

**Condensation is often considered as one of the most widely misunderstood causes of ill health and defects in residential properties. It is also often confused with other defects such as penetrating and rising dampness.**

Condensation in houses can be considered as an environmental process. For example, when air in a building becomes heavily laden with moisture from cooking or bathing and then latterly comes into contact with surfaces that are colder such as glass or external walls, condensation will form. In buildings, it is more usual to be affected by condensation between the months of October through to April when it is colder.

Air naturally increases and decreases in its moisture content minute by minute throughout the day, although warm air will hold more water than cold air. The moisture content of air can be measured by a specialist using an instrument called a hygrometer which displays relative humidity (RH) as a percentage from 0 to 100%. As an example, a level of 90% is much more humid than a level 10%. As an overview, the process of condensation occurs when warm moist air cools down quickly by touching a cold surface such as a window or wall, water droplets then form as the air reaches a stage known as its dewpoint (when the air can no longer hold the water vapour), at this juncture we refer to this physical change from a gas to a liquid as condensation.

Condensation is most commonly found in buildings usually after cooking or bathing has taken place, although people and pets also produce water vapour which is not readily seen. This also adds to the overall balance of moisture in the air. It is also made worse by poor ventilation or a lack of extraction of moist air. Where there are surfaces that are impervious to water, such as a plastic or metal window frames, the condensate can easily be seen. Whereas, on permeable surfaces such as plaster or wall paper, this condensate is not so easy to readily observe.

When trying to identify condensation, the most common aid to diagnosis is to look for mould spores on the surface of walls, behind furniture, around windows and on ceilings as an example. Mould



**e.g. damage to a window frame**

associated with condensation is often black, brown or green in colour; however condensation is often most commonly associated with black spot mould (*Aspergillus Niger*). There are however, some types of mould which are known to be toxic (*Stachybotrys*). Therefore, diagnosis is crucial if the correct measures are to be taken to alleviate the problem. Further information on toxic moulds can be sought from your local environmental health office, which is normally run by the Local Authority. Together with the mould growth, an observation of the average internal temperature, the level of heating and the ventilation in the property will aid in the diagnosis of condensation. A good indication of condensation however is when the mould appears in the colder months, particularly where it has not been previously.

It is worth pointing out that condensation may be a problem for one occupier where it was not for the previous one and vice versa. This is because a person's or families lifestyles can have a dramatically differing effect on the levels of moisture in a property.

The effects on health by condensation can be severe and lead to conditions such as Asthma, Bronchitis, Pneumonia and other related conditions such as Aspergillosis.

When condensation becomes a problem in your home, this can manifest itself in any number of locations, as an example, it is not uncommon to find water condensate droplets in roof spaces where it can form on the underside of bituminous roofing felts.



e.g. black spot mould growth on a ceiling

The water droplets can then affect the localised timbers which can then form rot. By retro fitting adequate ventilation and thermal insulation in the roof void, this will greatly reduce the risk of this occurring. Surface damage from mould to wall paper, curtains, clothes and other surfaces is also very common, although mould can sometimes be easily removed with a good fungicidal cleaner.

In simple terms, condensation occurs naturally. The initial way to alleviate the effects of condensation is to provide adequate heating, ventilation and reduce the level of relative humidity in kitchens and bathrooms. Increasing the heating in a property should ideally be done through either electric forms of heating such as night storage heaters or gas central heating, as other forms of heating such as gas fires will actually introduce more moisture into the atmosphere.

Ideally, airflow could be provided through background ventilation i.e. airbricks and trickle vents in windows. It may however be necessary to set the windows on the security catches in the semi open position, assuming that this will not pose a security risk. If this is still not effective, the regular opening and closing of windows will be required. To reduce more larger and difficult amounts of humidity will most likely require a greater degree of effort as modern living tends to produce vast amounts of excess moisture that becomes absorbed into the fabric of the building.

This is not so easy to dissipate. In the first instance, it is sensible to close bathroom and kitchen doors when cooking or bathing. However, if this is not practical, but it is permissible to do so, then an excellent way of reducing this moisture is to fit humidistat fans. These types of fans monitor the relative humidity in an area. At such a point as the air begins to become too moist, the fans turn themselves on until the humidity returns to an acceptable level, at which point the fans then shut off and continue to monitor the background atmosphere.

In order to diagnose condensation and advise on the best course of action, this will ideally require a diligent inspection by a trained professional such as a Chartered Building Surveyor. It may even be necessary to undertake further investigation which may involve an invasive inspection using specialised equipment.

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