

Questions regarding Condensation on Windows

Taking into consideration the various situations that could contribute to condensation, we have taken the time to review past and current conditions of our infrastructure.

Attic Ventilation:

Over the last several years, we have retrofitted the attics to ensure proper ventilation in the event that moisture would find its way into the attic via the unit itself or other areas. As a result of the retrofitting, and follow-up inspections from our engineer, we have determined that we have achieved what is known in the industry as a “cold roof.” A cold roof is created by having an attic that reflects the same temperature inside the attic as it is on the outside, thus preventing ice from building up on the roof. In addition, your attic has had additional insulation which brings the R-value to about R-50, which exceeds industry recommendations.

Walls:

The Park Vista townhouses were built in the very early 1980s. The R-value of the exterior walls was, on average, R-12 in accordance with the building code of the day. Over the last three Reserve Fund Studies (RFS), the engineers have determined that our external walls are adequate, and the ventilation holes in the brick walls are functioning properly. These facts are supported by the current RFS.

Windows:

Beginning in June 2004, we began replacing all of the wooden windows throughout the complex. At that time, we replaced the windows on the first and second floors. The dormer windows were installed in the spring of 2006. The standard double-pane windows incorporate full ‘Vinylbilt’ window construction, Super Spacer® silicone (that reduces energy cost and outside noise), and Cardinal LoE²-172, with an R-value of 4.2 — which reflects 96% of radiant heat back into the room, and blocks 84% of UV rays from entering the room.

Work Procedure During Installation:

We managed the contractor (Comfort King Ltd.) and inspected the work of each window. We took note of the opening left during the removal of the old windows to ensure that the openings were properly prepped before the new windows were installed. The installed windows were supported on all sides with small wooden blocks, then secured into place with lengthy screw nails. The space between the window frames and the 2" x 6" walls varied between 3/4" and 1" in width. The space was then filled in from both the inside and outside with slow, expanding, insulating foam representing a R-value of R-22 — ensuring an air-tight window.

The inside windows were finished with wooden trim, and the outside windows were capped with aluminium, then sealed in with high-quality caulking.

CAUSE AND EFFECT OF CONDENSATION

In spite of the fact that we have considerable knowledge on the causes of condensation, and in general the adverse effect of humidity, we took the time to refresh our understanding of the *cause and effect* of these two problems.

We researched and reviewed the observations and conclusions of the window industry revolving around *window condensation* from the following sources:

- National Research Council of Canada
- Canadian Mortgage and Housing Corporation
- Pella Windows
- MEACO (UK) Ltd.
- Windows Today
- WDMA: Window and Door Manufacturing Association
- Ask the Builder — Tim Carter, National Newspaper Columnist
- Gorell Window & Doors

The organizations listed above are considered experts on *window condensation*.

Using the mounds of information from these and other like organizations, we can say that condensation is not related to the windows, attics, or external walls. The window industry clearly states that condensation is generally a product of living standards and life style.

Their respective recommendations and resolutions to window condensation or other forms of condensation follow:

- 1) ensure house-wide air circulation,
- 2) use fans to help ensure that there is proper air circulation,
- 3) use de-humidifiers,
- 4) install energy-efficient windows (as we have),
- 5) set your heating to at least the comfort level throughout the house to ensure consistent temperature throughout your home,
- 6) ensure that you operate exhaust fans when cooking or taking showers,
- 7) house plants can and do create moisture,
- 8) closed fireplaces prevent moisture from escaping,
- 9) open doors and windows periodically,

- 10) window coverings can and do cause moisture build up — leave windows uncovered as much as possible and/or use sheer or light-weight fabrics.

House Plants:

On the question of the role house plants can play in condensation, we took the extra step to consult with horticulturalists at the Experimental Farm and Algonquin College. They both agree that depending on the number of plants around a window, moisture would mist up and possibly rest on the glass portion of the window — particularly in cold weather.

This observation is also supported by Mr. Pat Hunter, president of Comfort King Ltd., who has dealt with some concerns from people regarding condensation on newly installed windows. In our particular situation, he reminds us that we have replaced drafty wooden windows with very energy efficient windows, effectively eliminating air leaks. He goes on to say, that the absence of air leaks also prevents moisture from escaping and settles on the surface of the window, which brings us back to living standards and life style.

November 2007

CCC No. 272