

As the seasons change occasionally unexpected visible condensation may appear on the windows and doors of our homes. Because condensation shows up on these products one might think they are the cause of this issue however, windows do not cause the condensation.

Warmer air is able to hold more moisture and in the center of the room the temperature will naturally be a higher temperature compared to the exterior walls with windows. As that warmer air, if containing a larger percentage of water or humidity moves towards the cooler wall with a large enough temperature difference it can no longer hold that moisture at the lower temperature. This can cause the moisture to transform into water droplets and other forms of condensation on the glass and frames of windows. This is often more noticeable and frequent during the winter season because of the extreme differences in the indoor and outdoor temperatures. If you are looking to avoid condensation when the temperature drops to 35 degrees or less, maintaining a 25-30 degree relative indoor humidity is recommended.

Windows are not the cause condensation. That is why, if you are experiencing condensation installing new windows most likely will not correct that issue. Homes constructed with improved insulation standards and energy conservation measures may be more likely to experience visible condensation as they are designed to be more airtight and don't have as much built-in ventilation than older buildings with less insulation or single paned windows.



Even minor, everyday activities can add moisture that can contribute to condensation inside your home or business including:

- Cooking
- Taking a hot shower or a bath
- Humidifiers or vaporizers
- Construction projects
- Dish washing
- Heavy breathing
- Fish Tanks
- Even house plants



RECOMMENDED INDOOR RELATIVE HUMIDITY

If you have a way to control the humidity in your home, such as a dehumidifier, use this chart to understand what level of humidity your home may need to combat condensation.

RECOMMENDED INDOOR RELATIVE HUMIDITY		
Outdoor Air Temperature ¹	Outdoor Air Temperature ²	Indoor Relative Humidity (%RH)
20° to 40°F	-7° to 4°C	≤ 40%
10° to 20°F	-12° to -7°C	≤ 35%
0° to 10°F	-18° to -12°C	≤ 30%
-10° to 0°F	-23° to -18°C	≤ 25%
-20° to -10°F	-29° to -23°C	≤ 20%
Below -20°F	Below -29°C	≤ 15%

¹Home Energy Resource of Minnesota
²CSA A440.2 User Guide



CONDENSATION

Condensation is when a vapor turns into a liquid. It looks like tiny droplets of water on the inside of your window or even your door where there is too much moisture in the air. In colder climates, the condensation can even become frost or ice due to lower outdoor temperatures. It is more likely in areas or rooms with more moisture such as bathrooms, basements or kitchens.

DEW POINT

The “dew point” is the temperature the vapor needs to condense into a liquid. If the surface temperature of an object falls below the dew point, water will form or condense on the surface of the object.

RELATIVE HUMIDITY

Humidity is how much moisture is in the air. The term “relative humidity” is the measurement of how much moisture is in the air compared to how much moisture the air can hold at a given temperature. Warmer air can hold more moisture than cooler air.

TIPS TO REDUCE CONDENSATION INSIDE

Condensation is a natural process that cannot always be completely avoided. Therefore, when you see it on the outside of your windows or doors, there is not much you can do. Although, there are tips to reduce findings those little droplets of water on the inside of your windows or doors, including:

- **Air Circulation & Ventilation**
 - Circulating the air inside helps prevent condensation. If you have ceiling fans, those can help.
 - In bathrooms, having a venting fan can help tremendously.
- **Using a Dehumidifier**
- **The use of a Heat Recovery Ventilator (HRV) air exchanger to reduce humidity levels in the home**
- **Awareness and Reduction of Indoor Activities That Create Humidity**
- **Opening Up Your Curtains During the Daylight Hours**



CONDENSATION IN BETWEEN WINDOWPANS

If you are noticing moisture on your windows but cannot rub it off on the inside or the outside, the moisture may be between the windowpanes. If that is the case, a seal has failed and should be repaired or replaced.

ADDITIONAL INFORMATION LINKS

- <https://fgiaonline.org/pages/understanding-indoor-condensation>
- <https://www.ag.ndsu.edu/news/newsreleases/2011/jan-10-2011/window-condensation-common-problem>
- <https://conservancy.umn.edu/handle/11299/124254>