

CertainTeed

# Weatherizing With Fiber Glass Insulation:

Energy Efficiency & Performance Benefits



CertainTeed insulation products improve building energy efficiency and reduce building energy consumption for the life of the structure. As a result, they help conserve nonrenewable energy sources, decrease dependence on foreign oil and lower greenhouse gas emissions. Fiber glass and mineral wool insulations save more than 400 trillion BTUs annually – a twelve-fold savings over the energy needed to produce these products.

Sand — an inert, abundant and rapidly renewable resource — is the primary raw material used to make fiber glass. Even still, recycled glass has become a significant component of our fiber glass insulation products which average 35% recycled glass content (pre- and post-consumer), well exceeding the 20-25% EPA Recovered Material Guideline.

CertainTeed insulation products have been certified by the GREENGUARD Environmental Institute for superior indoor air quality and meet GREENGUARD Children & Schools Certified standards for low or no emissions of Volatile Organic Compound (VOC), including formaldehyde.

Fiber glass batt insulation can be removed easily and actually put back in place – making it one of the rare re-usable forms of insulation. When buildings are renovated, batts and rolls can easily be removed and reused, protecting your investment for the life of the building.

In addition to the Energy Efficiency benefits of weatherizing with Fiber Glass Insulation, there are many other performance-based attributes that make it the safest and preferred choice for the Weatherization Assistance Program.

**The benefits of properly installed Fiber Glass Insulation:**

- Reduces energy costs, lowers heating and air conditioning bills.
- Provides more comfort, room to room and floor to ceiling.
- Acts as a fire retardant and is fire resistant.
- Controls noise, both inside and from outside.
- Contributes to cleaner indoor air.
- Helps use less of the Earth's natural resources.
- Manages moisture.
- Can help prevent mold.
- Can increase the value of homes.

## **Building is indeed a science.**

With more than 50 years of research, fiber glass is one of the most examined building products in the world. Scientists agree that fiber glass insulation is safe to manufacture, install and have in living environments. Building scientists also agree that the right fiber glass insulation and correct installation can have significant positive effects on a home's performance.

CertainTeed Building Science is all about understanding how different building products used to construct walls, ceilings, roofs and other components interact with each other, as well as the home's occupants. The right conditions make homes more energy-efficient and more comfortable to live in—safer and healthier, too.

CertainTeed's Building Science department continues to develop the latest innovations in fiber glass insulation that deliver optimum performance. For more information, see [www.certainteed.com/buildingscience](http://www.certainteed.com/buildingscience).

## **The value of R-value.**

Insulation's effectiveness is measured in R-Value. R stands for the insulation's resistance to heat flow; heat escapes from houses in the winter and heated air enters houses in the summer. The higher the R-Value, the greater the resistance to heat flow and the greater potential for saving energy, natural resources and money. Insulation rated as R-19 will provide greater resistance to heat flow than insulation rated as R-13. Many different R-Values are used in homes today based on the needs of the application. For example, walls may contain R-13 insulation and an attic could have R-38 material.

## **Insulate locally. Save globally.**

Under-insulated homes and buildings experience substantial heat loss in winter and heat gain in summer. This tremendous energy loss forces buildings' heating and cooling systems to work overtime and waste money, along with our planet's limited natural resources.

When you decrease the amount of energy used to heat and cool homes, fewer overall emissions of greenhouse gases and other pollutants are produced. Better insulated homes also require fewer power plants to produce the energy needed to heat and cool them, which also helps cut down on greenhouse gas emissions. Homes insulated with fiber glass perform efficiently and comfortably, use less natural resources and fewer financial resources. Taking care of homes and buildings is an important step in taking care of our world.

## **From molten glass to fiber glass.**

Fiber glass insulation is made mostly from sand and recycled glass. These ingredients are melted and then spun into thin fibers and held together, much like cotton candy.

Fiber glass is an extremely effective insulation material because it has millions of tiny air pockets, which provide the real insulating power. These air pockets help resist the flow of warm air, and determine the insulation's R-Value. CertainTeed fiber glass insulation lasts for the life of homes without losing its insulating value. And it resists settling or deterioration over time, which means it also continues to save money and energy for years.

## **Fiber Glass controls a lot more than temperatures.**

Advancements by CertainTeed in the science of fiber glass insulation go far beyond thermal efficiency. Our fiber glass insulation provides higher thermal efficiency, along with greater sound and noise control. And now we're proud to introduce DryRight,™ the first insulation to help control moisture and prevent dangerous mold and mildew growth, even structural damage.

## **Keep families warmer... and cooler.**

An uninsulated or under-insulated home can cost more than you think. With energy costs forever rising, investing in fiber glass insulation in homes can be well justified. You may not be able to influence the cost of a barrel of oil, but upgrading a home's insulation can maximize the energy once it's installed. CertainTeed has a number of solutions to help you gain control over energy use and costs. We offer a wide selection of products to insulate every area of a home. For attics and walls, we offer premium-grade CertainTeed rolls, batts or blow-in fiber glass insulation. InsulSafe® and OPTIMA® are manufactured specifically to provide complete and uniform blow-in coverage. And we mean every nook and cranny that's letting heated and cooled air leave for parts unknown.

## **What you need to know.**

It's good to know you can save on energy costs with a well insulated house. But it's even better to know the fire safety properties of the insulation you have chosen.

## **Fire resistance of Fiber Glass vs. Cellulose.**

While the most common types of insulation found in homes today are fiber glass and cellulose, fiber glass is by far the most commonly used. Because fiber glass is primarily made from sand and recycled glass, it's naturally noncombustible. And fiber glass stays nonflammable over the life of a home.

Cellulose, however, is made from shredded and ground up newspapers, which are naturally flammable. To make it fire resistant—though not fireproof—cellulose must be treated with fire-retardant chemicals. But even chemically treated cellulose is not a guarantee of fire resistance, especially as cellulose ages.

According to tests done by the California Bureau of Home Furnishings and Thermal Insulations, the capability of cellulose to withstand combustion declines to levels below what is required for new material. Concerns about cellulose have been documented where a heat source, such as overheated recessed lighting, faulty wiring, chimneys and flues have caused the cellulose to smolder, ignite and re-ignite again and again.

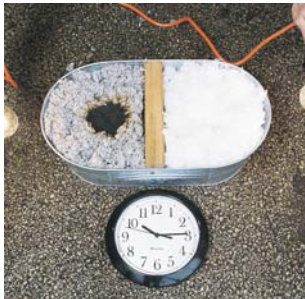
**Fire-Safety Testing Proves the Difference.**



*A heat source using a 60 watt bulb placed on cellulose insulation and InsulSafe® fiber glass blowing insulation.*



*AFTER 5 MINUTES: Smoldering combustion had begun in the cellulose side. There was no effect on the InsulSafe.*



*AFTER 15 MINUTES: The light was removed from the cellulose, but combustion continued. There was no effect on the InsulSafe.*



*AFTER 30 MINUTES: Combustion continued to spread in the cellulose. The light, inserted back into InsulSafe, still had no effect.*



*AFTER 60 MINUTES: Combustion had consumed most of the cellulose, causing significant damage to the wood. Again, no effect on the InsulSafe.*

**Fiber Glass safety tips.**

- While it's perfectly acceptable to add fiber glass over existing fiber glass, it is not recommended that you install fiber glass insulation over cellulose, as this does not eliminate cellulose's fire safety hazard.
- Never leave kraft or foil faced insulation exposed. Always cover with drywall or paneling.
- In ceilings, walls and floors (over unheated spaces), be sure the insulation facing always faces the inside (conditioned or heated/cooled space) of a home.
- Do not insulate on top or within three inches of recessed light fixtures. This rule does not apply to type IC light fixtures or to fluorescent fixtures with thermally protected ballasts.
- When insulating around furnaces, chimneys or flues, use unfaced insulation or remove any kraft or foil covering that could come in contact the heated area.
- For unfinished basements where insulation will be left exposed, install CertainTeed's basement wall fiber glass insulation, which is covered with a white or foil flame-resistant facing.



*Fiber glass insulation (top) is a more fire-resistant choice than cellulose (bottom).*

## It's also about peace and quiet.

Sound control is greatly aided with fiber glass insulation. Insulating interior walls, exterior walls and between floors adds to living in a quieter home. With more of us spending more time inside our homes, a little peace and quiet offers a welcome respite from a noisy world. To enhance the acoustical environment of homes, we offer NoiseReducer™ fiber glass insulation for walls and ceilings. This product is designed to create thorough sound-absorption throughout a home's various living areas. You can even rid a home of unwanted crosstalk (the kind you hear through a home's ventilation ducts) and the air-rush noise from ductwork. Our ToughGard® Duct Board, ToughGard® Duct Liner and Duct Wrap not only keep things quiet, but also help maintain the desired temperature of the air coming from a furnace or air conditioner.

## Helps prevent moisture and mold.

Most people generally think of fiber glass insulation only for its thermal and acoustical properties. Now there's a revolutionary new insulation that does all of the above—plus it helps control naturally occurring water vapor to help lower the risk of dangerous mold growth. CertainTeed introduces DryRight™ insulation, an amazing breakthrough in fiber glass insulation. DryRight is a remarkable advancement that combines dependable, thermally-efficient fiber glass insulation with a proven breathable clear membrane facing. DryRight's facing has microscopic paths that open and close to allow water vapor to escape from behind walls. Mold only grows under the right conditions—where it's dark, damp and has access to an available food source. These are the same conditions that can

exist behind home's walls. To be sure, mold in homes is one of the most litigated homeowner issues playing out in the courts today. And when you think of all the ways moisture can get behind walls—a leaking roof, poor window or door flashing, climatic changes, bathing, cooking, dishwashing, clothes washing, etc.—you can start to understand how mold can begin to grow. With serious health and property values at stake, choosing the right insulation really does matter.

### **MEMBRAIN™:**

*The Smart Vapor Retarder Protects... and Breathes.*

Designed to be applied on the interior over unfaced fiber glass insulation, loose-fill applications and spray foam, MemBrain looks similar to typical polyethylene sheeting, but is actually able to adapt its permeability depending on the climatic conditions. It uniquely provides high resistance to water vapor in winter or low humidity conditions and dramatically increases water vapor permeability during the summer or relatively high humidity conditions, which allows water vapor to easily escape wall and ceiling cavities.

## The right choice is fiber glass.

Now you know how an unseen building product like fiber glass insulation can have a dramatic impact on the energy efficiency of a home. You also know how CertainTeed fiber glass can dramatically enhance a family's year-round safety and health. And a home insulated with fiber glass can have a positive impact on the environment, locally and globally.

## Common terminology that's helpful to know.

### **Blow-in insulation –**

An insulation, usually fiber glass, rock wool or cellulose, that is fed into pneumatic blowing machines and blown under high pressure through a long flexible hose into attics and walls.

### **BTU –**

A BTU, British thermal unit, is the amount of heat required to increase the temperature of a pound of water just 1°F.

### **Building Science –**

The research and study of how various products used to construct walls, ceilings, roofs and other building envelope systems interact with each other, as well as with the home's occupants.

### **Facing –**

A material attached to fiber glass insulation to add additional advantages above the insulation's thermal benefit, such as helping to control drafts, moisture and mold.

### **Formaldehyde –**

A common chemical compound used to make binders and adhesives found in plywood, carpeting, facial tissue and other products.

### **Friction fit –**

Fiber glass batts or rolls that are slightly wider and do not have to be stapled into place. Also referred to as tabless batts.

### **GREENGUARD® Certification –**

A designation given to products that support superior indoor air quality. Using the strongest environmental standards, the GREENGUARD Environmental Institute regularly tests materials for low emissions of formaldehyde, volatile organic compounds (VOCs), respirable particles and other pollutants.

### **R-Value –**

A measure of the capacity of insulation to impede heat flow; the higher the R-Value, the greater its resistance to heat flow.

### **Vapor retarder –**

Any material (either attached to or separate from the fiber glass insulation itself) that adequately restricts or manages the transmission of water vapor.

### **VOCs (Volatile Organic Compounds) –**

Organic chemicals that emit gases; and are used as ingredients in common household products like permanent markers, correction fluids, cosmetics and cleaning supplies. The GREENGUARD Environmental Institute tests for VOCs in insulation to ensure safe indoor air quality.

### **CertainTeed Residential Insulation.**

CertainTeed's full range of fiber glass insulation products offer a variety of R-Values for every need. Choose from batts, rolls, blankets, blowing wool, blow-in products and sound control—everything you need for outstanding energy efficiency.

### **CertainTeed HVAC Insulation.**

CertainTeed duct board, duct liner, duct wrap and other fiber glass air-handling insulation products offer outstanding thermal, acoustical and moisture control. They're also lightweight, easy to clean and resistant to bacteria.

### **CertainTeed Dryright™ Fiber Glass Insulation.**

Revolutionary DryRight helps keep wall cavities dry and helps reduce the risk of mold and mildew. Thermally efficient and breathable DryRight can help prevent moisture from getting inside walls, while allowing trapped moisture to escape. DryRight is the ideal insulation for locations in the U.S. that experience changing, seasonal humidity conditions.

### **A history of building trust.**

CertainTeed is one the nation's largest and most respected manufacturers of building products. For more than 100 years, CertainTeed has been one of the most recognized brands among building professionals, as well as a leading researcher and producer of fiber glass insulation. You can depend on CertainTeed to continue to lead the building industry with creative advancements, innovative solutions and unparalleled service. For more information on insulation and all other CertainTeed building products, visit [www.certainteed.com](http://www.certainteed.com).

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#### **ASK ABOUT OUR OTHER CERTAINTEED® PRODUCTS AND SYSTEMS:**

**EXTERIOR:** ROOFING • SIDING • WINDOWS • FENCE • RAILING • TRIM • DECKING • FOUNDATIONS • PIPE  
**INTERIOR:** INSULATION • GYPSUM • CEILINGS