

Condensation on External Glass Surfaces



External condensation (dew) can occasionally occur on highly insulating glass units in temperate climates. Such occurrences will normally happen on cloud-free nights where there is little or no wind and usually when a warm front follows a dry spell.

The combination of several factors, namely external air temperature, localised micro-climate and the thermal transmittance of the glazing itself may all contribute to the formation of external condensation. **As a consequence of variable temperatures and localised conditions, it is possible to experience a situation whereby both clear and misted windows exists at the same time in the same development.**

This phenomenon is influenced by the thermal insulation of the glazing. Single glazing offers poor thermal insulation therefore heat escaping from inside the room readily passes through the glass to the outside environment. Consequently, the external surface temperature of single glazing is generally higher than the 'dew point' temperature of the outside air, thus prohibiting the formation of condensation on that surface.

With conventional double glazing the thermal insulation is improved, but sufficient heat still escapes through the glass so as to warm the external surface of the outermost glass, thereby precluding the formation of condensation in most circumstances.

Low emissivity glass (Low E) reflects heat back into the room and as such, the quantity of heat passing through the glazing to the outside is reduced. Consequently, the external pane of low emissivity double glazing is not warmed by escaping heat (which instead is retained within the room - a good thing!) and therefore presents a colder surface to the outside environment.

In such cases, and in situations where the external glass temperature is lower than the 'dew-point' of the air, (and when weather conditions are comparable to those mentioned previously) condensation can form on the external glass surface.

However, the combination of these contributing factors is largely unpredictable and therefore it is not possible to quantify the number of occasions when external condensation will occur. Instances of external condensation are relatively rare and in all cases it will be a transient effect. Upon any one of the climatological variables changing, the condensation on the glazing will usually dissipate within a short period of time, much in the same way as morning dew.