

This pressure is completely independent of that in the air. For example, a typically cold foggy British winter's day (a green light for condensation) may have an outside temperature of 5°C and humidity at 100%, while the inside temperature is at a comfortable 20°C. Keeping the inside relative humidity to 70% generates a difference between inside and outside moisture vapour pressure of 8 millibars, ample to alleviate condensation, all this with little or no heat loss. For background ventilation of habitable rooms the Building Regulations require that a ventilation opening should have a total area of not less than 8,000mm² and that openings should be controllable, secure and located to avoid draughts. The Passyfier Vent provides an opening on a section normal to the airflow direction with an effective area well in excess of the minimum requirement. Air flow through the opening is controlled automatically by the tortuosity of the intervening mineral wool which is transparent to the flow of water vapour, and also avoids undue draughts. It is important to realise that the reduction of moisture vapour pressure to avoid condensation within a dwelling does not require a specific ventilation rate. The pressure within a dwelling is always higher than on the outside during the condensation season, and the moisture vapour escapes by diffusion through Passyfier Vents, which have been tested by ADAS for airflow rate versus applied pressure difference.

The diffusion process is slow compared with mechanical ventilation and would not cope with a copious amount of water vapour produced in a short time scale in kitchens and bathrooms without the additional use of mechanical ventilation. Its main use is in habitable rooms where it operates continuously without noise 24 hours per day and can extract up to 2.3 litres of water per day even at low vapour pressures.

If the relative humidity of the room is say 70%, above which condensation will occur at 20°C, each kg of air would hold 0.0104kg of water. At a recommended maximum velocity of 0.9m/sec (recommended by local authorities to avoid a perceived draught) for air flow through the Passyfier, it could transmit 0.023m³/day. At a more typical air flow velocity of 0.09m/sec a Passyfier Sleeved Vent Kit would still transmit 2.3 litres of water per day.

