Roof Void Ventilation – Building Regulations

Freefoam Product Specifications:

F109 – 5m Vent Strip – Equivalent to 25mm continuous ventilation
FCV – Circular Vent – Equivalent to 10mm continuous ventilation (fitted at 250mm centres)
FVENT10 – 10mm Over Fascia Vent Strip – Provides 10mm continuous ventilation
FVENT25 – 25mm Over Fascia Vent Strip – Provides 25mm continuous ventilation
FPEP3 – Over Fascia Vented Eaves Protector – Equivalent to 10mm continuous ventilation
GPBV – Ventilated Soffit Board – Equivalent to 10mm continuous ventilation
GPBDV – Double Ventilated Soffit Board – Equivalent to 25mm continuous ventilation

Roof Ventilation


Here are the key points of these requirements:

Condensation
The requirement of Approved Document F2 is that condensation is reduced in order that it will not cause damage to the structural or thermal properties of materials in a roof. Dampness is caused by: weather, interstitial condensation, surface condensation, and construction water (in wet constructions).

Roof Ventilation
Roof ventilation is necessary to avoid the problem of condensation. Adequate cross ventilation is required, with openings placed on the longer sides of a typical rectangular roof. This eaves to eaves roof ventilation relies on wind power. In most cases the roof ventilation system is improved by utilising the natural thermal upflow of air in a roof void. This eaves to ridge ventilation also avoids the problem of stagnant air pockets due to inadequate through-flows.

Warning: high level roof ventilation should never be used on its own as the suction effect created could increase water vapour transfer into the roof void.

Roof ventilation should provide a continuous weatherproof path from roof void to the outside. Openings must not be blocked by dust or debris, and ingress of rain, snow, birds and large insects must be prevented. Mesh size of 4mm is recommended by BS5250, it is small enough to prevent entry by nesting insects, birds etc. yet is large enough to prevent blockage, provide adequate air movement and avoid excessive airflow restraint.

Roof ventilation is recommended in all circumstances. NRFC bulletin 20 states: ‘any water vapour transmission benefit of a vapour permeable roofing underlay cannot on its own eliminate roof space condensation. Any water vapour transmission benefit should be treated as fortuitous.’ Where a vapour permeable underlay is used, it should therefore be in addition to, rather than in place of, ventilation of the roof void.
Ventilation openings can be sited at intervals, they should be of equivalent area to a continuous opening:

- 5mm air gap = 5,000mm² /m ventilation
- 10mm air gap = 10,000mm² /m ventilation
- 25mm air gap = 25,000mm²/m ventilation

### Applications Of Building Regulations

**Pitched Roof - Ceiling and Insulation Horizontal**

**Open Roof Void**

Building Regulations state: where the void is open, eaves to eaves air flow is effective, along the longer sides of the building. Brett Martin recommend the use of high level ventilation in addition to eaves ventilation in all cases – as it utilises the natural thermal uplift in a roof void. Eaves to eaves roof ventilation relies on the wind conditions which can result in poor through flow and stagnant air pockets.

![Diagram of ventilation options for pitched roofs](image)

**PITCH 15° or less**
USE: eaves vents OR: low level slate/tile vents 25mm air gap

**PITCH 15° or greater**
USE: eaves vents OR: low level slate/tile vents 10mm air gap
In addition BS 5534 recommend:
USE: ridge vents OR: high level slate/tile vents 5mm air gap

**PITCH 35° or greater OR: WIDTH 10m or more**
USE: eaves vents OR: low level slate/tile vent 25mm air gap
AND: ridge vent 5mm air gap
OR: high level slate & tile vents
5mm air gap each side

**Steep or Wide Buildings**

In addition to eaves vents, increased ventilation must be provided by high level openings. These are necessary to avoid stagnant air pockets due to inadequate through flow. In particular for roof slopes steeper than 35°, or for buildings more than 10 metres wide, high level roof ventilation is required.

**Single Pitch Roofs**

Use ventilation at the eaves and at the abutment.

![Diagram of ventilation options for single pitch roofs](image)

**PITCH 15° or less**
USE: eaves vents
OR: low level slate/tile vents 25mm air gap
AND: high level slate/tile vents 5mm air gap
**PITCH 15° or greater**

**USE:** eaves vents OR: low level slate/tile vents 10mm air gap

**AND:** high level slate/tile vents 5mm air gap

---

**Air Flow**

Where eaves ventilation is provided care should be taken to prevent insulation blocking off air flow to roof.

**USE:** rafters trays

10mm/25mm air gap

---

**Pitched Roof - Ceiling and Insulation Inclined**

Where the insulation follows the line of the roof, it is necessary to ventilate both at low and high levels. An air gap of at least 50mm must be maintained between the underlay and insulation all the way along the inside of the roof in order to prevent air resistance in this area. Where joists run at right angles to the air flow, use counter battens.

---

**Air Flow Between roofing underlay and insulation**

**USE:** eaves vents OR: low level slate/tile vents 25mm AND: ridge vent 5mm OR: high level slate / tile vents 5mm each side

---

**Pitched Roof - Obstruction in Roof**

All isolated parts of the roof should have ventilation provision. Where an obstruction in the ventilation path occurs, such as at roof lights or at changes in pitch, the roof void should have additional ventilation openings.

---

**Obstruction outside inclined ceiling**

Immediately below the obstruction 5mm

Immediately above the obstruction 10mm

**Obstruction within inclined ceiling**

Immediately below the obstruction 5mm

Immediately above the obstruction 25mm

---

**Pitched Roof - Dormers**

Pitched type dormer roofs should be ventilated from eaves to eaves. Flat type dormer roofs should be ventilated from eaves to ridge of the main roof.
Pitched Type Dormer
USE: eaves vents OR: low level slate/tile vents 10mm

Flat Type Dormer
USE: eaves vents 25mm

Main Roof
USE: ridge line 5mm OR: high level slate / tile vents 5mm each side AND: eaves vents / low level slate/tile vents 25mm