

VENTILATION OF TILED ROOFS

[A STEP BY STEP GUIDE]



VENTILATION OF TILED ROOFS

How to comply with the NCC 2022



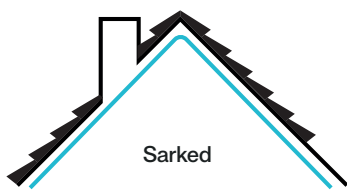
NCC 2022 REQUIREMENTS

In cool climates, condensation can occur in roof spaces due to temperature differentials between the interior and exterior environments. Adequate ventilation is crucial in these spaces to mitigate condensation by allowing moist air to escape, thereby preventing the buildup of moisture which can lead to mould growth and structural damage. The National Construction Code (NCC) 2022 has addressed this critical issue with new Condensation Management Provisions. These provisions apply to buildings in Climate Zones 6, 7 and 8 and are as follows:

- (1) In climate zones 6, 7 and 8, a roof must have a roof space that—
- (a) is located—
 - (i) immediately above the primary insulation layer; or
 - (ii) immediately above sarking with vapour permeance of not less than 1.14 ug/N.s, which is immediately above the primary insulation layer; or
 - (iii) immediately above ceiling insulation that meets the requirements of 13.2.3(3) and 13.2.3(4); and
 - (b) has a height of not less than 20 mm; and
 - (c) is either—
 - (i) ventilated to outdoor air through evenly distributed openings in accordance with Table 10.8.3; or
 - (ii) located immediately underneath the roof tiles of an unsarked tiled roof.
- (2) The requirements of (1) do not apply to a—
- (a) concrete roof*; or
 - (b) roof that is made of structural insulated panels; or
 - (c) roof that is subject to Bushfire Attack Level FZ requirements in accordance with AS 3959.

Note: A concrete roof does NOT include a tiled roof comprising of concrete roof tiles.

HOW TO COMPLY?



Sarked

Vent as per Table 10.8.3



Unsarked

No additional Requirements



ABC Housing Provisions Table 10.8.3

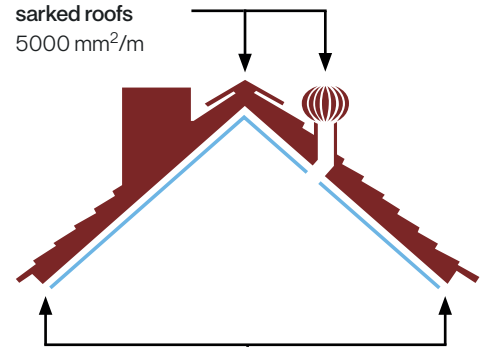
Roof Pitch	Ventilation Openings
< 10°	25,000 mm ² /m provided at each of two opposing ends
≥ 10° & < 15°	25,000 mm ² /m provided at the eaves and 5,000 mm ² /m at high level
≥ 15° & < 75°	7,000 mm ² /m provided at the eaves and 5,000 mm ² /m at high level, plus an additional 18,000 mm ² /m at the eaves if the roof has a cathedral ceiling

Table Notes:

- Ventilation openings are specified as a minimum free open area per metre length of the longest horizontal dimension of the roof.
- For the purposes of this Table, high level openings are openings provided at the ridge or not more than 900 mm below the ridge or highest point of the roof space, measured vertically.

REQUIREMENTS FOR SARKED TILED ROOFS (≥ 15°)

Ventilation opening requirements for sarked roofs
5000 mm²/m



7000 mm²/m at each of the eaves

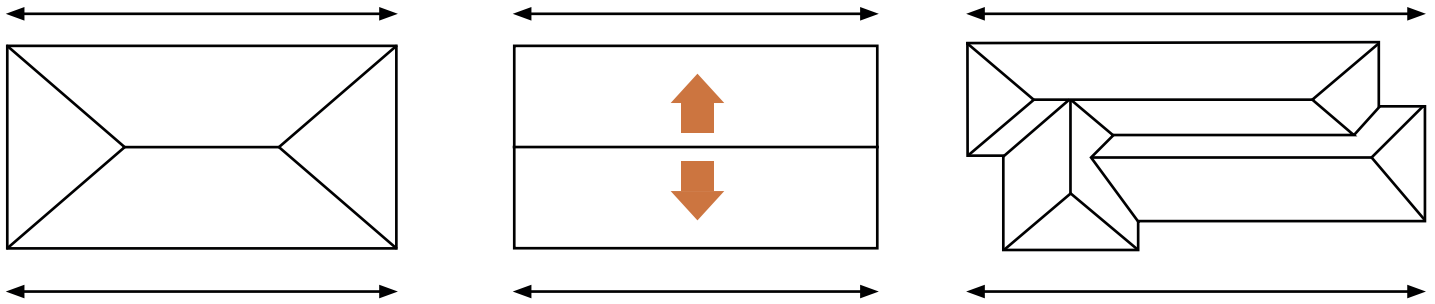
Note: For mansard roofs with mixed pitches, the lowest pitch should be selected for compliance to Table 10.8.3.

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LONGEST HORIZONTAL DIMENSION

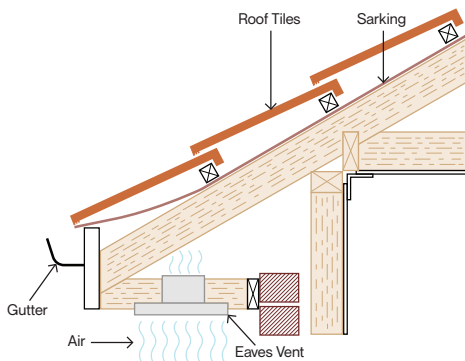
This is the longest distance from one edge of the roof to the other in one direction as below:



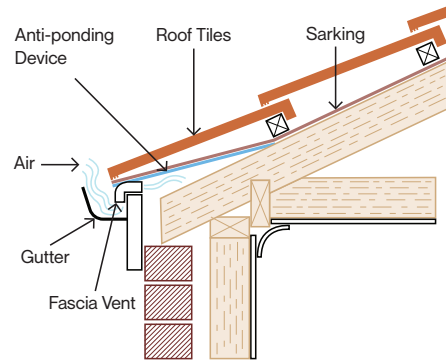
EAVES VENTILATION

This ventilation is provided at the eaves level. It can include any combination of:

Soffit Ventilation:



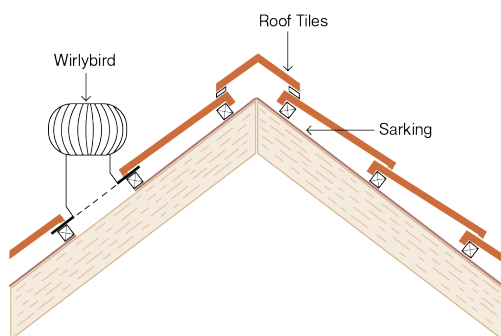
Fascia Ventilation:



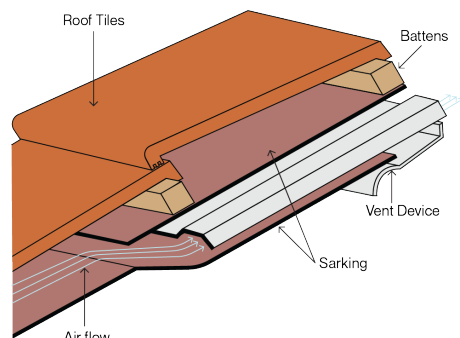
HIGH LEVEL VENTILATION

This is ventilation that is provided within 900 mm of the top-most part of the roof. This includes:

Ventilator Devices:



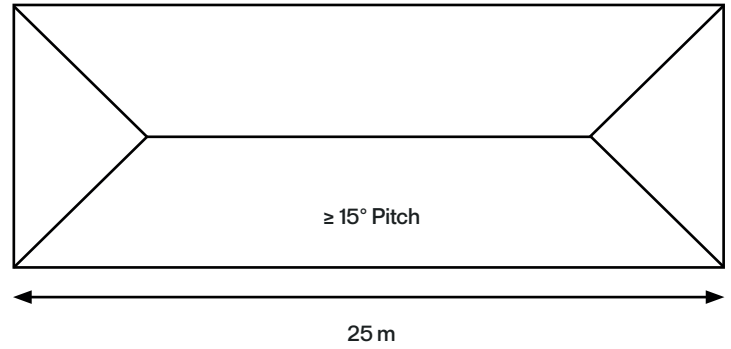
Lap Vents and evenly spread High level Vents:



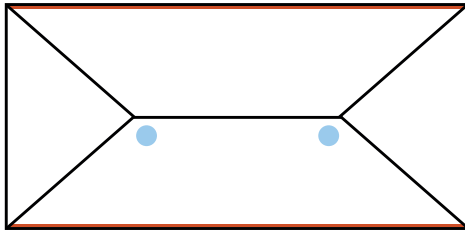
DTS WORKED EXAMPLE, SARKED TILED ROOF WITH $\geq 15^\circ$ PITCH

Please refer to the ABCB Housing Provisions Table 10.8.3 on page 2.

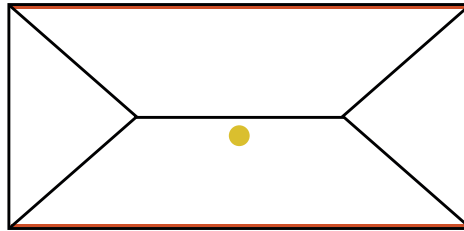
Note: The products or systems referred to in this document are examples of compliance only. Building designers should refer to ventilator device manufacturers to determine the most suitable ventilation solutions for their tiled roof.



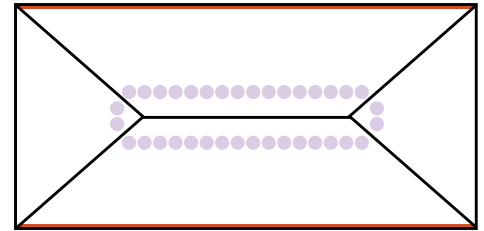
POSSIBLE SOLUTIONS FOR 25 M ROOF ($\geq 15^\circ$ PITCH)



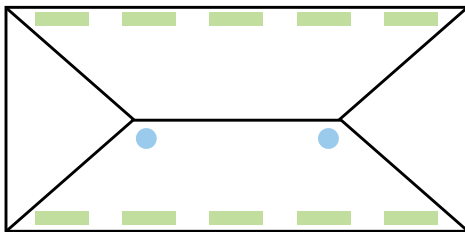
(1) + (A)



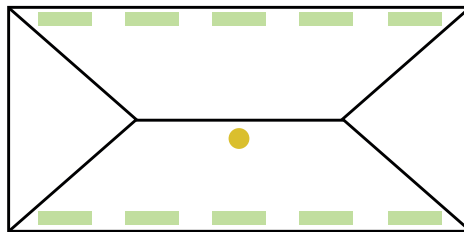
(1) + (B)



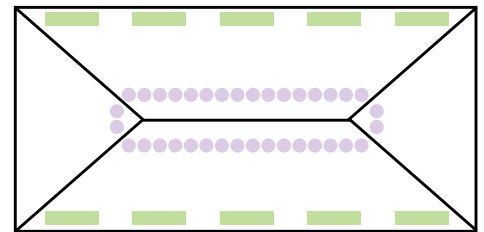
(1) + (C)



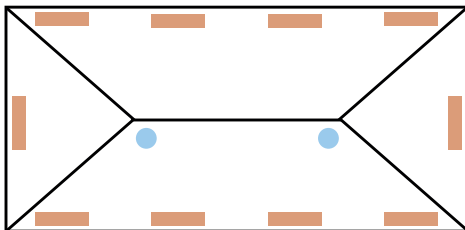
(2) + (A)



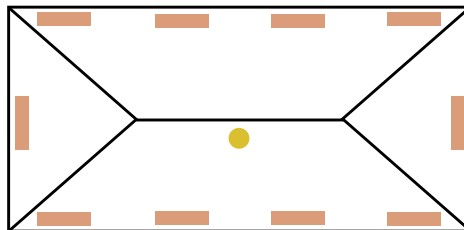
(2) + (B)



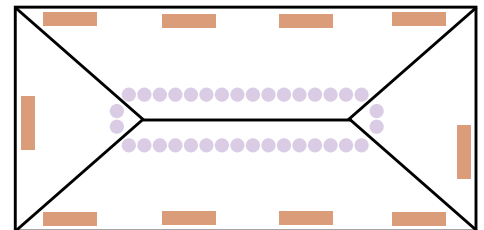
(2) + (C)



(3) + (A)



(3) + (B)



(3) + (C)

LOW LEVEL (EAVES LEVEL) VENTILATION

$25 \times 7000 \text{ mm}^2/\text{m} = 175,000 \text{ mm}^2$ of vent area per each long side of roof
= **350,000 mm² TOTAL**

(1) CONTINUOUS EAVES/FASCIA VENTS

Use a continuous eaves/fascia vent product (Vent Systems) with an open area of $\geq 7000 \text{ mm}^2/\text{m}$ on both eaves

(2) EVENLY SPACED LOW LEVEL VENTS (2 SIDES)

One vent opening = $35,000 \text{ mm}^2$ (Bradford) Therefore roof needs $350,000 / 35,000 = 10$ vents in total on 2 sides

(3) EVENLY SPACED LOW LEVEL VENTS (ALL SIDES)

One vent opening = $35,000 \text{ mm}^2$ (Bradford) Therefore roof needs $175,000 / 35,000 = 5$ vents in total on 4 sides

HIGH LEVEL (RIDGE) VENTILATION

$25 \times 5000 \text{ mm}^2/\text{m} = 125,000 \text{ mm}^2$ of vent area required
(within 900 mm below the highest point of the roof)
= **125,000 mm² TOTAL**

(A) WIND POWERED VENTILATOR

Use a continuous eaves/fascia vent product (Vent Systems) with an open area of $\geq 3500 \text{ mm}^2/\text{m}$ on opposite eaves (to achieve $7000 \text{ mm}^2/\text{m}$)

(B) POWERED VENTILATOR

One AiroMatic ventilator = $250,000 \text{ mm}^2$ (Bradford)
Roof needs $125,000 / 250,000 = 1$ vent only

(C) Evenly Spaced High Level Spaced Vents

One high level lap vent = $3,000 \text{ mm}^2$ (Vent Systems)
Roof needs $125,000 / 3,000 = 42$ vents (evenly spaced)