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## Moisture in the Home

We produce a lot of moisture within the home from breathing, cooking, showers, baths and drying clothes. Unless your home is properly designed, there is a danger that this moisture can harm both your health and your home.

Surface condensation can be avoided by having good levels of insulation, avoiding thermal bridging and having a properly designed ventilation system. If the relative humidity levels in a home exceed 70% for prolonged periods, there is a high probability that the condensation occurring on cold surfaces will lead to mould growth. This can seriously affect the quality of the air for the occupants, and mould spores can have a detrimental effect on our respiratory systems.

*Make sure your building is designed right and built right for a healthy and comfortable home.*

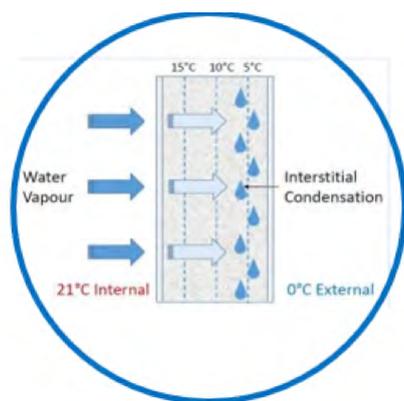


Surface condensation on windows due to heat loss through the windows and the incorrect levels of ventilation

# Avoiding Interstitial Condensation

Interstitial condensation is when warm, moist air from inside the house penetrates inside a wall, roof or floor structure, reaches the dew point and condenses into liquid water. This is typically caused by poor installation of vapour barriers or failure to design in ventilation for timber structures which allows this moisture to dry out again.

A vapour barrier must be correctly installed when installing internal insulation. It must not be broken in any location and that includes plug sockets. Otherwise warm damp air bypasses the vapour barrier and condenses between the insulation and the cold wall.



*Interstitial Condensation through the wall of a house.*

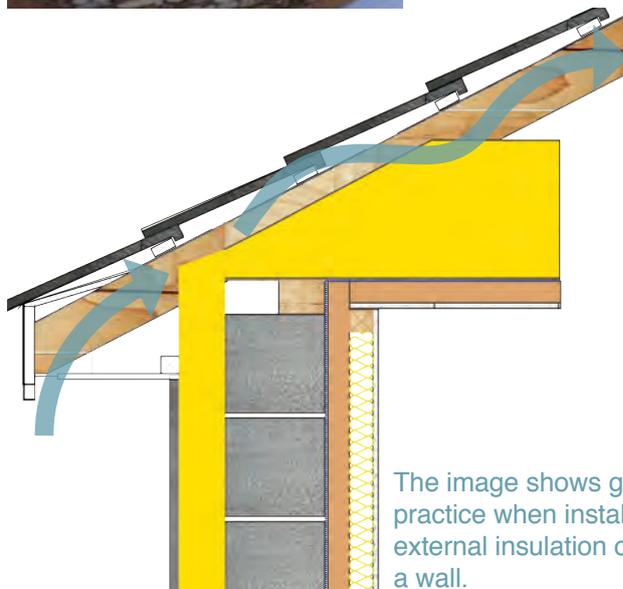
When moisture is trapped within the structure, it can cause reduced energy performance of the insulation, mould growth and even structural failure. This mould growth can have harmful consequences on the health of the occupants or other users of a building as the spores from the mould can get into the lungs and cause breathing and other difficulties.

Another typical example of where this can happen is when attics are converted. Often insulation is installed between the rafters, without ventilating between the roofing felt and the insulation. Even where a vapour barrier is installed, moist internal air can bypass the vapour barrier through weak points and get into the space between the rafters and condense onto the cold roofing felt under the slates. Without ventilation above the insulation to dry it out, moisture can build up over time making the insulation wet and ineffective. It causes mould and can eventually cause the rafters to rot. However you won't see anything until it's too late, maybe years after your builder has left.

Unfortunately this issue is not well understood by many builders so it is worth having a conversation particularly if you are insulating your attic. Make sure that they understand the principles of avoiding interstitial condensation. If you are seeking an SEAI grant for attic insulation, you are required to maintain or improve the ventilation levels within the roof structure. Many builders and insulation contractors think that this adds cost and is unnecessary. However they are wrong; it will be much more costly in the long run if you don't ventilate!



*Showing interstitial condensation resulting with mould through the wall.*



*The image shows good practice when installing external insulation on a wall.*

- 1. The insulation (in yellow) in the attic must link up fully with the insulation on the external wall to avoid cold bridging.*
- 2. The blue arrows indicate how the flow of ventilation is maintained from the eaves, up and over the insulation and into the attic ensuring that all the timbers, including that of the eaves and the rafters in the attic, are kept healthy and dry.*



*Vapour Barrier applied carefully to underside of Rafters in attic to prevent moisture getting in. This also requires a ventilation space above the insulation to avoid interstitial condensation.  
Image courtesy of Isover, Saint Gobain*