

What is condensation?

There is always some moisture in the air even if you cannot see it. If the air gets colder it cannot hold all the moisture and tiny drops of water appear. This is condensation.

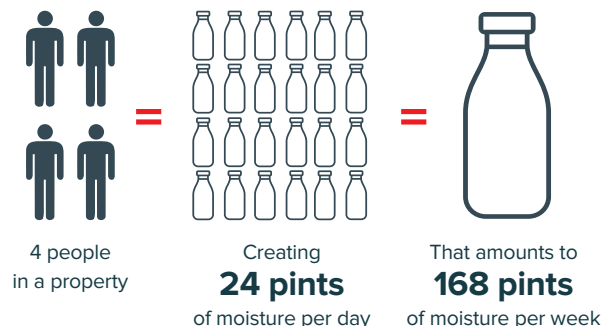
Moisture production is caused by everyday living, from cooking to having a shower. Normally moisture will remain in the atmosphere, but as the room air temperature drops, the ability of air to hold moisture reduces, and the air becomes saturated. This leads to water droplets forming as condensation (*at what is known as 'dew point'*) on cold surfaces such as walls, windows, metal and most commonly on the bathroom mirror.

Condensation occurs mainly during cold weather, whether it is raining or dry and affects 1 in 5 properties in the UK. Ventilation is often reduced in winter to keep the heat in and this causes moisture vapour to rise and condensation to form. It does not leave a 'tidemark' on walls which is typical of rising damp. It appears on cold surfaces and in places where there is little movement of air such as behind large furniture and in bay windows.

It can be spotted in the corners of windows, around window frames, in or behind wardrobes and cupboards and often forms on cold north-facing walls.

According to BS 5250:2002 an average 'wet' household will produce approximately 14 litres (24 pints) of water per day, adding up to well over 98 litres or 21 gallons per week.

Dogs will also contribute to moisture vapour production as they can only control their temperature by panting. Large dogs produce high amounts of body heat, which then passes through the dog bed at night to the floor. If the floor is cold and you hit dew point, condensation forms. This is often noticeable if the dog sleeps in a cold conservatory.



Modern features such as double glazing and loft insulation are important to keep homes warm, but they can contribute to poor air circulation. In the past there would be a natural escape for warm, damp and poor quality air around window frames, doors, uncarpeted floorboards, and up chimneys.

However, buildings are now designed to cut down heat loss and therefore inhibit natural ventilation particularly if there are no trickle vents on windows.

With the high costs of heating, we don't want to keep windows open all day, so we need to minimise the problem as much as possible. If not, stale humid air is trapped and this will inevitably lead to musty smells, dampness and ultimately mould growth. Moist stale air may also contain dust mite allergens and volatile organic compounds (*from cleaning products, hairspray and deodorants etc*), which can contribute to asthma symptoms.



What is mould?

Black speckled marks or grey growths on woodwork, painted walls, ceilings and wallpaper can be a sign of mould forming. Make sure to check grouting and sealing, window frames, the inside of curtains, blinds and upholstered surfaces such as sofas for specks of mould too.

Condensation can lead to staining and mould growth, damaging wallpaper, wall surfaces, window frames, furniture and clothing. The development of mould growth is a tell-tale sign that is frequently associated with excess moisture production and condensation.

The three basic ingredients to start mould growth are organic material, a fungal spore and water.

The vast majority of products used to build and furnish homes are made from organic materials. Fungal spores are microscopic and are present in any indoor or outdoor environment; they can easily enter any dwelling undetected. The main source of water for mould is from the air around it, so if relative humidity is high the mould will thrive. Therefore, to reduce the risk of mould growth in a property you must reduce the relative humidity below **70-80%**.

Is it condensation or another type of damp?

Condensation is not the only cause of damp - however it is the most common. Dampness can originate from numerous sources, from leaking pipes to blocked gutters, or the lack of or a broken damp proof course.

Other forms of damp will need alternative treatments and it's recommended you get a trained and qualified surveyor to assess the problem.

Damp can be caused by factors such as:

- ▶ Leaking pipes, waste and drainage pipes or overflows.
- ▶ Rain seeping in through the roof where tiles or slates are missing, spilling from a blocked gutter, penetrating around window frames or leaking through cracked downpipes.
- ▶ Rising damp due to a defective damp proof course, a bridged damp proof course or because there is no damp proof course.
- ▶ Penetrating damp around windows or through porous walls due to driving rain, or from high ground levels against retaining walls.

Rising damp affects many properties in the UK at some point. It occurs when groundwater is drawn up the porous masonry and mortar of a property through a process called capillary action. At first it moves upwards through the mortar and then follows on through the brick or porous stone. Mould will not normally form on a wall affected by rising damp, due to salts and the fact it will not be wet enough, though on rare occasions, cooling caused by the damp surface might make it cold enough for condensation to form.



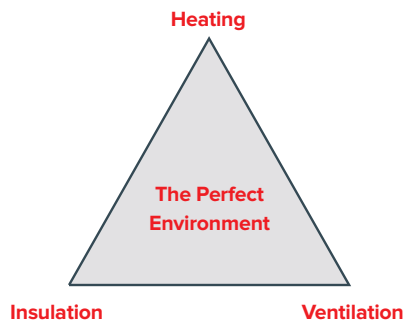
Condensation is particularly common in homes which are poorly ventilated, heated or insulated and usually gets worse in the colder winter months (October to April), which is known as 'the condensation season'.

How to avoid condensation

The removal of natural ventilation through modern features such as double glazing and draught proofing may lead to problems associated with poor air circulation - and where there is inadequate ventilation, condensation and stale air can result.

There are several ways to reduce the amount of moisture in your home - through increased ventilation, keeping the heat in your property and removing the excess moisture.

To prevent condensation you must get a balance of heating, insulation and ventilation.



Producing less moisture in your home

Cooking

- ▶ When cooking, try to reduce the amount of moisture by placing lids on pans. Do not leave kettles on the boil or pans of water on the hob when not in use. Try to use the minimum amount of water in a pan when boiling vegetables, rice or pasta and open a window.

Bathing

- ▶ When filling the bath, run the cold water first then add the hot – it will reduce the amount of steam produced, which will reduce condensation on surfaces.

Washing Clothes

- ▶ Put washing outdoors to dry if you can. If this isn't possible, place in the bathroom or kitchen with the door closed and the window open or extractor fan on. If you have a tumble dryer make sure the vent leads outside.

- ▶ When wiping down surfaces to remove condensation, wring out the cloth in the sink and do not leave the wet cloth to dry on a radiator, as the moisture will be released again.



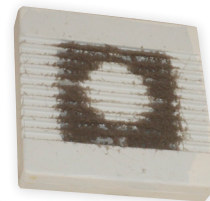
Ventilate to remove the moisture

You can ventilate your home without making draughts. Ventilation is needed to get rid of moisture which is produced throughout the day, including from people's breath and daily activities such as bathing and showering.



Kitchens and bathrooms

- ▶ You need much more ventilation in kitchens and bathrooms, especially when washing, cooking, bathing or drying clothes.
- ▶ This means opening windows wider, or where possible installing a humidistat-controlled ventilation fan. Extractor fans should be automatically humidistat controlled – not solely activated by a light switch. These must comply with and be fitted in accordance with building regulations, Approved Document F.



Make sure to keep ventilation fans clean to prevent blockages to the flow of air

- ▶ Close kitchen and bathroom doors when these rooms are in use even if the kitchen or bathroom has an extractor fan. This will remove the moisture using the ventilation fans, rather than let it move to other rooms, especially bedrooms which are often colder and more likely to be affected by condensation.

Try not to dry clothes on radiators as the moisture will stay in the room, and condense on other surfaces.

Living rooms and bedrooms

- In living rooms or bedrooms keep windows ajar where possible. Keep trickle vents and light vents open. If you have air bricks or vents keep these clean and make sure they are not covered over or blocked by large furniture.
- Ventilate cupboards and wardrobes by leaving doors ajar. To reduce the risk of mildew on clothes and other stored items, allow air to circulate round them by removing false wardrobe backs or drilling breather holes in them at the top and bottom. Avoid putting too many things in them as that will stop air from circulating.
- Leave space between the back of wardrobes and the wall. Where possible place floor mounted wardrobes and furniture against internal walls, rather than cold outside walls. It is essential to allow space for the air to circulate in and around your furniture, as condensation will form in cold spaces. The same is true with long curtains. These can reduce air circulation and evaporation of moisture from walls, particularly in corners.
- If you replace your window units at any time, make sure that new frames incorporate trickle vents.
- When you use paraffin, LPG or gas for heating, it produces at least equal volumes of moisture vapour.



Insulate and draught proof

While it is important to insulate and draught proof your home to help save energy and reduce fuel bills, remember not to block eaves and prevent air circulating.

Insulation in the loft, cavity wall insulation and draught proofing of windows and outside doors will help keep your home warm and you will have lower fuel bills as a result. When a home is warmer, condensation is less likely.

When draught proofing:

- Do not block permanent vents such as air bricks.
- Try not to block chimneys. Where the fire place is covered over make sure to leave a ventilation hole two bricks in size and fit a louvered grill. This not only helps ventilate the room, but prevents the chimney becoming damp and potentially causing damaged plaster.
- Do not draught proof a room where there is a fuel burning heater, gas fire or cooker. These require a constant supply of air, otherwise carbon monoxide can form.
- Always leave a 10mm gap under doors to promote ventilation and comply with Building Regulations Approved Document F.

Heating your home

In cold weather, the best way to keep rooms warm enough to avoid condensation is to keep low background heating on all day - even if there is no one at home. This is very important in flats, and bungalows and other dwellings where bedrooms are not above warm rooms. Thermostats will help control heating and costs.

The World Health Organisation suggests indoor air quality in living areas is best around **18-20°C**, **50-60%** relative humidity and with a minimum **10 litre/second** ventilation rate.



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Are the problems persisting? What are your options?

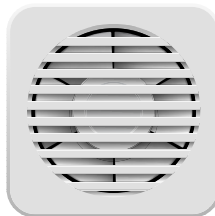
A condensation problem may be solved by making small changes to moisture production, ventilation or heating. If the problem persists for longer, then you may need professional advice and a full house survey to assess the cause of the issue. Most alternatives to ventilation units warm surfaces or remove moisture to mask the symptoms, without improving air quality.

Solutions include adding additional ventilation such as air bricks, trickle vents and extractor fans, along with positive input ventilation systems.



Extract fans

Filterless extract fans are designed to remove humid air at source, such as in a bathroom or kitchen. Even with extractor fans installed in rooms with lots of moisture, preventative measures must still be taken. If kitchen or bathroom doors are left open hot humid air can expand outwards at 600 litres/second.



Positive input ventilation

Positive input ventilation may also be an answer to improving air quality and removing moist air. Positive input ventilation units introduce a constant stream of fresh, filtered and tempered air from the loft space or exterior, to dilute and displace the stale static air inside a property.



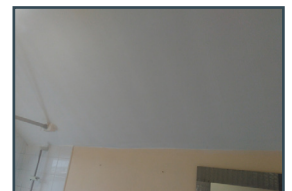
Anti condensation paint

For small areas of condensation caused by cold bridging an anti condensation paint can be applied to create a thermal barrier between the cold surface and the warm moist air.

This water based emulsion will reduce the formation of condensation by utilising hollow glass bead technology. Glass beads are 100% non-toxic hollow spheres the thickness of a human hair. When incorporated into paint they act as miniature thermos-like bottles, providing a thermal barrier between cold surfaces and the warmer interior air. As the air is insulated against the colder wall surface, condensation is controlled. This in turn inhibits mould growth.



Before



After

How do you get rid of mould? What is the easiest way?

It's vital to start with the root of the problem, so focus on reducing condensation in your home. The good news is that condensation can be easily fixed, mostly by making sure that rooms are well ventilated.

Some people turn to dehumidifiers for a quick fix, but they quickly fill with water so are not as effective as they may seem.

If condensation is a recurring problem, you can also look at moisture-resistant paint. It's designed to withstand both moisture and steam - so it can be easier to wipe areas clean - but it will not stop moisture from forming in the first place if the surface is cold.



An elderly person living in a home by themselves could experience no mould issues, but this could change if a larger family moves in and moisture production increases.

Other options to combat condensation and keep your house warm

To prevent condensation you must get a balance of heating, insulation and ventilation. Rentokil Property Care offer a range of energy saving services that help keep the heat in your home, and the cold out.



Loft insulation

Having correctly fitted loft insulation installed in your home is an easy way to improve the energy efficiency and reduce the risk of condensation. It is estimated that a quarter of heat lost from a property is through the roof of an uninsulated home (*Energy Saving Trust 2022*).



External masonry water repellent

Damp masonry, particularly on single leaf walls, causes your home to lose heat. When the brickwork is wet it loses thermal efficiency and means valuable heat escapes.

The application of vapour permeable masonry protection cream stops the brickwork getting wet from rain penetration.

It has been proven in scientific testing to save **29%** energy compared to an untreated wall and is independently verified by the Energy Saving Trust. Government guidance recommends that masonry is treated before internal wall insulation is applied to solid wall properties.

With its unique colourless cream formulation, a single coat application will protect brick, stone and concrete from rain penetration for **20-30** years.

Within 48 hours the original looks and features of the masonry will be retained.



Condensation control insulation

On solid wall properties, condensation can often be controlled by warming the entire internal wall surface. This can be achieved using anti-condensation paint or if a new plaster finish is required, by the application of vapour permeable polyurethane foam tiles.

These are then plastered with layers of backing and skim to give a hard surface ready for decoration. The tiles are Class O fire rated. As the product is only 12mm thick, it allows walls to be insulated without costly alterations to skirting boards, windows, covings and radiators.

This insulation improves the thermal resistance of a solid wall by **40%** when compared to an untreated wall. The product complies with Building Regulations for use where it is not functionally or technically possible to install thicker insulation systems.



Internal wall insulation

The largest area of heat loss in a solid walled property is through the walls (**35-45%**). Unfortunately, the thickness of traditional internal wall insulation required to comply with Building Regulations means a substantial loss in room dimensions and problems with detailing around skirting, coving and window sills.

By using cutting edge technology to fit vacuum insulation the thickness required can be substantially reduced and detailing is no longer an issue.



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