



## **CONDENSATION MANAGEMENT Changes to the BCA 2019**

The 2019 BCA introduces new requirements for condensation management in Class 1 buildings, Class 2 buildings and Class 4 parts of buildings where buildings must be designed to mitigate the risks associated with the amount of moisture that accumulates internally.

In order to provide some clarification for builders and designers please note the following extracts from the BCA Guide 2019:-

The new condensation management provisions aim to limit the amount of condensation that can accumulate within a building by requiring that water vapour be extracted to a point external to the building. It only applies to residential building classifications which are considered to be more susceptible to the accumulation of moisture due to the building's intended function and use. The majority of moisture within a building is produced from washing (bathrooms and laundries) and cooking.

Condensation is a physical phenomenon that occurs naturally wherever and whenever the physical conditions are conducive. Mould often grows where condensation forms within the built environment. The principle physical drivers are air pressure, temperature and humidity. These same physical conditions can occur within all built structures, in all climate types within the building (its internal environment), within its intermediate zones (subfloor and roof space zones) and within the building structure (floor, walls, ceilings and roofing materials). These natural processes cannot be stopped from occurring where these conditions exist. However, buildings can be designed, constructed and used in a way that manages vapour pressure, condensation risk and subsequent mould growth.

Human occupation of a residential building creates approximately 10 litres of water vapour per person per day. In an average family home with two adults and one child this equates to 30 litres of water vapour within the built fabric per day. This comes from people breathing, cooking, boiling water, washing and bathing. The shift from unconditioned to conditioned homes and the requirements for wall and ceiling insulation have significantly impacted on the internal climate of homes and the potential for condensation to occur. This is primarily due to less air changes within the home and occupants being less likely to open windows and doors when the air-conditioning is running. Modern buildings are also much better sealed due to advances in building materials and systems.

Interstitial condensation can affect the structural integrity of a building but its presence often goes undetected until such time as the cost to remedy becomes significant. The most effective means to reduce the problem of interstitial condensation is to provide a pathway for water vapour that avoids accumulation of condensation. To remove the risks associated with condensation and to

maintain indoor air quality, moisture laden air needs to be removed from the building and expelled out to the external environment.

The design, construction and use of a building can create conditions that lead to a building experiencing prolonged periods of damp, which leads to poor indoor environmental qualities, (potentially affecting occupant health) mould, and building degradation. Occupant behaviour, for example opening windows and doors to ventilate the building, can significantly impact a building's indoor air quality but cannot be regulated by the NCC. The condensation management requirements were included in the 2019 NCC series to assist in addressing the risks associated with condensation in residential buildings.

**Installation of pliable building membrane** – sarking is considered to be a pliable building membrane. All pliable building membranes must comply with AS/NZS 4200.1 and be installed in accordance with AS 4200.2. In climate zones 6, 7 and 8 pliable membranes must be vapour permeable to assist in the transfer of moisture from the internal to the external environment. This recognises the higher level of risk associated with the build-up of internal moisture in colder climates particularly due to the inadequate ventilation of internal spaces. Any pliable building membrane must be installed with suitable provision to allow for the drainage of accumulated condensate to a drainage point external to the wall.

Where a pliable building membrane is not installed a drained cavity must be installed.

**Discharge of exhaust systems** – a kitchen, bathroom, toilet and laundry exhaust fan must achieve specified minimum airflow rates. Requiring higher minimum airflow rates for kitchens and laundries recognises the potential for much greater air moisture in the room and therefore the increased risk of condensation. This provision also requires that the specified exhausts discharge to the external environment or into a ventilated roof space as specified.

**Ventilation of roof spaces** – a roof space must be ventilated where exhausts are discharged directly into it. The provisions regulate the minimum unobstructed vented areas and locations relative to the pitch of the roof. Providing regularly distributed vents at both upper and lower levels assists in providing adequate cross flow ventilation.

Due to the introduction of these new condensation management provisions within the Building Code of Australia 2019; please note the following new certificate that will be required from the builder, or suitably qualified person, upon the completion of works and prior to the issue of an Occupation Certificate.

Note that this will apply to all Construction Certificate and Complying Development Certificate Applications received on or after 1<sup>st</sup> May 2019.

Condensation Management –

Certification from the builder, or suitably qualified person, as to compliance with Part 3.8.7 of BCA 2019, Volume 2 for a Class 1 building or Part F6 of BCA 2019, Volume 1 for a Class 2 building or Class 4 part of a building , specifically stating that:-

- Where a pliable building membrane has been installed in an external wall, that it complies with:
  - AS/NZS 4200.1; and
  - has been installed in accordance with AS 4200.2; and
  - if in Climate Zones 6, 7 or 8 – is a vapour permeable membrane; and
  - is located on the exterior side of the primary insulation layer of wall assemblies that form the external envelope of the building

- Except for single skin masonry or single skin concrete, where a pliable building membrane is not installed in an external wall, the primary water control layer is separated from water sensitive materials by a drained cavity.
- Any exhaust system from a bathroom or sanitary compartment has a minimum flow rate of 25L/s
- Any exhaust system from a kitchen or laundry has a minimum flow rate of 40L/s
- All exhaust from a bathroom, sanitary compartment or laundry is discharged directly via a shaft or duct to outdoor air; or is discharged into a roof space that is ventilated in accordance with the following:
  - The roof space is ventilated to outdoor air through evenly distributed openings
  - Such openings have a total unobstructed area of 1/300 of the respective ceiling area if the roof pitch is more than 22°, or 1/150 of the respective ceiling area if the roof pitch is not more than 22°
  - 30% of the total unobstructed area is located not more than 900mm below the ridge or highest point of the roof space, measured vertically, and the remaining required area is provided by eave vents

If you require further information please contact our office on 4933 5626 during normal working hours.

#### Further Information

- [www.acrocert.com.au/contact-us](http://www.acrocert.com.au/contact-us)
- <https://www.abcb.gov.au/ABCB/Contact-Us>



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