

Window Condensation - Causes and Cures

Energy efficient vinyl windows do much to increase the "tightness" of a home. It is no wonder, therefore, when customers become concerned about signs of condensation on their windows. This section was created to address those concerns, and to answer most questions concerning window condensation, humidity, and ventilation.

Condensation FAQ's

Do windows cause condensation? Windows are not a cause, per se. They provide a ready medium on which the vapor can condense. But the primary cause of condensation is excessive moisture in the air. Windows are only *indicators* of excessive moisture.

Why do I see condensation on my windows and patio doors? Condensation is generally seen first on windows and patio doors because they tend to have the lowest temperature of any of the *visible* surfaces in the house.

What causes condensation on windows and patio doors? Recall that cool air is able to hold less moisture than warm air. Therefore, when the warm, moist air of the room comes into contact with the cool glass surface, some water vapor that can no longer be held by the cooled air is deposited on the glass.

Do drapes and window shades cause condensation? Drapes and other window coverings don't *cause* window condensation, but they *can* contribute to the problem by restricting the flow of warm room air over the glass surface. Therefore, condensation is more apt to occur when drapes are closed and shades pulled down.

What damage can excess window condensation do to windows? It can cause the paint to peel from the sash or stain the inside. Water can run down into the frame causing dampness around the frame. It can sometimes cause paint to peel on the outside of the window. Metal frames without thermal breaks conduct heat quite readily. So in the winter, the inside surface of a metal window frame is cold. When humid inside air comes into contact with cold metal, condensation and often freezing occurs.

Humidity FAQ's

What is humidity? Humidity is water vapor, or moisture, in the air. Usually it's invisible, but sometimes, such as with steam or ground fog, it's concentrated enough to be seen. But see it or not, *all* air contains a certain amount of moisture.

Where does moisture come from? There are many things that generate indoor moisture. The normal perspiration and breathing of a family of four adds about 1/2 pint of water to the air every hour. Cooking three meals a day adds four or five pints of water to the air. Each shower contributes 1/2 pint. In fact, every activity that uses water (like dishwashing, mopping floors, doing laundry) adds moisture to the air. Daily living activities of a family of four can add *more than 18 gallons of water a week* into the air in their home. And more water vapor in the air means a higher indoor relative humidity. Indoor plants produce moisture also.

Just what is condensation? Fog on windows is a form of condensation. So is the water that forms on the outside of a glass of iced tea in the summer. It all comes from water vapor in the air.

What causes it? Excess moisture in the air. When warm, moist air comes into contact with cooler surfaces, the moisture condenses. That's because the cooler air surrounding cooler surfaces can't hold as much moisture as warmer air.

What does condensation on windows mean? Window condensation can be a danger sign. It may mean that excessive indoor humidity could be doing unseen damage to other parts of your home.

How do I know if I have excess indoor humidity? Check for damp spots on ceilings and room-side surfaces of exterior walls, particularly closets. Look for water and ice on windows. Even water-filled blisters on *outside* paint surfaces indicate excessive *indoor* humidity.

What does excess humidity do to my home? Excess humidity contributes to the deterioration of a home. Excessive humidity can pass through walls and freeze in the insulation. In spring it melts, damaging your ceiling and walls. Or, humidity can force its way out through siding to form blisters under your exterior paint.

Ventilation FAQ's

How can I ventilate my home? There are basically two types of ventilation: interior and structural ventilation. As a temporary solution to an acute problem, open a window in each room for just a few minutes. Remember, inside air continually gains humidity through daily living activities. Opening windows allows the stale, humid air to escape, and fresh, dry air to enter. Structural ventilation is slightly more complex, but will save you costly repair bills in the long run.

Does structural ventilation include attics? Definitely. Many homeowners cover all attic louvers in winter in hopes of saving fuel. If the attic is properly insulated, this practice can only do harm. Because the indoor moisture penetrates ceilings, then condenses on the cool underside of the roof and can even form frost. If the attic were ventilated, moisture would be transferred to the outside air.

What harm can attic condensation do? A lot. Moisture condensing in attics produces mildew, or rotting conditions. Or it drips down to the ceiling below to damage plaster or paint. Thermal insulation also becomes wet and produces less resistance to heat loss.

Are some kinds of attic ventilation better than others? Yes. A combination of vents at the eaves and at the gable ends is better than gable vents alone. And, a combination of continuous eaves and ridge venting is best of all. However, regardless of the type you have, there should always be at least two vent openings, located so that air can flow in one and out the other.

What about the crawl space? Should it be ventilated also? Yes. The crawl space beneath a house is another place where ventilation is important. The crawl space can evaporate gallons of water each day. When you seal the crawl space, that water penetrates the floor above and causes more humidity problems in your home. Providing foundation vents in the crawl space reduces the humidity, and a vapor barrier (like polyethylene film) on the ground prevents moisture leakage into the house above.

How much ventilation should I have in the crawl space? At least one vent should be located near each corner, and should be placed as high as possible, but not higher than the bottom of the joists. Plus, if you have a ground cover, one 8" X 16" vent for each 350 sq. ft. is needed, with a minimum of four vents.

What steps should I take to reduce excessive humidity in my present home and control window condensation?

1. Recognize the best way to stop condensation is to reduce the moisture in the air.
2. Be sure that attic or crawl spaces are properly ventilated. Add a vapor barrier to cover the earth in the crawl space.
3. Be willing to try living in a lower humidity.
4. Eliminate any sources of moisture in your home which you can control.
5. In winter, provide more controlled ways for moist inside air to get out. Run kitchen or other ventilating fans longer and more often than you normally do.