QUESTIONS & ANSWERS

Foam Insulation's Strength

Q: I'm renovating a 100-year-old house that is a mix of timberframe and stick-frame, with massive diagonals at the corners. At some point a second story was added, and later a balloon-framed addition. I had planned to cut fiberglass batts to fit the stud spaces, but I'm beginning to think that foam-in-place might save enough on labor to offset the higher material cost. Would a foam such as Air Krete (*Solar Age*, 2/85) cause any problems with the structural integrity of the house due to pressure during application, or will it actually strengthen the framework?—*Stephen Oratado, contractor, White Stone, Va.*

A: Air Krete is a cementitious foam with the consistency of shaving cream and an R-value of about 4 per inch. When foamed in place, it has finished expanding and flows around obstacles. So it places little stress on the structure of the building. After it sets, the foam is dimensionally stable, and there is no shrinkage problem. Because it has no structural strength, it will not make the building frame any stiffer. A vapor barrier is recommended, says Jay Savery, an East Coast manufacturer of the material, because the foam is very porous to moisture flow.

UF Foam Worries

Q: What are the current health risks of living in a house with urea formaldehyde (UF) insulation, and the current regulations regarding its installation and removal?—*Erick Ingraham, Peterborough, N.H.*

A: The amount of formaldehyde gas UF insulation releases depends on many factors, including the age, quality, and proportions of the ingredients; how they are mixed; and the amount of moisture in a house.

Consumer complaints about formaldehyde gas prompted a nationwide ban on the use of UF foam in schools and houses in August 1982. But the ban was overturned by judicial review in 1983.

Reactions to formaldehyde vary from person to person. Most people can detect the gas at levels well below one part per million (ppm). Sensitive individuals are bothered by as little as 0.05 ppm. Burning eyes and throat irritations are common symptoms at low concentrations. At higher levels—3 to 5 ppm—coughing, chest constrictions, and wheezing can occur. There are also some hotly contested rat data that link formaldehyde with cancer.

ASHRAE has set 0.1 ppm as an acceptable "comfort" level. But since UF gas is released by many products—including particleboard, paint, solvent, and carpeting—standards aren't currently enforceable.

The National Bureau of Standards just issued an informative report titled "Urea-Formaldehyde Foam Insulations: A Review of Their Properties and Performance." It is available for $2.75 from the Government Printing Office, Superintendent of Documents, Washington, D.C. 20402.

Cellulose Pros & Cons

Q: I plan to retrofit 7 inches of blown insulation over the top of 6 inches of existing fiberglass, and would like to use cellulose. How does cellulose stack up against fiberglass or rockwool with respect to R-value, moisture absorption, attraction to nesting rodents, and fire protection?—*David Stingle, Black Creek, Wis.*

A: The R-value per inch of loosefill insulation varies depending on its installed density and product characteristics. For that reason, the most reliable way to buy loosefill is to specify the R-value—*not* the thickness—and install the correct number of bags per square foot, following the coverage chart printed on all loosefill bags. The chart also shows a minimum thickness to guarantee the desired R-value. The Federal Trade Commission requires contractors to make available to consumers an information sheet explaining this system.

Cellulose yields R-3.1 to R-3.7 per inch, compared to R-2.2 to R-2.9 for fiberglass and rockwool. In general, though, you should compare products on the basis of cost per R-value per square foot.

Of the three insulations, only cellulose will absorb moisture, but this is only a problem if it gets drenched. The other two will hold moisture only on the fiber surfaces. Of the three, only cellulose is potentially flammable—if its fire retardant loses effectiveness over time (as some suspect of the dry-applied fire retardants). Current studies of this are inconclusive. As for rodents' preferences, we're sorry—our usual sources have already hibernated for the winter.