



In our complex world, is there an insulation material designed to meet the needs, challenges, and concerns of today's homeowners?

Icynene®. The only insulation system that protects what matters most – your family and your home.

Make room for a revolutionary insulation material. Not long ago, very little thought was given to the type of insulation installed in homes. But, families today face problems that weren't even issues when conventional insulation was developed: rising energy costs, unwanted noise, allergies, asthma and mold. Times and attitudes are changing. Homeowners, like you, are beginning to appreciate the increasingly important role insulation plays in their lives.

People consider their homes as a safe haven – a place where they can escape the noise and pollution of modern everyday life. Consequently, insulation must play a multiple role. No longer there just to insulate, today's insulation must protect a home by providing a Healthier, Quieter, More Energy Efficient® environment.

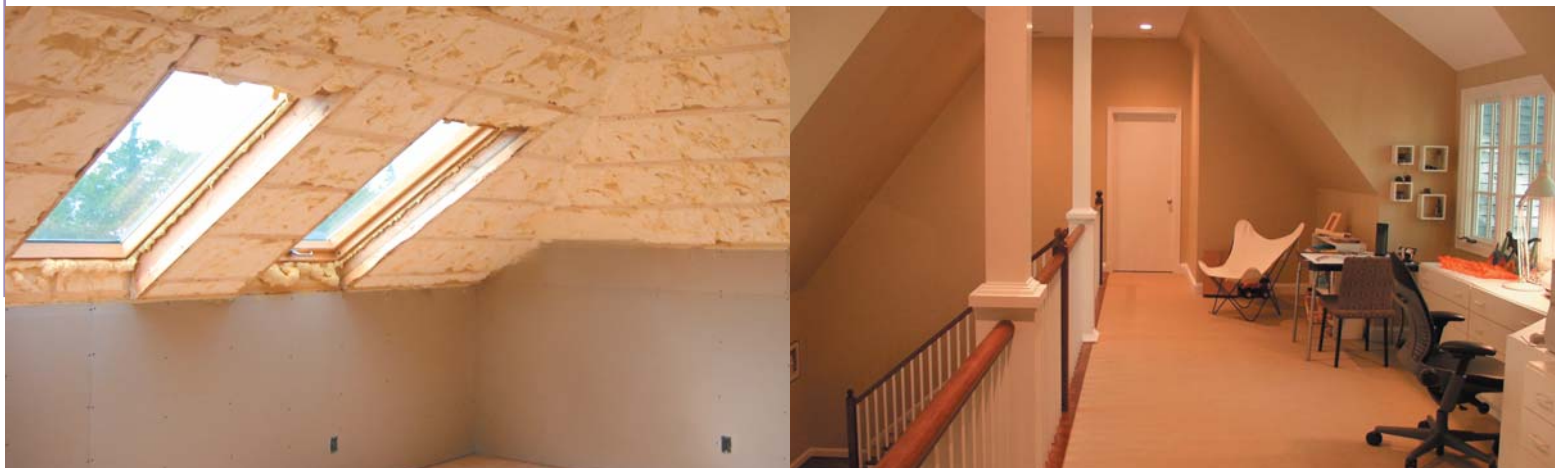
What's more, today's insulation should address a real threat to occupant comfort and health – that real threat is air leakage. It has been documented that enough air escapes from a typical house every day to fill two Goodyear blimps (www.urbanoptions.org). And, extra insulation means little without an effective air barrier! Unlike conventional insulation, Icynene® is an insulation and air barrier system that protects both new and existing homes from the adverse health and economic effects of air leakage.

Air leakage – a problem shared by new and old homes alike

This may come as a surprise to you, but the most important job of insulation should be to control air leakage.

What do we mean by air leakage? Conventional fiber insulation, regardless of R-value, leaves gaps and seams around framing materials where air can get in and out. This can lead to costly energy loss, transfer of airborne pollutants and pollens into your home and moisture build-up. When warm outside air meets cool air-conditioned inside air, or when heated inside air meets cold outside air, it can lead to condensation, moisture build-up, and a host of other problems, such as the growth of mold or mildew within the building cavity.

Thermal performance, health issues, noise control, and a home's structural soundness – all are negatively affected by air leakage.



Glossary of Terms

Air Barrier System

The assembly of components used in building construction to create a plane of air tightness throughout the building envelope and to control air leakage.

Air Permeance

(See opposite panel)

Building Envelope

The external elements (walls, floor, ceiling, roof, windows and doors) of a building that enclose conditioned space; the building shell.

Conventional Insulation

Fiberglass, cellulose and rockwool.

CFC (Chlorofluorocarbon)

Any of various halocarbon compounds consisting of carbon, hydrogen, chlorine, and fluorine, once used widely as aerosol propellants and refrigerants. Chlorofluorocarbons are believed to cause depletion of the atmospheric ozone layer and have been phased out as part of the Clean Air Act.

HCFC (Hydrochlorofluorocarbon)

Compounds containing carbon, hydrogen, chlorine and fluorine. They have shorter atmospheric lifetimes than CFCs and deliver less reactive chlorine to the stratosphere where the "ozone layer" is found.

HFA Propellant

Usually hydrofluoroalkane-134a, used in chlorofluorocarbon-free (CFC-free) aerosol delivery systems.

HFC (hydrofluorocarbon)

Compounds containing carbon, hydrogen, and fluorine. HFCs are a class of replacements for CFCs. Because they do not contain chlorine or bromine, they do not deplete the ozone layer. However, this class of compounds has other adverse environmental affects, which may make it necessary to regulate production and use of these compounds at some point in the future.

Heat loss

Heat that is lost from a building through air leakage, conduction and radiation. To maintain a steady interior temperature, heat losses must be offset by a combination of heat gains and heat contributed by a heating system.

Infiltration

Uncontrolled leakage of air into a building through cracks around doors, windows, electrical outlets and at structural joints.

R-Value

(See opposite panel)

Vapor Permeance (perm rating)

(See opposite panel)



What can a homeowner do?

Not only does Icynene® work as an insulation, it also works as a complete air barrier system to deliver optimal airtightness. Unlike conventional insulation products that allow air to move in and out of your home, Icynene® foam insulation is applied as a liquid and softly expands to 100 times its initial volume, sealing all gaps and crevices that compromise airtightness. Icynene® delivers a perfect fit for cavities of any shape, providing a continuous, protective barrier that virtually eliminates air leakage.

The secret to Icynene® is the way it seals

Icynene® works like a high-performance fabric because it is a breathable material that, just like your favorite outdoor sportswear, is windproof and resists water. Thanks to its air sealing capabilities, Icynene® minimizes both airflow and moisture build-up to help maintain a warm and dry building envelope. The result? A healthier, longer-lasting home.

By sealing the building envelope like no other conventional insulation can, Icynene® delivers the kind of benefits today's homeowners are looking for:

1. Improved Indoor Air Quality (IAQ)

With asthma rates on the rise, as a homeowner you can take comfort in knowing that Icynene® is a Green material that helps to improve the quality of the indoor air you and your family breathe. It is the only insulation certified by the Envirodesic™ Certification Program, which is recognized for improving air quality in homes across North America.

Icynene® reduces random air leakage and limits the penetration of outdoor allergens and pollutants. Combined with proper mechanical ventilation, Icynene® is the ideal base for a healthy structure. Because Icynene® is 100% water-blown, formaldehyde-free, and contains no harmful gases, it is the insulation of choice for many of the American Lung Association's "Health Houses" to help inhabitants breathe easier.

Effective Moisture Management

Icynene® delivers advanced moisture management by forming an air seal to minimize air movement and accompanying moisture. By minimizing moisture transport through the home, Icynene® helps to prevent condensation and reduces the potential for mold growth within walls and ceilings. Even if Icynene® gets wet (through a roof leak, for instance), the material doesn't wick water. Icynene®'s open-celled structure allows it to remain unaffected by wetting and drying so that it can continue to operate at peak performance levels. Water simply drains right through Icynene® without spreading so that it, as well as surrounding materials, can quickly dry.

Healthier

Conventional insulation is unable to seal all gaps and crevices, particularly those around electrical outlets, joints and vents. Icynene® fills every nook and cranny to minimize air leakage and create a Healthier, Quieter, More Energy Efficient® indoor environment.

2. Increased sound control

Traffic, neighborhood activities, and plumbing runs can be the sources of annoying sounds – the unwanted noises that can invade living spaces, hindering comfort and enjoyment. These sounds most commonly travel through the air.

By sealing the building envelope, Icynene® effectively minimizes airborne sounds. Icynene® is perfect for dampening noises from home theaters, playrooms, plumbing runs, and roads.

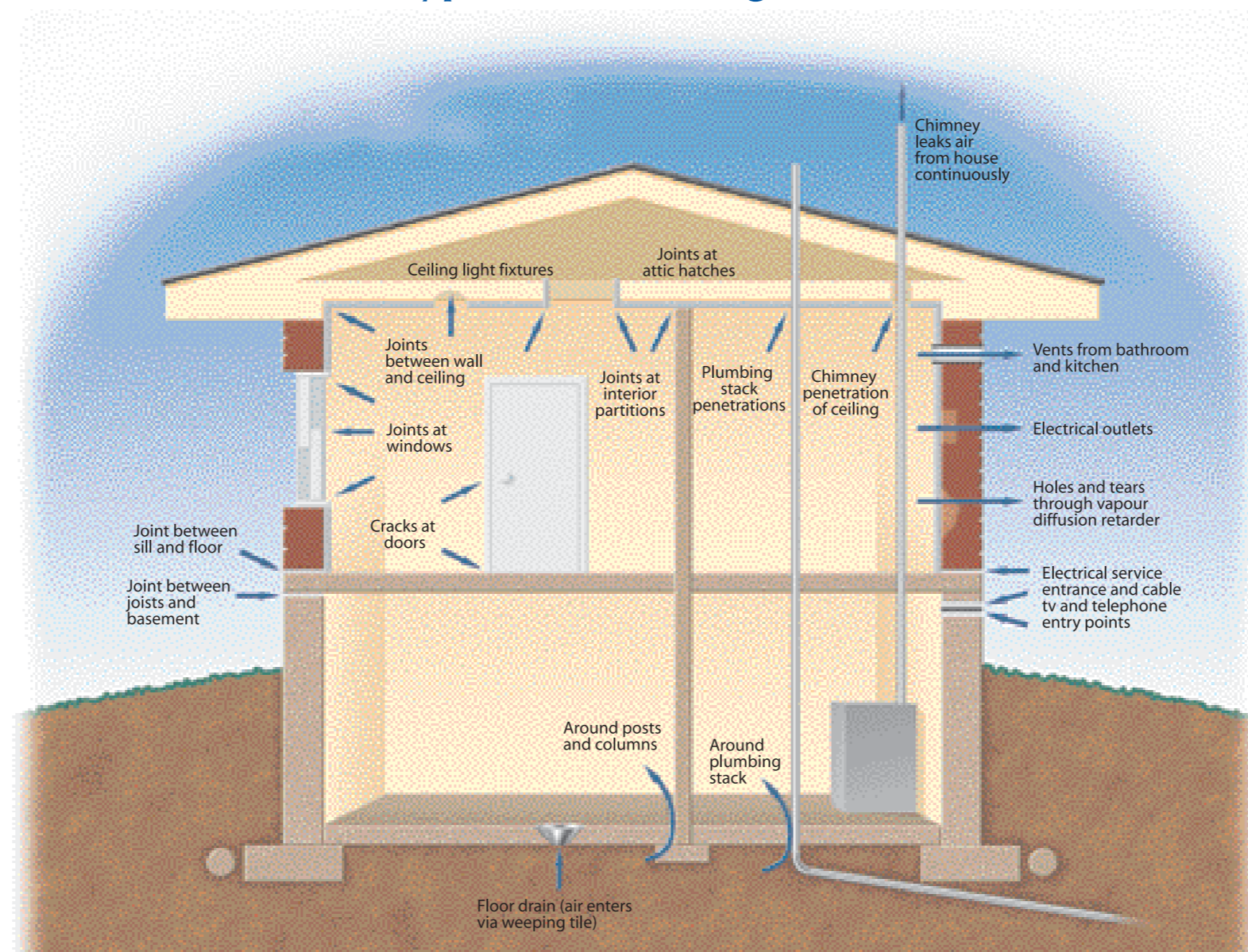
Quieter

3. Maximum energy conservation

Icynene® has earned the Energy Star® because, when installed, homeowners can look forward to reduced monthly energy costs of up to 50% versus conventional insulation. And the savings don't stop there. Eliminating random air leakage allows Icynene®-insulated homes to maintain the same heating and cooling performance with smaller, less expensive HVAC equipment.

More Energy Efficient

Typical Air Leakage Paths



Green

In addition to the immediate monthly energy savings, many homeowners qualify for an Energy Efficient Mortgage if they install Icynene® in their home, giving them another opportunity to save even more money over the long run.

Go Green with Icynene®

Homeowners today are increasingly aware that the choices they make impact their health, safety, comfort and pocket book as well as the welfare of their community and the natural environment. Homeowners understand that a Green home equates to a safe, durable, healthy and efficient home.

Icynene® is an example of a Green building product that pays homeowners numerous dividends – both short term and long term. As energy costs rise, you can bank on the fact that your lower heating and cooling costs will become an important resale feature. Green upgrades, such as Icynene®, contribute significantly to higher home resale values. The *Appraisal Journal* conducted studies that demonstrated the increasing value a home garners by becoming more energy efficient. Including energy efficient upgrades as part of your home improvements can increase the value of your home by approximately \$20 for every \$1 reduction in annual utility bills.



And, Icynene® is a proven insulation that enhances the comfort of your living environment. That's why it is the insulation of choice for high profile projects such as the **American Lung Association's national demonstration Health House®, EarthCraft House™, model reMODEL, and This Old House®'s Carlisle renovation project.**

Ideal for new home and remodeling projects

In its spray form, Icynene® is ideal for new homes where the interior surfaces of walls, ceilings and floors are exposed. The soft, flexible foam is sprayed-in-place and expands to 100 times its initial volume in seconds. By permanently adhering to the construction material, Icynene® controls air leakage, especially in those problem areas such as crawlspaces, rim joists and around doors and windows.

Icynene®'s pour fill formula is perfect for older homes and renovation projects because it eliminates the need for gutting or tearing down existing walls, allowing you to maximize energy efficiency while preserving the home's original architectural details. Through small pre-drilled holes, Icynene® is poured-in-place and gently rises to perfectly fill and seal the enclosed, uninsulated cavity.

Exposing the Myth of R-Value as the Only Way to Evaluate Insulation

For years, the performance of insulation has been gauged by its R-Value. The general rule of thumb has been the higher the R-Value, the more effective the insulation. The truth is, higher R-Value doesn't mean better consumer value.

R-Value is the numeric value given to an insulation material that is measured in a controlled laboratory setting. So, how can we consider R-Value as the be-all and end-all of an insulation's ability to control airflow, energy loss and condensation in a real world situation? While it is a way of measuring heat transfer from one material to another (conductive heat flow), it is not a true measure of an insulation material's performance.

Is There a Better Way to Evaluate Insulation?

There are three components to consider when measuring the effectiveness of insulation:

1. R-Value

Contrary to popular belief, all insulation materials of equal R-Value will not perform equally in your walls and ceilings. While insulations of equal R-Value perform the same in the controlled conditions of a laboratory, they do not all maintain that same R-Value in the walls and ceilings of a building. Some off-gas over time, diminishing in thickness and efficiency. If there are gaps between the insulation and other building materials (as is often the case with batts), the effective R-Value of the insulation can be reduced by as much as 50 percent from the maximum R-Value rated on a product. A high performance insulation like Icynene® does not off-gas, sag or settle. Therefore, its ability to totally seal a home and create a complete air barrier has greater consumer value. Icynene®'s R-Value will not diminish over time.

2. Vapor Permeance (perm rating)

Vapor permeance measures the rate at which the insulation material diffuses moisture. The lower the perm rating, the better. Ideally, insulation should allow low rates of moisture diffusion to occur, just enough to let adjacent building materials breathe in order to prevent moisture entrapment. Icynene® insulates and air-seals to significantly reduce heat and moisture flow through the building envelope. This is an important factor in combating condensation and mold growth within the walls and ceilings.

3. Air Permeance

An insulation material that doesn't completely fill the entire cavity results in air pockets, which permit air movement within the cavity. Condensation inside walls, ceilings, floors and attics occurs when warm, moist air is allowed to pass through or around insulation and contacts a cold surface. Icynene® is proven to deliver optimal airtightness to minimize airflow through the building envelope. It fills every crevice and acts as an air barrier to restrict air leakage, removing up to 99% of airborne moisture movement in a structure. Icynene® is both an insulation and air barrier system that provides advanced moisture management to significantly reduce the potential for mold and mildew growth. By minimizing air movement and introducing mechanical ventilation, your home can be healthier, quieter, and more energy efficient.

This all-encompassing triad provides a realistic, more accurate reading of how insulation performs in a real world situation. And no other insulation material delivers the full proven solution like The Icynene Insulation System®.

We're changing the way you think about insulation.



Perfect for walls (new or existing), ceilings, floors, basements, and every other nook and cranny found in homes. Additionally, oddly shaped structures, such as bay windows, dormers, cathedral ceilings, arches, and other architectural features are easily insulated and sealed with Icynene®.

Ask for Icynene® by name

Homeowners are more involved in decision-making and specifying products because they are better educated about Green Building issues, such as energy efficiency and home health. Your decision to go with foam insulation is the right one. Just be sure you purchase the right foam insulation. Don't be misled into thinking all foam insulation products are equal. Settle for nothing less than Icynene® – the only proven foam insulation that delivers the performance features homeowners need for comfortable, healthy living.

Icynene® - The best of all worlds

In a perfect world, fuel costs would be going down instead of up. Air quality would be getting better instead of worse. Asthma and allergy rates would be declining instead of the other way around. Our cities would be quiet and peaceful, without traffic and construction noise.

We can't do much to change the world outside, but we can do something about the part of the world we can control – inside our homes.

The Icynene Insulation System® provides:

- Up to 50% monthly energy savings
- Improved indoor air quality
- Increased comfort - draft-free; moisture management
- Enhanced sound control
- Higher home resale value

Don't compromise the quality of your home, choose Icynene® for better living.