

Renewal
by Andersen®



WINDOW REPLACEMENT

an Andersen Company

**UNDERSTANDING
CONDENSATION**



The moisture that suddenly appears

in cold weather on the interior or exterior of window and patio door glass can block the view, drip or freeze on the glass. It can be an annoyance.

While it may seem natural to blame the windows or doors, interior condensation is really an indication of excess humidity in the home.

Exterior condensation, on the other hand, is a form of dew; the glass simply provides a surface on which moisture can condense.



Are My Windows to Blame?

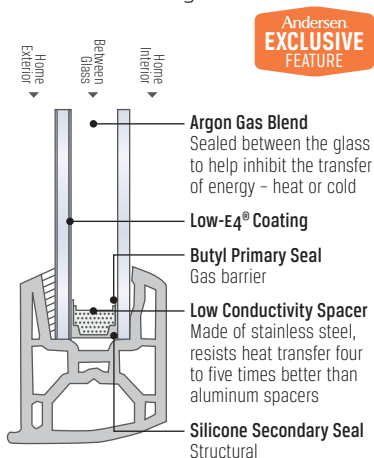
Windows do not cause condensation and, at the same time, can't eliminate condensation. Your windows are alerting you to excess humidity trapped in your home, telling you when you need to reduce the moisture level.

Renewal by Andersen® windows are energy efficient and help provide a tight barrier between the temperature and conditions of the exterior of your home from that of the inside.

The Role of a Window

Tighter modern windows help reduce air leaks, which limit ventilation and traps moisture. But tight windows also help reduce heating costs and limit drafts. Modern windows with special glass may even reduce condensation problems because the glass temperature remains higher.

If your old windows were drafty, those cracks did more than just let in the wind – they allowed excess moisture to escape outdoors. Your new windows are better insulated, so indoor humidity can't escape.



What Is Condensation?

Condensation appears when warm, moist air comes into contact with cooler surfaces, like your window glass on a cold winter day. That's true with even the best performing windows.



Although condensation is most common during winter, it can occur whenever warm, moist air encounters a cold surface.

That's why your iced tea glass sweats during the summer. The glass is cold and condensation forms when warmer, moist air comes into contact with it.

Diagnosing Excess Humidity

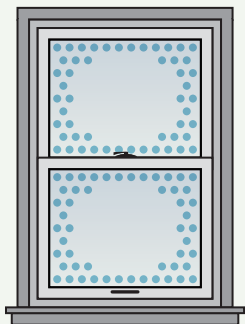
The important thing to realize is that if humidity is causing window condensation, it may also be causing problems elsewhere in the home.

SIGNS OF TOO MUCH MOISTURE

- Sweating pipes
- Musty odors
- A damp feeling
- Cracking, peeling or blistering paint on the interior or exterior
- Warped wooden surfaces
- Staining or discoloration of interior surfaces
- Mold or mildew on surfaces

Indoor Humidity's Affect on Condensation

Excessive humidity is the cause of most window condensation. As the outside temperature drops, the window glass temperature also drops. When moist air



comes in contact with the cold glass pane, the moisture condenses and forms water droplets.

Determining when the condensation will occur and preventing it depends on the energy efficiency of the window, the relative indoor humidity of the home and the exterior and interior temperature.

Sources of Indoor Moisture

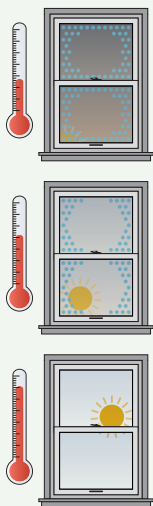
Everyday living generates a surprising amount of indoor moisture. Cooking three meals a day adds eight or ten cups of water into the air. Each shower contributes another cup. Every activity that uses water adds moisture.

Regardless of its cause, the moisture's source doesn't have to be where the condensation occurs. Vapor pressure can actually force moisture through plaster, wood, brick and cement.



Managing Exterior Moisture

Condensation on the outside of



a window is the same as dew on your lawn. It occurs mostly during the spring and fall, when there are cooler nights and warmer days. It is usually an indicator of energy-efficient windows, since it means the outside pane is thoroughly insulated from the heat indoors.

ENGINEERED WITH
FIBREX[®]

While wood and fiberglass windows may require regular maintenance to combat the effects of condensation, Renewal by Andersen replacement windows are made with Fibrex[®] material, a revolutionary composite that provides exceptional resistance to rot and fungal growth.*

Sources:

ASHRAE Handbook of Fundamentals 1999
American Society of Heating,
Refrigerating and Air-Conditioning
Engineers, Inc. (ASHRAE)
1791 Tullie Circle NE
Atlanta, GA 30329
www.ashrae.org

Builders Guide
Energy and Environmental Building
Association (EEBA)
6520 Edenvale Boulevard, Suite 112
Eden Prairie, MN 55346
www.eeba.org

Building Science Consulting
70 Main Street
Westford, MA 01886
www.buildingscience.com

Cold Climate Housing Center
University of Minnesota
203 Kaufert Laboratory
2004 Folwell Avenue
Saint Paul, MN 55108

Residential Windows – A Guide to New
Technologies and Energy Performance
Edition #1 and 2
Carmody, et al

Seacor Environmental Engineering
3433 Broadway Street NE, Suite 150
Minneapolis, MN 55413

University of Minnesota
Department of Environmental Health
and Safety
Minneapolis, MN 55455
www.dehs.umn.edu

Window & Door Manufacturers
Association (WDMA)
1400 East Touhy Avenue, Suite 470
Des Plaines, IL 60018
www.wdma.com

Environmental Health and Engineering
60 Wells Avenue
Newton, MA 02459

Glass Products for Windows and Doors
Cardinal IG
12301 Whitewater Drive
Minnetonka, MN 55343

How to Save Money by Insulating
Your Home

Federal Energy Administration
c/o Department of Energy
James Forrestal Building
1000 Independence Avenue SE
Washington, DC 20585

Michaud, Cooley, Erickson and
Associates, Inc., Consulting Engineers
333 S 7th Street, Suite 1200
Minneapolis, MN 55402

Moisture Condensation (University
of Illinois Building Research Council
Circular F6.2)
University of Illinois at Urbana-
Champaign Building Research Council
1 E Saint Mary's Road
Champaign, IL 61820

NFRC (National Fenestration
Rating Council)
8484 Georgia Avenue, Suite 20
Silver Spring, MD 20910
www.nfrc.org

EWC (Efficient Winds Collaborative)
Alliance to Save Energy
1850 M Street NW, Suite 600
Washington, DC 20036
www.efficientwindows.org

Energy Star Programs
United States DOE and EPA
www.energystar.gov

Tips for Reducing Humidity in the Home

Vent all gas appliances, such as clothes dryers and exhaust fans, to the outside

Cover the earth in the crawl space with a good vapor barrier

Run an over-the-range exhaust fan when you cook

Avoid storing firewood indoors

Ventilate your attic and crawl space

While bathing, run a bathroom exhaust fan until the mirror is clear

If you have a forced-air furnace, contact your heating and air conditioning specialist for guidance in ensuring your home is properly ventilated



Measuring Indoor Humidity



You can use humidity-measuring instruments called hygrometers, inexpensive tools that can be purchased at most hardware stores. Many of today's new programmable thermostats also include controls for humidifiers and

dehumidifiers. Remember that humidity levels quoted in weather reports indicate outdoor humidity. They have little bearing on your home's humidity level.

Outside Air Temperature (°F)	20° to 40°	10° to 20°	0° to 10°	-10° to 0°	-20° to -10°	below -20°
Maximum Recommended Indoor Humidity Level	up to 40%	up to 35%	up to 30%	up to 25%	up to 20%	up to 15%

Humidity levels above these are not recommended unless special provisions are taken in building construction.

If higher relative humidity levels are required because of special interior environmental conditions, the window manufacturer should be consulted.



“Highest in
Customer Satisfaction
with Windows and Doors”
J.D. Power

Renewal by Andersen received the highest numerical score among window and door manufacturers in the proprietary J.D. Power 2015 Windows and Patio Doors Satisfaction Study™ Study based on responses from 2,442 consumers measuring 14 brands and measures opinions of consumers who purchased new windows or patio doors in the previous 12 months. Proprietary study results are based on experiences and perceptions of consumers surveyed in January-February, 2015. Your experiences may vary. Visit jdpower.com

Window and Door Replacement from a Company You Can Trust®

Don't just take our word for it. Renewal by Andersen has long been committed to environmentally responsible products and manufacturing methods. Our efforts have been acknowledged by leading organizations with some of the most rigorous standards in the United States.



Questions?

We're here to help. Please contact your local Renewal by Andersen Retailer.

**Renewal
by Andersen®**
WINDOW REPLACEMENT



an Andersen Company