

REDUCING CONDENSATION

PRINCIPLES OF CONDENSATION

The amount of water vapour that air can contain is limited, and when that limit is reached air is said to be saturated. The point of saturation varies with temperature, in other words the higher the temperature of air, the greater the volume of water vapour it can maintain. As a gas, water vapour contributes to the total pressure exerted by the air that we breathe, and when expressed as a percentage of the ratio of vapour pressure in contrast with saturated air at the same temperature, this is known as relative humidity (RH).

In specific set of circumstances, for example when the temperature is 20 degrees and assuming an 80% RU, all of the moisture can be held in the air. If more water vapour is introduced into the air, RH will increase. At 100% RH, saturation point is reached and, thereafter, any further water introduced into the air will be deposited as condensation. Similarly, should the temperature fall, because colder can support less moisture, the RH will rise and, again, condensation will form.

CONDITIONS PRODUCING CONDENSATION

As explained above, changes in temperature or in moisture content of the air can cause condensation to occur. These changes can occur naturally or artificially;

1. **Atmospheric conditions.** *When warm, damp weather follows a period of cold weather, the fabric of a heavy structure, such as a multi-story building of mass concrete design, which has not been fully or continuously heated, will not warm up immediately, but may remain cold for a*

relatively considerable period of time. When the moist, warm incoming air comes into contact with the cold surfaces, water will condense upon them, but as the walls warm up, condensation ceases and the deposited moisture evaporates.

2. **Artificial influences.** *The humidity within an occupied building is usually higher than outside. People themselves, and many of their activities, increase the amount of moisture in the air. Moisture is released by breathing, cooking, clothes washing/ drying and by the use of oil or gas fired appliances.*

Condensation, particularly in houses and flats, does not necessarily occur in the room where the water vapour is produced. A kitchen or bathroom where vapour is formed may be warm enough to remain free from condensation.

The exceptions to this may be where water vapour forms on single glazed windows, cold water pipes or other cold surfaces within those areas. But if the water vapour is allowed to escape throughout the house/ flat into the colder rooms which may not be heated, or heated for only part of each day, condensation will occur on the cold surfaces within those rooms, which may be some distance from the source of the moisture.

MEANS OF REDUCING CONDENSATION

Remove moisture laden air from the house/ flat near to its point of origin. This will involve the introduction of ventilators into kitchens and bathrooms, preferably incorporating a Humidistat facility to provide a degree of control over the operation of the ventilator and, thereby, reduce heat loss to a minimum. Clearly, before any ventilator can be installed, an opening will need to be formed into the external wall of the kitchen or bathroom and, so far as flats are



concerned, prior approval will almost certainly need to be given by the freeholders or their managing agents.

The addition of self-closers to the internal doors can also improve the situation by providing a means of divorcing the moisture generating areas, such as the kitchen and bathroom, from the remainder of the house/ flat.

REDUCING MOISTURE GENERATION

Provide adequate heating at all times. As mentioned above, for any given set of circumstances, an increase in air temperature will assist in reducing the onset of condensation.

Improve insulation. By adding an insulation layer between, say, the cold external walls and the moisture laden internal air, the temperature of the internal surfaces can be effectively increased, with a consequential reduction in the presence of condensation. The introduction of a secondary double glazing system into the window openings will achieve a similar improvement in living conditions by separating the colder, outer panes of glass from the damper internal air.



Black mould on walls as a result of severe condensation

PROFESSIONAL ADVICE

The suggestions made above are intended to provide a framework within which to alleviate condensation as an environmental difficulty. They are based upon advice given in the relevant Building Research Station Digest (no. 110), the Building Research Station Report on Tracking Condensation, and the Good Repair Guide 7 – Treating Condensation in Housing. Where specific problems exist, it may be necessary to supplement these general recommendations with further advice from a suitably qualified person or organization. For more information, please email us at marketing@countystate.co.uk or alternatively contact your property manager.

FURTHER READING AND ONLINE RESOURCES

- Building Research Establishment (BRE)
<http://www.bre.co.uk>
- AskBRE, the online advisory service from BRE – Useful Digests and Guides on Condensation
http://www.bre.co.uk/askbre/pub_list.jsp?keyw=ords=Condensation
- DIY Data, Conditions and Controls of Condensation
<http://www.diydata.com/problem/condensation/condensation.htm>
- Royal Institute of British Architects (RIBA)
<http://www.riba.org>
- The Royal Institution of Chartered Surveyors (RICS)
www.rics.org

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