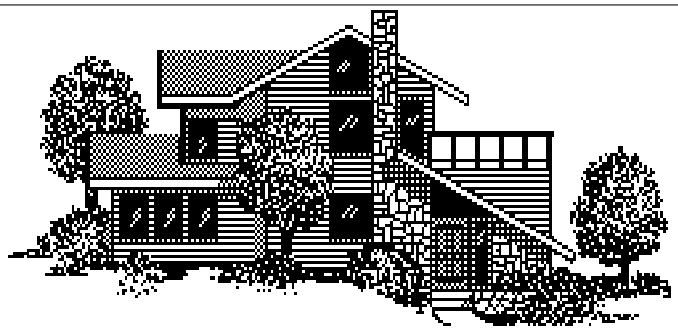
the Inspection Reporter



Ronald Scott, P.E.

The purpose of this newsletter is to address one of the most exciting new building materials, that (I believe) will transform home energy efficiency as we now know it: spray-on foam insulation. Effective home insulation is the best way to ensure lower energy costs. Many homeowners are initially inclined to select fiberglass, rock wool or cellulose insulation since that is what they are most familiar with and because it is relatively inexpensive; however, spray-on foam insulation should considered before making a choice. Polyurethane foam insulation is rapidly gaining in popularity as its benefits become more widely recognized. While its upfront costs may be higher than fiberglass, foam insulation is considered to provide a better quality insulating barrier than all other current insulation options.

The Future of Home Energy Efficiency: Spray-on Foam Insulation.

What is Spray Foam Insulation? It is a method of sealing and insulating that is spray applied. It is a multi-component system consisting of petroleum-based products, heated and mixed at high pressure to form a rapidly expanding foam with millions of tiny air-filled cells that fill every nook and cranny, curing into a rigid layer of insulation. As it expands, it creates a continuous thermal envelope ----- a complete seal against air infiltration, the number one source of energy loss in homes. Department of Energy (DOE) studies show that 40% of your home's energy is lost due to air infiltration. The result is a reduction in energy loss due to air infiltration, significantly lowering heating and cooling costs for the homeowner, and often allowing for a reduction in the size of the heating, ventilation and air conditioning (HVAC) equipment required to maintain a comfortable air quality in the home.

There are two types of spray-on foam insulation materials currently in use in residential construction: Open Cell and Closed Cell. Open Cell (low density) spray foam cures soft and the irregular bubbles which form during the expansion reaction are broken or open, thus the material is not approved as a vapor barrier. Closed Cell (medium density) spray foam cures rigid and the millions of microscopic bubbles which form during the expansion reaction remain closed and intact, forming a moisture resistant seal.

While mainly used in new home construction at this time, spray on foam insulation can be installed as a "retro-fit" in older homes, in cases where the attic areas are accessible, and/or cases where the interior walls are stripped of all drywall (to the studs).

Benefits of Spray Foam Insulation

* Stops air and moisture infiltration
* Makes a home more comfortable --- and quieter
* Saves on energy costs
* Sticks to the walls and won't fall off like fiberglass, adding strength to the building structure
* It is permanent
* Inhibits mold because it doesn't absorb water (closed-cell type)
* Keeps dust, air pollution and pollen out
* Reduces capacity requirements, maintenance and wear of HVAC equipment

Personal Experiences

Personal experiences with this product (in Houston homes):

- I have been in attics sprayed with foam insulation on the underside of the roof decking,
- when the outside temperature was 100°F ----- while the temperature inside the attic remained within 10°F of the temperature within the interior of the air-conditioned home.
- I inspected a custom 8000+ square foot home that had been designed and constructed for energy efficiency --- the average electric bill was $400/month.
- I inspected a 1500 square foot home that had been designed and constructed for maximum energy efficiency, and included solar panels that "back-feed" into the municipal electrical grid system --- the average annual electric bill was minus $240.

Attic Space Ventilation

Attic space ventilation is often cited as deficient in inspection reports, and much has been written regarding methods for maximizing attic space ventilation with conventional insulation methods. However, when foam-type insulation is installed on the underside of the roof decking, the entire attic space is completely sealed ----- all surface or ridge vents, gable vents and eave soffit vents are removed or sealed.

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