

CONDENSATION AND RELATIVE HUMIDITY

Condensation of moisture on windows is a common occurrence in most houses in winter. However, it is a source of annoyance and if corrective measures are not taken at an early stage, serious damage from staining, rotting and mold can result. While the problem is more acute during the first winter when the house is "drying out" (many of the materials in construction contain moisture that must be dissipated) normal living habits are additional and continuing contributors to high Relative Humidities (R.H.) in many instances.

The problem is an old one and applies particularly to today's homes as they are tighter and better insulated than ever before due to a new and improved building practices, increased energy costs and comfort levels, commonly required by today's new home buyers. To quote from a National Research Council publication of 1963, "Humidity's should be controlled so that little or no condensation appears on the inside surface of the glass (windows)". With double glazing this still permits high R.H. except during the most severe weather as indicated in the following which shows the maximum R.H. that can be tolerated if condensation is to be avoided in cold weather.

Outside Air Temperature Celsius	Desirable Maximum Inside Relative Humidity (%) at an Indoor Temperature of 21 C
-29	20%
-24	25%
-18	30%
-12	35%
- 7	40%

"The householder does not need to measure the R.H. directly; he can simply use the windows as a guide to the proper R.H. within the house (humidity indicators are readily available at hardware outlets and should be of good quality to assure an accurate reading). As soon as objectionable condensation occurs on inside window surfaces, steps should be taken to reduce the R.H. by controlling the moisture sources or by increasing ventilation.

There is no conclusive evidence that either the health or the comfort of most people will be adversely affected if R.H. is kept at a level that will prevent excessive condensation on the interior surfaces of double windows.

The homeowner frequently assumes that window condensation is a fault of construction. It is not readily appreciated that living habits are of prime

importance, nor that a well-built house is often more vulnerable to excess moisture problems than one that is loosely constructed".

The publication also demonstrates that approximately 15 to 20 lbs. (6.804 to 9.072 kg) or 1 ½ to 2 gallons (6.819 to 9.092 litres) of moisture per day may be introduced into a house with four occupants under normal living conditions and that this can rise to as much as 40 or 50 lbs. (18.144 to 22.680 kg) or 4 or 5 gallons (18.184 to 22.730 litres) per day on washday.

Ventilation is often the only effective means available to the householder for removing moisture-dehumidifiers are not a practical solution except for limited areas. Exhaust fans in the kitchen and bathroom are useful for drawing off moisture from cooking and bathing before vapor can circulate through the house-these fans should ventilate to the outside and not into the attic space.

Windows are commonly relied on for general ventilation and whenever possible the windows nearest the source of moisture should be opened. Fireplaces and chimneys are useful means of ventilation. With a warm air heating system, it is practical to consider a dampered air duct from outside connected to the return air part of the system, (fresh air intake).

While we have concentrated on the condensation problems common to winter conditions it should be noted that basements frequently experience condensation in summer. In warm weather basement areas, particularly near the base of the walls, in corners, and parts of the floor, are relatively cool as they approximate surrounding earth temperatures.

When hot humid air is allowed to enter from outside in summer through open basement windows it will seek out those cool areas and also cold water pipes, the underside of oil storage tanks, etc. and condense there. Basement windows, in areas where this problem persists, should be kept open during periods of dry weather and closed on hot humid days.

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WINDOW AND DOOR MAINTENANCE CHECK LIST

On windows with two locking levers make sure both locks are used when window is closed. This will ensure that the window will remain straight and continue to lock on both levers.

If you are developing moisture or frost on the inside glass, check the condensation and relative humidity pamphlet for corrective measures you should take.

If your window opens with a crank be sure not to force window open, this will cause the gears to strip. Check to be sure that the locks are unlatched, if they are, check to see if you can tell if the window is frosted up. If it is, this may be causing the window problem. DO NOT unthaw with heat as this can cause the glass to crack. Check the condensation and relative humidity pamphlet for solutions.

If you have cold air coming through the bottom of your door check to see if the door sweep weather strip can be adjusted lower or if the door threshold is adjustable. It may be adjusted to allow a better seal to the door.