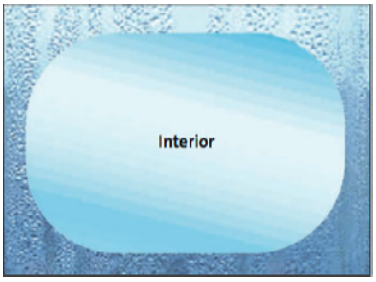
A Guide to Condensation

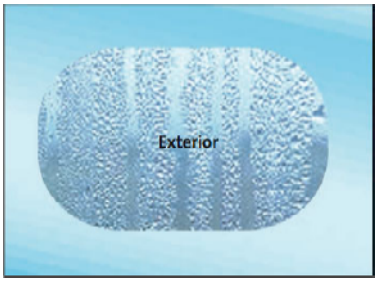
A Brief Description of Condensation

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 what is known as the 'Dew Point' temperature for a given relative humidity of the surrounding air, water vapour from the atmosphere condenses into water droplets on its surface. This "dew point" varies according to the amount of water in the atmosphere (known as humidity). In humid conditions condensation occurs at higher temperatures. In cold conditions condensation occurs despite relatively low humidity.



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 and ventilation in these areas. However, another way to reduce the problem is to use high performance windows containing an enhanced thermally insulating glass. Windows manufactured using an energy efficient low-emissivity (or low-E) glass such as Planitherm Total, actually restrict heat exchange across the air space between the two panes of glass. This keeps the inner pane of glass warmer thus reducing the instances when condensation can form. In addition, the use of a "Warm-edge" spacer bar made of insulating material, such as the SwissSpacer, will reduce the risk of condensation at the edges.



Outdoor Condensation

Condensation forms on the outdoor surface of glass when its temperature drops below the outdoor dew point temperature. Again, windows manufactured with a double-glazed unit containing energy efficient low emissivity glass such as Planiterm Total, have enhanced thermal insulation properties thanks to a high performance transparent coating that reflects heat from radiators or fires back into the room. As a result the outer pane of glass does not get warmed by heat escaping from inside the building through the glass and remains cooler in comparison to less thermally efficient windows. External condensation only occurs in certain climatic conditions with high humidity levels and/or particularly cold weather. It is possible that external condensation will appear on some windows but not on others. This is due to localised atmospheric conditions such as shelter from nearby trees or buildings, variable air currents and wind speeds and varying levels of nearby vegetation. Condensation on the outdoor surface of such high performance windows is in no way an indication of a defective unit. Indeed, this can be seen as a positive indication that the enhanced thermally insulating units are actively reducing heat loss through the glass.

In Summary

Internal condensation:

1) Can occur in areas of high humidity such as bathrooms and during exceptionally cold weather.
2) Can be reduced on windows by using high performance insulating glass, such as Planiterm Total.

External condensation:

1) Can occur in certain climatic conditions with high humidity particularly cold weather.
2) Is a positive indication that the enhanced thermally insulating working correctly and reducing heat loss through the windows.