

Got Condensation? It's Not Your Windows

Posted by Tom Herron on September 03, 2014



Condensation is a persistent and often misunderstood issue. Homeowners sometimes think their windows are defective when they discover condensation on them, but it's actually caused by high humidity in their homes.

What Causes Condensation?

Condensation appears as a light coating of water, frost, or ice. When this occurs, homeowners sometimes fear their windows are damaged or not performing properly. Unless the condensation is between the window panes, this is not likely the case. It's really the humidity inside their home that's causing this to happen.

Humid air holds water vapor until it contacts a surface whose temperature is less than or equal to the dew point. When this happens, the water vapor turns to liquid. Because the interior surface of your windows is typically the coldest part of your home, condensation forms here first. Once the air becomes less humid or the glass becomes warmer, the condensation vanishes.

Similarly, exterior condensation forms when the dew point in the air is higher than the temperature of the glass, which is common when a warm day turns into a cool night.

The formation of condensation on the interior or exterior surfaces of your windows doesn't indicate a defective product. It's just a naturally occurring phenomenon.

Why is Condensation a Concern?

Condensation is not just annoying. It can also be destructive. Excessive moisture can damage curtains, walls, carpets, and wooden window frames. In some cases, condensation leads to the formation of mold, creating health risks.

Reducing Condensation

Minimizing condensation requires maintaining the surface temperature of the window above the dew point. Manufacturers accomplish this by reducing the amount of heat that transfers through a window, which is called the thermal transmittance or U-factor, of the entire product. The higher the U-factor, the higher the potential that condensation will form on the glass.

Reducing the potential for condensation requires each one of a window's three thermal zones to be efficient. These zones include the center of glazing, edge of glazing, and the frame. Heat from inside the house will conduct its way through the parts of the window that are the least efficient, causing those parts to have lower indoor surface temperatures. Here are a few things to consider when choosing windows:

Center of glazing. Upgrading from single-glazed windows to multiple-glazed windows or insulating glass units reduces the potential for condensation. Choosing energy efficient low-e coatings in multiple-glazed or insulating glass units enables further reduction.

Edge of glazing. Similar to the center of glazing, going from single-glazed to dual-glazed or insulating glass units reduces the potential for condensation on the edge of glazing surface, and choosing high-performance glass further reduces the chances for condensation. Warm-edge spacers also reduce the potential for condensation by reducing conductivity through the edge.

Frame. Going from highly-conductive metal framing systems to thermally broken metal frames or thermally improved framing materials such as wood or vinyl also resist condensation.

Conclusion

Interior or exterior condensation doesn't indicate damaged or defective windows. It's simply visible evidence of excessive moisture in the air. Remember that installing new windows won't eliminate condensation, but controlling the humidity in your home can help minimize it.

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