What's to know about condensation

Condensation is the process by which water vapour (gas) in the air turns to water (liquid) when hot air hits cold air or cold surfaces.

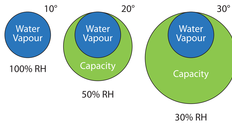
In nature, condensation creates clouds, fog and dew. But in the home it creates water buildup on less insulated surfaces (windows & window frames) that separate inside and outside air temperatures.

In Ottawa, we tend to notice window condensation more in the winter, especially on extremely cold days. But it can also appear on the outside of a window in warmer months when we use air conditioners to cool the inside of our homes.

The greater the amount of water in the air (humidity), and the higher the **temperature differential** between hot and cold air masses and the more visible the effects of condensation.

Relative humidity

Expressed as a percentage, **relative humidity** (RH) is a measurement that indicates the amount of vapour in the air relative to the temperature of the air.



The higher the temperature, the more vapour the air can hold. At 100% relative humidity, the air has reached what is called a **dew point**, which is the temperature at which water vapor (gas) will condense to a liquid as the air can no longer hold water.

Why so humid?

Humidity levels inside the home will naturally vary from **season to season**, but **daily** humidity levels will vary depending on vapour producing activities inside the home which can include:

Breathing

Hot beverages

Washing

Cooking

Bathing

Drying

Finding a comfort level

As a general comfort rule, the **recommended relative humidity level** in the home should be maintained **between 25% to 40%** along with in-home temperatures **between 18°C to 24°C (65°F to 75°F)**. Finding a perfect balance can be a little difficult especially in older homes.

RELATIVE HUMIDITY (RH) %

Too Dry		Comfort Zone				Too Humid				
0	10	20	30	40	50	60	70	80	90	100

Monitor humidity

Use a **hygrometer** - a relatively inexpensive device that can be used in the home to measure the level of relative humidity in the air.

Too much humidity

If you have too much humidity (mostly in homes without air conditioning in the summer), a **dehumidifier** will take the vapour out of the air. In winter try opening a window for a little bit.

Too little humidity

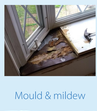
If your home does not have enough humidity, a **humidifier** can add help add more vapour to the air, thereby increasing the relative humidity in the home.

Humidity troubles

High levels of humidity will cause condensation, mould, musty smells, allergic reactions and damage to walls and interior finishes.

Low levels of humidity on the other hand, especially in the winter will cause breathing difficulty, sore throat, static electricity and dry skin.

Decay in wood framing



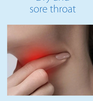
Allergies & difficulty breathing

Mould & mildew

Dry skin

Wall & floor damage

Dry and sore throat



Inside the wall damage

Static electricity

New windows

If your current windows are over 20-25 years old, or if you have failing builder grade windows, the purchase of new windows will improve the condensation issues in your home.

Window technology has progressed significantly over the last 25 years offering new insulation solutions to help combat and minimize condensation. But windows are far from perfect insulators between the inside of your home and extreme outdoor temperatures, so even in very extreme cold temperatures you can expect some level of condensation.

To minimize condensation in your home:

- Purchase windows with the highest insulation rating as possible. Remember, not all brands are the same and some materials perform better than others.
- Ask if new triple-glazed windows will help increase the insulation properties of your windows.
- Keep your home at an optimized relative humidity level throughout the year.
- Ensure there is good airflow around your windows, open drapes and blinds during the day.
- Have your windows installed by certified professionals.

www.bayviewwindows.ca

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