TREFOREST GLASS

Causes and Advice on Condensation

Internal Condensation

Condensation is the water which results from the conversion of water vapour in the atmosphere.

The increased incidence of condensation in today's buildings is the direct result of changes in modern living conditions, which have led to warmer and more comfortable rooms.

In many homes, traditional open fires have been replaced by sophisticated heating systems, modern frames have been fitted getting rid of draughts floors have been completely covered by fitted carpets, while ceiling heights have been lowered and the space between loft joists filled with insulating material.

These modern aids to home comfort have created rooms which are warmer but which often have less ventilation and fewer air changes. The result is that the water vapour produced by normal living activities is no longer able to escape up the chimney or through door jambs, window joints and other outlets.

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In certain circumstances, all these comfort aids combine to create ideal conditions for the formation of condensation.
The question is how to reduce condensation without sacrificing the benefit of increased comfort. When double glazing is used in conjunction with heating and controlled ventilation, it helps solve this problem – and its effectiveness will be even greater if the elementary precautions referred to in this leaflet are adopted.

Some examples of where the water vapour comes from

Breathing: Two sleeping adults produce 1½ pints of moisture in 8 hours

Cooking: Steam clouds can be seen near saucepans and kettles, and then seem to disappear. The clouds have been absorbed into the atmosphere.
The cooker itself may be a source of water vapour; e.g. an average gas cooker could produce approximately 1½ pints of moisture per hour.

Washing up: The vapour clouds given off by the hot water are rapidly absorbed into the atmosphere.

Bathing, laundry, and wet outer clothing: These are often the major sources of water vapour in the home.

Heaters: A flueless gas heater can produce up to ⅔ pint of moisture per hour.
Paraffin heaters produce nine pints of moisture for every eight pints of fuel burned.

Indoor Plants: A frequently unrecognized but nevertheless significant source of water vapour.

New Property or Renovation: The bricks, timber, concrete and other materials in an average 3-bedroomed house absorb about 1500 gallons of water during construction. Much of this is dissipated into the indoor atmosphere during the drying out period.

The factors governing condensation

The three main factors governing condensation are:

1. Water vapour content of the air.

2. Inside room temperature.

3. Outside temperature.

The first two factors are normally controllable.

1. Water vapour content of the air

This is produced by normal living activities such as washing, cooking, bathing, etc., and can be controlled by the use of extractor fans, cowlings, and ventilation at appropriate places.

2. Inside room temperature

This can be controlled by replacing single glazing with double glazing, thereby maintaining a higher surface temperature of the glass on the room side, and by increasing the air temperature to enable it to hold more water vapour without condensing.

3. Outside temperature

This cannot be controlled, but it can be countered when it falls by increasing the indoor heating.

The location of condensation on the glass

When attempting to reduce the degree of condensation it is important to note on which surface of the glass it forms; its location indicates the cause, and so points to the solution.
Condensation on the room side surface of the inner glass means that the temperature of the glass surface is too low given the water vapour content of the atmosphere in the room.

How to reduce the condensation

Condensation is a ventilation problem and cannot be caused purely by the installation of double glazing. By acting as a heat barrier and providing an inner pane which is considerably warmer than the outer pane, condensation may be reduced.

Living rooms

- Allow the room's warmth to reach the windows. ○ Position heaters under the windows, and use fittings which hold the curtains at least 15cm to 20cm away from the glass to allow free movement of warm air.
- Open windows for at least a few minutes each day to permit air changes.

- Where open fires are not provided, or existing flues are blocked off, see that wall vents are fitted and kept clear. When a gas fire has been installed in an open fire aperture, the back plate should have vent holes below the fire, unless this is provided for in the fire design.
- Where possible, avoid glazed or non-absorbent wall coatings, as these can promote condensation on walls.

Bathroom

- Stop water vapour finding its way into the rest of the house, particularly during and after bathing.
- After a bath or shower, close the door and open a window for a few minutes. ○ Position a radiator, or heated towel rail, under the window.
- Consider installing an extractor fan.

Bedrooms

- If possible extend the central heating programme to compensate for the night time drop in external temperature, and the increase in water vapour caused by the occupants' breathing.
- Bedroom windows should be opened during the day to allow at least one complete air change.

Kitchens, Laundries

- Close internal doors and keep a window open. Alternatively, install extractor fans or cooker hoods, ventilated to the outside air.

Conservatories

- Consider cross flow ventilation with the use of vents in walls and roofs especially if the conservatory is south facing.
- Trickle ventilation in the wall, eaves and ridge zone can also help.

<u>External Condensation</u>

External condensation is a natural phenomenon, typically occurring in the spring and autumn months, where the external surface temperature of the glass drops below the point where air cannot hold any more moisture – its dew point.

Over the last ten years consumers who have installed modern IGUs (Insulating Glass Units), to help save energy and money on their fuel bills, may have experienced some form of condensation. This is due to IGUs having a low heat transfer coefficient which means the internal glass pane remains warm, while the external glass is allowed

to cool. This can make the units particularly vulnerable to external condensation, ironically proving that the IGUs are thermally efficient and work properly.

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