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Spray Polyurethane Foam (SPF) Insulation Provides Substantial, Sustainable Benefits

Polyurethane, first utilized by the military in airplanes during World War II, has come a long way in effectiveness since being introduced as a home insulation in the 1970s. Today, energy-conscious homeowners have realized substantial energy savings and increased comfort in new and existing homes with spray polyurethane foam (SPF) insulation.

Energy Savings

Immediate savings in monthly energy bills is the leading benefit of SPF insulation. The U.S. Environmental Protection Agency estimates that homeowners who seal and insulate their homes – including all types of insulation – can save up to 20 percent of heating and cooling costs.

SPF insulation has dual benefits because it provides an air seal and insulation in one product. SPF is sprayed in as a liquid that expands immediately to completely fill the cavity, seal cracks and prevent leaks. That sealed thermal envelop around your building gives your HVAC unit the ability to efficiently and effectively condition your inside air.

As an insulating material, heat transfer is substantially less with SPF insulation due to its molecular structure and air sealing abilities, compared to other types of insulation. The R-value – a term used to rate an insulation's ability to resist conductive heat transfer – is 3.5 to 6.5 per inch of thickness for SPF insulation.

SPF insulation used in an attic space

According to the U.S. Department of energy, 40 percent of a home's energy is lost due to air infiltration and exfiltration through windows, walls and doorways. That's roughly the equivalent of leaving a window open in your home throughout the year. Home Energy Rating System modeling studies conducted by Rhino Linings Corporation show that SPF insulation, used with other responsible building products, can reduce energy usage by up to 50 percent in comparison to traditional products.

Additional Benefits

There are other non-energy related benefits to SPF insulation. When you stop air movement, you stop moisture movement, so SPF can help reduce mold and mildew issues. Because your HVAC until operates more efficiently, many times you can eliminate cold, drafty areas and temperature differences between floors or from room to room. SPF, particularly open cell insulation, helps to reduce airborne noise issues too.

With the insulation foam's expansion qualities, small cracks, gaps and air pockets in the walls, around doors, windows and the sill plate are filled. There is little room for insects and other household pests and airborne allergens are dramatically reduced.

According to the Canadian Urethane Foam Contractors Association, the size of a HVAC system can be reduced as much as 35 percent with properly applied SPF insulation, without the loss of comfort and efficiency.

Homeowner also can earn Federal, and in some instances State, tax credits or incentives when you install an energy efficient product like spray polyurethane foam insulation.

Installation

SPF is spray applied using either water or a 245fa blowing agent, both of which have zero Ozone Depletion Potential. Once it expands, SPF insulation is made up of millions of tiny bubbles or cells that trap air or the chemical blowing agent inside them and help to insulate. This trapped gas has similar molecular structure to argon gas, used in high-end window systems to block radiant heat from the sun in the summer and help to keep radiant heat in the house during the winter.

SPF is available in two-component, high pressure systems and both two-component and one-component low pressure systems. Most large insulation jobs are accomplished using a two-component, high pressure system.

Proper installation of SPF insulation is critical to achieve maximum benefit. SPF should only be installed by trained insulation contractors. The product expands dramatically, and the weekend do-it-yourselfer can cause serious damage to walls and ceilings by underestimating the expansion. In addition, air respirators and specific protective clothing are musts to avoid health hazards during installation. The foam has possible health risks during the installation for the unprotected installer but once cured, is safe for the homeowner.

SPF being installed in an attic space

SFP is available in open cell formulations and closed cell formulations. Open cell is used across most of the country, particularly in areas that experience equal numbers of heating and cooling

days. Closed cell insulation provides a vapor barrier and some additional structural strength, so it's used in areas where vapor drive is an issue, coastal areas where hurricanes are prominent and can be a good choice when you have a limited space for insulation.

Your contractor will know which one is best to consider for your region and application. Generally, closed cell insulation is more expensive because it is a denser product, but it will take less closed cell insulation to attain your desired R-value.

Rhino Linings Corporation is a San Diego, California-based manufacturer of ThermalGuard™ insulation. ThermalGuard OC.5 is an open cell spray foam insulation and ThermalGuard CC2 is closed cell. Each has specific application benefits and features, depending upon variables such as geographic region, area humidity and budget.

For more information on SPF insulation and possible state and federal tax incentives, visit www.rhinolinings.com/spf. To find a local installer in your area visit www.rhinolinings.com/local.

About Rhino Linings Corporation: *Since it was founded in 1988, the mission of Rhino Linings Corporation has been to develop proprietary, high-performance polymers based on polyurethane, polyurea and epoxy formulations. Rhino is known for protective coating products that dominate their markets. Now, Rhino has expanded into the building materials market with ThermalGuard Insulation by Rhino Linings. Rhino Linings Corporation has a global retail and industrial applicator network consisting of more than 2,000 independently-owned and operated businesses in over 80 countries.*