Moisture Problems in Attic and Wall Cavities of a Home

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However, if the plaster is rough and covered with paper, applying paint as a vapor barrier is not practical or effective. In some cases, an effective vapor barrier can be installed by placing a polyethylene sheet over the papered wall and applying wall board or paneling on the inside of the outside walls of the home. A more difficult and expensive but effective method of applying a vapor barrier is to remove the plaster and lath, apply insulation with a vapor barrier and then finish the inside of the outside walls with wall board or paneling.

Usually the siding of older homes is not tightly constructed and therefore is in a condition that the wall "breathes." This helps avoid condensation trouble in the stud space because it assists in evaporating and carrying away any condensation that occurs on the insulation.

PAINT PEELING

Peeling paint on the outside of homes is not only unsightly, but it is also costly to scrape, clean and replace. In addition, structural damage may be done to the home from the same cause as the peeling.

The exact cause of paint peeling is sometimes difficult to determine. In some cases it is caused by condensation of moisture on the back surface of the siding. A home properly insulated and with a properly installed vapor seal will seldom have peeling paint from moisture condensation.

If peeling is caused by condensation, the problem may be solved by improving the effectiveness of the vapor barrier or by increasing the ventilation between the sheathing to evaporate and carry away any excess moisture that is in the wall cavity. Small screened ventilators are available for installation in the siding, usually at the top and bottom of each stud space.

In other situations, the source of the moisture can be found and eliminated. An example is to cover the soil in the crawl space with the polyethylene vapor barrier.

For the more complicated paint peeling problems, you should obtain the services of a reputable person who has the knowledge and experience to solve this problem.

Recently, a homeowner got in touch with his local Extension office to solve a moisture problem in the attic of his home. The relative humidity in the attic was above 90 percent, and frost and ice had formed on the bottom of the sheathing. When the temperature rose above 32°F, the frozen material melted and dripped into the attic insulation and soaked through the ceiling board.

This guide was prepared to help you with moisture condensation problems such as these. If you have similar problems, this guide should be helpful in diagnosing and curing them.
Using a Vapor Barrier

Vapor barriers prevent house moisture from entering ceiling insulation where it is likely to condense and cause moisture problems. A vapor barrier should always be placed over the side of the insulation which is closest to the ceiling.

If you use batt-type insulation, use one with a vapor seal built in. Fill-type insulation that is blown in place should have a polyethylene vapor barrier laid between the ceiling joists first. Be sure to lap it 4 inches up on the side of each joist. Then blow or pour the insulation on top of the polyethylene.

For a one and one-half story house, ventilators must be installed so that the attic is uniformly ventilated. Provide space between the rafters and the sloping portion of the second floor walls so that air movement is adequate. Each installation must be planned carefully to accomplish good attic ventilation.

During winter in the Midwest, even when a vapor barrier is used at the bottom side of the attic insulation, a small amount of moisture vapor passes from the warm living area of the house through the ceiling into the cold attic. With no ceiling vapor barrier, much more water vapor passes through the insulation into the attic. Attic ventilation is needed to remove this moisture to keep it from condensing on cold surfaces in the attic, especially on the bottom of sheathing boards.

In the problem outlined at the beginning of this guide, the attic was insulated with R-24 insulation with a vapor barrier. However, the builder erroneously decided on no attic ventilation. Consequently, moisture passing from the warm living area through the ceiling into the cold attic was trapped. The relative humidity was above 90 percent, and moisture condensed on the bottom of sheathing boards, the tops of joists, and on other exposed lumber surfaces.

Louvered and vents were installed in accordance with the information and recommendations set out in this guide. This completely eliminated the problem.

Some blown-in or fill-type insulation is lightweight, and high winds may displace it around soffit ventilators. To prevent this, use R-24 batt-type insulation 24 inches wide around the edges of the attic (see Figure 1). This is more resistant to movement by the wind. If it is more convenient, use wood headers between rafters and ceiling joists at the outer edges of the ceiling joists to contain the fill insulation. In either case maintain a minimum of 1 inch of space below the sheathing boards for free air movement.