

DATASHEET

Condensation - Its causes and cure

(External Condensation on Double Glazed Replacement Windows)

Relative humidity is a comparison of the actual vapor density versus the saturation vapor density at a particular temperature.

Another issue that a small number of homeowners experience is “external condensation” on the outside of their new double glazed windows and doors. This is often after the homeowner has installed low emissivity glass (Low E Glass), which reflects heat back into the room.

This can be quite confusing for the small number of home owners who experience external condensation as in the main people are expecting reduced or no condensation once they have fitted double glazing.

In short the “problem” is caused by the fact that the Low E Glass is doing its job so well and reflecting heat back into the room.

The following is an explanation by **PILKINGTON** of the phenomenon of External Condensation.

Condensation on external glass surfaces

External condensation (dew) can occasionally occur on highly insulating glass units in temperate climates. Such occurrences will only happen on cloud-free nights when 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 microclimate 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 exist 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 a 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.

In common with other low emissivity glasses, Pilkington K Glass reflects heat back into the room and as such the quantity of heat passing through the glazing is reduced. Consequently the external pane of low emissivity double glazing is not warmed by escaping heat (which instead is retained within the room) and therefore presents a colder surface to the outside environment.

In such cases, and in situations where the external glass surface 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 in much the same way as morning dew.