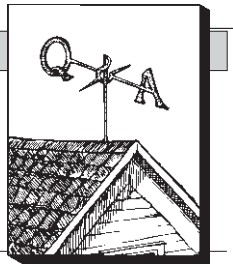

Stain Failure

by Henry Spies

Q: *A house we completed last winter has the stain peeling off in sheets. The siding was red-cedar clapboards. The only vapor barrier was the kraft on the batts. There was rosin paper under the clapboards. The stain was an oil-based semi-transparent stain over an oil-based primer, which we applied to keep the red cedar from bleeding through. We stained the house in September, it was occupied in November, and the peeling started in January.*

We took a moisture reading and found the siding had a 30- to 40-percent moisture content. The sheathing was also wet, but the fiberglass insulation had only 11- to 12-percent moisture. We've built over 100 houses like this over the last 17 years, although this is the first time we have primed under a stain. What is causing the problem?

A: The problem is twofold. First, a continuous vapor barrier such as polyethylene should be used under the wall finish. The kraft backing on insulation is a vapor barrier, but all of the bulges, tears, and discontinuities of installation make it relatively ineffective. The second is the use of the oil-based primer, which effectively sealed and formed a film on the outer face of the siding. When the moisture inside the wall or in the siding (some of the cedar coming in from Canada has been very wet) was forced out by vapor pressure, it took the primer with it. One of the reasons for using a stain is to provide a porous surface rather than a continuous film on the siding, so that moisture vapor can escape.

A better approach might have been to prime the back of the siding. That would tend to keep moisture from coming through and bringing cedar extractives to the surface.

Incredible Shrinking Trim

Q: *I'm having trouble with wood trim shrinking in new houses after people have lived in the house for a while with the heat on. I always use the best clear, kiln-dried stock, but my beautiful, tight miters separate after a while. How can I prevent this?*

A: While the stock you are buying is kiln-dried, it is probably dried to 19-percent moisture content, which is the federal standard for use of the dry label. However, after it is installed in a house for one heating season, it will dry to 9 to 11 percent, with the resulting shrinkage. You can use a moisture meter to determine the original moisture content. One approach is to stockpile and store your trim material in a heated building before you install it. Or you might consider the use of plinth blocks at the corners of the trim rather than miters. That is the traditional method of avoiding the problem.

Foam Sheathing Fears

Q: *The wall system I am using has two inches of extruded polystyrene on the exterior of a 2x4 wall. Is it necessary to leave gaps between the foam to allow the condensate to escape? How about providing drainage at the bottom of the wall by flashing the sill?*

A: A lot of research has been done in this area, and the wall construction you describe should have no problems. The moisture in the air will condense out on the windows, even triple-glazed, long before it condenses on the inside surface of the foam, even without a vapor retarder. The homeowner will normally choose to reduce the humidity rather than mop the windows. Even with foam insulation, though, we still recommend installing a continuous vapor retarder beneath the interior finish to keep interior moisture out of the wall cavity.

Covering Your Truss

Q: *When installing plywood or waferboard roof sheathing on trusses on 24-inch centers, should the panels go up the roof or across? What thickness of plywood should be used and how many plies? Should solid blocking, panel clips, or other support be used at the unsupported seams of the sheathing?*

A: Plywood should always run across the trusses, as it is much stronger in the direction of the surface plies. Waferboard has equal strength in both directions. Oriented strandboard, like plywood, is stronger along the length of the panel. The grade stamp on APA-rated plywood sheathing indicates the distance it can span. For instance, 3/4-inch plywood may carry the legend "48/24," which means it can be used on roofs with 48-inch on-center framing, and on subfloors with 24-inch spacing. The number of plies is irrelevant as long as the panel is rated for the span.

The use of edge supports will increase the allowable span for a given thickness. For instance, 3/8-inch plywood can be used over roof trusses on 24-inch centers if the edge is supported. Unsupported edges require 1/2-inch material. For most waferboards, the required thicknesses are 7/16 inch with support and 9/16 inch without. Oriented strand board dimensions are 3/8 inch with support and 7/16 inch without. ■

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