

10/05/2011

Ask a Builder

By Cold Climate Housing Research Center Staff

The "Ask a Builder" series is dedicated to answering some of the many questions Fairbanks residents have about building, energy and the many other parts of home life

What are some alternatives to fiberglass batt and polystyrene insulation, and how green and effective are they?

A product's "greenness" depends on many factors, including the energy that goes into production, the waste from production, the safety of the material used, and the durability of the material produced, among others.

As an alternative to your typical insulations, there are people building with straw bales to make houses. That is a relatively green insulation, but it still takes embodied energy in the form of fertilizers and fuel oil to produce that end product. The other end of the spectrum is the foam insulations that are largely petroleum-based. Cellulose insulation is somewhere in the middle because it is usually a recycled product. You are using something that already exists and you are giving it another life, so it's a good choice in terms of using a byproduct. Don't forget that soil is a natural insulator as well, so a bermed house will insulate very well too.

Overall, the construction industry is becoming more environmentally aware. Things are changing. Insulation companies are coming up with different greener types insulation that use more natural ingredients in lieu of traditional materials, like petrochemicals. The spray foam industry, for example, is producing spray foam that is partially soy-based rather than 100% petrochemical.

One of the latest advances in spray foam is a partial soy-based insulation. However, "soy-based" can be misleading.

Spray foam works by combining two components, commonly referred to as the A & B components. The A-component is a diisocyanate (a petrochemical), which is mixed in a one-to-one ratio with the B-component, which can contain modified natural or petroleum-based oils. Unfortunately, in order to get the chemical reaction to work, the amount of natural ingredients cannot be too high. Spray polyurethane foams can approach 40 percent natural oil, such as soy or canola oil, but it cannot reach 50 percent with current formulations. Once mixed into foam, it's likely to be between 20 percent to 40 percent natural oil content, depending on the recipe.

Soy foams can compete with non-soy foams on several performance indicators. Soy-based foam provides an r-value that is as high or sometimes higher than non-soy foams and is about as resistant to water (measured by a permeability rating) as foams that do not contain soy.

You can find spray foam installers that use soy foam in Fairbanks.

Ask a Builder articles promote awareness of home-related issues. If you have a question, e-mail the Cold Climate Housing Research Center at akhomewise@cchrc.org. You can also call the CCHRC at (907) 457-3454.