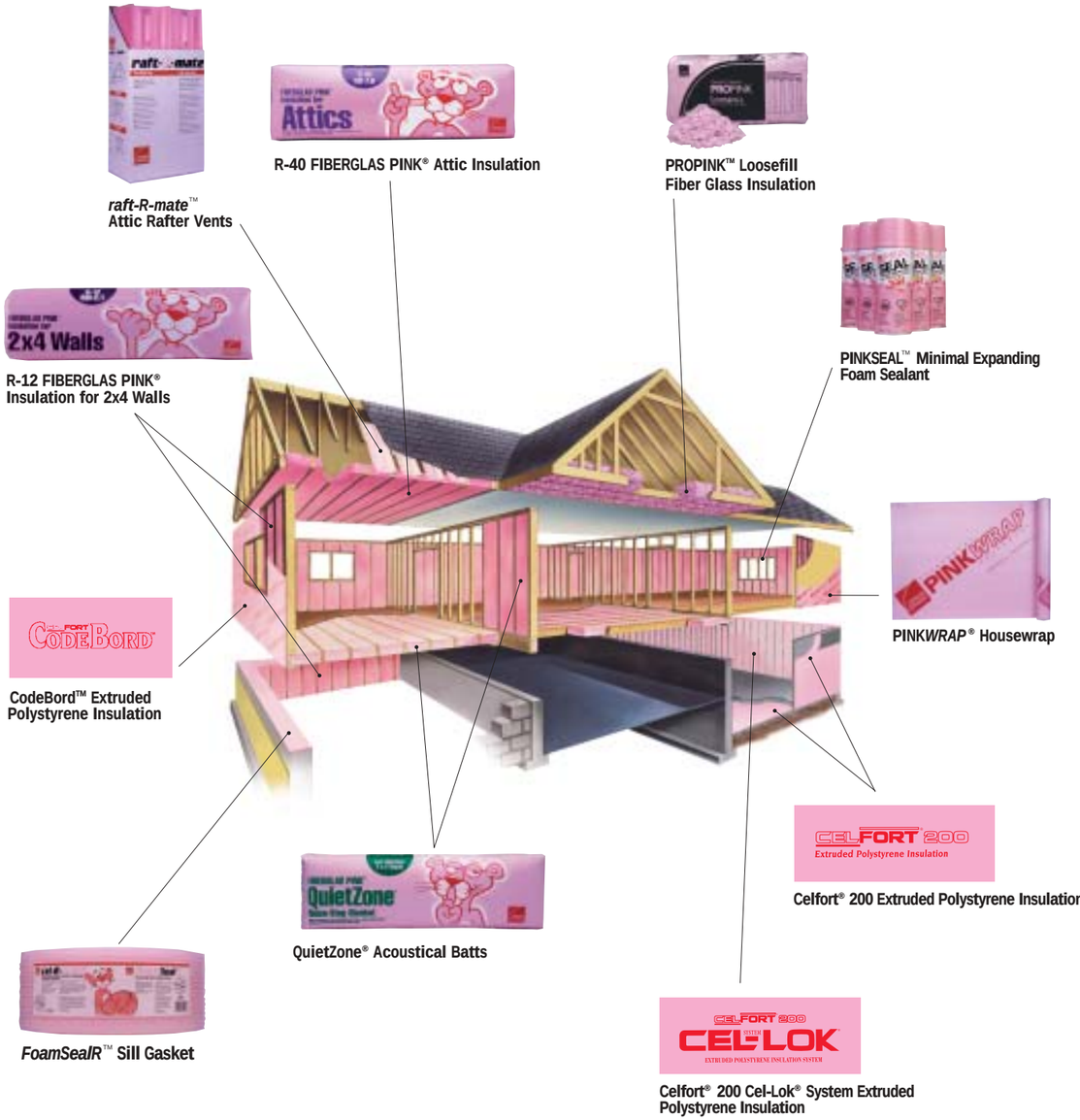
Owens Corning *System Thinking*™ is about getting the most from your home insulation products, that means having them work together.

Take our **High Performance Wall** for example. It features CodeBord™ (Extruded Polystyrene Insulation) in combination with FIBERGLAS PINK® Insulation batts and accessory products, in a 2x4 or 2x6 wall assembly.

CodeBord™ takes care of the outside by covering the entire exterior frame, even the studs, through which most of heat escapes traditional wood sheathing wall assemblies. The inside of the wall is insulated with our tried and true PINK® batts, with PINKSEAL™ Minimal Expanding Foam Sealant 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™!

System Thinking™ Products For Every Insulation Job!



raft-R-mate™ Attic Rafter Vents

R-40 FIBERGLAS PINK® Attic Insulation

PROPINK™ Loosefill Fiber Glass Insulation

PINKSEAL™ Minimal Expanding Foam Sealant

R-12 FIBERGLAS PINK® Insulation for 2x4 Walls

PINK*WRAP*® Housewrap

CodeBord™ Extruded Polystyrene Insulation

Celfort® 200 Extruded Polystyrene Insulation

QuietZone® Acoustical Batts

FoamSeaIR™ Sill Gasket

Celfort® 200 Cel-Lok® System Extruded Polystyrene Insulation

GAIN THREE WAYS WITH EFFECTIVE INSULATION

1. Cut heating and air conditioning costs
When you insulate your home properly with Owens Corning products you increase energy efficiency. Heat flow between inside and outside is reduced to a minimum. In winter, you need less heat to keep your house warm. In summer, natural cooling and air conditioning are more effective. Result: you cut down on energy bills--winter and summer.

2. Make your home more comfortable
When your home is well insulated and sealed, you feel warmer in winter and cooler in summer. With no cold spots or chilly drafts, the whole family can relax in comfort. With less summer heat entering your house, you can maintain a more natural environment.

Good insulation helps also to manage the flow and volume of sound. You can also take advantage of the acoustical properties of QuietZone® Acoustical Batts.

3. Increase resale value
Of all improvement projects, insulating every last part of the house, including the attic and basement, is one of the best ways to increase your home's resale value. Once insulated, you can confidently finish areas for living and working activities - thus adding to the valuable square footage available.

Note that actual savings will depend on the effects of several related factors, including thickness of insulation installed, efficiency of air and moisture barriers, quality of workmanship, building construction materials and exposure to the elements. The number of occupants, their lifestyle and the way appliances are used will also affect energy savings.

This brochure is based on currently available data and assumes normal construction practices. The information provided is, to the best of our knowledge, accurate and appropriate for the purposes suggested. However, as Owens Corning Canada Inc. cannot control the use of this information, or the actual installation of its products, the company cannot warrant any of the results indicated.

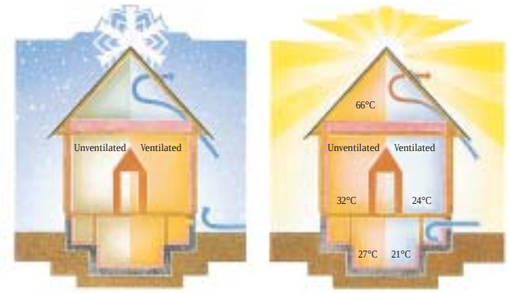
LET'S LOOK AT THE WHOLE INSULATION PROJECT

Insulation is simply a material for reducing the escape of heat from your home. Insulation also helps reduce the heat entering your home in summer. Imagine heat as something that always tries to move toward a cooler area, travelling through any material that does not stop it. Heat can move easily through single panes of glass, metal, concrete and plastic. But it cannot move easily through materials that contain pockets of still air. Note: Air conditioning load is primarily influenced by window size, type (e.g. Low-E glass) and placement, not so much on insulation levels. Insulation will help but can be completely undermined by poor window design.

FIBERGLAS PINK® Insulation holds millions of tiny air pockets, each acting as a resistance to the flow of heat. In winter, your expensive heat bumps up against the insulation. Its movement is slowed, and it becomes trapped inside your home, where you want it. In summer, it's cooler inside the house. Outdoor heat trying to enter it is likewise resisted.

The idea, then, is to create an envelope all around your house to minimize energy requirements. This protective envelope should be as continuous as possible. It is achieved with vapour retarders, attic ventilation, caulking, weatherstripping, insulation and insulating sheathing. These must all work together to ensure that the whole system stays at peak efficiency over the years. (If you're building or doing major upgrading, you'll also want to think about double glazed Low-E windows and insulated doors.)

Attic and crawl space ventilation



Coming up for air

Remember that you need air inside your house. The virtually total sealing achieved with super energy efficient construction means you have to provide for an effective method of exchanging stale inside air for fresh outside air-without circumventing all your energy saving efforts.

Even if you are upgrading an older building, it is possible to create the same type of problem if sealing is super efficient. Evaluate the air flow situation in your home and check out the various air exchange methods and equipment available.

Your attic must be well ventilated. Any water vapour passing through imperfections in the ceiling vapour retarder must be allowed to escape to avoid potentially harmful condensation in the cold attic. For the same reason, ventilation above the insulation in a cathedral ceiling is also necessary. In the summer, attic ventilation will help the house stay cooler by reducing heat build-up in the attic.

Air is encouraged to flow in these areas by vent openings at strategic points at the soffit, or on the roof. Look to your hardware store or building supply dealer for roof vents, ridge vents, gable vents, perforated soffits, crawl space vents and attic ventilators. Special *raft-R-mate*™ baffles are available to ensure air can flow up from eave vents between attic insulation and roof sheathing.

Follow code requirements and manufacturer's directions for installing these ventilation devices. In attic areas, provide both lower (eg. soffit) and higher (eg. ridge) openings so that air can flow in one level and out the other. Calculate one square foot of opening for every 300 square feet of attic area.

Heated crawl spaces should have vents with tight-fitting covers that can be closed in the winter and opened in the summer.

Caulking and weatherstripping

A half-inch crack under an outside door is equivalent to having an 18 square inch hole in it! Plug up all spaces and gaps with weatherstripping, caulk or PINKSEAL™ Minimal Expanding Foam Sealant. Look around windows and doors, structural joints and areas where different building materials meet. There are many different products for these purposes - your hardware store or building supply dealer will help you choose the most suitable for each situation.

LET'S LOOK AT THE WHOLE INSULATION PROJECT

Vapour retarders

Everyday life in your home creates a surprising amount of moisture-from five to ten pounds a day. If you wash or dry clothes indoors, you may be adding another 30 pounds. This moisture is generally in the form of vapour, which can be absorbed by wood and other building materials, finally passing through to the outside.

In winter, if this moisture vapour reaches the cold inner side of exterior surfaces, it will condense and form water drops. These will accumulate until everything in the wall gets damp or even wet, including the insulation. There goes your R-Value. And eventually you will discover stains on the inside of walls, blistering of outside paints and damage to brick veneer or siding. What you may not discover until it's too late, is rotting wood framing members.

You must install a vapour retarder on the warm-in-winter side of every wall and ceiling, generally immediately under the drywall or finish paneling. If the vapour retarder is to be installed between layers of wall insulation, it is recommended that you have a professional check for the correct location of the dewpoint. This will determine where to install the vapour retarder within the wall assembly. Do not put a vapour retarder on the outside of the wall, it will simply act as a collection device for the condensing moisture.

Your vapour retarder will normally be a continuous sheet of 6 mil polyethylene, sold where you buy your insulation, or possibly foil-backed gypsum wallboard. If you use polyethylene, just staple it to the framing members over the insulation, making sure to overlap all joints by at least six inches.

Be sure to caulk around all the breaks in the retarder, such as electrical outlets and plumbing. If it gets torn, fasten a patch in place with sheathing tape or duct tape.

THE SYSTEM THINKING™ PRODUCTS FOR EVERY INSULATION JOB.

There are several types of insulation material, each designed to do the best possible job in a specific application. As it is important that you get the biggest energy savings possible at the lowest installed cost, check out these Owens Corning materials to see where they fit in your insulating plans. In this brochure, insulation thickness is given to help you work out the space needed to accommodate it. Remember, if it is 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.

FIBERGLAS PINK®
FIBERGLAS PINK® Insulation is non-combustible (except for RSI 2.4 and RSI 3.87). It is inorganic, will not settle or rot and will not sustain vermin.

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

Recommended R-Value	RSI	R
Attics	7.0	40
Cathedral ceilings	6.1	35
Exterior walls	3.5	20
Basement walls more than 50% above ground	3.5	20
Basement walls more than 50% below ground	2.1	12
Floors over unheated spaces	4.9	28
No basement: heated crawl space	2.1	12
No basement: concrete slab on ground	2.2	12.5
No basement: heated slab	2.6	15

Friction Fit Batts

	Value		Nominal thickness		Standard widths		Standard lengths	
	RSI	R	mm	in.	mm	in.	mm	in.
Walls	2.1	12	89	3.5	381 584	15 23	1194	47**
Walls	2.29	13*	89	3.5	375 584	14.75 22.75	1194	47
Walls	2.4	14	89	3.5	381 584	15 23	1194	47
Walls	3.5	20***	152	6	381 584	15 23	1194	47**
Walls	3.87	22*	140	5.5	375 584	14.75 22.75	1194	47
Attics	4.9	28	216	8.5	406 609	16 24	1219	48
Attics	5.4	31	235	9.25	406 609	16 24	1219	48
Attics	6.1	35	251	9.87	406 609	16 24	1219	48
Attics	7.0	40	265	10.37	406 609	16 24	1219	48

* where available
** 1.219 m (48″) in Quebec
*** R-20 attic insulation may be compressed into 2 x 6 stud construction giving RSI 3.34 or 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.

Steel Stud Insulation

Value		Nominal thickness		Standard widths		Standard lengths	
RSI	R	mm	in.	mm	in.	mm	in.
2.1	12	92	3.625	406 609	16 24	1219	48
3.5	20	152	6	406 609	16 24	1219	48

This version of FIBERGLAS PINK® Insulation provides batts to match steel stud construction.

QuietZone® Acoustical Batts

	Size (mm)	(in.)	Area/Pkg (m²)	(sq.ft.)
Wood Stud	381 x 1219 x 89	(15 x 48 x 3½)	10.22	(110.00)
	584 x 1219 x 89	(23 x 48 x 3½)	15.66	(168.60)
Steel Stud	406 x 1219 x 63.5	(16 x 48 x 2½)	15.84	(170.40)
	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)
	609 x 1219 x 89	(24 x 48 x 3½)	17.84	(192.00)

QuietZone® Acoustical Batts 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.

Multi-Purpose Insulation

Size
63.5 mm T x 381 mm W x 14.6 m L (2.5˝ T x 15˝ W x 48' L)

The same great insulation as our tried and true batts but in a small bag. It's the perfect size to insulate around pipes and heating or cooling ducts and seal gaps around air-conditioners.

PROPINK™ Loosefill Fiber Glass Insulation

Size
13.6 kg (30 lb.) bag

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.

PINK*WRAP*™ Housewrap

Nominal thickness		Standard lengths		Standard widths	
mm	mils	m	ft.	m	ft.
0.2	8.0	30.5	100	0.9 2.7	3 9
		59.4	195	2.7	9

PINK*WRAP*™ Housewrap is a perforated, cross-woven polypropylene fabric with a polypropylene coating engineered as an air infiltration and moisture protection barrier breathing type sheathing membrane for use in residential and commercial sidewall construction.

FoamSealR™ Sill Gasket

Size 6 mm thick (3/16")	Rolls per bag
89 mm W x 15.2 m L (3 ½˝ W x 82' L)	12
140 mm W x 15.2 m L (5 ½˝ W x 82' L)	8

A good percentage of a building's heat loss is 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.

PINKSEAL™
Minimal Expanding Foam Sealant

Available Can Sizes

340g (12oz.), 568g (20oz.)

PINKSEAL™ seals cracks and holes in walls and around doors and windows to stop air infiltration that helps lower home energy bills. It also has some acoustical properties and can be used to block noise pathways such as around electrical outlets. PINKSEAL™ is easy to use and insulates better than caulking, in fact, one 340g can (12 oz.) is the same as 20 tubes of caulking.

raft-R-mate™ Attic Rafter Vents

Size	Vents per carton
572 mm x 1.2 m x 51 mm (22 ½˝ x 48˝ x 2˝)	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.

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˝ ,1 ½˝ , 2˝)
1.2 m W x 2.7 m L (4' W x 9' L)	25.4, 38, 51 mm (1˝ ,1 ½˝ , 2˝)

CodeBord™ is a rigid foam insulation that is installed on the exterior of 2 x 4 or 2 x 6 wood stud walls. It has a thermal resistance of R-5 per inch of thickness that blankets the exterior frame, reducing heat loss though 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.

Celfort® 200 Extruded Polystyrene Insulation

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˝ ,1 ½˝ , 2˝ , 2 ½˝ , 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.

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 (1 ½˝ , 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.

It is very important that all parts of the insulating system-vapour retarder, ventilation, caulking, weatherstripping and insulation-are properly installed. Poor workmanship or incorrect use can not only reduce the effectiveness of your insulation, it can also cause major structural and comfort problems in the years to come.

This brochure shows you how the various Owens Corning Insulations should be installed, and what special techniques can be used to make the job easier and more effective.

Insulate your home as well as possible and get the best overall results and the biggest long-term energy savings. Check your plans, or existing insulation, against this picture and check for weak spots-where the energy escapes!

At the roof

One of the key insulation points is above your living spaces. It's worth installing at least 304 mm (12″) of FIBERGLAS PINK® 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 (RSI 7.0) rating. Alternately, you can install single R-40 (10 3/8″ thick) batts over the same area.

If you have finished attic rooms, be sure to insulate them in exactly the same way as cathedral ceilings and exterior walls. Ceilings under flat or peaked roofs are difficult to insulate because there is no free attic space above them. Here you have to install the maximum thickness of insulation between the rafters while leaving 63.5 mm (2½″) inch minimum clearance between insulation and sheathing for ventilation (see page 17).

In the walls

All exterior walls built with 2 x 4 studs should be insulated with R-12, R-13 or R-14 FIBERGLAS PINK® Batts plus Owens Corning CodeBord™ Exterior Insulating Sheathing. Another effective approach is to build with 2 x 6 studs so that you can install compressed R-20 or uncompressed R-22 insulation. Another alternative is to build a double 2 x 4 wall with staggered studs, each with its own layer of insulation.

Extra R-Value, and protection against drafts, can be achieved by using CodeBord™ in addition to the batt insulation. One inch CodeBord™ sheathing will give you an additional R-5.0 (RSI 0.88), 38 mm (1½″) R-7.5 (RSI 1.32) and 51mm (2″) thickness gives an additional R-10 (RSI 1.76). The continuity of CodeBord™ Sheathing prevents thermal bridging at stud locations. Be sure to fully insulate walls between living spaces and garages and storage areas.

DO IT RIGHT - INSULATE FOR MAXIMUM EFFECT

All Owens Corning Insulation products conform to industry and government standards. FIBERGLAS PINK® Home Insulation has been tested in accordance with CAN/ULC S102-M88 and classified as Flame Spread 15, Fuel Contributed 10, Smoke Developed 5. It is rated as non-combustible according to test method CAN/ULC S114-M80 (except R-14 and R-22). FIBERGLAS PINK® Home Insulation, PROPINK™ Loosefill Fiber Glass complies with CAN/ULC-S702-97.

CCMC Evaluation Report Number:

FIBERGLAS PINK® Home Insulation	*05650-L*
QuietZone® Exterior Sheathing	*08900-L*
ProPink™ Loosefill Fiber Glass Insulation	*12851-L*
CodeBord™/Celfort® 200/Cel-Lok®	*11246-L*

Make it easy and effective

See the following installation pages for details on how to make sure all your insulation work is effective and long-lasting.

Under floors

When it comes to floors, it's very important to insulate over cold spaces such as floors cantilevered over garages, vented crawlspaces and unheated basements. Aim for 8" of insulation: R-28 (RSI 4.9).

In the basement

Leaking basements are a major concern for every home builder. With over a decade of successful drainage experience, Owens Corning recommends that a drainage layer be installed. It is designed to be a protective layer or capillary breaking layer against the foundation wall to protect the wall against transient or intermittent water which may come in contact with the wall surface. It should be used in pervious or semi pervious soil conditions which allow for some drainage through the soil.

PLAN AHEAD

TM & © 1999 U.A. Corp.

PLAN AHEAD FOR SUCCESS

Your insulation project falls into one of two categories: new construction or renovation.

New construction can include additions to an existing house and/or major renovations involving construction of new walls. New construction offers the best, and most economical, opportunities for effective insulation. This is the time to ensure plans call for the highest quality insulation and construction practices- it's much easier to do it now than have to upgrade later when everything has been closed in.

Renovation projects often offer an opportunity to upgrade insulation but– because much of the structure is already enclosed–the task requires knowledge of insulation techniques and careful planning. Attic insulation, however, is usually simple and relatively easy to install.

Plumbing and wiring

Be sure to talk to plumbers and electricians in either case to make sure they understand your insulation plans and work to enhance your energy savings objectives-not frustrate them.

For example, plumbing should, where possible, be kept out of exterior walls: a basic design consideration. Wiring can be placed to make insulation easier throughout the house. In the attic, wires can be run along the top edges of joists and along the underside of rafters-although some provision must be made for placing walkways without damaging the cables. Thoughtful placing of wires and boxes in walls can also help keep insulation continuous.

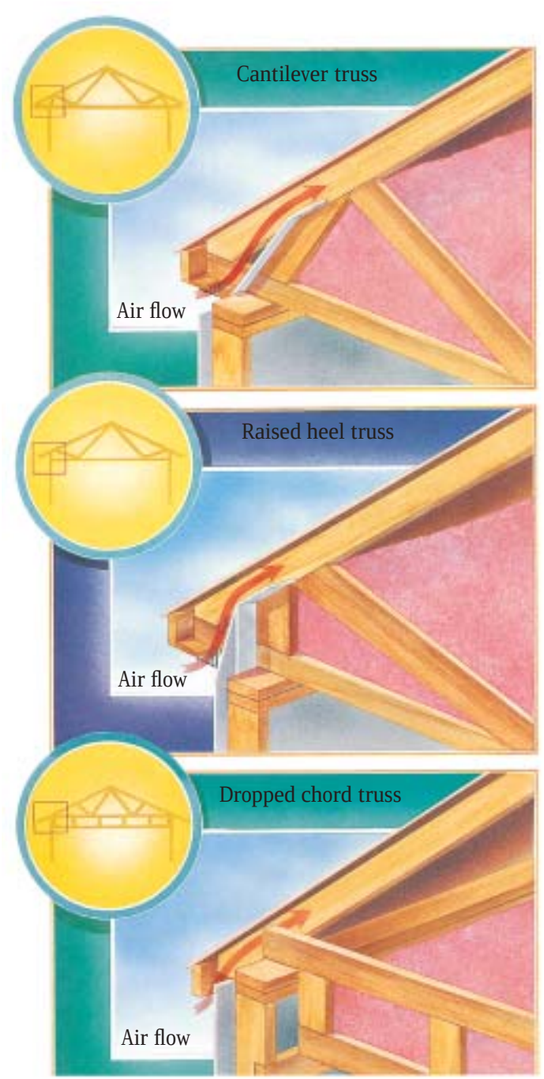
General construction

When you are planning construction details, remember that batts come in either 381 m (15″) or 584 m (23″) widths and 1194 m (47″) and 1219 m (48″) lengths to fit wood stud cavities - minimize cuts by avoiding unnecessary interruptions and off-standard spacings.

New roofs

If you are planning to build, now is the time to think about roof lines and the problems of insulating special designs such as cathedral ceilings and flat roofed sections of your house.

With the insulation thicknesses now being used, builders are raising the roof line at its edge to allow insulation to be installed without being compressed. Raised heel, cantilever, and dropped chord trusses offer effective solutions to this problem.

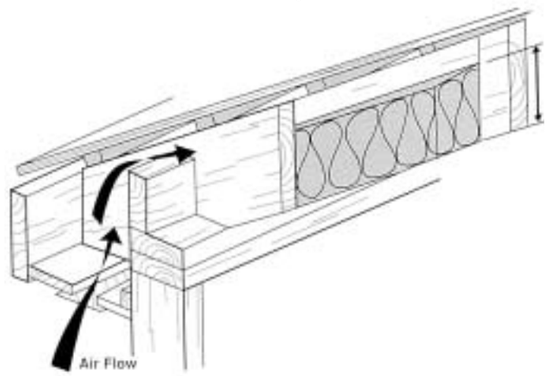


Cathedral ceilings and flat roofs

Think carefully before you opt for these design features; both pose problems in achieving effective insulation while providing adequate ventilation. On flat or low slope roofs (less than 1 in 6) the top of the insulation should be at least 25.4 mm (1″) below the top of the roof joists. In addition, 38 mm (1½″) thick furring strips must be placed perpendicularly across the top of the joists. There should be one square foot of ventilation area for every 150 square feet of ceiling area. If the slope is 1 in 6 or greater and the joists run in the same direction as the slope, then the 38 mm (1½″) cross furring strips may be omitted. In this case, there must be not less than 63.5 mm (2½″) between the top of the insulation and the roof sheathing. The ventilation should be distributed so that 50% of the required vent area is near the lower part of the roof and 50% is near the ridge.

The use of scissor trusses or parallel chord trusses will allow for a greater thickness, and therefore higher R-Value, of insulation under these types of roofs.

Cathedral ceiling insulation



BE PREPARED

BE PREPARED

Work always goes easier if you have the right tools for the job. Insulation is not difficult to install, although much of the work is done in confined areas such as attics or crawl spaces.

In a conventional eight foot high wall, with studs on 16″ or 24″ centres, all you have to do is push the friction fit batt of insulation into place without compressing it. But as soon as you come to shorter sections and details, you'll have to do some cutting.

You'll need a tape measure, a straight-edge and a utility knife to install batts. Just press down on the straight-edge and cut through the insulation. Fill small spaces around doors and windows with PINKSEAL™ Foam Sealant.

Vapour retarder

When you install the vapour retarder, you'll need a lightweight, squeeze-type stapler, with plenty of refills. Polyethylene comes already sized for standard wall heights but you have to cut it to fit the length of the wall-be sure to overlap all joints by at least six inches, at a framing member.

CODEBORD™

If you're installing CodeBord™, you'll need nails with 19mm (3/4″) diameter heads or 25.4 mm (1″) washers, and a hammer. Be sure to get nails that are at least 25.4 mm (1″) longer than the thickness of the CodeBord™. Read the directions first.

In the attic

When you're working in the attic, you may need some boards or a sheet of plywood placed over the joists so you can walk around and sit or kneel to work. A broom handle or hockey stick is very useful for pushing batts into hard-to-reach places such as where the rafters come down to meet an outside wall. Be sure to not block (soffit) ventilation. Don't forget a portable safety light if you have to work in unlit areas.

Work safely

Insulating materials can be dusty and may cause temporary skin irritation after contact.

Always wear lightweight goggles and a high quality dust mask. In very enclosed and dusty situations, we suggest you use a (WHMIS specification) dust/mist respirator.

Wear loose clothing with long sleeves buttoned around your wrists, snug work gloves and a hat.

When you're finished, wash or shower with soap and luke warm water to remove the dust before you open your pores with hot water. Launder your work clothes separately.

Be constantly aware of other safety precautions such as not using an open flame near polyethylene vapour retarders.

Additional safety items include a pair of knee pads, for extended kneeling in cramped areas, a step stool for hard to reach places, and a tool box or other container to put your tools in while you work - things easily get misplaced in an attic full of insulation.

In the attic

This is probably the easiest place to insulate, whether you're working in a new building or upgrading an existing house.

In new construction, batts are usually installed from below. They should be pushed carefully between the joists-batts of R-28 and higher are designed to knit over the top of the joists providing a continuous blanket of insulation.

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

If you're retrofitting an existing attic space where some insulation has already been installed, first fill the space between the joists to the depth of the wood and then place any further layers of batts at right angles to the joist. Alternatively, you can install one thick layer or two thinner layers of proper width batts to fit between the ceiling joists or bottom truss members.

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. 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.

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 51mm (2″) space between insulation and the chimney structure or stainless steel insulated flue. Where contact with non-combustible insulation is permitted, FIBERGLAS PINK® Batts or Loosefill Insulation meets the requirements for non-combustibility with the exception of R-14 and R-22 batts. 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.

ATTICS

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, the specified insulation thermal performance is guaranteed.

Contact 1-800-GET-PINK (1-800-438-7465) for further information.

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]		Minimum Mass per Unit Area		Maximum Coverage per Bag[2]		Minimum Number of Bags per Unit Area	
RSI	R	mm	in.	kg/m²	lb/ft²	m²	ft²	100 m²	1000 ft²
1.9	11	92	3¾	1.03	0.21	13.1	141.5	7.6	7.1
2.1	12	102	4	1.14	0.23	11.9	128.1	8.4	7.8
2.8	16	136	5¼	1.52	0.31	8.9	96.0	11.2	10.4
3.3	19	160	6¼	1.80	0.37	7.6	81.5	13.2	12.3
3.5	20	170	6¾	1.91	0.39	7.1	76.8	14.0	13.0
3.8	22	185	7¼	2.07	0.42	6.6	70.8	15.2	14.1
4.2	24	204	8	2.29	0.47	5.9	64.0	16.8	15.6
4.9	28	238	9¼	2.67	0.55	5.1	54.9	19.6	18.2
5.3	30	257	10¼	2.89	0.59	4.7	50.7	21.2	19.7
5.6	32	272	10¾	3.05	0.62	4.5	48.0	22.4	20.8
6.0	34	291	11½	3.27	0.67	4.2	44.8	24.0	22.3
6.3	36	306	12	3.43	0.70	4.0	42.7	25.2	23.4
6.7	38	325	12¾	3.65	0.75	3.7	40.1	26.8	24.9
7.0	40	340	13½	3.81	0.78	3.6	38.4	28.0	26.0
7.7	44	374	14¾	4.19	0.86	3.2	34.9	30.8	28.6
8.4	48	406	16	4.57	0.94	3.0	32.0	33.5	31.2
8.6	49	418	16½	4.68	0.96	2.9	31.3	34.4	32.0
8.8	50	427	16¾	4.79	0.98	2.8	30.5	35.2	32.7
9.1	52	442	17½	4.95	1.01	2.7	29.6	36.4	33.8
9.8	56	476	18¾	5.33	1.09	2.5	27.4	39.2	36.4
10.5	60	510	20	5.72	1.17	2.4	25.6	42.0	39.0

[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.

CATHEDRAL AND FLAT CEILINGS

Whether new construction or renovation, your finished attic cathedral ceiling or flat ceiling should be properly insulated for maximum energy savings. Be sure to insulate knee and end walls as well as under the roof.

Before proceeding, be sure to read the information on cathedral ceilings and flat roofs on page 17.

1. A vapour retarder is strongly recommended for ceilings. Lengths of poly 102 mm (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 152 mm (6″) or tape. Three coats of old alkyd paint or new vapour barrier paint with sealing of all penetrations are generally acceptable alternatives to poly. Place the batts between the ceiling joists. Snug the ends up so they butt tightly, with no gaps anywhere.

2. Complete installing insulation in knee walls and end walls, stuffing small pieces in the spaces around windows and in narrow details. (Be sure that you have fitted all necessary gable and roof vents before placing the insulation.)

3. Apply your wall or ceiling finish, such as drywall, directly over the vapour retarder, fastening it to the joists, beams or studs.

Every exterior wall in the house should be insulated to the maximum R-value possible. Use CodeBord™ Sheathing directly on the outside edge of the studs and then fill the entire width of the studs with FIBERGLAS PINK® Insulation and accessory products in a 2″ x 4″ or 2″ x 6″ wall assembly.

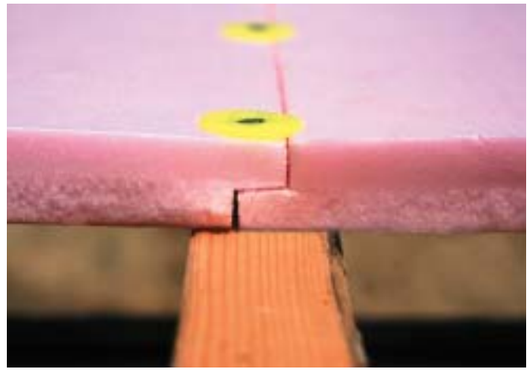
Note: According to the National Building Code of Canada (NBCC), permanent bracing is not required where walls are finished on the interior with 13mm (1/2″) gypsum board, or a similar material conforming to NBCC requirements. When the interior of the framed wall is not finished or when additional bracing is desired, please consult the NBCC or local codes for bracing requirements. Since CodeBord™ is a non-structural insulating sheathing, it may be necessary to provide temporary bracing during wall construction.

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 shiplap 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 104 mm (4″) wide panels should always meet and be supported by a stud. CodeBord™ has a shiplap 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 practicable.

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 2 x 4 walls, compressed R-20 or un-compressed R-22 for 2 x 6 walls) taking care not to compress the insulation, and then cover the entire wall with 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.

EXTERIOR WALLS

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 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.

FLOORS OVER UNHEATED AREAS

A cold floor will rob your insulated house of much of its comfort, not to mention your precious energy. Any floor which projects over an exterior wall or which is directly above an unheated crawl space or basement should be very well insulated and sealed against air leakage. Your best choice is FIBERGLAS PINK® R-28 Insulation.

If you have a vented crawl space with insulated ducts and no pipes, simply install insulation on the underside of the floor. If you have uninsulated ducts and pipes, you should insulate the walls of the crawl space and place a moisture barrier sheet over the ground below. (See "Crawl Space" on page 28.)

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. Batts 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 PINK*WRAP*™ Housewrap.

CRAWL SPACE

Use FIBERGLAS PINK® Batts in this area. In addition to the 6 mil poly moisture barrier placed on the ground, a vapour retarder is required on the warm side of the insulation.

1. Spread 0.15mm (6mil) 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 retarder over insulation, taping all joints. Tape edge of vapour retarder to ground cover poly, at edge of horizontal insulation.

FINISHED BASEMENTS WITH BATTS

If you plan to have a finished basement, in which you will spend family time or enjoy hobby activities, you will want to finish the walls in much the same way as you finish all the other walls in the house.

Such an insulated, finished basement increases the resale value of your home.

Before you do any insulating work inside, make sure the exterior surfaces of your basement walls have been properly sealed. If the inside surface of any basement wall shows signs of dampness or wet spots, you must have the foundations checked by a professional. There is no point insulating over a basement wall that lets dampness through.

Note: For best results, you should wait a year after the construction of a new basement to allow the concrete to dry before finishing the interior. New construction will have some moisture behind the moisture barrier but wood studs stay dry and any draining water escapes at the crack between the floor and the wall. Installing FoamSealR™ Sill Gasket under the bottom plate or using a preserved wood bottom plate ensures the proper performance of this member.

1. If an air-gap membrane is not installed on the outside of the foundation, 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.

FINISHED BASEMENTS WITH BATTS

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.

FINISHED BASEMENTS WITH THE CEL-LOK® SYSTEM

An effective way to insulate your basement, without the need for wood studs and FIBERGLAS PINK® batts, is to install the Celfort® 200 Cel-Lok® System Extruded Polystyrene Insulation.

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 the shiplap edge 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 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 51mm x 76mm x 152mm (2″ x 3″ x 6″) piece of wood.

7b) Fasten the 2″ x 3″ x 6″ wood piece to the foundation wall.

7c) For 38 mm (1 ½″) thick panels, fasten the electrical box to the side of the 2″ x 3″ x 6″ wood piece. The electrical box must exceed the 2″ x 3″ x 6″ 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 mentioned procedure while adding a 13 mm (1/2″) thick spacer behind the 2″ x 3″ x 6″ 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 PINKSEAL™ Minimal Expanding Foam Sealant to fill the enlarged groove, the area behind the electrical box and the perimeter of the 2″ x 3″ x 6″ 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 PINKSEAL™ Minimal Expanding Foam Sealant.

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

FINISHED BASEMENTS WITH CEL-LOK®

8. When installation is complete, cover the insulation with 13mm (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.

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). A high R-Value of R-5 per inch of thickness will not decay over time. 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.

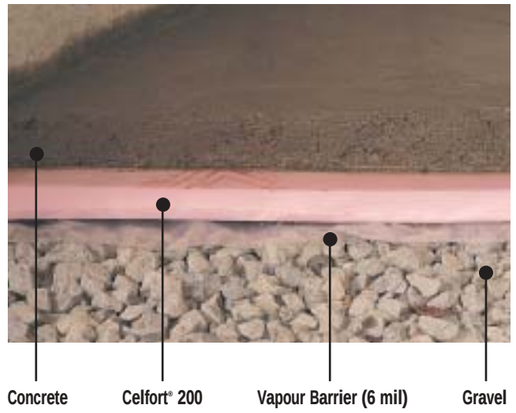
1. Place 102 mm (4″) minimum of coarse clean granular material on top of the undisturbed native soil. Ensure that the gravel is level.

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 maybe 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.

DETAILS TO LOOK OUT FOR

For the best results, you want your insulation to be as continuous as possible, with no gaps or thin spots to allow heat to escape. This becomes more difficult when you have to deal with ducting, wiring, plumbing, small spaces and special features in your house.

As a general rule, simply cut or tear pieces of insulation to fit in or around the problem so that the overall thickness (and R-value) is maintained.

Split insulation and pass it behind and in front of electrical wiring where the cable passes through the centre of wall studs.

Cut insulation to fit around electrical boxes and seal the vapour retarder penetration. One suggestion is to caulk the vapour retarder to a pre-fabricated plastic pan surrounding the outlet.

It is best to avoid running any plumbing lines in exterior walls. But if you have to, make sure to slip the insulation behind the pipes so that they will be insulated against freezing.

DETAILS TO LOOK OUT FOR

Insulation can be wrapped around ductwork and held in place with duct tape to help prevent heat loss where it is not needed.

Spray PINKSEAL™ Minimal Expanding Foam Sealant into the small spaces around windows and doors to prevent heat loss. FIBERGLAS PINK® Insulation will not stop drafts. Use poly wrap method over FIBERGLAS PINK® Insulation around window or use PINKSEAL™ Minimal Expanding Foam Sealant.

If your vapour retarder gets torn or punctured, be sure to patch it over before applying the finish. Polyethylene film can be patched with duct tape or builder's tape.

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.

SOUND PROOFING YOUR HOME

While you're thinking about thermal insulation, give some thought to acoustical insulation as well. FIBERGLAS PINK® Insulation and QuietZone® Acoustical Batts are effective sound absorbers.

With insulation all around its exterior, you'll find your whole house is sheltered from many outside noises.

You can take the same approach to confining noise within certain rooms or areas, helping make domestic life quieter and more pleasant.

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!

1. Place FIBERGLAS PINK® 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 prevent sound waves from passing through the studs into the drywall. For added sound reduction, do the same application to the ceiling.

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

3. To soundproof a ceiling, place batts up between the floor joists and then attach the resilient channels and complete the job with drywall. 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. The poly acts as an assembly sound block for absorptive ceiling tiles.

WAYS TO CONTROL SOUND LEAKS

Ways to Control Sound Leaks

Increasing Mass
Heavier materials block sound better than light materials. For example, adding another layer of gypsum wallboard provides increased sound transmission loss.

Breaking Vibration Paths
Walls transmit sound vibrations from one face to another through structural elements such as metal or wood studs. An effective technique is to stagger wood studs, reducing sound transmission through them. Resilient metal channels can also be used between the 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 difference in the sound absorbing properties.

What Else Can You Do?

A non-hardening caulking air seal around the perimeter of the wall provides 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
Windows normally have lower STC (Sound Transmission Coefficient) values than the surrounding wall.

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
To eliminate any unwanted sound, design 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. Avoid installing fixtures back-to-back. Caulk all openings made in walls and floors.

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 sidewall 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.

MORE WAYS TO SAVE ENERGY

It is very worthwhile to seek additional ways to lower your energy costs through simple but effective construction practices. In everything you plan around the house, be conscious of opportunities to gain heat or prevent its loss through design features and good workmanship. There are many helpful books available to show you how to take advantage of natural heat, shade, plantings and landscaping. The following notes will give you some idea of what can be done to enhance your energy saving plans.

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 very effective in reducing summer cooling costs while not preventing you from taking advantage of the winter sun.

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. More to the point, 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 have an effect on the temperature inside the area. Even on conventional roofs, attic temperature can be affected 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.




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 FIBERGLAS® and Extruded Polystyrene insulating products you buy and follow his guidance about the best ways to install them. If you would like further guidance, contact Owens Corning Canada Inc.

This booklet is based on normal modern construction practices. If you are interested in advanced low energy building, using special construction approaches, please contact Owens Corning Canada Inc. for further information.

All materials recommended in this booklet are available from your building supply dealer. For further information contact Owens Corning Canada Inc.

Printed in Canada August 1999.

OWENS CORNING®

ALLIANCE BUILDER PROGRAM

CANADIAN ENERGY PROFESSIONAL

For more information, call

1-800-GET-PINK®

4 3 8 7 4 6 5

www.owenscorning.com

Pub. No. 30011645

Printed on recycled paper