CONDENSATION OVERVIEW

Condensation is visible evidence of excessive moisture in the air. It may take form as water, frost, or ice on the room surface of windows and doors. Warmer air holds more water – air in the center of a room will hold more water vapor than the air next to the cooler window or door walls. As the warmer air contacts these cooler areas, the temperature drops, and the moisture also "drops," appearing as water on the glass and frames of windows and doors. This is more frequently seen in the winter months due to extreme differences between inside and outside temperatures.

Everyday activities put literally gallons of moisture into the air in a home. Moisture created by house plants, cooking, laundry, bathing, and breathing is kept inside. Newer, more tightly built homes trap the moisture inside the structure. As the warm, moist air moves toward the outside walls and contacts the cooler surface, it condenses and forms water or frost.

Most homeowners are concerned when a small amount of frost or moisture appears on the lower corners of window or door glass. This is simply vapor that can be seen and is generally not considered problematic. Excessive condensation is when an entire window or door is covered with frost or moisture, where it's running off and staining woodwork or damaging flooring, walls, or wall covering. This much excess humidity in the air will be doing more unseen damage – for instance, in your attic insulation, where the moisture could freeze within the insulation. When warmer weather arrives, the melt-off could cause damage similar to a roof leak. Additionally, the moisture may be seeking its way outside through the walls, which can damage paint, siding, and framing members and cause rust, mold, and mildew issues.

Ventilation plays a large part in condensation issues. Older and/or poorly insulated structures – even with single-glazed windows – often have less condensation problems because the air infiltration moves the inside vapor-laden air towards the drier outside air. In our quest to construct houses that are better insulated to conserve energy, we have caused a moisture trap within the structure.

The best way to deal with excess condensation is to reduce the amount of water vapor in the inside air. Relative humidity is the ratio of water vapor present in the air to the most amount of vapor possible (saturation) at the same temperature. As a general rule of thumb, when average outdoor temperature falls beneath 35 degrees, a 25-30 degree relative indoor humidity is desirable:

OUTSIDE AIR TEMPERATURE	INDOOR HUMIDITY (at 70° F)
20° to 40° F	No more than 40%
10° to 20° F	No more than 35%
0° to 10° F	No more than 30%
-10° to 0° F	No more than 25%
-20° to -10° F	No more than 20%
Below -20° F	No more than 15%

Remember – your windows and doors are not causing the condensation; therefore, they will not be the solution. Using kitchen and bath vent fans, properly venting clothes dryers, and operating dehumidifiers are all good methods of moving large volumes of water vapor out of the home.

SOURCES: Changing Times – The Kiplinger Magazine, Successful Builder (Mar 1994)