

Condensation

Technical Note. June 2007

WHAT IS CONDENSATION?

Condensation is the result of moisture-laden air below its 'dew point' coming into contact with cold surfaces such as glass, walls or ceilings. ('Dew point' means - *the atmospheric temperature below which dew can form.*)

Water vapour is constantly present in the air seasonal conditions and occupancy habits are a significant influence on the occurrence and amount of condensation produced. Cold air is unable to retain water vapour, resulting in the formation of water droplets where as warm air can retain and absorb water vapour.



Condensation can travel from room to room and throughout the house. For example, water vapour produced in the bathroom or laundry can travel through to other rooms in the house.

Condensation isn't always visible and can occur on absorbent surfaces such as clothing, upholstery, curtains and timber linings.

Where moisture is absorbed by timber linings there is the potential for structural and cosmetic damage to occur.

SYMPTOMS

Surfaces most likely to be affected by condensation are glass, cold walls and ceilings. The main problem areas are:

- Winter time, cold days and nights
- Bathrooms, kitchens and laundries;
- Bedrooms (particularly those facing south);
- Wardrobes; and
- Other areas in pockets of 'still air' such as behind furniture and curtains.

WHAT CAUSES CONDENSATION?

The two main causes of condensation in homes are:-

- a) People's ordinary living conditions and activities and,
- b) Materials in newly-built houses shedding their moisture content.

a) Ordinary living conditions

Ordinary living conditions cause the air within your home to become moisture laden, particularly in winter.

For example, did you know?

- a) An adult can produce more than ½ a litre of water vapour overnight, simply by breathing.
- b) A hot shower lasting 15 minutes can produce more than 2 litres of water vapour.
- c) A washing machine or dishwasher can produce about 3 litres each hour they are used.
- d) A clothes drier can generate as much as 10 litres of water vapour in an hour.

Water vapour is also generated by other living activities including cooking.

b) The materials in new homes

New materials such as concrete floors, brickwork, plaster wall linings and paints need to dry out and stabilise, to do this they shed excess water which is used during the manufacturing of materials and construction phase of the building.

The structure will also absorb significant amounts of water during construction where rainfall occurs prior to the building being weather tight.

Ideally, the structure should be dried naturally during the construction phase after the building reaches lock-up and before the commencement of works such as laying carpets, floor tiling and painting. Unfortunately, this is not always practical and new home owners should take measures to dry out the property after they move in.

A home built in the winter and occupied before it has had the chance to dry out may immediately show signs of dampness on surfaces such as concrete floors, plaster walls and the inside of the window glass. This will occur while the moisture in the structure evaporates.

Other Hints for drying out a new home;-

- Moisture that appears on the surface of concrete floors during the drying period should not be mistaken for a problem with the damp proofing of the floor.
- Keep wardrobe and linen cupboard doors open, and 'air' the contents.
- Do not to lay carpets, vinyl or timber flooring until concrete slabs have adequately dried out.
- Tradesperson should accurately tests the moisture content of concrete floors before installing floor and wall coverings.

The evaporation process may take several weeks or even months, depending upon the conditions. When coupled with condensation arising from living activities, problems can become severe unless managed carefully.

WARNING: Don't attempt to accelerate the drying out of your home by using heaters to produce a very high temperature. This is likely to result in damage from shrinkage or the buckling of timber joinery and furniture.

MOULD GROWTH

Mould or mildew is a minute fungus that thrives in moist conditions. Mould occurs in the type of humid conditions that create condensation and results in unsightly discolouration of the surfaces upon which it grows. If the causes are not dealt with promptly, mould growth can prove both costly and damaging.

HOW TO CONTROL THE PROBLEM?

The following methods for moisture control used in conjunction will limit the amount of condensation produced inside your home:-

- Open a window ensuring adequate natural cross ventilation, (to remove the moisture laden air from your home);
- Fit locks to all windows so they can be left slightly open, to permit cross ventilation.
- Promptly wipe moisture from surfaces such as window sills glass and tiles;
- Fit and use fans in all bathrooms, laundries and kitchens.
- Fit vents in the doors and ceilings of wardrobes
- Providing heating, (to raise the temperature of the cold surfaces);
- Install building insulation.
- Maintaining 'free flowing' natural ventilation to rooms when using unflued gas or oil heaters;

- If available, run ceiling fans on low to circulate the air in your home.
- Periodically let additional outside air into your home.
- If necessary, run a dehumidifier.

Ventilation

The No 1 control for condensation is to extract the air laden with water vapour near its source. The most efficient way to extract the air is by installing **and using** exhaust fans in bathrooms, laundries and kitchens.



Exhaust fans should be ducted to the outside air or into a well "ventilated" roof space.

Bathroom doors should be fitted with a ventilation grill or have the bottom 15mm cut off the door to increase the ventilation draft to the room which improves the performance of the exhaust fan.

Rooms should be well ventilated and whenever possible bedroom windows should be opened. To provide efficient cross ventilation several windows should be left slightly open throughout the house and wardrobes left ajar to prevent mould growth.



'Free flowing' natural ventilation is essential for most types of unflued gas heaters - if unsure check with the manufacturer.

Heating

While it's true that higher temperatures allow the air to carry more moisture, efficient heating methods will raise surface temperatures above the dew point. Good ventilation can then carry moisture laden air outside the home.

DON'T use kerosene room heaters if your home suffers from condensation, because they produce large quantities of water vapour.

Although air conditioners reduce humidity a gentle, dry method of heating is most suitable.