



CONDENSATION ON EXTERIOR SURFACES OF SEALED UNITS

Sealed units have become much more efficient in recent years and there have been many inquiries about condensation forming on the outside surface of the glass.

Once moisture content in the air reaches the saturation point (100% relative humidity) condensation will start to develop on surfaces. This means that the air is holding the maximum amount of moisture that it can. Temperature is the main factor that determines how much moisture air can hold. When the temperature of the air drops, the amount of moisture it can hold decreases as well. If the air is already at 100% R.H. and then the temperature drops the excess moisture will condense on surfaces that are at a lower temperature. This is because the air temperature near the surface will be cooled forcing it to release some of its moisture. Dew on the grass in the morning is a good illustration of this process. A spandrel section on a building is another good example of condensation forming on an exterior surface. The fall and spring, when humidity is high and temperatures are falling is a very typical times when this happens.

At times the outside surface temperature might be several degrees C less than the ambient temperature inside the home. This can happen when the ground frost starts as a result of clear conditions, even though the outside air temperature is just above freezing 0° C. Surfaces can achieve temperatures less than ambient air because of radiation warmth loss towards the sky.

If the windows have low performing glass, there is a flow of heat from the inside to the outside. This will keep the exterior piece of glass warm enough to prevent condensation. However, when a higher performing sealed unit is used in a window, this transfer of heat does not happen as readily. This means that the outside piece of glass has a much cooler temperature and a higher risk of condensation forming. Thus the better performing sealed unit and window have the more likelihood of condensation. This is a very common problem with spandrel panels because they have an insulation factor usually around R15 or more.

Exterior condensation on higher performing sealed units may be a nuisance particularly in the fall and spring. However it is a sign the unit carries a high insulation value. Exterior condensation is becoming more prevalent because of better thermal performance, but should not be any reason of concern.