



HOME COMFORT & WINDOW PERFORMANCE GUIDE

Understanding Window Condensation

A clear, practical guide to what causes condensation, why efficient windows can make it more noticeable, and what homeowners can do to manage indoor humidity.

THE KEY POINT

Condensation is moisture in the air becoming visible on a surface.

Windows are often where homeowners notice it first because glass does not absorb moisture. The location of the moisture — outside, inside, or between panes — tells you what is most likely happening.



3

PLACES MOISTURE
MAY APPEAR



6

PRACTICAL
HUMIDITY-CONTROL
STEPS



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WINDOWS
INSTALLED

01 / THE BASICS

What condensation actually is

Common household condensation, sometimes described as window “sweating,” occurs when water vapor in the air contacts a surface cold enough for that vapor to change into liquid droplets.

- 1 Occasional fog or droplets can be normal.**
Short-lived condensation during weather changes, cooking, showers, or the beginning of heating season may simply reflect temporary humidity and temperature conditions.
- 2 Persistent or excessive moisture deserves attention.**
Repeated heavy condensation, frost, peeling paint, damp trim, or moisture spots on walls and ceilings can indicate that indoor humidity is too high or that another building or HVAC condition needs evaluation.
- 3 The window is often the indicator, not the source.**
Because glass is non-porous and often cooler than surrounding interior finishes, it is one of the first places excess airborne moisture becomes visible.



Windows do not create indoor humidity.

Cooking, bathing, humidifiers, laundry, plants, occupants, new construction materials, and normal household activities add moisture to the air. A tighter, more energy-efficient home can reduce incidental air leakage, so excess moisture may remain indoors longer unless it is intentionally ventilated.



WHY NEW WINDOWS MAY SHOW IT

Older, draftier windows can allow more uncontrolled air exchange. Newer windows generally seal more tightly, which improves comfort and energy performance but can also make a home's existing humidity more noticeable on cold glass surfaces.



THINK TEMPERATURE

The colder a glass surface becomes relative to the moisture level in the surrounding air, the greater the chance condensation can form.



THINK HUMIDITY

Lowering excessive indoor humidity is usually the most effective way to reduce interior window condensation during cold weather.



Condensation is a condition, not a diagnosis.

Seeing moisture tells you that water vapor met a surface at or below its dew point. The next step is identifying where the moisture is located and whether it is temporary, persistent, or trapped between panes.

02 / DIAGNOSE THE LOCATION

First question: where is the moisture?

A quick surface check can prevent unnecessary concern. If accessible, lightly touch or wipe the glass to determine which side is wet. For high or hard-to-reach windows, use a safe extension tool rather than climbing.

OUT



Outside surface

Moisture on the exterior glass is formed by outdoor air. It can occur on clear, cool mornings when the exterior pane temperature falls below the outdoor dew point. On high-performance glass, less indoor heat escapes to warm the outer pane, so exterior condensation can sometimes be more noticeable.

USUALLY WEATHER-RELATED

IN



Inside surface

Moisture on the room-side glass points to indoor humidity meeting a cold surface. The response is typically to reduce moisture production, improve ventilation and air movement, and adjust humidifier settings as outdoor temperatures fall.

MANAGE INDOOR HUMIDITY

IGU



Between glass panes

Fogging or moisture that cannot be wiped from either accessible surface may be located inside the sealed insulating glass unit. That is different from ordinary household condensation and should be documented and evaluated for a possible glass-seal issue.

SERVICE EVALUATION MAY BE NEEDED

“Why is only one window fogged when the others are clear?”

Condensation does not have to appear uniformly. One window may have a different glass temperature or exposure because of shade, roof overhangs, wind, elevation, nearby landscaping, screens, room airflow, HVAC supply placement, interior window treatments, or localized humidity.

Upper windows may also behave differently from lower windows because warmer, moisture-bearing indoor air rises. Outdoors, a window with a clearer view of the night sky may cool more by radiation than a neighboring window protected by an overhang or tree canopy.

THREE-STEP HOMEOWNER CHECK

- 1 Locate the moisture.** Outside surface, inside surface, or between panes?
- 2 Note the conditions.** Outdoor temperature, time of day, weather, room activity, and indoor humidity if known.
- 3 Watch the pattern.** Temporary morning moisture differs from repeated heavy condensation that persists or damages surrounding materials.

IMPORTANT DISTINCTION

Exterior condensation is not moisture “leaking through” the window.

It is water vapor from the outdoor air condensing on the outside surface. Interior condensation likewise forms from indoor air. The location of the droplets matters.

03 / WHY HUMIDITY BUILDS

Where indoor moisture comes from



H₂O

Everyday water use

Showers, baths, cooking, dishwashing, mopping, drying clothes and other routine activities release water vapor into indoor air.



HVAC

Humidifiers & mechanical systems

Whole-home and portable humidifiers can add more moisture than the home can safely carry when outdoor temperatures drop. Venting and combustion appliances should also be functioning correctly.



NEW

New construction & remodeling

Wood, drywall compound, plaster, concrete, paint and other materials can release significant moisture while curing and drying, temporarily increasing condensation risk.



HOME

People, plants & normal living

Occupants, pets and plants continuously add moisture. A large number of plants or overwatering can contribute to higher localized humidity.

SEASONAL PATTERN

Why condensation often shows up when heating season begins

- **Late summer / early fall**
Building materials and furnishings may hold moisture accumulated during humid weather.
- **First cold weather**
Glass temperatures drop quickly while indoor moisture can remain elevated, making condensation more visible.
- **After several weeks of heating**
The home often dries as moisture is removed through ventilation and normal winter operation, reducing condensation if humidity is kept in balance.
- **Very cold weather**
Lower outdoor temperatures generally require lower indoor relative humidity to prevent condensation on colder interior surfaces.

EFFICIENCY CHANGES THE EQUATION

A tighter home keeps conditioned air in — and can keep moisture in too.

Modern insulation, air sealing, weatherstripping and efficient windows reduce uncontrolled drafts. That is beneficial for comfort and energy use, but it also means humidity should be managed intentionally through exhaust ventilation, HVAC controls and normal air exchange.



Practical takeaway: If interior condensation appears after installing tighter windows, first measure indoor relative humidity and verify that kitchen, bath and laundry exhaust systems vent to the outdoors and are being used.

Central Indiana note: Large temperature swings in fall and winter can create short periods when glass temperature and humidity cross the dew-point threshold. A single morning event is different from persistent moisture day after day.

04 / CONTROL THE MOISTURE

Reducing indoor humidity is the key

The right balance of indoor humidity helps prevent condensation, protects your home, and keeps your living space comfortable all winter long.

Cold-Weather Humidity Guide

These are general winter targets commonly used to reduce condensation risk as outdoor temperatures fall. Actual conditions vary by home, glass temperature, air movement and construction.

OUTSIDE TEMPERATURE	RECOMMENDED INDOOR RH
+20°F	30% to 35%
+10°F	25% to 30%
0°F	20% to 25%
-10°F	15% to 20%
-20°F	15% to 20%

Measure, do not guess. A basic digital hygrometer can show indoor relative humidity. If condensation persists, reduce humidity gradually and monitor comfort and building conditions.

WATCH FOR WARNING SIGNS

Heavy condensation that repeatedly wets woodwork, frost buildup, musty odors, peeling paint, staining, or damp ceilings/walls can indicate more than a normal brief condensation event. Address moisture promptly to reduce the risk of material damage and mold growth.

SIX PRACTICAL STEPS

1 Use exhaust fans

Run kitchen, bathroom and laundry ventilation during and after moisture-producing activities. Verify fans actually exhaust outdoors.

2 Air out the home

When weather permits, brief controlled ventilation can exchange stale, moist indoor air for drier outdoor air without leaving windows open for long periods.

3 Adjust humidifiers

Lower humidifier settings as outdoor temperatures fall. A setting that feels comfortable at 40°F may be too high when the temperature drops near 0°F.

4 Check ventilation paths

Keep appropriate attic and foundation ventilation unobstructed. Do not block designed vents. Follow appliance and building-code requirements.

5 Manage plants & water

Avoid overwatering and consider grouping a large number of houseplants if a room is consistently more humid than the rest of the home.

6 Bring in a professional

If condensation remains troublesome, ask an HVAC or building professional to evaluate ventilation, fresh-air intake, combustion venting, humidity controls, and air movement.

Do not overcorrect blindly. Extremely dry indoor air can also be uncomfortable and may affect wood furnishings and finishes. The goal is balanced humidity appropriate for outdoor conditions and your home.

05 / HOMEOWNER CHECKLIST

When to monitor, manage, or request service

MONITOR & MANAGE

- ✓ **Exterior droplets that disappear as conditions change:** commonly weather-related; document if needed, but this is not by itself evidence of a leaking window.
- ✓ **Interior moisture during showers, cooking or sudden cold snaps:** measure indoor humidity, use exhaust ventilation and adjust humidifier settings.
- ✓ **Condensation on only one or a few windows:** compare room humidity, airflow, shading, window treatments and exterior exposure before assuming all windows should behave identically.
- ✓ **Temporary condensation early in heating season:** monitor over the next several weeks as the home dries and outdoor conditions stabilize.

REQUEST AN EVALUATION

Call when the pattern does not fit normal surface condensation.

Examples include fogging that appears trapped between panes, repeated moisture that cannot be controlled through reasonable humidity management, visible water entry around the opening, damaged finishes, or concerns about HVAC ventilation or building-envelope performance.

Helpful information to provide: photos, date/time, outdoor temperature, whether the moisture is inside/outside/between panes, indoor humidity reading, room location, and whether the condition clears later in the day.

Locate it. Measure it. Manage the moisture.

Most condensation questions become much easier to solve once the surface location and humidity conditions are known.

ABOUT FACTORY DIRECT

Customer education is part of a professional installation experience.

Factory Direct has served Central Indiana since 1991 with replacement windows, doors, siding and related exterior home improvements. Our goal is to help homeowners understand not only the product they purchased, but also the normal building-science conditions that can affect comfort and window performance.



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EDUCATIONAL NOTE

This guide provides general homeowner education. Condensation can be affected by window type, glass configuration, indoor temperature, heating system, insulation, vapor control, ventilation, room use, drainage and other site conditions. Persistent or damaging moisture should be evaluated by the appropriate qualified professional.