



# Facts About Condensation

## Window Condensation

### **Reduce and Control Household Humidity**

#### **Aged-over or frost-coated windows:**

##### **A problem or a symptom?**

It should be pointed out that a little fogging or frosting that comes and goes on the lower corners of our windows is nothing to be concerned about. Condensation that blocks the whole window with fog or frost, though, presents more of a problem. Runoff can cause staining on woodwork, wallpaper and plaster. Heavy condensation of this type on your windows is symptomatic of moisture damage that can be occurring throughout your home.

Household humidity is a modern problem. That's because more and more of us are living in moisture-trapping homes that are more economical as well as being cleaner and more comfortable. So...were we unwise or even a little hasty in hoping for the energy-efficient "tight" home? **Definitely not.** This information explains the moisture challenges of the modern home and offers practical and easy to follow suggestions for solving the problem of excess indoor humidity.

#### **How does excessive humidity cause home damage?**

Outside air is usually drier than the air in your home. The moisture in wet air is compelled to flow toward and mix with the outside drier air, and it does so with a force of nature that is known as vapor pressure. A relentless force, vapor pressure can even go upstream to airflow as it forces moisture through wood, plaster, brick, cement and most of the other materials we use to build our homes. This phenomenon can force excessive indoor humidity through siding to form blisters under the exterior paint.

#### **Why do modern homes trap more humidity inside?**

Because, in achieving today's "tight" homes, builders and remodelers have made increasing use of moisture-trapping material such as glass, less permeable varnishes and paints, tiles and plastic wall coverings. These materials, plus the application of vapor-seal wall insulation, combine to keep moisture inside where it can condense and cause fogging on cooler window surfaces as well as dampness on other interior surfaces.

#### **What heightens the indoor humidity problem?**

Life-style changes are elevating water-vapor levels in today's homes. There is more washing, more bathing, more showering... and there are more appliances and gas furnaces. How much water vapor do day-to-day family activities generate?

Cooking for a family of four adds 4.5 lbs. of moisture a day to a household. Other contributors, to name just a few, are: each shower; 1/2 lb., weekly laundry; 30 lbs., human occupancy; 6 to 8 lbs. Studies show that a family of four can easily release more than 18 gallons (150 lbs.) of moisture per week into household air.

#### **What is the recommended humidity level for most homes?**

Your family needs a certain level of indoor humidity for health reasons. How can you tell if your home humidity level is acceptable for both health and home? As stated previously, the wintertime build-up of a little fog or frost on the lower corners of your windows indicates your humidity is still within the proper range.

One way to test the humidity inside your home is by using a psychrometer. The following table shows suggested humidity levels for a home that is heated to 70° F. Lower humidities are required for higher indoor temperatures.

<b>Outside Air Temperature</b>	<b>Recommended Indoor Relative Humidity For A Household Temperature of 70° F</b>
-20° F or below	Not over 15%
-20° F or -10°	Not over 20%
-10° F or 0°	Not over 25%
0° F or 10°	Not over 30%
10° F or 20°	Not over 35%
20° F to 40°	Not over 40%

#### **7 ways to reduce and control household humidity:**

1. Shut off all household humidifier units (including the furnace humidifier).
2. Ventilate regularly. Air out the entire house for a few minutes each day. Ventilate kitchen, laundry and bathrooms during use.
3. Run exhaust fans longer and more often.
4. Open the fireplace damper.
5. Be sure attic and basement crawl-space louvers are large enough and that they remain open.
6. Install windows that are double glazed.
7. Vent humidity producers such as clothes dryers and all gas burners to the outdoors.

### What to do about persistent problem humidity?

If the simple steps above don't solve your problem, ask your heating contractor about installing an outside air vent for your furnace...or the addition of more or larger exhaust fans.

Remember, windows do not cause condensation, but excessive humidity levels can. The reasons for excessive window condensation and humidity can be complicated. Sometimes the diagnosis requires the service of a qualified expert who can make recommendations based on an overall evaluation that includes: the number and type of windows; the type of double glazing system used; the heating system (hot air or hot water, perimeter or interior wall heating); the type of insulation and vapor barrier; and the type of soil and quality of drainage. One thing is clear. Whatever is required, homeowners cannot afford to let humidity go unchecked.

### A Few Additional Comments...

Condensation is visible evidence of excessive moisture in the air. It may appear as water, frost, or ice on the room surface of windows and doors. The warmer the air, the more water the air can hold, which means that the air in the center of any given room will hold more water than the air adjacent to the window or door walls, since this area is always cooler. When the warm, moisture laden air moves toward the cooler window or door wall, it becomes cooler and cannot hold the moisture it held when it was warmer, and is dropped and appears as water on the glass and frames of windows and doors. This occurs more frequently during the winter months because of the extreme difference between the inside and outside temperatures. If you wish to avoid condensation during the winter months, when the average outdoor temperature drops to 35 degrees or less, it would be wise to maintain a 25-30 degree relative indoor humidity.

Ventilation is a very effective way to remove excessive moisture from the air, which is why old, poorly insulated houses with single glazed windows, often do not have condensation

problems. This is because the air is changed by infiltration around the windows, doors, vents and other openings. Newer homes, which have been newly insulated through the addition of attic and basement insulation and installation of primed windows with dual or triple glazed glass, are now so airtight that they present a new challenge.

All homes will, on occasion, have temporary condensation which is the result of one of three occurrences:

**New Construction or Remodeling:** Building materials contain a great deal of moisture. As soon as the heat is turned on, this moisture will flow out into the air and settle on doors and windows, etc. This will usually disappear following the first heating season.

**Humid Summers:** During humid summers, houses absorb moisture. This will be apparent during the first few weeks of heating. Then the house should dry out.

**Temperature Change:** Sharp, quick and sudden drops in temperature. Especially during the heating season, will create temporary condensation.

### REMEMBER:

Windows do not cause condensation, excess interior humidity is the source.

If you have an existing moisture or condensation problem, do not count on correcting it merely by installing new windows.

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