

GREEN TECH THE SERIES COLUMN FOR OCTOBER 19, 2016
HEADLINE: SPRAY FOAM: USE AND PREPARATION

The regular theme of this column is new products and “green” buildings. There is a growing segment of the marketplace, however, that recognizes that the complete renovation of an older home may be a wise investment. Recently, I had a number of readers inquire about the use, preparation and benefits of spray foam.

Depending upon the age of the home, upgrading the insulation is usually number one on the list of improvements. While the Government Energy Audit Program and the grants are long gone, there are lots of highly skilled auditors available and this would be my first step, here. It’s money well spent, especially if you are not gutting the building to the studs. That said, if you are doing a major renovation, this is likely the best long-term value option, allowing for a complete insulation and air envelope upgrade.

Spray foam insulation comes in two main types, open and closed cell. With respect to application and overall benefits, there are pros and cons to both. Closed cell foam is strong. In fact, structurally strong and has a high R value per inch and a greater resistance to water and mold issues. It is also a very good air barrier and is often used in cathedral ceilings, where there are no plans for an attic or ventilation. Its main disadvantage is cost. Because it’s denser, it takes more material.

Health issues during the installation phase are involved here, too, and not only for the applicator. The occupants have to take heed, as well, especially if they have chemical sensitivities. Professional applicators should be fully covered. Spraying the foam with a complete face mask and an air support system is recommended. When we built our Spa addition, I had the entire structure sprayed with closed cell spray foam and our crew was kept out of the building during and, for a time after, the application. Over exposure can cause asthmatic reactions in some people and there is a growing number of cases where homeowners, who are sensitive to chemicals, are having reactions to this product. That said, the percentage is very small and it’s often found that the mix and application are the major causes of the air quality problem. A poor mix can allow off-gassing of the installed foam to remain for undetermined time periods.

Open cell spray foam is a different product; usually blended with water as the blowing agent. Hence the lack of air quality issues during and after the application. It tends to be less expensive and usually does not provide for any

type of air barrier. In fact, it allows vapour permeation and in some applications this is desirable. It is well known that open cell has excellent sound barrier values, will move with a building as it goes through seasonal movement and will not sustain mold. It does take more depth of open cell to attain the same level of insulation value that a couple of inches of closed cell will manage. On average, an inch of open cell is R3.6 while the same inch of closed cell can range from R6-8.

Preparing for the application of spray foam does take some effort, starting with your building inspector. Some inspectors are a bit wary of spray foam, especially closed cell. It is well known that expansion strength of some close cell has caused some structural issues in the past. I have heard of the local official demanding an engineer's letter to confirm that the old rafters in a century home could handle the close cell. While this may seem extreme, lack of knowledge can cause some headaches, so it's wise to confirm when you apply for a renovation permit. Talk to your spray foam contractor before you proceed. The "top guns" in this business have a wealth of knowledge.

Preparing your site is very important. The number one spot is the rim joist area in the basement and, if you are using spray foam as an air barrier, continuance along the top plate in the attic, where some form of blocking as containment is strongly recommended. Cover everything and I mean everything. Until you have tried to uncover wiring or clean out an electrical box covered in spray foam you will not understand the frustration involved. Any HVAC equipment, venting, be it either wall or through the floor, should be isolated. If it's a vent for a wood stove, there are actual clearance requirements. Any penetrations in your walls and ceilings should be caulked. Spray foam will enter any void that is more than 1/8." I have seen siding pushed out from a lack of sealing around a dryer vent; caulking works fine here. During the actual application, unless you need to be in the area, don't be.

As spray foam is being applied, there are tiny droplets that remain air borne for some time. This stuff is sticky, very sticky and, during application, it will attach itself to everything. Anything that has to remain in the area should be covered with disposable plastic and taped into place. If there are floor heat registers, especially return air ducts, make up a wooden cover using an internal block of wood and screw it to the floor or the metal duct. The area must be warm, as closed cell foam does not cure as well on a cold substrate. Provisions for supplemental heat may have to be considered. Some companies have a summer and winter formula. We used Kingston Spray Foam with excellent results, Jeff and his crew use Polar Foam, and they have seasonal formulas.

There are various recommendations as to the level of spray foam needed for a proper insulation application. Three inches of properly applied spray foam will give you an R21-24 value. Make sure you are getting what you are paying for, as this is not a cheap process. If you contracted for three inches of spray foam, check and see you that are getting it. Make up a depth gauge with a piece of a metal coat hanger and mark the contracted depth with a wrap of colored tape; painters tape works well. Stab the foam as a random check. This tiny metal probe will not have an effect on the foam's performance if you do it just before it has surfaced hardened.

In an older home, spray foam, no matter which formula, is an excellent method of insulation. It will reach into difficult cavities, often areas where moisture can enter the home and cause damage. If you are spraying rafters or trusses in an attic, closed cell will seal out the air loss, but it will also trap water. Make sure you know how water tight your roof covering is.

As an insulation and air barrier combined, spray foam really has no competitors when it comes to sealing up an older home and attaining the most R value for the dollars spent.

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