

Q: What is Spray Foam Insulation?

A: Spray Foam Insulation (also referred to as Spray Polyurethane Foam) is a method of sealing and insulating that is spray applied like paint. It is a 2 component system typically consisting of petroleum oils, plastics, and resins. The 2 liquids are heated at high pressure and mix at the spray gun. When the 2 liquids hit the target substrate they react with each other and rapidly expand curing as a foam. Spray Foam Insulations fall under 2 categories Open Cell (also referred to as ½ lb. or low density foam) and Closed Cell (also referred to as 2 lb. or medium density foam).

Q: What is The Difference Between Open Cell and Closed Cell?

A: Open Cell, ½ lb. or low density spray foam cures soft and the irregular bubbles which form during the expansion reaction are broken or open. These pockets fill with air, and as



Such the R-Value of Open Cell foam is close to that of dormant air, around 3.6 per inch. Being spray applied as a liquid, Open Cell foam conforms to any shape, but it is not a Code Approved Vapor Barrier with a permeability rating of over 400 ng. Closed Cell, 2 lb. or medium density spray foam cures rigid and the millions of microscopic bubbles which form during the expansion reaction remain closed and intact. This traps the reaction gases, and as such the R-Value of Closed Cell foam is close to that of the reaction gas, around 7 per inch. The Closed Cell structure is very strong; increasing shear and racking strength by 300%. Closed Cell foam is a Code Approved Vapor Barrier with a permeability rating of under 45 ng. Closed Cell foam stops both air flow through the wall and air flow within the wall cavity.

Q: How Long Has Spray Foam Insulation Been Around?

A: Spray Foam Insulation has been around for more than 30 years. Its primary use was in the food storage industry. Original Spray Foam Insulations contained urea formaldehyde, and used CFCs as blowing agents. Spray Foam Insulation today does not contain urea and spray foam uses a Zero Ozone Depletion Substance (Zero ODS) blowing agent.

Q: What is The R-value of Spray Foam?

A: Spray Foam has the highest R-Value (7 per inch) of any insulation product available today. Also, unlike Fiber Insulations such as Fiberglass, Cellulose, and Rock wool, Envirofoam has a "real world" R-Value which is not affected by external forces. Studies by the US Department of Energy found that Fiber Insulations loose half of their R-Values when outside temperatures reach -28°C. Similar tests found the same effect from wind, with Fiber Insulations loosing half of their R-Values when exposed to a 15 km/h wind.

Q: What Makes Envirofoam So Effective?

A: Envirofoam is much more effective than traditional insulation products, because it is applied as a liquid, and then expands as a foam 20 to 30 times its original liquid size in seconds. As it expands, it conforms to and fills in every single nook, cranny, crevice, hole, crack, and gap to create a continuous thermal envelope. Spray foam creates a complete seal against air infiltration, the number one source of energy loss. This innovative insulation adheres to any clean, dry surface and will not shrink, settle, or disintegrate. Since Fiber Insulations like Fiberglass and Cellulose are settling materials, they cannot seal from stud to stud or around outlets and other penetrations. In addition, Fiberglass and Cellulose can lose their insulation value if water or moisture invade the wall cavity. As a Code Approved Vapor Barrier, Spray Foam can actually help eliminate moisture problems in a wall cavity. Spray Foam is an inert substance and will not support mold growth.

Q: How Does Spray Foam Control Indoor Air Quality and Comfort?

A: Spray Foam creates an air-tight sealed thermal envelope. When spray applied, the liquid rapidly expands as a foam 20 to 30 times it's original size conforming to and filling in every single nook, cranny, crevice, hole, crack, and gap. With Spray Foam there are no fibers or loose matter to contaminate the interior air. By stopping exterior air infiltration, Spray Foam also stops dust and external pollutants from entering the building. As a Code Approved Vapor Barrier it also stops air movement or convection within the wall cavity, which eliminates moisture problems such as mold and mildew. Spray Foam does not contain bleach or formaldehyde nor does it emit any harmful VOCs (Volatile Organic Compounds) or CFCs (Chloro Fluoro Carbons). A building sprayed with Spray Foam is also much quieter; it decreases the noise from both the exterior environment and interior mechanical systems. The end result is improved indoor air quality, and a healthier more comfortable building. This is why The American Lung Association uses Spray Foam Insulation for their "Health Homes" being built in the U.S.



Q: How Does Spray Foam Control Moisture and Condensation?

A: Most of the damaging moisture within a building envelope is the result of convection currents both through and within the wall cavity. Warm moist inside air circulates and exchanges with cold dry outside air in a cavity insulated with Fiberglass or Cellulose. As the moisture in the air condenses, it forms dew within the insulation. This destroys the insulation, decreases it's effectiveness, and if it is there long enough causes mold and rot. Both Spray Foam, and other Open Cell spray foams create an air-tight seal and are highly effective at stopping air movement through the wall. However only Spray Foam with it's Closed Cell structure can stop the air movement within the wall. No air movement means no convection, resulting in no condensation, and elimination of moisture problems.

Q: Are There any Glass Fibers in Spray Foam?

A: No. Glass fibers have been listed as a suspected carcinogen by the EPA and most Fiberglass insulation manufacturers now print a warning label on the wrapper.

Q: Does Envirofoam Create a Rodent or Insect Problem?

A: No. Envirofoam is an inert substance and as such, is pest resistant. There is absolutely no food value in the insulation.

Q: Does Envirofoam Support Bacteria or Fungal Growth?

A: Spray Foam offers no food value, and is an inert substance; therefore it does not support bacteria or fungal growth.

Q: Where is Spray Foam used?

A: Spray Foam Insulation is used in all aspects of construction: Industrial, Commercial, Agricultural, Institutional, and Residential. In new home construction, Spray Foam Insulation is fast becoming the industry standard for hard to insulate areas such as Rim Joists, Sill Areas, Cantilevers, Bays, Cathedral Ceilings, and Bonus Rooms. However, homes that are completely insulated and sealed with Spray Foam give their owners substantial advantages over traditional insulation methods. Spray Foam can also be used to insulate HVAC plenums and ducts as well as plumbing drains and lines which helps conserve energy and reduces the interior noise of these mechanical systems. Other applications include the exterior of flat roofs, basement floors, underground footings and foundation walls, and pools.

Q: How is Spray Foam Installed?

A: Spray Foam is a two component liquid which is sprayed in place by a Trained and Certified Professional Applicator. The two liquids, which are heated under high pressure, mix at the spray gun reacting with each other causing the liquid to expand rapidly and cure as a rigid foam.

Q: How Long Does it Take for Spray Foam to Cure?

A: Spray Foam goes from liquid to foam in a few seconds. You can watch it quickly expand 20 to 30 times its original volume. It is dry to the touch within seconds, and is completely cured in 24 hours.

Q: At What Stage is Spray Foam Installed?

A: Spray Foam is installed after the windows, doors and roof systems are in, after the framing, electrical, and plumbing inspections are complete, and after any other system located behind the drywall is installed. Simply, it is the last installation to take place before drywall.

Q: Can Homeowners Install Spray Foam Themselves?

A: No, it takes a trained professional to install Spray Foam because of the sophisticated equipment needed to install it properly.



Q: Who Applies Spray Foam?

A: Only trained, certified and licensed applicators can apply Spray Foam, ensuring professional and consistent installations. The Canadian Urethane Foam Contractors Association uses the Spray Foam Quality Assurance Program to train, certify and license applicators. Spray Foam Insulation is a Licensed Contractor with CUFCA, and all our applicators are trained and certified with CUFCA. As a Licensed Contractor we ensure that all the requirements of the CAN/ULC S705.2 Installation Standard are met and that all safety and building code requirements are adhered to.

Q: Does Spray Foam Adhere to Metal or Wood Studs?

A: Spray Foam adheres well to almost any material, especially wood and metal studs and concrete which are commonly found in residential and commercial construction.

Q: How Long Does Spray Foam Last?

A: Indefinitely. As an inert, long lasting polymer, any residential or commercial structure is a great place for Spray Foam.

Q: Does Spray Foam Cause any Overheating with Electrical Wiring?

A: No, Spray Foam has been tested and is not a concern to electrical authorities.

Q: Is Spray Foam Corrosive to Metals?

A: No, Spray Foam is non-corrosive.

Q: Are There any Compatibility Concerns with Other Building Materials?

A: Spray Foam is stable in the presence of most solvents found in binders, bituminous materials, wood preservatives, and sealers. It is resistant to facers containing plasticizers, fuel, mineral oil, weak acid, and weak bases, which are typically found in residential and commercial construction materials.

Q: Is it healthy For a Building to have a 100% Air Tight Seal?

A: While having a 100% air tight seal is essential to stopping heat loss and reducing energy bills, occupants need fresh air. As such, buildings sealed with Spray Foam may want to have a heat recovery air exchanger installed. In the winter, this simple machine brings cold fresh air from the outside and passes it by (without mixing) the warm stale air being expelled. This allows the fresh air to pick up the heat from the stale air, maintaining energy efficiency while providing a continuous supply of fresh air. In the summer, the opposite occurs giving the same results.

Q: Does Spray Foam Contain any VOCs or CFCs?

A: No. Spray Foam does not contain any Volatile Organic Compounds, nor does it contain any formaldehyde, bleach, or any CFCs (Chloro Fluoro Carbons) or HCFCs (Hydro Chloro Fluoro Carbons). In fact, Spray Foam Insulation has been used in many of the American Lung Association "Health Homes" being built in the U.S.

Q: Does Spray Foam Have Building Code Approvals?

A: Spray Foam has the approval of all four major building codes in the United States, Canada and Alberta. Spray Foam is not only recognized as a Thermal Insulation, it also meets the requirements of a Vapor Barrier, and an Air Barrier. In fact, it is one of the most extensively tested insulation products ever. Concern in the 1970's over the excessive off-gassing of an early foam product called urea formaldehyde, and the health effects of other insulating products, specifically Asbestos and Fiberglass, resulted in some very thorough and sensitive emissions testing for new building products. Spray Foam has met the requirements of these emissions tests and all subsequent re-certifications.



**Q: Is Spray Foam a Fire Hazard or a Fire Barrier?**

**A:** Both. Spray Foam only chars, does not self-sustain combustion, and will extinguish once an external flame source is removed. Spray Foam is also thermoset, not thermoplastic; meaning that it does not return to liquid form once it is cured. These properties make Spray Foam a great fire barrier. For example, if the common wall between a warehouse and a showroom is sealed with Spray Foam a fire can burn in the warehouse all night and the showroom would remain untouched. However, it is the super insulating properties of Spray Foam that make it a fire hazard. The heat from a fire inside a building completely sealed with Spray Foam will be reflected back to the fire and cause the fire to burn hotter and quicker. For this reason a code approved fire barrier must be installed over Spray Foam in living spaces. ½" drywall is an approved fire barrier for this.

**Q: How Does Spray Foam Compare to ICFs (Insulated Concrete Forms)?**

**A:** ICFs or Insulated Concrete Forms share many of the same advantages as Spray Foam. They both create a more energy efficient wall by creating a completely sealed thermal air barrier. They both create a stronger wall and a quieter building. However ICFs are much more expensive and time consuming than conventional wood framed walls insulated and sealed with Spray Foam. Since Spray Foam is applied at the same time in the construction process as Conventional Insulation, there is no interruption or alteration to the construction schedule. Everything from framing, plumbing, and electrical to interior and exterior finishing is exactly the same. ICFs require drastic changes to all aspects of the construction process, which result in increased time and money. ICF block walls are typically 11" to 13" thick decreasing your living space where Spray Foam's high R-Value (7 per inch compared to 3.6 per inch for the EPS foam ICFs typically use) allows you to use maximize your living space. Also ICFs are limited to walls with little customization, where Spray Foam can be used to seal and insulate the roof (hot air rises) and the most highly customized wall structures. ICFs however are a great alternative for cement basements, and work extremely well with wood framed main floors and roofs that are sealed and insulated with Spray Foam.

Q: How Does Spray Foam Compare to Geothermal Energy?

A: While Geothermal Energy and Spray Foam both work towards the same result: lowering your energy bills, and reducing your greenhouse gas emissions, they accomplish this in 2 different ways. Geothermal Energy is an alternative source to heat and cool your home. Spray Foam is the best way to seal and insulate your home from the exterior environment, reducing your heating and cooling requirements. As such a home that is insulated and sealed with Spray Foam which also utilizes a Geothermal Energy heating and cooling system will use little to no energy.

Q: How Much Does it Cost?

A: While the initial cost of insulating and sealing your building with Spray Foam is 3-4 times higher than using Fiberglass, it will actually add value to your building and put money in your pocket every month. Some of the initial cost is offset by the ability to downsize the heating and cooling systems. The remaining extra cost may only affect your mortgage slightly, maybe a few dollars every month, but by using 50% to 80% less energy you could save hundreds of dollars every month on your utility bill, and add thousands of dollars in value to your home. According to the Home Appraisers Journal "A homes value increases \$20 for every \$1 of annual energy savings." With the rising costs of energy, your savings will continue to grow for the entire life of your building.