Aztec Windows (Coventry) Ltd
11 Macefield Close
Aldermans Green Industrial Estate
Coventry
CV2 2PJ

t: 024 7662 1316
f: 024 7660 3857

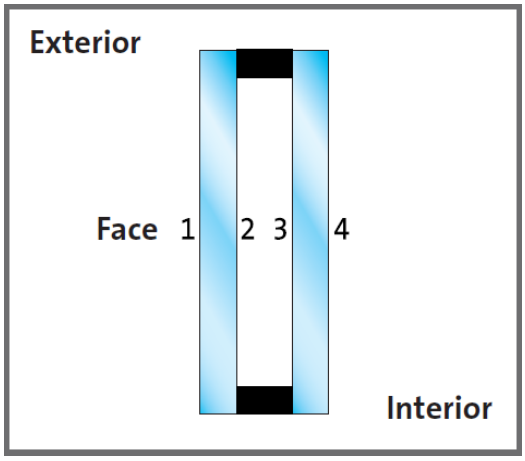
e: enquiries@aztec-windows.com
w: www.aztec-windows.com

Condensation on Double Glazing

The phenomenon of surface condensation on double-glazed units occurs in three forms:

- On the external face (face 1)
- On the inner surfaces 2 and 3 of the double-glazed unit
- On the internal face (face 4).

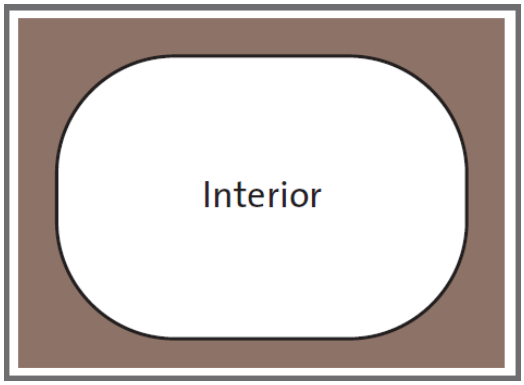
Condensation forms very differently depending on whether it is inside or outside the building, due to the thermal bridge effect around the cavity. Surface condensation on the internal face always starts in the corners, mainly due to the additional cooling caused by the thermal bridge. "Warm-edge" spacerbars, made of insulating material, such as SGGSWISSPACER or SuperSpacer, reduce the risk of condensation at the corners. Surface condensation on the external face rarely occurs in the corners, given that the edges of the external glass heat up adjacent to the thermal bridge. The coldest point on the external face of the glazing is generally in the centre, where there is the least heat loss.



Condensation on the internal face (face 4)

The phenomenon of surface condensation on face 4 of a double glazed unit is mainly linked to the following factors:

- The external climate
- The internal air temperature
- Humidity within the building
- The ventilation flow rate
- The surface temperature of the glass



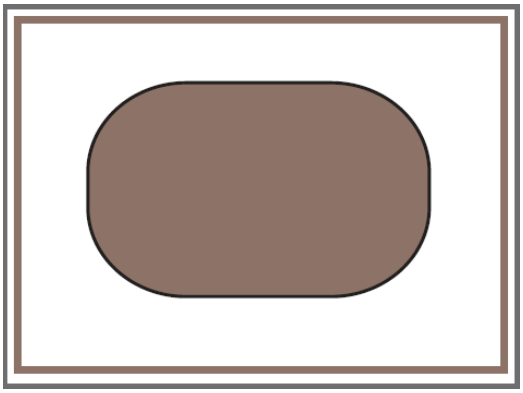
To limit condensation, it is advisable to control each of the above parameters, with the exception of the external climate, which is ever-changing. The best way to reduce surface condensation on the internal face is to collect the water vapour at source (for example in the kitchen or bathroom) and evacuate it straight outside. It is also advisable to heat and ventilate the premises adequately. It is also possible to reduce the risk of condensation by using a "warm-edge" spacerbar such as SGGSWISSPACER or SuperSpacer.

Condensation on the external face (face 1)

Surface condensation will appear on face 1 of the insulating glazing if the temperature on this face of the glazing is significantly lower than the external air temperature and if the dew point (i.e. temperature at which water vapour becomes liquid) of the external air is higher than the temperature of the glass. The surface temperature on the outside of glazing is dependent on:

- The heat flow from the interior passing through the glass. This depends on the difference in temperature between the internal surface and the external surface of the glazing and the U-value of the glass
- The heat exchange by convection with the external air
- Heat loss by radiation mainly to the sky. Various studies and measurements carried out by the CSTC have shown that heat exchange by radiation is relatively limited in overcast weather. However, when the sky is clear at night, there are significant heat losses to the sky.

The effect of radiation from a glazed surface to the sky can be compared with a car parked outdoors at night in clear (cloudless) weather: in the morning, some parts of its outer surface are wet, or even covered in frost, even if it has not rained. When the car is parked alongside a building, the windows on the building side are never wet, because the building significantly reduces the heat exchange by radiation between the car windows and the sky.



In conclusion, surface condensation on the outside of glazing is a phenomenon that is occasionally seen at night and in the early hours of the morning on well-insulated glass in clear (cloudless) weather and when there is no wind. This is mainly caused by heat losses towards the clear sky. It is important that this phenomenon is not considered to represent poor quality double glazed units, but rather proof of good thermal insulation.