



TOP OF THE HOUSE™

CERTIFIED CONTRACTOR TRAINING MANUAL



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INTRODUCTION

THE BENEFITS OF TOP OF THE HOUSE™ CERTIFICATION

Congratulations! Choosing to become Top of the House™ certified is one of the best decisions you could make for your business. Taking this course and becoming certified is so important because:

- It's a natural transition from being an expert in roofing to gaining knowledge about insulation and ventilation. Knowing the big picture will help you become an even better roofer and solve more problems for homeowners
- Knowing how to do a *Top of the House* assessment can really build your business. Diversifying can help you better meet the needs of your customers. And with today's focus on energy efficiency, it's essential that you also know how to help homeowners save on their energy bills

Thank you for taking this *Top of the House* certification course. Let's get started!

CHAPTER

WELCOME

TOP OF THE HOUSE™ SYSTEM INTRODUCTION

A high-performance roof takes more than just shingles. The performance of any roof you install depends on an entire system of products working and performing together, including ventilation and insulation.

Even the highest-quality shingles cannot work alone to protect a home. That's why it's important to also consider attic insulation and proper ventilation when approaching a re-roofing job.

WHY IS A TOP OF THE HOUSE™ SYSTEM IMPORTANT?

It's essential that a home's roof, ventilation and insulation work together as a system. When they do, a homeowner will be able to feel the added comfort of maintaining their desired indoor temperature almost immediately. And over time, a properly functioning Top of the House™ system becomes a perfect example of why we say that PINK is Green®:

- As a home's energy efficiency increases with a *Top of the House* system, its carbon footprint decreases
- A *Top of the House* system helps increase a roof's longevity by adding to the life of shingles, preventing moisture and preventing ice dams—and each of those benefits adds to a home's sustainability
- PINK FIBERGLAS™ Insulation products are GREENGUARD and GREENGUARD Children & Schools certified* for better indoor air quality

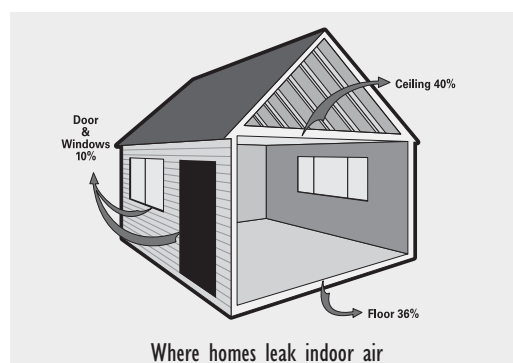
*Certified by the GREENGUARD Environmental Institute to meet current indoor air quality standards.

**See actual warranty for complete details and requirements.

LONGEVITY

High-quality shingles, such as Owens Corning Duration® Series, are an important starting point. They are, after all, a roof's first line of defense against the elements. *Duration* Series shingles come with a Limited 30-year or Lifetime warranty, and they can withstand winds up to 130 MPH.** They also have SureNail® Technology, which features a wider, clearly marked nailing area for improved and consistent installation. This results in a smoother, flatter installed look.

ENERGY EFFICIENCY



Energy used in homes and buildings is the number-one source of greenhouse gas emissions—and in an under-insulated home, the majority of a home's heat escapes through the attic. Adding insulation to the attic is one of the easiest and most cost-effective ways to improve energy efficiency, plus it helps reduce greenhouse gas emissions. If a customer's heating and cooling energy costs are going through the roof, you're in a position to provide an easy solution: Adding attic insulation and sealing air leaks can help cut heating

and cooling energy bills by up to 20%*. And adding Owens Corning AttiCat® Expanding Blown-In PINK FIBERGLAS Insulation to your customer's attic can reduce greenhouse gas emissions by over half a ton each year.**

PREVENTION OF MOISTURE

Proper ventilation and attic insulation are essential for preventing trapped heat and moisture in the attic, which can severely jeopardize the performance of a roof.

Attic moisture can cause:

- Wet wood—sagging roof deck
- Potential insect infestation
- Mold, spores, fungi and mildew
- Metal rust (nail heads)
- Interior damage
- Roof warping
- Cracked shingles

Attic heat can cause:

- Ice dams that prevent water runoff
- Premature failure of roofing materials

The combination of insulation and a ventilation system helps keep excessive household moisture and heat out. As a result, the proper conditions and temperature are better maintained in the attic and on the roof deck throughout the year.

Owens Corning offers a lineup of key products that can help prevent attic heat and moisture:

- VentSure® ventilation products release heat from the attic to help protect roofs from moisture damage
- Undereave ventilation products work together with ridge vents to keep air moving, preventing moisture buildup

PREVENTION OF ICE DAMS

Ice dams form when indoor heating rises through the ceiling into the attic and warms the roof surface. The snow on the heated part of the roof melts and flows down until it meets the part of the roof that is below 32 degrees. At that point, the water freezes into an ice dam. Water backs up behind the dam and, as it sits on the roof, works its way under the roof covering and flows into the attic. From there it can seep through insulation, ceilings, walls and other areas where it can cause damage.

Keeping a consistent attic temperature can help prevent ice dams. Insulation and ventilation are key components of maintaining the proper conditions in the attic and on the roof deck.

As you're already in customers' homes, and they've entrusted you with installing a roof, it benefits you and your customers for you to provide a complete *Top of the House* assessment along with your roof analysis.

What causes ice dams

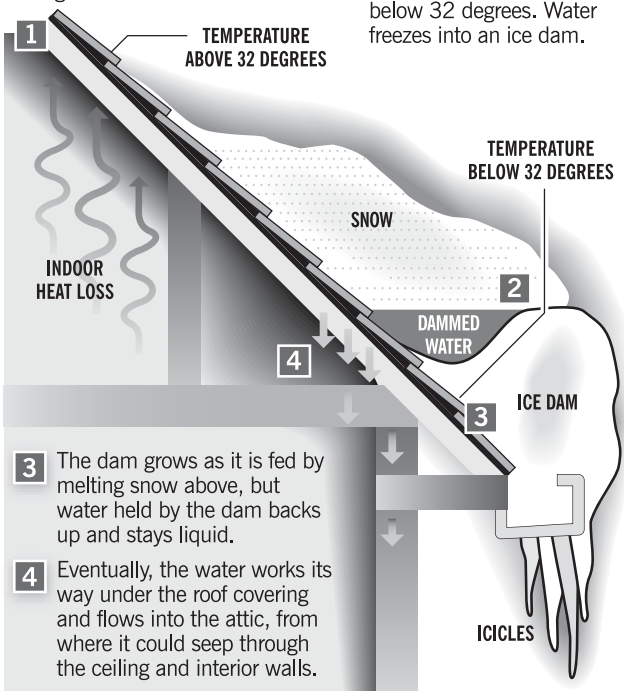
An ice dam is a ridge of ice that forms at the edge of a roof and prevents melting snow from draining off the roof. The water that backs up behind the dam can leak into a home and cause damage to walls, ceilings, insulation and other parts of the house.

An ice dam might form when ...

- There is snow on the roof.
- Average outside temperature is below 32 degrees.
- Roof surface temperature is above 32 degrees at its higher end and below 32 degrees at its lower end.

How it forms

- 1 Indoor heating rises through the ceiling into the attic and warms the roof surface.
- 2 Snow on the heated part of the roof melts and flows down until it reaches that part of the roof that is below 32 degrees. Water freezes into an ice dam.



Source: University of Minnesota Extension

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*ENERGY STAR: http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_methodology. Savings vary. Find out why in the seller's fact sheet on R-values. Higher R-values mean greater insulating power.

**Based on an average attic size of 1700 sq. ft. with existing R-19 insulation averaged over 7 cities in diverse climate regions. Savings may vary.

Customer Corner

Important tips for talking with your customers about the value of a complete roofing system:

- Insulation and ventilation are key components of maintaining the proper conditions in the attic and on the roof deck
- In an under-insulated home, the majority of a home's heat escapes through the attic
- Adding insulation to the attic is one of the easiest and most cost-effective ways to improve energy efficiency, plus it helps reduce greenhouse gas emissions. And that's another reason why PINK is Green®
- Even the highest-quality shingles alone aren't enough to create a high-performance roof. Shingles, ventilation and insulation are all important factors to provide you with:
 - Comfort
 - Durability
 - Energy efficiency
 - Moisture control
 - Prevention of ice dams, which can cause water to leak through the roof and into the home



CHAPTER

2

JOB SITE INSPECTION AND ETIQUETTE

HOW TO CREATE A SATISFYING CUSTOMER EXPERIENCE

A quality installation depends on roof inspections before and during application in addition to the final roof inspection upon completion. This offers you a number of opportunities to be certain the materials are installed correctly and are in good condition.

INITIAL INSPECTION

Roofs can hide many secrets. Inspection of the underside of the roof is an important step in the professional installation of a new roof. Ask the homeowner to allow you to inspect the attic—this will enable you to spot any areas of concern that could jeopardize the warranty of the roofing system you install. (Caution: Be sure not to walk in between the ceiling joists while you are in the attic.)

Check for...

- Moisture, staining and dry rot
- Ventilation
 - Confirm that any existing attic insulation isn't blocking the intake vents
 - Make sure there are baffles currently in place
 - Based on the area of the attic, make sure the home has the correct amount of ventilation and has both intake and exhaust vents (see Chapter 3 for more information)
- Improper insulation
 - If there is no insulation in the attic, or if you can see the joists, the attic is under-insulated
 - If you can't see the joists, it does not necessarily mean the attic is properly insulated. Use your AttiCat® insulation ruler to determine how much insulation is in

the attic. Most homes need a minimum of 17" of AttiCat insulation to meet the governmental recommendations for energy efficiency

- Based on the recommended R-value (this is reviewed in Chapter 7), determine if the attic needs additional insulation

There are also some jobs you should avoid:

- Homes with bare wires or knob-and-tube wiring, which exists mainly in homes built before the 1940s. Recommend that the wiring be replaced by a licensed electrician prior to re-insulation
- Homes with vermiculite, a known carcinogen. As opposed to the fibrous texture of fiber glass insulation, vermiculite is formed of brownish-pink or brownish-silver, accordion-shaped chips

REVIEW FINDINGS WITH HOMEOWNER

Once you have evaluated the attic environment, it's an ideal time to promote your Top of the House™ certification. Present your findings to the homeowner along with your *Top of the House* assessment. Using a digital photo is a good way to show the homeowner the conditions in their attic, since they may not have been up there recently. Be sure the homeowner understands that this is done as a part of the re-roofing process, not as an attempt to sell them unnecessary services. Proper attic condition is important for the performance of every roof. Owens Corning offers in-home selling tools that can make this conversation successful.

CLEANUP BEFORE LEAVING THE ROOF

When the job is complete, remove any loose shingles, cuttings, nails, wood shavings, boards or other debris that has been left on the roof. Remove any debris from valleys and gutters to ensure they are unobstructed.

LEAVING THE ROOF

Remove scaffolding and ladders carefully to avoid scraping the siding, breaking windows or tree branches, or damaging shrubbery.

CLEANUP ON THE GROUND

Thoroughly clean the site of roofing materials, cuttings, scraps, wood and any other remaining debris.

HOMEOWNER INSPECTION

If possible, invite the homeowner to make a final inspection of the grounds and attic, and obtain his or her approval of the work before leaving the job site.

CHAPTER

3

VENTILATION

INTRODUCTION AND OVERVIEW

WHY IS VENTILATION IMPORTANT?

A properly ventilated attic gives trapped heat an escape route. It may take a combination of soffit and ridge vents to do the job, but the result will improve overall home energy efficiency—and extend the life of roof shingles.

Attic ventilation is an important part of roofing. Proper attic ventilation extends the life of a roof and reduces problems because it minimizes the temperature differential between the attic and the air outside. Proper ventilation will remove moisture and heat from the attic. Trapped moisture and heat can raise energy costs, cause ice dams and damage roof system components as well as structural and personal items located inside the attic where temperatures can easily reach 150°F (65°C). Condensation that forms inside attics can be caused by the use of washing machines, dishwashers, bathtubs, showers and tumble dryers unless these items are properly ventilated through the roof. In some cases the condensation can be bad enough to be mistaken for a roof leak.

Here are some problems associated with an improperly ventilated attic space:

- Sumps between rafters (deck deflection) can happen after several years, or sometimes only a couple of years. A plywood roof deck can warp or deteriorate and become spongy and dangerous to walk on. This occurs because one side of plywood decking needs be able to “breathe” by being exposed to circulating air. The adhesives used in the plywood can deteriorate, or dry rot can occur because of condensation
- Water vapor will condense first on anything metal inside the attic; this will eventually cause the metal to rust.

Heads can rust off nails. Metal plumbing straps or straps holding HVAC ducting can rust and break in two, causing the ducting to crash down on top of the ceiling joists or through a suspended ceiling. This problem is more common in humid climates

- In colder climates—generally where the average January temperature is 32°F (0°C) or colder—high inside humidity (40% or greater) combined with low outside temperatures can cause frost to form on the bottom of the roof deck. (See Dry Rot in the Glossary.)
- Insulation can trap moisture, which will reduce the R-value of the insulation and create a nice environment for the propagation of certain molds, spores and fungi, which can also cause problems. (See Dry Rot in the Glossary.)
- There is also the problem of mildew, which can both do damage and cause health problems
- The roof system itself will deteriorate prematurely
- Cooling units will need to be serviced or replaced prematurely because of excessive use
- Ice dams are the result of melting snow continually refreezing at the roof perimeter and then backing up under the shingles and causing leaks. Proper ventilation used in conjunction with heavy insulation and an air barrier can create a Cold Roof Assembly, which will help eliminate ice dams

There are many types of attic vents available today. There are static vents, power vents, ridge vents, turbine vents, soffit/cornice vents, gable vents, starter vents and cupola vents. These all come in a wide variety of sizes, styles and shapes. Some will ventilate better than others depending on the roof configuration, attic size, climate, etc.

To properly ventilate an attic, two types of vents are needed. Intake vents, which are located at the down-slope edge of the roof (aka eaves), allow fresh air into the attic. Exhaust vents, which are located near or on the ridgeline of the roof, allow air to leave the attic. The use of an exhaust vent in conjunction with an intake vent uses the natural forces of wind pressure and thermal effect, collectively known as the stack effect, to ventilate the attic space.



HINT: Make sure your attic insulation doesn't block the intake vents. If necessary, use raft-R-mate® baffles to keep the insulation back from it.

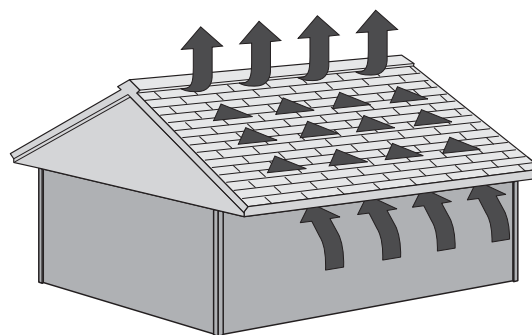
A vent's effectiveness is measured by its net free vent area. The net free vent area is the portion of the opening in the vent that actually ventilates. For instance, a vent can have an opening that measures 12" x 12"; this would appear as if it would yield 144 sq. in. of ventilation area. Because of louvers, an insect screen or other type of blockage, the actual ventilation area could be as little as 40 percent of that, yielding about 58 sq. in. of ventilation area. This 58 sq. in. is what's known as the net free vent area and is the amount that should be used when calculating how much venting you need.

Calculating how much venting your attic needs is relatively simple. All you need to know is the area of the attic floor. Include the garage, if you have one, and the soffit overhang, because heat gets trapped above them, too. A common rule of thumb is the 1/300 rule, which means 1 sq. ft. of net free vent area per 300 sq. ft. of attic floor space. Let's look at an example. Say you have a 1,800-sq.-ft. home with a garage that measures 20' by 22'. This will yield a total area of 2,240 sq. ft. You then divide this number by 300. $2,240 \div 300 = 7.5$.

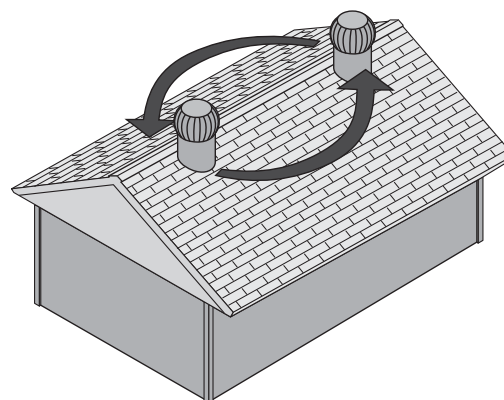
This tells us that we need 7.5 sq. ft. of ventilation for the attic. Most attic vents are measured in square inches, so we need to convert the 7.5 sq. ft. to square inches. This is done by some simple multiplication. 1 sq. ft. is equal to 144 sq. in., so we multiply 7.5 by 144.

$7.5 \times 144 = 1,080$, so we need 1,080 sq. in. of net free vent area. Divide this by two and we see that we need 540 sq. in. of intake ventilation and 540 sq. in. of exhaust ventilation.

There is always a lot of concern for what the best type of ventilation is. You have already read that you need both intake ventilation and exhaust ventilation installed at an approximate one-to-one (1:1) ratio. Now remember that the idea behind this is for maximum air circulation. Installing more than 1 sq. ft. of ventilation per 300 sq. ft. of attic floor space will not hurt anything—it's a general guideline and code requirement in some areas. Most roofing professionals will agree that the best type of ventilation is continuous soffit and ridge ventilation. If a continuous exhaust vent and an equal or slightly greater amount of intake vent are installed, then the attic will be ventilated for its entire length.



There are several common misconceptions about attic ventilation. Many people think that if they have **only** power vents or turbine vents working near the ridgeline, then their attic is properly ventilated. Remember that in order for an exhaust vent to properly function, it has to have intake vents working with it. If there are no intake vents, then air has to enter somewhere so it will enter through some exhaust vents and exit through others. The result is circulation of only the air immediately surrounding the vents or in between the vents.



This picture shows what happens if you have no intake vents along the eaves. Air will circulate only between the exhaust vents, leaving the remainder of the attic space unventilated.

Another common misconception is “more is better.” Many people think that they can improve ventilation of their attic by installing vents throughout the roof surface. What they don't know is this causes a Ventilation Short Circuit. For instance, let's say that Fred has a full soffit and ridge vent system installed. But thinking that more is better, Fred decides to install a couple of vents about halfway up the slope. Instead of improving his ventilation, he has now hampered it because air is now exiting out the vents in the middle of the roof before it reaches the ridge, leaving the attic partially unvented. Depending on wind pressure, air will also be taken in at the intermediate vents, reducing the intake at the eaves, where it should be.

There is also the problem of weather infiltration. Wind blowing across a roof surface creates a negative air pressure. Nature will automatically try to compensate for it by moving air from a location of higher pressure, such as inside the attic. When the air is then removed from the attic in this manner, it has to be replaced. If the proper intake ventilation isn't used, air will be brought into the attic through the exhaust vents and will at times bring moisture with it.

When determining ventilation, remember the following:

1. Intake and exhaust ventilation should be installed at an approximate one-to-one (1:1) ratio. More at the eaves is better if it can be attained.
2. The 1/300 rule—1 sq. ft. of attic ventilation (net free vent area) per 300 sq. ft. of attic floor space.
3. No attic vents should be installed between the intake and exhaust vents.
4. There should be at least three feet (3') of vertical distance between the intake vents and the exhaust vents.

SOME NOTES:

1. FHA guidelines recommend the 1/300 rule. Some building codes require the 1/150 rule. When using the example above, adjust your numbers accordingly.
2. The Home Ventilating Institute (HVI) recommends a 60/40 ratio where 60% of the total ventilation is for intake and the remaining 40% is for exhaust.
3. Some material manufacturers will not honor their warranty unless attic ventilation has been installed.

The information found on this page is for informational purposes. For specific ventilation requirements in your area, consult your local building code authority.

Product Focus

USE THE RIGHT PRODUCTS FOR THE JOB

VentSure® Rigid Roll Ridge Vents with Weather PROtector® Moisture Barrier

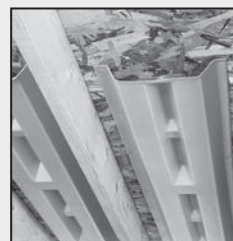
VentSure® Rigid Roll Ridge Vents are shingle-over, low-profile ridge vents designed to provide year-round protection and consistent ventilation in the attic. At the same time, they achieve a natural, finished look at the ridge.



- Patented, durable corrugated plastic construction
- Customers will appreciate the curb appeal of the low, 1/8" ridge line profile
- Regional availability in three different widths: 1 1/4", 9" and 7"
- Unique design adjusts to almost any roof pitch (2/12 to 20/12)
- Easy-to-handle 20' rolls; end caps are provided in each roll
- Net-free vent area: 12.5 sq. in. per lineal ft.
- Should be used with proper soffit intake ventilation

raft-R-mate® Attic Rafter Vents

raft-R-mate® Attic Rafter Vents are rigid foam extruded polystyrene rafter vents that assure the unrestricted flow of fresh air from the soffit to the attic through the thickest part of the fibrous or loose-fill insulation.



- Offer 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
- High resistance to moisture means they will not rot or decay over time, for long-lasting effectiveness
- Built-in rigidity makes them extremely break-resistant and easy to install
- Designed for use as an integral component of a building's insulation/ventilation system

CHAPTER

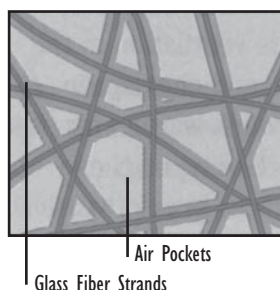
4

INSULATION

HOW IT WORKS, HOW DIFFERENT TYPES PERFORM

HOW DOES INSULATION WORK?

Heat always moves toward cold, which is why heat tries to escape a home in the winter, and tries to enter a home in the summer. Fiber glass insulation works by trapping air within tiny pockets to resist the transfer of heat, so it doesn't move into or out of the house.



Insulation provides a number of other important benefits as well, including controlling moisture and air infiltration, assuring proper ventilation, and maximizing the efficiency of the home's HVAC system. Insulation can also:

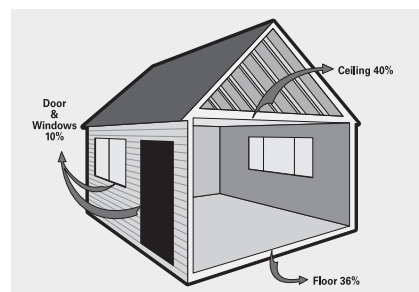
- Increase comfort
- Reduce the homeowner's heating and cooling costs
- Conserve natural resources by helping the homeowner use less energy
- Increase the home's resale value*

We'll explore these benefits in greater detail on the following pages.

CONTROLLING AIR INFILTRATION

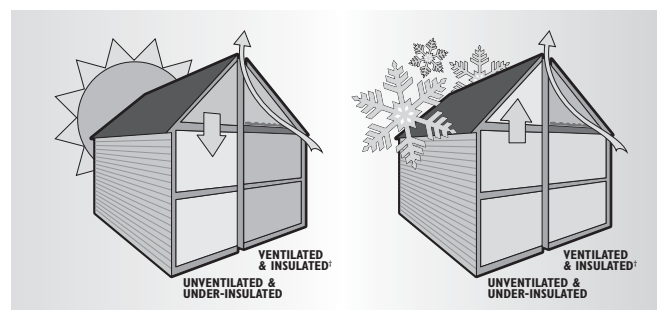
According to the U.S. Department of Energy (DOE), "Before you insulate, you must control air leakage." Reducing air infiltration takes the strain off heating and cooling units so they don't waste energy by running longer than necessary. The result can be annual energy-cost savings of up to 20%.** Savings vary depending on the original amount of insulation in the home, climate, house size, air leaks, and the customer's personal energy use and living habits.

As the illustration below shows, proper insulation and ventilation are essential in warm and cold climates—and in all seasons—to prevent indoor energy from leaking out of the home. Reducing air infiltration can dramatically improve a home's thermal performance because most air infiltration occurs through the ceiling and floor.



Reducing air infiltration can dramatically improve your home's thermal performance. Most of a home's air infiltration occurs through the ceiling and floor.

In hot weather, proper insulation prevents the attic from spilling unwanted heat down through the attic floor into the living area. In cold weather, proper insulation helps prevent moisture from condensing on the rafters or roof deck and dripping into the insulation.



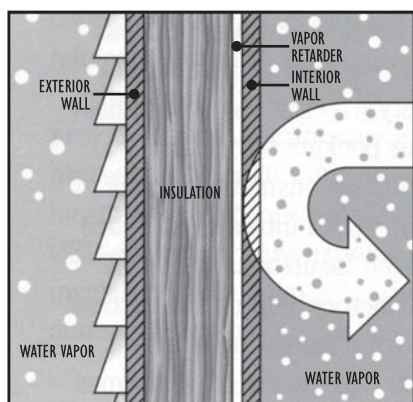
*84% of homeowners believe energy-efficient homes have a higher retail value. Homeowner Segmentation Study, Smith-Dahmer, 2005.

**ENERGY STAR: http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_methodology. Savings vary. Find out why in the seller's fact sheet on R-values. Higher R-values mean greater insulating power.

[†]Insulate to local building codes.

USING VAPOR RETARDERS FOR MOISTURE CONTROL

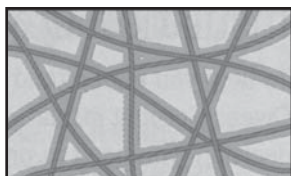
Showers, cooking, washing and even breathing can put a surprising amount of moisture into the home, according to the EPA. Vapor retarders help control the amount of moisture passing through insulation and collecting inside exterior walls, ceilings and floors. Owens Corning offers products with pre-applied vapor retarders, such as kraft-faced insulation. The kraft paper acts as a vapor retarder, and it's already adhered.



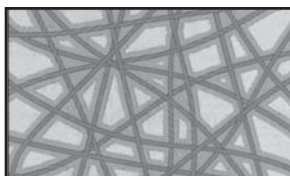
R-VALUE

The ability of insulation to resist the transfer of heat is measured by “R-value.” The higher an insulation’s R-value, the better its ability to resist the flow of heat. Tiny air pockets trapped in the insulation resist the passage of heat—heat loss in winter and heat gain in summer.

R-values are not directly related to the thickness of the insulation product, but are related to the number of fibers per square inch, or the insulation’s density. The thicker or more dense the insulation, the more air pockets and the higher the R-value. For example, 3½" thick R-15 insulation has more fibers per square inch than 3½" thick R-11, making it more dense and earning a higher R-value for the same thickness.



Same thickness with fewer fibers per cubic inch means less density and lower R-value.



Same thickness with more fibers and air pockets per cubic inch means more density and higher R-value.

The DOE bases its R-value recommendations for existing homes on specific heating and cooling needs and the cost of energy across the country—ZIP code by ZIP code. Chapter 7 provides information on calculating the specific R-values by region.

How much attic insulation is needed? While the amount needed varies based on the region of the country, in most cases, the DOE recommends attics be insulated to R-49. The R-value represents thermal resistance to heat flow, so the higher the R-value, the greater the insulation effectiveness. Attaining an R-60 value requires about 19" of blown-in insulation.

Chapter 7 explains how to measure for the correct amount of attic insulation; it's also important to call the local building department to check for local code requirements.

WHICH TYPE OF INSULATION SHOULD YOU USE? CONSIDERING CELLULOSE VS. FIBER GLASS

There are many claims about the performance, safety and other merits of cellulose vs. fiber glass insulation. Here are the facts.

Thermal Performance

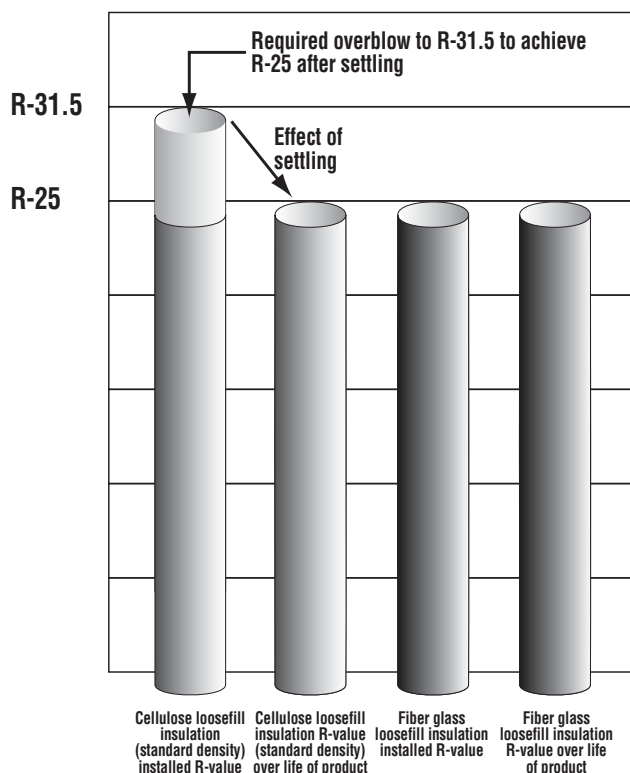
CLAIM: Cellulose insulation delivers the R-value stated on its package.

Cellulose: In some cases, the R-value and thickness listed on cellulose insulation packages reflect settled density only (as minimum requirement of CAN/CGSB-51.60-M90 cellulose standard)—the density the product achieves over some length of time. In attics, if the contractor installs cellulose insulation at the labeled settled thickness, the homeowner will not receive the stated R-value, due to settlement after installation. If extra cellulose insulation is not installed, the insulation may never achieve its claimed insulating power because it will lose approximately 15 to 25 percent of its R-value over time from settling. Note: All cellulose insulation packaging should feature a statement concerning the installed and settled thickness R-value of the product.

Fiber glass: Owens Corning fiber glass insulation products are clearly labeled by R-value. Those values are based on tests made by accredited laboratories using current American Society for Testing and Materials (ASTM) methods. Furthermore, fiber glass batt and loosefill insulations are factory-engineered to retain their thermal performance for the lifetime of the product. Properly installed, they will not significantly sag or settle, thereby assuring that the installed R-value is maintained. (Tests done on fiber glass insulation from a 40-year-old building in Ohio confirmed that, despite the age of the material, the fiber glass insulation had retained its original thermal performance.) Fiber glass batts and properly installed loosefill insulations are not significantly affected by convection (the upward movement of warm air).

R-value Retention Over Time

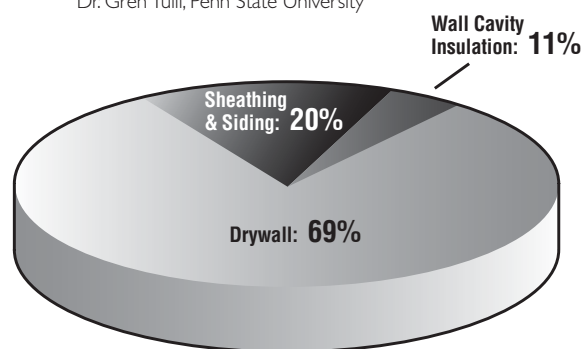
Source: Oak Ridge National Laboratories report



leakage through the other components of a house (see bottom chart). No significant amount of air will flow through a wall cavity, regardless of the material with which the wall has been insulated. Openings for wiring runs, light switches and electrical outlets, where air infiltration can occur, can and should be sealed by the builder with foam sealants and caulk. In other words, wall cavity insulation plays an important role in a house, but its job is to provide resistance to heat loss or heat gain, not to reduce air infiltration.

Effect of Construction Materials in Resisting Exterior Wall Air Infiltration

Source: 1996 Whole House Air Infiltration Study by Dr. Gren Yuill, Penn State University



AIR INFILTRATION

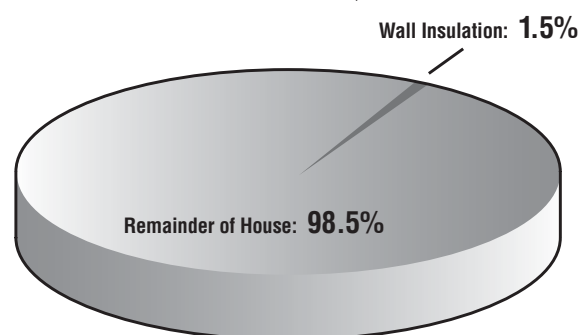
CLAIM: Standard density and wet-spray cellulose wall insulation systems make a house more airtight than fiber glass insulation.

Cellulose: Some cellulose manufacturers claim that their wet-spray cavity insulation improves air infiltration performance in cavity walls, compared to fiber glass batt insulation. But air infiltration occurs mostly through attics and floors, as well as through doors, windows and vents—not wall cavities, according to a recent Whole House Air Infiltration Study. And when it comes to walls, that same study and a field study by Union Electric documented that insulation type has no significant impact on air infiltration*. Some cellulose manufacturers have used unrealistic, small-scale demonstrations to make their claims about air infiltration. Typical small-scale demonstrations feature wall sections without drywall, exterior sheathing, caulk or sealant.

Fiber glass: According to a 1996 Whole House Air Infiltration Study, drywall alone accounted for 69 percent of a wall's airflow resistance, with the exterior siding and sheathing providing an additional 20 percent airflow resistance (see top chart). Wall cavity insulation as an air infiltration barrier is insignificant when compared to the other components of a wall, and the air leakage through the walls is small compared to the overall

Impact of Cavity Insulation on Whole House Air Infiltration

Source: 1996 Whole House Air Infiltration Study by Dr. Gren Yuill, Penn State University



*Energy Design Update, Vol. 17, No. 2 article reprint "Union Electric Field Test Pits Cellulose Against Fiber glass... and the Winner is..."

FIRE SAFETY

CLAIM: Cellulose insulation will not burn.

Cellulose: Made principally of shredded newspapers—a combustible material. It must be treated with fire-retardant chemicals to meet minimum fire safety standards. However, according to a study conducted by the California Bureau of Home Furnishings, fire-retardant chemicals can disappear from the insulation over time—as much as 28 percent in the first two-year period following installation. The city of Palo Alto, California, tested cellulose insulation in 133 attics for fire safety. Only eight of the attics passed the requirements of the Consumer Product Safety Commission fire tests. A December 1993 survey by the Indiana State Fire Marshal's Office of 900 fire departments found that 72 percent of them fight cellulose insulation fires in an average year.

Fiber glass: Made primarily from sand, an inherently non-combustible material. Therefore, glass fibers will not burn and require no fire-retardant chemicals. Owens Corning AttiCat® Expanding Blown-In PINK FIBERGLAS™ Insulation is rated non-combustible by building codes by passing CAN/ULC-S114. And it remains non-combustible for the life of the product.

HEALTH CONCERNS

CLAIM: Cellulose insulation is safer to install than fiber glass insulation.

Cellulose: Not enough is known about the safety of cellulose. No health testing by cellulose manufacturers or the cellulose industry exists, and no hazard testing or risk assessment evaluations have been done on cellulose insulation. While many cellulose insulation manufacturers claim that their product is made from natural, safe, recycled materials, typically 20 percent of cellulose insulation is chemical by weight. Some ingredients in shredded newspaper insulation are known to adversely affect health: paper dust causes chronic pulmonary obstructive disease, and boric acid and borax fire-retardants have been shown to cause reproductive disorders in laboratory rats. Some labor organizations have called for testing the health effects of cellulose insulation and have urged manufacturers to act responsibly and test their products. They have argued that simply because a product is untested does not mean it is safe. Those unions have also asked the federal government to test cellulose insulation. The National Institute of Environmental Health Sciences, through the National Toxicology Program, has agreed to conduct such testing.

Fiber glass: Fiber glass insulation is safe to use when the simple directions printed on the package are followed. In terms of health and safety testing, fiber glass insulation is one of the most tested building materials. Studies conducted over the past 50 years involving 40,000 workers have not established a causal relationship between exposure to glass fibers and cancer or any other disease in plant workers or installers. In fact, during the last 50 years, more than 600 reports and scientific articles have been published on the subject. Following the simple work practices described on the label permits installer comfort and lowers exposure to airborne fibers. The potential health effects of glass fibers have been reviewed by various national and international bodies for over 20 years. Although the International Agency for Research on Cancer (IARC) reclassified glass wool insulation in October 2001 considering it “not classifiable as to carcinogenicity to humans” (Group 3), Owens Corning's packages of fiber glass insulation continue to carry toxic “T” WHMIS warning labels. This is primarily for regulatory reasons that require warning labels on many commonly used products, including paint, cleaners, artificial sweeteners and gasoline. The origin of the statement is based on the results of studies using extremely high doses injected into laboratory animals, not on the results from studies of humans or in laboratory animals breathing in the fibers, which is the way humans are exposed. In 1997, the American Conference of Governmental Industrial Hygienists evaluated glass fibers and fully considered the uniqueness of the positive animal tests. Their test resulted in an “A3” designation and concluded that the “available evidence suggests that [fiber glass] is not likely to cause cancer in humans except under uncommon and unlikely routes or levels of exposure.” An “A3” designation indicates that the substance to which it applies may cause cancer in laboratory animals at relatively high doses and by routes of exposure that “are not considered relevant” to workers.

THE ATTICAT® SYSTEM

The AttiCat Expanding Blown-In Insulation Blowing Machine and Insulation work together as a safe, effective, easy-to-use system. It's not only quick and reliable, it also delivers the results you need without mess.

AttiCat® Machine

- The safest machine in the industry
 - o Fully enclosed
 - o Integrated safety switch
 - o No-touch feeder
 - o Integrated bag cutter

- Lightest fiber glass installation machine in the industry at only 146 pounds
- Quick setup, installation and cleanup
- Self-feeding for consistent flow
- Clean and quiet
- Completes an entire attic in 1.5 hours
- Uses two 50' sections of 2.5" hose with remote
- For use with *AttiCat* loosefill only, or the warranty is void

AttiCat® Insulation

- Limited lifetime warranty on performance
 - *AttiCat* loosefill through *AttiCat* machine
- A preferred consumer product
- Will not settle
- Noncombustible
- Low dust and mess
- Green—made with 58% recycled glass
- Super compact (16x)
- Fits the loader perfectly
- Expands inside the machine
- Will not absorb moisture
- Does not support mold growth*

COMMON INSULATION QUESTIONS

Q. How can you tell if a home needs more attic insulation?

A. Simply look into the attic. If you can see the joists of the attic floor, more insulation is needed.

Q. Are homes in different geographic areas insulated differently?

A. The DOE recommends different R-values for different parts of a home, depending on the geographic area of the home. State and local codes suggest or require different R-value recommendations. The R-value you need also depends on what part of the home you are insulating.

Q. Does insulation have any benefits during warm weather?

A. Yes. Insulation slows the flow of heat from warm to cold areas, no matter what the outside temperature. A well-insulated home will help keep summer heat from coming inside, keeping the inside cool and reducing the need for continuous air conditioning.

Customer Corner

Important tips for talking with your customers about choosing fiber glass insulation over cellulose:

- No health testing, hazard testing or risk assessment evaluations have been done on cellulose insulation
- In terms of health and safety testing, fiber glass insulation is one of the most-tested building materials
- Cellulose insulation is made principally of shredded newspapers, which must be treated with fire-retardant chemicals to meet minimum fire safety standards. These chemicals can disappear from the insulation over time—as much as 28 percent in the first two years
- Fiber glass insulation is made primarily from sand and requires no fire-retardant chemicals

Why PINK is Green®

- Owens Corning PINK FIBERGLAS™ Insulation has the highest certified recycled content of any fiber glass insulation
- Owens Corning insulation products can help increase home energy efficiency up to 20%**
- A properly insulated attic can reduce greenhouse gas emissions up to ½ ton per year†
- Owens Corning is an ENERGY STAR® Partner, and Owens Corning products carry the ENERGY STAR® Home Sealing Label



*As manufactured, fiber glass insulation is resistant to mold growth. However, mold growth can occur on building materials, including insulation, when it becomes contaminated with organic material and when water is present. To avoid mold 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.

**ENERGY STAR: http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_methodology. Savings vary. Find out why in the seller's fact sheet on R-values. Higher R-values mean greater insulating power.

†Based on an average attic size of 1700 sq. ft. with existing R-19 insulation averaged over 7 cities in diverse climate regions.

ENERGY STAR and the ENERGY STAR mark are registered trademarks of the U.S. Environmental Protection Agency.

CHAPTER

5

SAFETY GEAR

YOUR TOP OF THE HOUSE™ SAFETY CHECKLIST

One of the most important parts of any job is to make it a safe one. As you well know, the best form of accident insurance is accident prevention.

It's paramount that you inspect each job site before the work begins for possible hazards such as overhead electrical lines or unstable ground conditions that might not adequately support ladders or scaffolding. Bring any potentially hazardous conditions to the attention of all workers before the job begins.

Also be sure to adhere to OSHA safety and fall protection standards and observe these general precautions, including, but not limited to:

Procedures

- Safety is everyone's responsibility; have a safety plan and carry it out
- Create policies and procedures to ensure safe roofing, ventilation and insulation practices
- Train employees to know what to do in case of an accident
- Do not attempt to work in bad weather or on wet roof decks
- Do not touch wires crossing over the roof. If cranes are used to raise materials, be sure the operator is aware of overhead power lines or other wires. Keep metal ladders away from power lines
- Do not concentrate bundles or rolls of roofing materials on the deck. Distribute them over the entire roof surface to spread the load evenly
- As the work proceeds, keep the deck clear of unnecessary debris to avoid tripping hazards
- Always use the proper tools for each stage of the work
- Use GFCI protected extension cords

Ladders

- Extension ladders should have proper locking devices and be in good condition. Place the ladders at safe angles on stable foundations and properly secure them to prevent movement. Ladders must extend past the edge of the roof by a 3-foot minimum
- Rope should be used to secure ladders and scaffolding and used as safety lines for personnel
- Brace ladders used on the roof deck to the roof structure
- Avoid leaning away from a ladder to work. Move the ladder as required
- Use the proper size ladder to gain access to the attic

Gear

- Footwear that provides good traction such as rubber-soled shoes with good ankle support
- Work gloves
- Loose-fitting, long-sleeved shirt
- OSHA-approved safety glasses to protect your eyes from airborne particles
- Disposable dust respirator (NIOSH- or MSHA-approved for protection from fiber glass) prevents you from breathing airborne particles of insulation
- Work helmet to protect your head from joists, trusses and other obstructions

Insulation may cause temporary irritation to the skin, eyes and respiratory tract. Avoid contact with eyes and skin. Wear long-sleeved, loose-fitting clothing, gloves and eye protection when handling insulation material. Wash with soap and warm water after handling. Wash work clothes separately and wipe out the washer afterward.

Remember: Safety is no accident.

CHAPTER

6

RE-INSULATION PREPARATION AND TRAINING

Owens Corning's AttiCat® Expanding Blown-In PINK FIBERGLAS™ Insulation is designed to be mechanically blown into new or existing attics. The insulation consists of unbonded fiber glass insulation material enclosed in specially designed packages.

The *AttiCat* machine was developed to be the best at blowing in the insulation. Its enclosed design makes it cleaner and safer to use, plus it is lighter and smaller than other blown-in insulation machines.

PREPARATIONS FOR INSTALLATION

What You'll Need

TOOLS AND EQUIPMENT

- First aid kit
- *AttiCat* insulation MSDS
- *AttiCat* Expanding Blown-In PINK FIBERGLAS Insulation (use the table in Chapter 7 to determine the amount of insulation you will need)
- *AttiCat* machine and 100-foot hose assembly
- Appropriate-sized ladders
- Temporary lights with extension cords (2)
- Two-prong extension cord adapters (2)
- Extension cord—three-conductor, grounded, 14-gauge, 15-amp
- Broom and dust pan or shop vacuum
- Walkie talkies (2)
- Tool bag
- Safety razor knife with extra blades

- Flashlight
- Extra battery for remote—3-volt lithium CR2032
- Staple gun with supply of ⅜" staples
- Eave or soffit ventilation baffling material, such as Owens Corning raft-R-mate® attic vents
- Cardboard or metal baffling
- *AttiCat* rulers and a marking pen
- Uninsulated attics may also require vapor retardant
- **PINKCap**® is also available for attic stair openings; you'll find more information at the end of this chapter

SUPPLIES

- Can of Owens Corning **PROPINK**® gun foam or 12 oz. foam sealant
- 3" flex duct with clamps
- SmartCap® covers for non-IC lights
- Cardboard or Owens Corning FanFold FOAMULAR® insulation
- Large heavy-duty garbage bags—attach to machine to hold empty insulation bags
- BILD-R-TAPE® construction tape or gray duct tape
- Hand cleaner and paper towels
- Drop cloths
- Plank or plywood pieces to serve as temporary flooring

What You'll Need to Wear

- Protective clothing and equipment, including a properly fitted NIOSH- or MSHA-approved disposable dust respirator (such as 3M Model 8210, Model 8271 for high-humidity environments, or equivalent)

- Long-sleeved shirt and long pants
- Safety glasses or goggles when in attic
- Protective gloves
- Shoe booties when not walking on drop cloths in home

Suggested Materials You'll Need with You

- Proof of certification
- Customer work order paperwork

Cautions

- When working in the attic, walk only on the ceiling rafters or joists and not on the ceiling. Be careful of overhead obstructions and nails penetrating through the roof deck
- Maintain a minimum clearance of 3" around any heat-generating sources (lights, flues, etc.) in the attic. If a light fixture is labeled IC-rated, it is safe to lay insulation over it
- Do not place insulation in air spaces surrounding metal flues, chimneys or fireplaces. Provide minimum clearances specified in NFPA-31, NFPA-54 or NFPA-211, or as required by local building codes

BEFORE YOU BEGIN INSTALLATION, TAKE THESE STEPS:

NOTE: If the attic has knob-and-tube wiring or vermiculite, *AttiCat* insulation should not be installed.

When you arrive

- Greet your customer—have identification and paperwork available
- Review and have the customer sign any required paperwork
- Review with the customer where they prefer you to park
- Ask to see the opening to the attic
- Determine the best path to walk in and out of the home and make sure the intended route is OK with the customer
- Determine the best path for the *AttiCat* insulation hose to the attic
- Determine the location of needed electric outlets for lighting and/or powering the *AttiCat* machine
- Place drop cloths along the walking path in the home
- Set up ladder for access to attic
- Set the access door aside for insulating
- Set up temporary lighting if needed

Inspect the attic

- Wet spots, wood rot or mold?
- Temporary lighting needed?
- Items that need to be removed?
- Venting? What kind, size, number and location?

- Can lights? IC-rated?
- Exhaust fans? Vented properly?
- Any visible house air leakage spots? Around chimney?
- Check the duct work again; is it OK and are all the joints sealed?
- Inspect exterior of the house for vents—note number, size and location

Assess ventilation

- Examine the attic to be sure it is adequately ventilated. Owens Corning recommends a minimum of 1 sq. ft. of venting for every 150 sq. ft. of space to be insulated
- Attics with partial soffit venting: Add *raft-R-mate* rafter venting at the location of each soffit vent; make sure the rest of the openings between the attic and soffit are protected to keep the insulation out of the soffit area
- Attics with continuous soffit venting (See Chapter 3, page 7.)



Assess house leakage

- General rule: "Seal it if you can see it."
- Openings around chimney—seal by covering openings with aluminum flashing and spray foam
- Other openings in the attic—seal with *FOAMULAR* insulation and spray foam
- Cracks around piping or electric wiring—seal with canned foam
- Non-IC-rated can lights—install a barrier around each light that will maintain a 3" air space around the lights. Suggested examples: We recommend Owens Corning SmartCap® Recessed Light Cover; insulation must be kept at least 3" away from all other lights)
- Install attic rulers—one every 300 sq. ft.



Setup

- Lay temporary flooring (using plank or plywood pieces) across joists and hang temporary work light

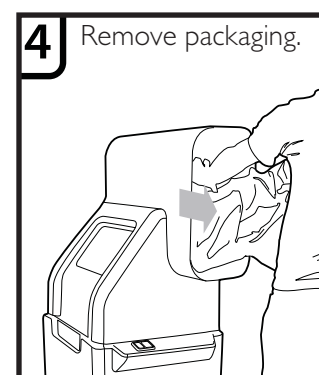
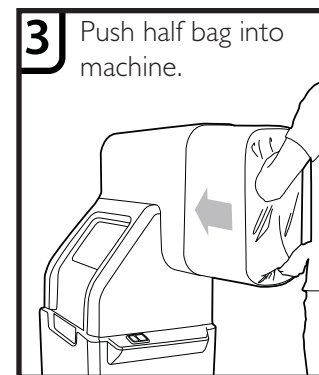
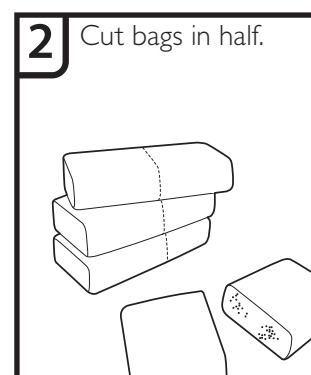
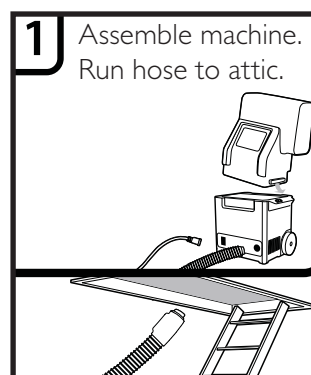
- Do not block eave venting (soffit vents) with insulation. Use vent baffles such as Owens Corning *raft-R-mate* attic vents (or equivalent) between eave vents and attic to ensure airflow
- Install a rigid barrier around the attic access opening to prevent insulation from falling out when you open the attic door (Owens Corning FanFold Foam Residing Board; FOAMULAR, INSULPINK® or PROPINK® Foam Insulation Board; or equivalent). Be sure the barrier is taller than the thickness of the insulation you plan to install
- Prevent air infiltration by caulking and sealing all top and bottom plates, sealing any wire or open penetrations, and weather-stripping attic access openings
- Inspect any duct work in the attic and make sure all connections are sound. If necessary, seal duct joints prior to installing insulation
- Place the AttiCat machine outside of the house or in the garage. CAUTION: The base unit should be lifted by two people
- Lay drop cloths in the house along the path of the hose to protect floors and other surfaces
- Run the hose into the attic. Extend enough hose to reach the farthest point in the attic. NOTE: AttiCat machine shoots insulation a distance of approximately 8' to 10'
- Do NOT attempt to forcefully push or hand-feed loose insulation down into machine
- Add another half-bag of insulation once the machine feeder has emptied and the agitator paddles can be seen through window

USING ATTICAT® EXPANDING BLOWN-IN PINK FIBERGLAS™ INSULATION:

The AttiCat system requires two people—one in the attic installing and the other operating the machine.

At the machine (person #1)

- Plug extension cord into AttiCat machine; connect to a standard 115-v electrical outlet. White light on machine will illuminate
- Connect hose to machine and take the other end into the attic
- Feed only half-bags to avoid jamming and damaging the machine. Using a knife, cut bag of insulation along cut line. Break package in half; machine's feeder is specifically designed to accommodate a half-bag of AttiCat Expanding Blown-In PINK FIBERGLAS Insulation
- Hold the half-bag by end flaps and insert cut end into machine. Push half-bag completely into feeder until it stops. The built-in AUTOCUTTER will cut plastic packaging thereby releasing insulation into the machine
- Remove packaging from machine. IMPORTANT! PACKAGING MAY CLOG MACHINE AND SHOULD BE REMOVED IMMEDIATELY ONCE FIBER GLASS IS RELEASED INTO FEEDER

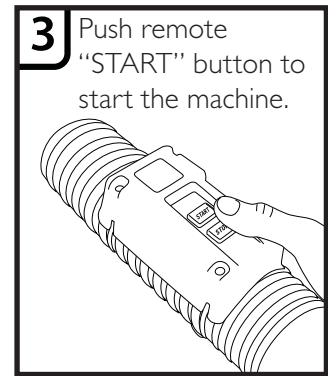
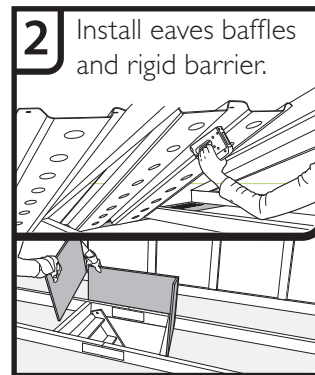
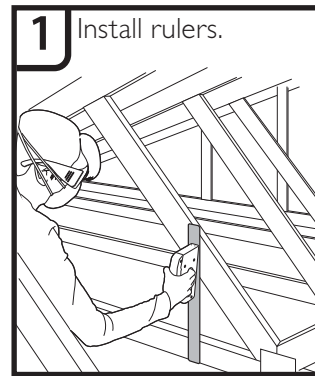


In the attic (person #2)

- Using a staple gun, install *AttiCat* rulers on joists, roof trusses or vertical framing to determine how much insulation you need to add. Install one per every 300 ft²/28 m² so that they are clearly visible
- Install a barrier around heat-generating sources such as can lights or flues/metal chimneys; keep cardboard and insulation at least 3" from heat sources
- Press the START button on the remote to begin flow of insulation. There will be a slight delay from the time the blower starts and the time the agitators begin rotating. To stop the flow of insulation at any time, press the STOP button on the remote; this will stop the *AttiCat* machine
- Direct the hose toward the eaves, and begin by blowing insulation at the point furthest from the attic opening. Insulation should flow out of the hose and fall onto the surface 8' to 10' away
- As each attic section is filled, move slowly backward toward the attic opening. Repeat this process until attic is fully insulated
- Ensure eaves vents and heat-generating fixtures are not covered with insulation
- When you're close to the attic opening, use gloved hands to deflect the insulation downward

Warnings

- KEEP HANDS AND TOOLS AWAY FROM ANY MOVING PARTS
- DO NOT ATTEMPT TO CLEAN THE *ATTICAT* MACHINE OR HOSE UNTIL MACHINE IS COMPLETELY OFF AND EXTENSION CORD IS DISCONNECTED
- NEVER OPERATE THE *ATTICAT* MACHINE IF IT OR THE OPERATOR IS STANDING IN WATER. SERIOUS INJURY MAY RESULT
- OWENS CORNING SHALL NOT BE RESPONSIBLE FOR ANY INJURY, DAMAGE, LOSS, COST, EXPENSE, OR LIABILITY RELATING TO FAILURE TO FOLLOW THESE INSTRUCTIONS. FAILURE TO FOLLOW THESE INSULATION INSTRUCTIONS MAY AFFECT OWENS CORNING'S OBLIGATIONS UNDER THIS PRODUCT'S LIMITED WARRANTY

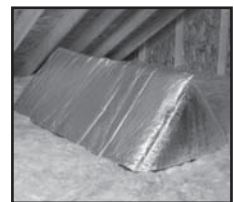


PRODUCTS FOR ATTIC STAIR OPENINGS

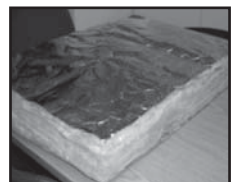
- **PINKCap** attic stair insulator is a molded expanded polystyrene (EPS) cap used to cover an attic stair opening. The one-piece design is rigid, clean and easy to install. It fits standard attic access openings up to 25" x 54".



- Owens Corning™ Attic Stairway Insulator is comprised of durable PINK FIBERGLAS® Insulation and tough, highly reflective foil. The product comes fully assembled and is easy to install. The Attic Stairway insulator can help reduce air leaks and add insulation to the home as recommended by the Seal and Insulate with ENERGY STAR® effort.



- Owens Corning™ Attic Hatch Insulator is comprised of R-30 PINK™ FIBERGLAS™ Insulation with reflective foil on both the top and bottom faces. Included in the kit is peel and stick weather-stripping. Attic Hatch Insulator installs quickly and easily.



CHAPTER

7

ACCURATE ESTIMATING CALCULATIONS FOR TIME AND MATERIALS

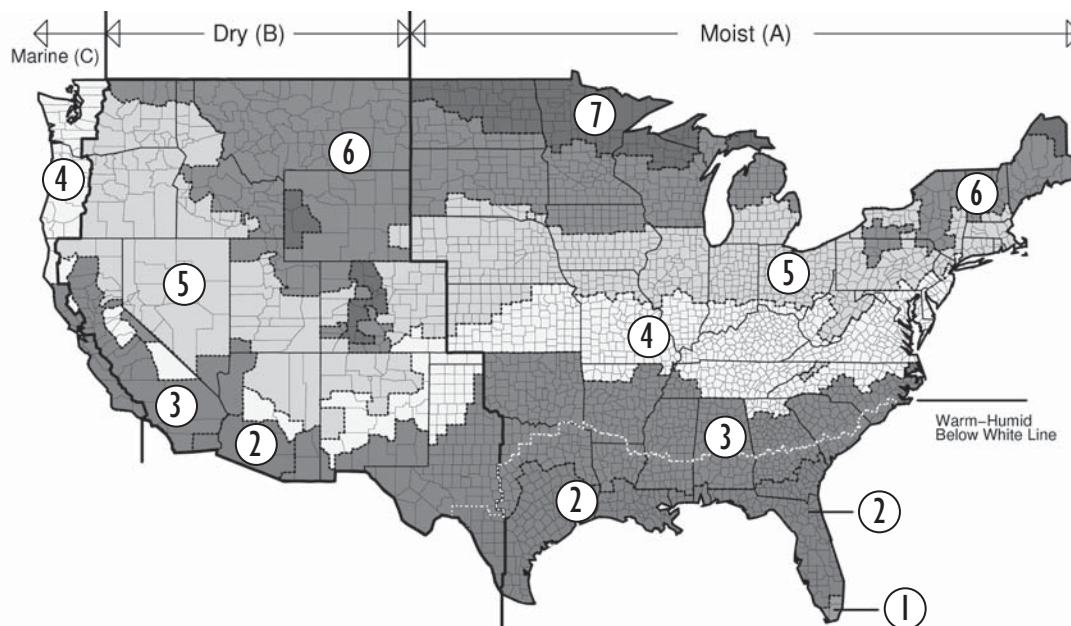
Planning and preparation are essential for providing customers with accurate estimates and getting the insulation, roofing and/or ventilation job done quickly, efficiently and effectively. This chapter provides the tools you need to calculate R-value, the amount of insulation you'll need and the amount of time the job will take, as well as materials, equipment and labor needs.

DETERMINING R-VALUE

The map below and the chart to the right provide you with a breakdown of the recommended R-values for homes throughout the U.S., depending on the amount of insulation currently in the home's attic. Simply find the home's location on the map and refer to the chart to determine the recommended R-value for the area.

- Determine the "Insulation Zone" by locating the home's city or town on the map
- Check the chart to determine the home's Insulation Zone
- Identify the amount of insulation currently in the home's attic and use the chart to determine the recommended R-value
- The DOE now recommends a range of R-values up to R-60. The previous R-value recommendation for most zones was up to R-49

Zone	Add Insulation to Attic		Floor
	Uninsulated Attic	Existing 3–4 Inches of Insulation	
1	R-30 to R-49	R-25 to R-30	R-13
2	R-30 to R-60	R-25 to R-38	R-13 to R-19
3	R-30 to R-60	R-25 to R-38	R-19 to R-25
4	R-38 to R-60	R-38	R-25 to R-30
5–8	R-49 to R-60	R-38 to R-49	R-25 to R-30



DETERMINING INSULATION AMOUNT NEEDED

To determine how much AttiCat® Expanding Blown-In PINK FIBERGLAS™ Insulation you need to add to the attic to achieve the recommended R-value, follow the steps below:

- Use the list at left to translate the recommended R-value for your area into inches
- Use the AttiCat measuring ruler to measure the amount of insulation currently in the attic (if any)
- Subtract the amount of existing insulation from the recommended R-value to determine the total amount of insulation you will need to add to the attic

R-VALUES IN INCHES

(minimum thickness)



R 13 = 4.50"	R 38 = 13.00"
R 19 = 6.50"	R 44 = 14.75"
R 22 = 7.50"	R 49 = 16.50"
R 25 = 8.75"	R 60 = 20.00"
R 30 = 10.25"	

ESTIMATING THE NUMBER OF BAGS TO COMPLETE THE JOB

Now that you know how many inches of insulation to add to the attic, estimate the area that needs to be insulated. To determine the number of bags you will need, see the chart below.

ATTICS	R-Value Desired	Thickness Needed (inches)	# of Bags for 500 sq. ft.*	# of Bags for 750 sq. ft.*	# of Bags for 1000 sq. ft.*	# of Bags for 1500 sq. ft.*	# of sq. ft. One Bag Covers
	R-13	4.50	4	5	7	10	151.4
	R-19	6.50	5	8	10	15	106.3
	R-22	7.50	6	9	12	17	89.9
	R-25	8.75	7	10	14	20	75.0
	R-30	10.25	8	12	16	23	65.4
	R-38	13.00	10	15	20	30	51.4
	R-44	14.75	12	18	23	35	43.6
	R-49	16.50	13	20	26	39	38.8
	R-60	20.00	17	25	33	49	31.1

Now AttiCat® Insulation Works in Walls, Too.

Square footage is the exterior wall's height multiplied by its length less the window measurement.

WALLS 2 x 6 2 x 4	R-13	3.50	7	10	14	20	75.2
	R-15	3.50	8	12	16	23	65.1
	R-21	5.50	11	16	21	32	47.8
	R-24	5.50	15	22	29	44	34.5

*The number of bags of insulation is rounded up.

To achieve desired R-Value and Thermal Performance, you will need to install both the minimum thickness and the number of bags prescribed on the AttiCat® insulation coverage chart.

CALCULATING THE ACCESSORIES/LABOR NEEDED

Consider the following products and labor to complete the job:

- raft-R-mate® baffles
- SmartCap® Recessed Light Cover
- Ventilation requirements
- PINKCap® stair insulator, Fiberglass Attic Stairway Insulation, Attic Hatch Insulator
- Accessibility of the attic
- Pitch of roof (lower pitches are harder to work with)
- Air Sealing needed (PROPINK® gun Foam or 12 oz. foam sealant)

CHAPTER

8

TOP OF THE HOUSE™ CERTIFIED CONTRACTOR

PROMOTE AND LEVERAGE THE ADVANTAGES

Your Top of the House™ certification puts you a step above other contractors, giving you added credibility and the backing of a recognized, trusted name. Here is a look at all the recognition and resources available to you as a *Top of the House* Certified Contractor.

A RECOGNIZED NAME

Owens Corning has been a recognized leader in the building materials industry for over 70 years. We're known for making homes more comfortable, beautiful and durable.

FAST FACTS

- Owens Corning brand awareness among consumers is twice that of our nearest competitor*
- Customers prefer Owens Corning insulation 7:1 over other brands†
- Owens Corning was named a *Fortune* magazine Most Admired Company in the building materials category
- Owens Corning is a Fortune 500 Company with nearly \$5 billion in annual sales (2007)
- Owens Corning services 30 countries and 6 continents, and employs 20,000 people
- The company's Corporate Science & Technology Center in Granville, OH, is focused on innovative research and development
- At Owens Corning, customer satisfaction is a priority

TOP OF THE HOUSE™ CERTIFICATION

You've been trained and tested by Owens Corning—this differentiates you from other roofing contractors. You've earned the *Top of the House* certification, so use it to your advantage when selling a remodeling job.

Trust is a major factor when homeowners are selecting a contractor, so your certification by the manufacturer—a leader in the roofing industry—is sure to bring about confidence for a job well done.



COMMUNICATIONS SUPPORT

Owens Corning offers tools to help you sell your *Top of the House* services. These tools help convey the importance of the combination of roofing, ventilation and AttiCat® insulation, and provide insight regarding the AttiCat insulation application. These tools position you as a *Top of the House* expert, and will assist in putting homeowners at ease since this is a process that they likely have not experienced before.

Contact your Area Sales Manager for the marketing tools available.

*Based on results from an independent survey of homeowners intending to re-roof in the next two years, conducted by MAI (Marketing Analysts, Inc.) in July 2006.

†Owens Corning Image and Brand Tracking Study, 2001.

CHAPTER

9

IN-HOME SELLING PROCESS

TIPS TO USE AT EVERY STAGE

You've learned how to install the insulation. Now master how to sell it. Use these proven tactics from the AttiCat® Business System Sales Method.

STAGE 0: SETTING EXPECTATIONS

Before you enter a customer's home, start off on the right foot by setting their expectations—and ensuring that your visit will be a pleasant and profitable one.

When a prospect calls to schedule a home visit

- Let them know you will also need attic access to inspect the roof deck and ask that the opening be cleared of any clutter
- Ask for permission to enter the attic from inside the home
- Ensure that the homeowner is available for an appropriate window of time for your visit to allow for all of their questions
- Ask that all decision makers be present so you can answer all questions at once in order to create the most accurate estimate

By setting attic visit expectations

- Homeowner won't be surprised
- Homeowner will be prepared to hear about roofing, ventilation and insulation
- Homeowner will be more receptive to receiving comprehensive estimate

What to say:

"When he visits your home, our estimator will need access to your attic so he can perform a comprehensive assessment of the roofing system, including your roof decking and ventilation. Will that be possible?"

"Where is your access? Can you make sure it's clear from obstruction? Thanks!"

STAGE 1: BUILDING RAPPORT

Before you even ring the doorbell, there are several things you can do to help set a positive tone to your visit. Be on time for your appointment; if you are delayed, phone the homeowners. When you arrive at the home, take care where you park. Never park behind vehicles in the driveway. Be sure to use all walkways and don't step on any landscaping. Note that some consumers may be offended by smoking or the smell of cigarette smoke. Remember to turn your radio off or the volume down when you enter the neighborhood.

Introduce yourself and anyone with you when the homeowner answers the door, and remind them why you are there. Ask if where you're parked is okay and for permission to enter the home.

Once you are inside the home:

- Explain the inspection process and what equipment you may need to bring into the home
- Repeat the estimate of how long the process will take that the homeowner was given on the phone—let the homeowner know you're there to do a thorough job and answer any questions they may have
- Ask for permission to go up on the roof
- Ask for permission to enter the attic—do not enter any other room not associated with the attic or roof without permission
- As you go through the home, you can add value to your visit and introduce the topic of saving energy by pointing out that the homeowner could be using a programmable

thermostat or more efficient light bulbs although take care to stay focused on your primary objective—the roofing system

What to say:

“We’ll need to access your attic to visually inspect your roof deck. The process involves inspecting and taking pictures of your deck, inspecting your ventilation system and checking the physical state of your insulation. I’d like to do this prior to walking the roof’s exterior. Can you show me the access door?”

STAGE 2: INSPECTING THE ROOF AND ATTIC

After your arrival and rapport building, proceed to the attic for the inspection.

- Check for damage to roof deck
- Take digital photos of the deck and ventilation system to show the homeowner, noting whether the soffit vents are blocked by insulation
- Check insulation
 - Note rafter baffles and hatch insulation
 - Stick a ruler into the insulation and take a digital photo of the depth of the insulation to show the homeowner
- Measure the attic—just like anything else, it’s better to measure twice and insulate once
 - Digital laser measure
 - Base measurement on the size of the roof
 - Measure the space in between two rafters and multiply by the number of rafters
 - Do it the old-fashioned way with a ruler
- Note where the hatch is, measure it and take a picture of it
- Note the number and location of recessed lights and the chimney
- Count the exhaust fans, note their locations and check that they are working properly
- Note the ceiling grade and height
- Check for any rodent or bird nesting
- Inspect for roof leaks and dry rot

As you carry out your assessment, it’s important to keep in mind these jobs to avoid for re-insulation:

- Homes with bare wires or knob-and-tube wiring, which exists mainly in homes built before the 1940s. Recommend that the wiring be replaced by a licensed electrician prior to re-insulation
- Homes with vermiculite, a known carcinogen. As opposed to the fibrous texture of fiber glass insulation, vermiculite is formed of brownish-pink or brownish-silver, accordion-shaped chips

Proceed to roof exterior and inspect (along with taking notes and photos):

- Shingle condition (granule loss)
- Flashing
- Valleys
- Gutters
- Drip edge
- Ventilation

STAGE 3: BRIDGING FROM INSPECTION TO DEMONSTRATION

Upon completion of inspection

- Provide the homeowner with a roof assessment
 - Condition of shingles, valleys, drip edge, roof deck, gutters, etc.
 - Condition and accuracy of the ventilation system
 - Condition and depth of insulation
- Show the homeowner the digital photos you took
- Tell them about the U.S. Department of Energy recommended insulation depth
- Explain the role of insulation in the performance of a roofing system

What to say:

“The shingles look... valleys, drip edge, flashing, gutters, roof deck looks [insert assessment of the roof deck].

“And the ventilation system looks [insert assessment]. While we were inspecting the underside of the deck and ventilation, we noticed that your insulation [is in good shape physically or has water damage], but that the insulation levels are lower than what the Department of Energy recommends for our area.”

STAGE 4: ENVIRONMENT AT THE TOP OF THE HOUSE™

Next, reiterate to the homeowner that a high-performance roof takes more than just shingles. The performance of any roof you install depends on an entire system of products working and performing together, including ventilation and insulation. This is called the Top of the House™ system. Use the Owens Corning homeowner sell sheet entitled, *Ensure Top Roofing Performance, Use a Top of the House™ Certified Contractor*, Pub. No. 10009892. See Chapter One for more details.

When a home’s roof, ventilation and insulation work together as a system, a homeowner will almost immediately be able to feel the added comfort of maintaining their desired indoor temperature.



The benefits of a Top of the House™ system:

- Comfort—more even temperatures throughout a home
- Energy savings—up to 20% per year*
- Environmental savings—insulating to R-49 reduces greenhouse gas emissions by a half ton per year**
- Durability—using high-performance shingles with proper insulation and ventilation helps ensure a long-lasting roof

What to say:

“This picture we took in your attic shows that you have (XX) inches of insulation or an R-X level of insulation, which according to the Department of Energy, is inadequate. For our area, they recommend R-49 or 19 inches of insulation.”

“Do you believe your energy bills are higher than they ought to be?”

“Do you have a room that is hotter/colder than others in the home?”

“Were you aware you had this low a level of insulation in your attic?”

STAGE 5: BUILDING COMPANY CREDIBILITY

You now have an opportunity to lay the foundation for an easier closing by telling the homeowner about your company—and adding to your credibility.

- Talk about how long you’ve been in business and be able to provide references

Also let the homeowner know that you have earned *Top of the House* certification from Owens Corning, which enables you to help your customers save money and energy with a properly functioning *Top of the House* system.

Finally, leverage your relationship with Owens Corning—a recognized leader in the building materials industry for over 70 years.

- Owens Corning helps the environment by providing energy-efficient products that use post-consumer recycled materials and eliminate greenhouse gas emissions
- Owens Corning is known for making homes more comfortable, beautiful and durable
- Owens Corning is America’s number one roofing brand
- Customers prefer Owens Corning insulation 7:1 over other brands†
- Installation using the *AttiCat* system is fast and clean
- Owens Corning was named a *Fortune* magazine Most Admired Company in the building materials category

Preparing for the Close

Before moving to the actual close, be sure the homeowner has no residual questions that could lead to an objection.

STAGE 6: REINFORCING PRODUCT FEATURES AND BENEFITS

At this point in the selling process, it’s likely that you will describe the features of the roofing products you install. As a *Top of the House* contractor, this is the time to include the benefits of the *AttiCat* system as well.

- The *AttiCat* system was created by Owens Corning, the company that invented PINK FIBERGLAS Insulation
- The *AttiCat* system uses PINK FIBERGLAS Insulation—specifically, *AttiCat* Expanding Blown-In PINK FIBERGLAS Insulation
 - o Resists mold††
 - o Fire resistant
 - o Limited lifetime warranty on performance
 - o Preferred consumer product
 - o No settling
 - o Noncombustible
 - o Low dust and mess
 - o Green—made with 58% recycled glass

STAGE 7: CLOSING THE SALE WITH URGENCY

Work through your estimate in front of the homeowner. Talk about everything you will do as you list it. It is helpful for the close if you reconfirm that the homeowner: a) has a need for the product; b) feels that this is the right product to use; and c) feels that your company is the right company to do the job. Revisit any concerns surfaced before presenting price.

When you present the price, ask the homeowner how he or she feels about it and if it was what they had expected and if they’d like to get started with the project. In this manner, you will be able to isolate any objections to price since you’ve already clarified any company or product questions. Having a financing option to present to help alleviate the pricing concern would be a good approach.

What to say:

“I’ve outlined the project costs for you, including bringing your insulation up to Department of Energy recommendations. You can certainly choose to re-insulate your attic at another time, but it’s worth considering letting us handle that for you while we’re already doing your roofing job.”

“We’re certified Owens Corning *Top of the House* system installers, allowing us to professionally install high-quality Owens Corning insulation. The system is clean, efficient and doesn’t impact your home adversely in the process. And because we’re already at your house working on your roof, it will be less expensive for you than having us or another contractor return to your home.”

STAGE 8: ANSWERING OBJECTIONS

Understandably, a homeowner may hesitate at the prospect of having what they feel is additional or unexpected work done to their home. If this is the case, try to uncover any additional hidden objectives and make sure you address them. Be professional and emphasize the benefits and facts.

- If the homeowner is concerned about the amount of mess that the project could create, reassure them that the *AttiCat* system is incredibly clean. In fact, it’s one of the reasons why you enjoy working with the system
- Explain that there are some advantages to re-insulating while you are working on the roof; for example:
 - o It will cost less money than if you had to come back on a separate occasion
 - o If you are financing the job, you can easily roll the additional price into the payment
 - o You can ensure that the soffits are not covered
 - o They will only have to deal with one contractor for the job, not two
- Emphasize the long-term energy efficiency benefits of doing the job now
- Also reiterate that, for their added peace of mind on such an important project, you are an Owens Corning *Top of the House* Certified Contractor
- If the homeowner objects to your price, offer value-added incentives such as discounts for putting a sign in the yard, referrals and having a flexible installation date
- Take any negative signals from the homeowner, such as crossed arms, as a sign that you need to re-engage them
- Look for customer signals of interest
 - o Head nodding
 - o Verbal agreement
- If you’re getting positive signals, restate your offer
 - o Restate the answers to any previous objections
 - o Restate the time limit
 - o Restate the incentives
- Talk schedule—let the customer know a date in the near future when you can get started
- Start the project or get it scheduled

What to say:

“To be sure we get your job started as soon as possible, we need to put you on the schedule now. When would you like to get the job started?”

If no, for insulation reasons:

“Are you worried about the additional cost of the insulation to the project?”

“I realize these costs are something you probably haven’t planned for. Most people don’t. We realize that roof projects can be expensive. Our company offers financing options that many of our customers have found helpful. Would you like to look at some of those options?”

If no, I’d like to think about it:

“That’s understandable. This is a big project, but it’s one that is well worth the long-term benefits. Our quotes are good for 30 days, so if you decide within that time frame, this quote is valid. When in the next 30 days would you like me to contact you?”

*ENERGY STAR: http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_methodology. Savings vary. Find out why in the seller’s fact sheet on R-values. Higher R-values mean greater insulating power.

**Based on an average attic size of 1700 sq. ft. with existing R-19 insulation averaged over 7 cities in diverse climate regions. Savings may vary.

†Owens Corning Image and Brand Tracking Study, 2001.

††As manufactured, fiber glass insulation is resistant to mold growth. However, mold growth can occur on building materials, including insulation, when it becomes contaminated with organic material and when water is present. To avoid mold 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.

TOP OF THE HOUSE™ GLOSSARY

Baffles: Devices to maintain a ventilation space between the insulation and roof deck, assuring airflow from the eave/soffit vents to ridge vent or other roof vents provided in attics and cathedral ceilings (Owens Corning product is raft-R-mate®).

Band Joist: Vertical members that form the perimeter of a floor system in which the floor joists tie in. Also known as the rim joist.

Cavity: The empty space between studs or joists typically filled with insulation.

Collar Beam: A horizontal board connecting two opposite rafters at a level considerably above the wall plate. Also known as collar tie.

Condensation: Changing a substance from a vapor to a liquid state by removing the heat. The condensate shows up on surfaces as a film or drops of water.

Density: The mass of a substance per unit of volume of that substance.

DOE: Department of Energy.

Dry Rot: Dry rot occurs most often in places where the ventilation is poor or humidity is high or when the wood has been improperly seasoned.

Eave Vents: Vent openings located in the soffit under the eaves of a house to allow the passage of air through the attic and out the roof vents.

FIBERGLAS™ Insulation: An energy-efficient glass fiber product manufactured by Owens Corning to ensure the best thermal and noise control performance available.

Gable Vents: A louver vent mounted in the top of the gable to allow the passage of air through the attic.

Glass Fibers: Glass in a strand form. The ingredients are essentially the same that go into any glass product, such as a window pane or drinking glass.

I.C. or Insulation Contact: Marking on recessed lighting fixtures indicating that they are designed for direct insulation contact.

Insulation Density: Denser insulation products have more fibers per square inch and, therefore, give you greater insulating power through higher R-values.

Joist: Horizontal framing member set from wall to wall to support the floor or ceiling.

Knee Walls: Walls of varying length. Used to provide additional support to roof rafters with a wide span or to finish off an attic.

Metal Flue: A metal channel through which hot air, gas, steam or smoke may pass.

Noncombustible: The material will not burn. The glass fibers in PINK FIBERGLAS™ Insulation have a natural fire resistance, and are considered noncombustible when tested in accordance to ASTM E136.

Rafters: Slope framing members that support a pitched roof.

Ridge Vents: Vents mounted along the entire ridgeline of the roof to allow the passage of air through the attic or cathedral ceiling.

Roof Vents: Louvers or small domes mounted near the ridge of the roof to allow the passage of air through the attic.

R-Value: Measure of resistance to heat flow. Insulation materials have tiny pockets of trapped air. These pockets resist the transfer of heat through material. The ability of insulation to slow the transfer of heat

is measured in R-values. The higher the R-value, the better the insulation material's ability to resist the flow of heat through it.

Stud: A vertical framing member used in both exterior and interior walls.

Vapor Retarder: Helps control the amount of moisture passing through the insulation and collecting inside exterior walls, ceilings and floors.

Ventilation: Creates a positive flow of air that allows the house to “breathe” and helps prevent moisture buildup year-round.

Water Vapor Retarder: A material or system that adequately impedes the transmission of water vapor under specified conditions.

FINAL EXAM



TOP OF THE HOUSE™

FINAL EXAM



Name: _____

Company: _____

Date: _____

FINAL EXAM

Chapter 1:

1. Which elements make up the **Top of the House™** system?
 - a. Attic insulation, batts and raft-R-mate®
 - b. Shingles, ventilation and attic insulation
 - c. Shingles, hip & ridge shingles and underlayment
 - d. Plywood, shingles and ventilation
2. In an under-insulated home, where does the majority of the home's heat escape from?
 - a. Windows
 - b. The front door
 - c. The attic
 - d. The basement
3. A combination of proper ventilation and insulation can help...
 - a. Prevent ice dams
 - b. Reduce greenhouse gas emissions
 - c. Improve the life of the roof
 - d. All of the above
4. Why should you become **Top of the House™** certified?
 - a. You can help customers lower their energy bills
 - b. It enables you to help increase the longevity of a roof
 - c. Being able to make a complete Top of the House™ assessment can help you build your business
 - d. All of the above

Chapter 2:

1. You should always inspect the attic before beginning a re-roofing job.
 - a. True
 - b. False
2. After completing your evaluation of the attic environment, you should:
 - a. Begin tearoff
 - b. Present your findings to the homeowner and discuss how proper ventilation and insulation are important components for a fully functioning roof
 - c. Provide a bid
 - d. Measure the roof
3. At the end of a job, it is important to do a final inspection. A final inspection includes:
 - a. Applying hip & ridge shingles
 - b. Receiving payment
 - c. Cleaning the site of building materials, cuttings, scraps, wood and any other debris remaining from the roofing work
 - d. Washing the homeowner's car

Chapter 3:

1. **What two types of vents are needed to properly ventilate the attic?**
 - a. Power vents and turbine vents
 - b. Ridge vents and off-ridge vents
 - c. Intake and exhaust vents
 - d. Metal vents and plastic vents
2. **The 1/300 rule states that:**
 - a. For every 300 inches of floor space, use 1 foot of ventilation
 - b. For every vent, you should charge \$300
 - c. 1 sq. ft. of net free vent area per 300 sq. ft. of attic floor space
 - d. One in 300 roofs needs ventilation
3. **Intake and exhaust ventilation should be installed at an approximate ratio of:**
 - a. Five-to-one (5:1)
 - b. One-to-one (1:1)
 - c. Two-to-one (2:1)
 - d. None of the above
4. **The area you should use to calculate the proper amount of ventilation for a vent is:**
 - a. The net free vent area
 - b. Total vent size
 - c. Ventilation crawl space
 - d. Bernoulli measurement

Chapter 4:

1. **What are the main reasons a home should be insulated?**
 - a. Helps reduce year-round heating and cooling costs
 - b. Makes a home more comfortable
 - c. May increase a home's resale value
 - d. Conserves natural resources by helping the homeowner use less energy
 - e. All of the above
2. **Insulation is measured by "X," the ability to resist the transfer of heat:**
 - a. Air infiltration
 - b. Moisture control
 - c. R-value
 - d. W-value

3. How does insulation work?

- a. Tiny air pockets trapped in the insulation resist the passage of heat
 - b. By capturing heat and transferring it back into the home
 - c. By covering vents in the home to prevent loss of heat
 - d. By keeping cool air outside the home
4. **Unlike with fiber glass insulation, when installing cellulose insulation, it's necessary to insulate over the desired R-value to accommodate settling.**
 - a. True
 - b. False
 5. **In which season does insulation help reduce heating and cooling energy bills?**
 - a. Winter
 - b. Summer
 - c. Spring
 - d. Fall
 - e. All year long

Chapter 5:

1. **Along with the personal protective gear required for roofing installation, insulation installation requires all of the following protective safety gear, except:**
 - a. Loose-fitting, long-sleeved shirt
 - b. OSHA-approved safety glasses
 - c. Knee pads
 - d. Disposable dust respirator (NIOSH- or MSHA-approved)
2. **When working with insulation, what steps are required for proper handling?**
 - a. Avoid contact with eyes and skin
 - b. Wear long-sleeved, loose-fitting clothing, gloves and eye protection
 - c. Wash with soap and warm water after handling
 - d. All of the above

Chapter 6:

- I. How many inches of uninsulated space should you allow around non- I.C. rated lighting fixtures for safety and code compliance?
 - a. 10"
 - b. 1"
 - c. 3"
 - d. 4"
2. Installation with an AttiCat® system requires how many people?
 - a. 1
 - b. 2
 - c. 3
 - d. 4

Chapter 7:

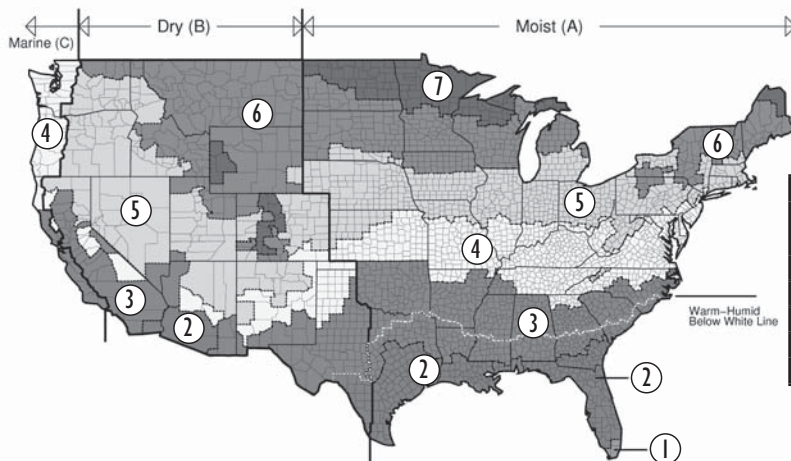
- I. Using the map and chart below, what should the proper R-value be for an uninsulated attic in a home in Zone 6 for safety and code compliance?
 - a. R-30 to R-60
 - b. R-30 to R-49
 - c. R-38 to R-60
 - d. R-49 to R-60

Chapter 8:

- I. Why should you leverage your Top of the House™ certification?
 - a. It makes you stand out from other contractors
 - b. You enjoy the added credibility of being backed by the trusted Owens Corning brand
 - c. You can use it to your advantage when selling a roofing job
 - d. All of the above

Chapter 9:

- I. Which is not an important part of the in-home selling process?
 - a. Setting expectations to ensure your visit will be a pleasant and profitable one
 - b. Inspecting the roof and attic
 - c. Installing raft-R-mate® baffles
 - d. Adding to your credibility by telling the homeowner about your company, Owens Corning and the high-quality products you install



Zone	Add Insulation to Attic		Floor
	Uninsulated Attic	Existing 3–4 Inches of Insulation	
1	R-30 to R-49	R-25 to R-30	R-13
2	R-30 to R-60	R-25 to R-38	R-13 to R-19
3	R-30 to R-60	R-25 to R-38	R-19 to R-25
4	R-38 to R-60	R-38	R-25 to R-30
5–8	R-49 to R-60	R-38 to R-49	R-25 to R-30



HELP THE ENVIRONMENT

We provide energy-efficient products so you can meet rising demand. The Owens Corning PINK FIBERGLAS™ Insulation used in our AttiCat® Expanding Blown-In Insulation Blowing Machine:

- Is ENERGY STAR®-rated for energy efficiency and GREENGUARD Certified as meeting current indoor air quality standards
- Contains the highest certified percentage of post-consumer and post-industrial recycled glass (SCS Certified)

Owens Corning is also responsible for:

- The prevention of more than 1 billion tons of greenhouse gas emissions
- A variety of products that contribute to the NAHB Model Green Home Building Guidelines

PINK is Green® embodies the Owens Corning philosophy around sustainability and our dedication to “greening” our operations, “greening” our products and accelerating the conversation around energy efficiency.

If you want to learn more, visit www.owenscorning.com/sustainability.



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