

Understanding Condensation & Your Windows



Finding your windows covered in a thin layer of moisture in the autumn and winter is something that can be as common as expecting the coming storms. The phenomenon of condensation is an all too frequent occurrence and can happen anywhere. Colder temperatures can often increase the likelihood of homeowners finding moisture on their windows. What causes it and more importantly how can it be reduced?

The key to understanding condensation is recognizing the importance of dew point. The dew point is a temperature at which moisture begins to change from an invisible vapor to a visible liquid state. It is the same principle that is observed when clouds form or when you get water dripping all over your coffee table from a glass of ice water you put down a few minutes earlier. Much like the moisture on the outside of your glass did not seep through the glass, the condensation on your windows is simply where the already existing moisture collects.

Why does water condense on your windows?

Condensation happens on your windows because the surface of the window is at or below the dew point. Why doesn't it happen all the time or at a constant temperature? Well, simply put, the dew point fluctuates as temperature and relative humidity change. The higher the relative humidity is in a given area (inside your home) the higher the dew point temperature. To stop condensation from happening you have two choices: raise the temperature of the window surface or reduce the relative humidity in your home.



Window surface temperature is greatly affected by outdoor temperatures. With today's technology in windows, the exterior temperatures at which the window becomes cold enough to form condensation have changed substantially. It now takes much colder outdoor temperatures to reach the dew point on the surface of the window. But that dew point will still occur. Additionally, closing drapes or blinds can trap both temperature and moisture next to the window surface creating a more likely environment for condensation to happen.

Homeowners frequently tell us that they should not have condensation issues because they do not own or do not run a humidifier. While humidifiers are an obvious source of moisture in the air they are not the only source of possible water vapor in a home. Everyday activities contribute to the relative humidity levels in your home. Things like taking a shower, cooking or even simply breathing will release water vapors into the air of your home.

What can be done to reduce condensation?

While it is not realistic for people to stop the activities of daily life, there are many simple actions that will help to reduce the amount of moisture in the air inside your house. Running exhaust fans while showering or cooking, for instance, will help a great deal, provided your fans exhaust outside. A good rule of thumb regarding relative humidity levels in your home is to keep it below 40% at all times. During cold snaps that number should drop closer to 20% or lower. Opening blinds or drapes to allow for air to circulate next to your windows also helps. This is the same principle as running the defroster in your car. It will help to increase the surface temperature of the window and keep the moisture from settling in the air near the window. Beyond these activities if you still have a recurring problem it can be a good idea to consult a heating and

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air conditioning professional so see what else you can do to reduce the relative humidity and increase the air flow in your home.

With the increased energy efficiency of houses, more and more moisture is now trapped within the home. Efforts to reduce condensation by window manufacturers over the years have helped. However, the governing principles of how and why condensation occurs will never change. Understanding these principles can help you develop habits and practices that can further reduce condensation's effects in your home.

Here is quick checklist of things you can do to reduce the likelihood of condensation on your windows:

- Know and understand the sources of humidity in your home
- Adjust the relative humidity levels in your home
 - Keep humidity levels below 40% under normal conditions
 - During cold weather, drop the humidity to 20% or lower depending on how cold it gets
- Always run exhaust fans when cooking or showering
- Open your blinds or drapes to allow air to circulate around your windows

Outside Air Temperature	Indoor Relative Humidity
-20° F	Less than 15%
-10° F	Less than 20%
0° F	Less than 25%
10° F	Less than 30%
20° F	Less than 35%
40° F	Less than 40%