

External Dew on Double Glazing

An issue that a small number of homeowners experience is dew forming on the outside of their new double glazed windows and doors. This is more common if the homeowner has an advanced insulating glass unit (IGU) with low emissivity (Low E) glass and/or an Argon gas filled IGU, but it can happen with all types of IGUs under specific conditions.

In short 'external dew' results from the fact that the IGU is doing its job

The following is an explanation of the phenomenon of external dew on glass surfaces:

Dew is water in the form of droplets that appear on thin, exposed objects in the morning or evening. As the exposed surface cools by radiating its heat, atmospheric moisture condenses at a rate greater than it can evaporate, resulting in the formation of water droplets.

External dew (which is sometimes known as external condensation) can occasionally occur on the outside of the high performance insulating glass units in temperate climates. Such occurrences will only happen in cloud-free nights when there is little or no wind and usually when a warm front follows a dry spell, and there is little heating of the room.

It is possible to experience a situation whereby both clear and misted windows exist at the same time in the same house.

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, warming it up on the way. Consequently, the external surface temperature of the single glazing is generally higher than the 'dew point' temperature of the outside air, thus preventing the formation of the dew on that surface.

With an air or argon filled IGU, the thermal insulation is markedly improved, but sufficient heat may still escape through the glass so as to warm the external surface of the outermost glass, thereby precluding the formation of the dew in most circumstances.

With a Low E IGU the low emissivity glass reflects heat back into the room and as such the quantity of heat passing through the glazing is reduced still further. Consequently the external pane of the low E IGU is only slightly warmed by escaping heat (which instead is retained in the room) and therefore presents a colder surface to the outside environment. When Argon gas is used with the low E the problem is more pronounced as the insulation is better.

In these 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) dew can form on the external glass surface.

The combination of these contributing factors is largely unpredictable and therefore it is not possible to quantify the number of occasions when external dew will occur.

Instances of the external dew are relatively rare and in all cases it will be a transient effect. Upon any one of the climatic variables changing, the dew on the glazing will usually dissipate within a short period of time in much the same way as morning dew.

If this phenomenon happens, it proves that your double glazing is working and insulating your house or building.