



INFORMATION SHEET

BUILDING SERVICES

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CONDENSATION IN HOUSES

Condensation is an issue that comes up as a technical query whenever beads of moisture appear on non-absorbent surfaces. It can also occur in other surfaces but may not be noticeable until the material is fully saturated.

The effects of condensation which can become a problem are: blistering of paint, mould growth on walls and ceilings, water stains and the musty smell that eventuates.

Causes of Condensation

We are surrounded by air and the air around us contains water or moisture. The amount of moisture in the air is dependent on temperature. The warmer the temperature the more amount of moisture the air can absorb. The temperature in which the air can hold the maximum amount of moisture is called the "dew point". Cooling below this "dew point" temperature causes condensation. At this temperature, water leaves the air and forms beads of moisture or a film of water on any cooler surfaces such as windows, walls and ceilings.

When the temperature is low (say, during winter), the air cannot hold high levels of moisture. A cold room in a house would therefore produce moisture. Moisture in the house can also come from cooking and washing. People produce moisture in the air by breathing and perspiring. It is said that a family of four can produce about 12 litres of water vapour or moisture each day in a house.

Kerosene heaters and unflued gas fires also produce water vapour. About 1 litre of water vapour is given off for every litre of kerosene, while unflued gas fires give off 2 litres of water vapour for every litre of natural gas burned. These types of heaters should be avoided where there may be condensation problems.

Usually moisture escapes from the interior of a house through the air vents or through the chimney. However, in modern homes natural ventilation is reduced and more moisture is retained especially with closed windows in winter. Ventilation is an essential safeguard from condensation from the above causes, although this may increase heating costs. But if good thermal insulation is installed and the ventilation is not excessive, then condensation may not be a major issue in a house.

Problem Areas

Kitchens: Steam from cooking and washing up is the main source of moisture in the kitchen. An extractor fan and a range hood ducted to outside air are effective means of removing steam. Any build-up of mould on the walls or ceilings should be treated with a bleach/water solution or commercial mould remover.

Pantries: These rooms should have proper ventilation. It is good practice to allow 15 mm gap between the shelves and the wall to allow free circulation of air.

Bathrooms: Bathrooms usually have high condensation during and after showers and baths. The moist air can cause mould formation if the ventilation is poor. Windows should be opened for ventilation during and after showering or bathing. Glossy paint on the walls and ceilings should assist the evaporation of moisture. If condensation is a major problem, then an extractor fan should be installed preferably in an external wall.

DISCLAIMER - The above is intended to provide general information in summary form. The contents do not constitute specific advice and should not be relied upon as such. Formal specific advice should be sought by members with respect to particular matters before taking action.

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Bedrooms: Bedrooms are usually the coldest rooms in the house. Water vapour from other warmer areas or rooms of the house may flow into bedrooms and condense on the walls and more often on the windows. It is best to keep bedroom doors closed and remove sources of water vapour through exhaust fans in the kitchen and bathrooms.

Wardrobes and cupboards: If wardrobes and cupboards are built on external walls, then condensation can become a problem. Clothes, shoes and other items may be damaged by mildew and mould growth. The use of louvered doors or drilling holes in the doors at high and low levels is a way of ventilating these storage areas. It is a good idea to take clothes out and air them at regular intervals especially during humid weather in summer.

Ceilings: Ceilings can become cold enough for water vapour in the air to form directly on the underside. This is caused by the entry of cold air through metal roofing or through tiling. Without ceiling insulation, moisture will form on the ceiling of an unheated room.

Windows and Glass Doors: Condensation usually forms on large areas of glass. The walls below the glass can become permanently damp and pools of water will even form on the floor. The opening of the windows slightly to allow for ventilation remedies most problems. However, in bad cases, a condensation channel may be necessary with weep holes to the outside of the windows to remedy the problem.

Summary

By designing the room layout and internal fittings, such as pantries and wardrobes to avoid areas where condensation may occur, future moisture problems in the home can be minimised. Ensuring there is adequate ventilation and insulation are key remedies to eliminating or avoiding problems relating to condensation over the life of the house.

The Australian Building Codes Board publish a Handbook on Condensation that also provides useful information on managing condensation in buildings.

**For further information HIA members can contact HIA's Building Services staff
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