

Roofing Tile Alternative

by Henry Spies

Roofing and Insulation For An Exposed Rafter Ceiling

Q. What is the best roofing and insulation to use on a 20-year-old house with exposed rafter cathedral ceilings? The framing doesn't seem strong enough for tile, which is common here in the Southwest, and the roof needs substantial insulation to shield against an extremely hot summer climate.

A. If the framing won't support the weight of concrete tile, my choice of roofing in a hot climate would be fiber-cement shingles. These are becoming more widely available and seem to provide a long-lasting roof without adding much weight. Fiber-cement shingles weigh just a little more than architectural-grade asphalt shingles (approximately 400 pounds per square when installed).

There are two ways to handle the insulation problem. The first method is to install a urethane foam insulation board and a new plywood deck over the existing sheathing (see illustration). In warm climates, a second possibility is to install a new roof deck on 2x2 sleepers over the existing sheathing, with a radiant barrier between the old and new roof decks. This would prevent the building from absorbing a significant amount of heat, providing the radiant barrier has at least a 1/2-inch air space on either side. Use either two layers of reflective foil insulation installed back to back, or one layer of a "double-polished" reflective material, which is shiny on both surfaces. The roof would then have about the same insulating value as R-11 fiberglass

against downward heat flow. The space should be ventilated with continuous soffit and ridge vents. This would not be a good solution in a cold climate, where you would have to insulate against conductive heat losses from inside the building.

Vapor-Retarding Paint

Q. I am residing an old house that is uninsulated. I plan to add foam exterior sheathing and blown-in cellulose in the walls. Is a vapor-retarding paint adequate to prevent moisture problems in the wall?

A. Two coats of a latex vapor-retarding paint or an oil-based enamel will provide reasonable protection against moisture diffusion into the wall. But diffusion is often not the problem. The most important thing is to seal the wall as much as possible to prevent interior air from infiltrating the wall cavity. This will involve sealing the baseboards to the floor and wall and around electrical boxes, windows, doors, and other penetrations.

If you add 1/2-inch foam, the inside surface of the sheathing could get cold enough to reach the dew point. The foam sheathing you add should be at least 3/4 inch thick, and preferably, 1 inch thick. This would provide enough insulation so that the dew point in the wall section would be in the foam and not closer inside where it might cause problems. ■

Henry Spies is a building consultant formerly with the Small Homes Council-Building Research Council of the University of Illinois.

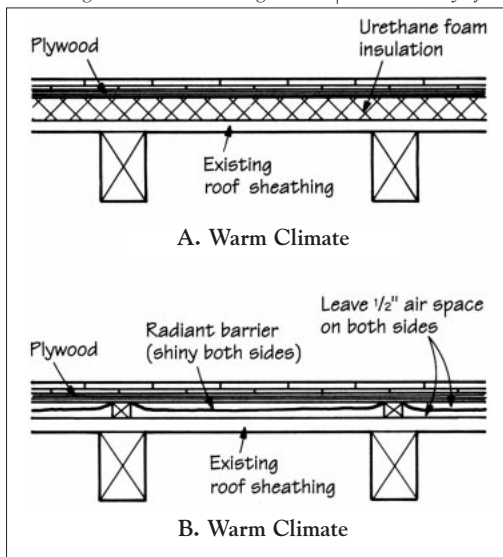


Figure 1. Two options for retrofit roof insulation over an exposed ceiling. The most common method is to install a urethane foam insulation board and a new plywood deck over the existing sheathing (A). In warm climates, a second possibility is to install a new roof deck on 2x2 sleepers over the existing sheathing, with a radiant barrier between the old and new roof decks (B).