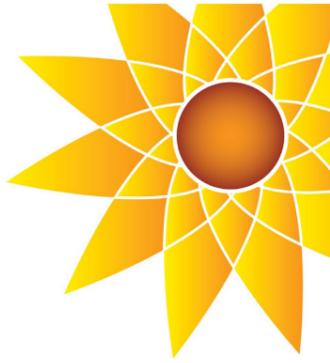


Condensation

Causes & Advise



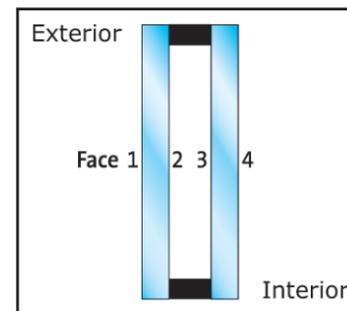
What is condensation ?

Condensation is defined as the physical process by which a gas or vapour changes into a liquid. If the temperature of an object (e.g. grass, metal, glass) falls below the dew point temperature. An example of this is when a person breathes onto a mirror : condensation occurs because the exhaled air is vapour saturated and its temperature is higher of that of the mirror.

Condensation on Glass

Condensation on the outer surfaces of an insulating glass unit (IGU) can form in a wide variety of circumstances and on either the inside or the outside of a building. The phenomenon of surface condensation on insulating glass units occurs in three forms:

- On the external face (face 1)
- On the internal face (face 4)
- On the inner faces of the insulating glass unit (2 & 3)



Outdoor Condensation

Condensation forms on the outer surface of glass when its temperature drops below the outdoor dew point temperature. Again, windows manufactured with an insulating glass unit containing energy efficient Low-Emissivity glass such as **Planitherm Softcoated Glass**, have enhanced thermal insulation properties due to the high performance coating that reflects heat back into the room. Condensation on the outdoor surface of high performance windows is in no way an indication of a defective glass unit. Indeed, this can be seen as a positive indication that the thermally enhanced insulating units are actively reducing heat loss through the windows.

This form of condensation can be counteracted by the use of a Self Cleaning Glass, which helps to attract water across the surface in a “sheeting” effect allowing clear viewing through glass that is susceptible to external condensation.



Windows manufactured using a low-E glass, actually restrict heat loss. This keeps the inner pane of glass warmer thus reducing the instances when condensation can form.

Indoor Condensation

The principal cause of condensation on glass on the inside of a building is a high internal humidity level coupled with a low outside temperature which cools the inside surface to below the dew point, particularly around the edges. Bathrooms, kitchens and other areas where humidity levels are high are particularly susceptible to this problem.

In order to control this form of condensation, consideration should be given to improving the heating in these areas. However, another way to reduce the problem is to use High Performance Windows containing an **enhanced thermally insulating glass**, such as soft-coated glass.

Low emissivity glass actually restricts heat exchange across the cavity between the two panes of glass. This keeps the inner pane of the glass warmer thus reducing the instances when condensation can form. In addition, the use of **“Warm Edge”** spacer bar, which is made of insulating material, will reduce the risk even further.

Condensation on Inner Faces

The formation of condensation on the inner faces of the insulating glass unit is an indication that the air or gas cavity is no longer completely sealed. The desiccant will rapidly become saturated and any damp air penetrating via the seal around the perimeter will reduce visibility by forming condensation on faces 2 and 3. The insulating glass unit must therefore be replaced as this cannot be reversed.

Please visit us at www.ecoglass.co.uk for more information

In summary

- **External condensation:**
 - Can occur in certain climatic conditions with high humidity levels and /or particularly cold weather
 - Is a positive indication that the enhanced thermally insulating units are working correctly and reducing heat loss through the windows
 - Can be counteracted by the use of a hydrophilic coating such as self-cleaning glass.
- **Internal condensation:**
 - Can occur in areas of high humidity (e.g. bathrooms and kitchens) and / or during exceptionally cold weather
 - Can be reduced on windows by using high performance thermally insulating glass, such as softcoat.
- **Condensation on the inner faces of an insulating glass unit:**
 - Is not normal and is an indication that the cavity is no longer completely sealed
 - The unit must be replaced as this cannot be reversed.