

HUMIDITY AND CONDENSATION

Q. What is humidity, anyway?

A. 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.

Q. Where does the moisture come from?

A. There are many things that generate indoor moisture. The normal perspiration and breathing of a family of four adds about ½ 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 ½ pint. In fact every activity that uses water (like dishwashing, mopping floors doing laundry) adds moisture to the air. The truth is, 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.

Q. Just what is condensation?

A. 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.

Q. What causes it?

A. 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.

Q. What does condensation on windows mean?

A. 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.

Q. How do I know if I have excess indoor humidity?

A. Check for a 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.

Q. Does condensation depend on whether my home is new or old?

A. Generally, yes. Years ago, before the concern with energy efficiency, homes were built with less weathertightness than homes today. Insulation concepts were not as advanced as today. Walls and ceilings were built with much more porous materials. Water vapor could easily flow in and out of walls.

Q. What relative humidity is best?

A. As the outside temperature drops, your home's indoor relative humidity level should be decreased. For homes equipped with double glazed windows, the University of Minnesota Agriculture Extension Service gives the following levels that can be maintained without causing window condensation or discomfort to inhabitants:

Outside Air Temperature	Inside relative humidity for 70 degrees F indoor air temperature.
-20 F	15 to 20%
-10 F	20 to 25%
0 F	25 to 30%
10 F	30 to 35%
20 F	35 to 40%

Q. How do I measure indoor relative humidity?

A. It's important to remember that relative humidity levels quoted in weather reports indicate *outdoor* humidity in outdoor air. So they have little bearing on your home's *indoor* relative humidity.

Q. How can I reduce the inside humidity in winter?

A. There are at least two steps you can take to reduce indoor humidity in winter:

- Control the sources of humidity. Vent all gas burners, clothes dryers, etc. to the outdoors. Use kitchen and bathroom exhaust fans.
- Ventilate your home. Because outside air usually contains less water vapor, it will "dilute" humidity of inside air. This takes place automatically in older homes through constant infiltration of outside air. Bug, again, in newer "tighter" homes, the only way outside air can get in is by ventilation.

Q. Will reducing the humidity in my home during the winter help control condensation?

A. It's the most practical way. Condensation indicates excessive humidity. Eliminate the excessive humidity, and you eliminate the condensation.

Q. Do windows cause condensation?

A. 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.

Q. Why do I see condensation on my windows and gliding doors first?

A. Condensation is generally seen first on windows and gliding doors because they tend to have the lowest temperature of any of the *visible* surfaces in the house.

Q. What cause condensation on the windows and gliding doors?

A. 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. Also, when the flow of warm room air over window surfaces is restricted, condensation can occur. This is especially true of recessed windows like angle bays and bow windows.

Q. Are there any cases where window condensation is only temporary?

A. Yes, there are primarily three: new construction or remodeling, the beginning of each heating season, and quick changes in temperature.

New construction and remodeling produce a lot of moisture. Wood, plaster, cement, and other building materials contain a great deal of moisture. When the heating season starts, this moisture will gradually flow out into the air in the home. It will usually disappear during the first heating season and not cause any further trouble.