Condensation management considerations for ventilation of roof spaces (NCC 2025 Volume 2)

The National Construction Code (NCC) 2025 ABCB Housing Provisions Part 10.8.3 Ventilation of Roof Spaces has been expanded since NCC 2022 Volume 2 and is now split into 2 separate clauses for differing roof types. Clause 10.8.3 refers specifically to roofs where the insulation is not parallel to the primary insulation and Clause 10.8.4 where a roof is parallel to the primary insulation layer. These clauses list the individual requirements to meet deemed to satisfy for the specific construction type. These clauses are specifically applicable to climate zone 6, 7 & 8 only.

10.8.3 Ventilation of a roof space with the primary insulation layer not parallel to the roof plane

1. *In climate zone 6, 7 and 8, a roof must have a roof space that:*
   - **(a)** *has a height of not less than 18 mm at any point between the primary insulation layer and the underside of the roof or a control layer; and*
   - **(b)** *is located immediately above the primary insulation layer; and*
   - **(c)** *is ventilated to outdoor air in accordance with Table 10.8.3.*

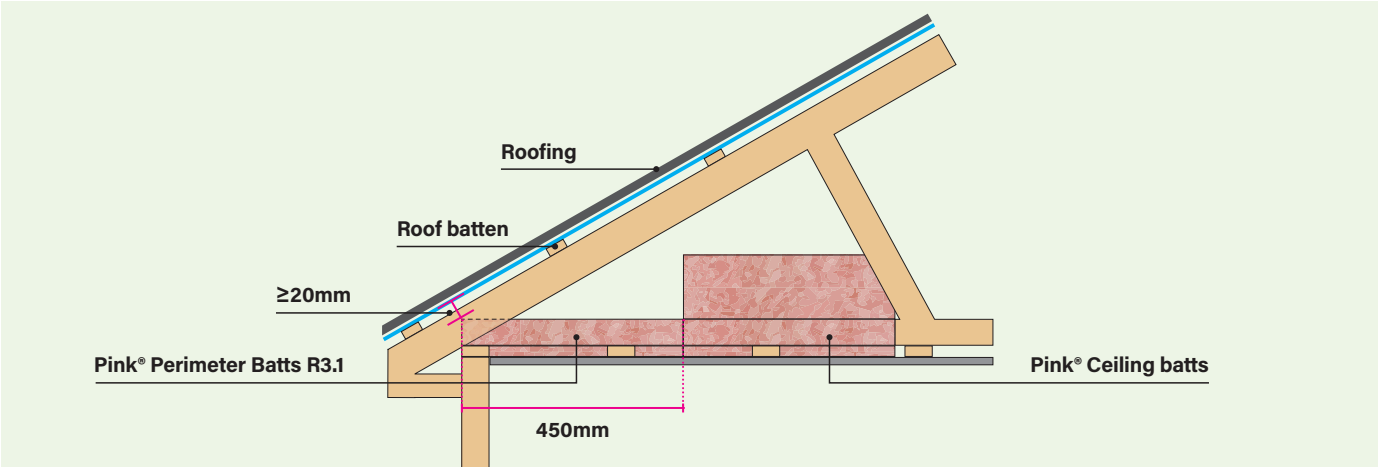
To meet Part 10.8.3:

Standard hip and gable roofs will generally have a roof space ≥20mm above the primary insulation and the underside of the roofing plane.

Recommendation (Metal Roof): Metal Roof allows the option to add Sisalation® products or Resituff® blanket in a metal roof system to gain an additional thermal performance. In this system type it is important to ensure that adequate ventilation is provided to roofing at the eaves or low level and/or ridge or high level as per the requirements of Table 10.8.3 above the primary insulation layer (Pink® Ceiling Batts) and below the Select Roofing/Blanket/Sarking.

Recommendation (Sarked Tile Roof): Where a tile roof has Sisalation Multipurpose EHD 456 installed ensure adequate ventilation is provided to roofing at the eaves and/or ridge as per the requirements of Table 10.8.3 above the primary insulation layer (Pink® Ceiling Batts).

Figure 10.8.3: Example of roof space with low level ventilation



Considerations:

- At the perimeter, a minimum of an R3.1 Pink Perimeter batt or greater is strongly recommended. Pink Perimeter Insulation has been developed to ensure the minimum 20mm gap is kept between the roofing/pliable building membrane and the product (see figure 10.8.3) in most scenarios. It is important to note that a lower R-value batt at the perimeter will drive the need for higher R-value Batts around the rest of the ceiling to compensate.
- Please note where metal framed housing is required to meet NCC Vol 2 Housing provision 13.2.3 (4), the vapour permeance of each layer is required to have a vapour permeance no less than the primary insulation layer. Use of two layers of Pink® Batts is strongly recommended.

Table 10.8.3: Roof space ventilation requirements

Roof pitch	Ventilation openings
< 10°	20,000mm²/m provided at eaves or low level, or at each of two opposing ends for gable roofs.
	For roofs less than 10m², 7,000mm²/m provided at eaves or low level roof perimeter and 5,000mm²/m provided at ridge or high level for skilion roofs.
	20,000mm²/m provided at the eaves or low level and 5,000mm²/m provided at ridge or high level for skillion roofs.
≥ 10° and < 75°	7,000mm²/m provided at the eaves or low level and 5,000mm²/m provided at high level or ridge.

Table notes

1. Ventilation openings are specified as a minimum free open area per metre length. The longest total plan dimension is based on the roof length irrespective of the number of storeys beneath.
2. Total low level ventilation openings are calculated based on twice the longest total plan dimension of the roof except for mono pitch or skillion roofs that are calculated based on the longest total plan dimension of the roof. Total high level ventilation is calculated based on the longest total plan dimension of the roof.
3. High level openings are openings provided at the ridge or not more than 900mm below the ridge or highest point of the roof space, measured vertically or 1/3 of the height of the roof below highest point of the roof, whichever is least.

10.8.4 Ventilation of a roof space with the primary insulation layer parallel to the roof plane

1. *In climate zones 6, 7 and 8, a roof system with the primary insulation layer installed parallel to the roof plane must have a roof space that:*
   - **(a)** *is located immediately above:*
     - **i.** *the primary insulation layer; or*
     - **ii.** *any control layer installed immediately above the primary insulation layer; and*
   - **(b)** *is not obstructed by insulation; and*
   - **(c)** *has a height not less than 18mm as measured perpendicular to the plane of the roof; and*
   - **(d)** *for roofs less than 10m², is ventilated to outdoor air through openings not less than:*
     - **i.** *7,000mm²/m provided at eaves or low level; and*
     - **ii.** *5,000mm²/m at the high level or ridge; and*
   - **(e)** *for all other roofs, is ventilated to outdoor air through openings not less than:*
     - **i.** *20,000mm²/m provided at the eaves or low level; and*
     - **ii.** *5,000mm²/m at the high level or ridge.*

2. *Where a control layer is installed immediately above the primary insulation layer in climate zones 6, 7 and 8, it must have a vapour permeance of not less than 1.14 µg/N.s.*

To meet Part 10.8.4(1)(a)(i):

Recommendation: Where there is limited roof cavity such as in cathedral and skillion type roofs, a 20mm air gap must be provided between the primary insulation layer (Generally Pink® Ceiling Batts) and the roof. This may be achieved with the use of suitable ventilation systems. The ventilation must be provided at the low or eaves level and high or ridge level, as per the requirements of 10.8.4(d) or (e) where applicable.

Figure 10.8.4b (explanatory): Example of a roof space in accordance with 10.8.4(1)(a)(i)

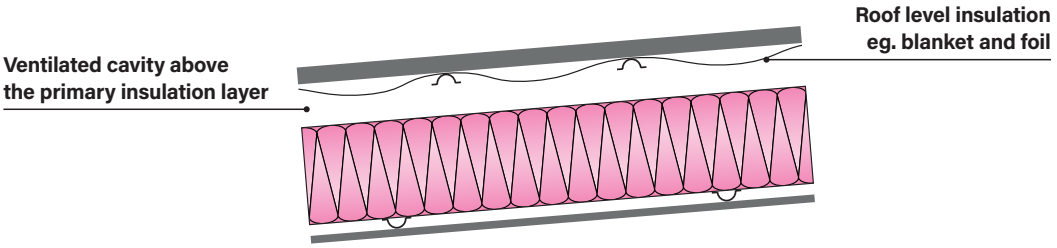


Figure notes

1. Roof space above the primary insulation layer.
2. Roof level insulation, eg. blanket and foil.

To meet Part 10.8.4(1)(a)(ii):

Recommendation (metal roof only): Sisalation® Vapawrap™ Vapour Permeable Metal Roof with a ≥18mm ventilated cavity above the membrane meeting the requirements of 10.8.4(d) or (e) where applicable. It may be possible to achieve this with a corrugated metal roof and a sufficiently ventilated ridge or alternatively a ventilated batten system.

Figure 10.8.4c (explanatory): Example of a roof space in accordance with 10.8.4(1)(a)(ii)

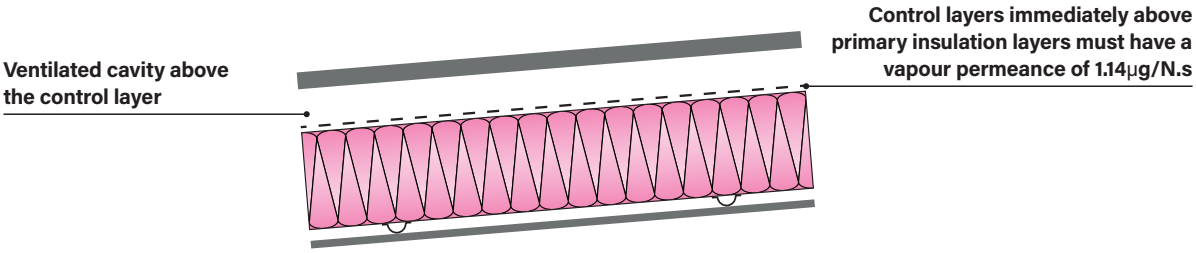


Figure notes

1. Roof space above the control layer, water barrier or sheathing.
2. Control layers immediately above primary insulation layer must have a vapour permeance of 1.14 µg/N.s.

The requirements of 10.8.3 (1) & 10.8.4 (1) do not apply to a:

(a) concrete roof; or
(b) roof that is made of structural insulated panels with or without an additional ceiling lining; or
(c) roof that is subject to Bushfire Attack Level FZ requirements in accordance with AS 3959.
(a) tiled roof without a control layer located above the primary insulation layer.

Please note: It is strongly recommended the selected roofing and/or ventilation manufacturer is consulted to ensure compliance is met.