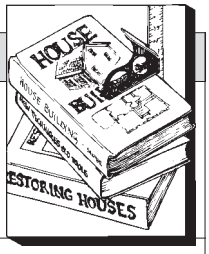

Foam Fundamentals

Foam-Core Panels & Building Systems by Steve Andrews (Cutter Information Corp., 37 Broadway, Arlington, MA 02174; 800/888-8939). 1988. 130 pages. 8½x11 perfect bound. $50.

Foam-core and stressed-skin insulation panels have been a controversial component of the energy-efficient building market for a number of years. If you've attended conferences and kept up with articles on the subject, you might be familiar with the relevant issues, but if you have any questions, or if you're seriously considering a switch to a foam-core insulation system, *Foam-Core Panels & Building Systems* is the book for you.

Author Steve Andrews has done an admirable job of addressing all the questions, from basic foam chemistry and behavior to fire testing, fabrication, comparative dollar values, marketing, and the pros and cons of urethane vs. expanded polystyrene materials. Among other things you'll learn the difference between structural and non-structural panels, what tests are used to rate fire safety, why some urethane proponents question the fire tests used on EPS panels, what effect freon gas escaping from urethane panels has upon R-value and the earth's ozone layer, how to evaluate manufacturers' quality control and testing programs, why urethane panels may have *less* insulating value as temperature goes down, what effect splines have on R-value, why panels faced with T-1/11 plywood can be a more economical choice despite their higher cost, what sells, who buys, and why passive solar design may *not* make sense for foam panel houses.

You'll also get a 41-page product directory listing 25 brands from 38 different companies. This is a well-researched, informative, and very useful guide to the subject.

The Truth About Radiant Barriers

Radiant Barriers: Principles, Practice & Product Directory by J.D. Ned Nisson (Cutter Information Corp., 37 Broadway, Arlington, MA 02174; 800/888-8939). 1990. 140 pages. 8½x11 perfect bound. $50.

Radiant barriers have been promoted in recent years as real energy savers, particularly for buildings in warm climes. How much will they actually save? How do they work? What's the truth behind promotional claims for them? Who makes them? Are they dangerous? Where should you use them? Ned Nisson is well-qualified to answer these and other questions, having been editor of *Energy Design Update* (EDU) for many years, and in *Radiant Barriers: Principles, Practice & Product Directory* he tackles all the thorny issues of this controversial material.

You'll learn that a radiant barrier is a shiny material (one- or two-sided), which must face an airspace to function properly. They can be used in roofs, walls, and even floors to reduce both heating and cooling loads. Most people believe that these foil products *reflect* heat back to the outdoors (or into the living space), but this does not actually explain their effectiveness, or why attic barriers perform just as well whether the shiny side faces up or down.

Nisson leads the reader through the basic physics of radiant heat transfer, the effects of emissivity temperature, and placement (i.e., draped over rafters, stapled to roof deck, or laid over horizontal ceiling insulation). He reviews the sometimes contradictory test results from labs such as the Florida Solar Energy Center, TVA, Texas A & M, and Oak Ridge National Lab, and speculates on what real-world savings might be in summer and winter. He also addresses controversial issues such as whether horizontal attic barriers will trap moisture, the effects of dust accumulation, and especially the rather astounding data produced by EDU's own informal flammability tests, which found that even some "low flame spread" products burned readily (a detailed industry rebuttal is included).

Finally he analyzes various promotional claims made by manufacturers — such as an incredible "R-19" paint, which rests its claim on absolutely no test results at all! Not all questions have answers, but Nisson provides as detailed a look at the subject as you could hope to find, supplemented by a five-page bibliography and a directory listing 66 products.

— *Paul Hanke*