QUESTIONS & ANSWERS

Mass Floor Finish

Q: I plan to build a passive solar home with poured acrylic floors over concrete. I understand these finishes can be installed for as little as $2 a square foot. How will they affect solar performance?—*Gerald Griffith, Columbia, Pa.*

A: This hard-to-find material comes in two parts: an acrylic matrix and a catalyst (hardener). You can vary pattern and color by adding colorants and chips. The abilities of the surface to absorb and conduct heat both affect how much heat enters the slab. Because the acrylic bonds chemically to the concrete, heat should flow into the slab better than through an adhesive-bonded resilient flooring. The darker the color, the more heat absorbed (see "Floor Coverings and Heat Storage," 9/84, p. 56).

Storm Window Savings

Q: Is there a fast way to calculate savings from an interior acrylic storm window retrofit?—*Franklin Ellingwood, Honeoye, N.Y.*

A: The Architectural Aluminum Manufacturers Association (AAMA) has developed and printed many nomographs for exterior storm windows. These should also apply to an interior retrofit. For information on using nomographs, see *Solar Age*, 12/84, p. 48. For information on the nomographs, contact AAMA Technical Information Center, 35 E. Wacker Dr., Chicago, Ill. 60601 (312) 782-8256.

Insulating a Brick Cavity

Q: What foam insulation would be appropriate for retrofitting the cavity in a brick-and-block wall? How about a product called Dacotherm, which I heard about a couple of years ago?—*Blair Pollock, Integrated Energy Systems, Chapel Hill, N.C.*

A: According to Jerry Carrier, an engineer at the Brick Institute of America, in McLean, Va., the 1-inch cavity between the brick and the blocks should not be filled with any type of insulation. That space is there to let any moisture that gets into the wall drain out. If you fill it, moisture may be trapped within the wall.

Mike Ondra, a designer with the Shelter Design Group, Stoney Run, Pa., says that although he has heard of some retrofits where the 1-inch cavity was foamed full of urethane insulation, he has never tried it himself. He prefers to stud up an interior 2x3 wall and foam it with urethane. The stud wall is built an inch out from the wall to ensure the foam forms an uninterrupted thermal break.

We contacted Diamond Shamrock (P. O. Box 2300, Irving, Texas 75061), the manufacturers of Dacotherm, a loose-fill, inert silicate material. They don't recommend it for use in block walls. Dacotherm is biodegradable. If it gets wet, it breaks down. It is suitable only in dry locations.

Blown-In Insulation

Q: Does blown-in insulation settle and need to be added to as time goes by? Our house doesn't seem as warm as it did at first, though it could be because we're getting old. There is no vapor barrier—the builder said I didn't need one in this climate.—*Carl Whitis, Belen, N.M.*

A: If the insulation was blown in at the proper density, it shouldn't settle. This is true for both fiberglass and cellulose. If it has settled, the gap at the top of the wall may sharply reduce the R-value of the wall. Assume R-11 blown-in insulation settles enough to create a void equal to 10 percent of the wall area. This would drop the effective R-value of the wall from 13 to 9.75—a 25-percent decline. A thermograph scan should show if this happened to your house.

Your house may feel cold because the lack of a vapor barrier has let moist air from the house enter the walls. As it does so, it cools, causing condensation in the wall cavity. This moisture will

- be absorbed into the wall framing and insulation,
- diffuse or convect to the outside air, or
- return to the house itself as the indoor relative humidity level drops.

If insulation gets wet, it becomes less effective—and you may feel the result. If the second or third case holds true, no harm is done. Studies of several hundred houses without vapor barriers in Spokane, Wash., and Portland, Ore., by George Tsongas of Portland State University found no structural damage, and only occasional higher-than-average moisture levels in the framing or insulation. Albuquerque is dryer than Spokane and has fewer degree days, so you shouldn't have in-wall humidity problems.

Address questions about articles in Solar Age *to Q&A,* Solar Age, *7 Church Hill, Harrisville, N.H. 03450. If you want a reply, send a self-addressed stamped envelope and a member of our staff will respond. Questions and answers of general interest will be printed in the magazine.*