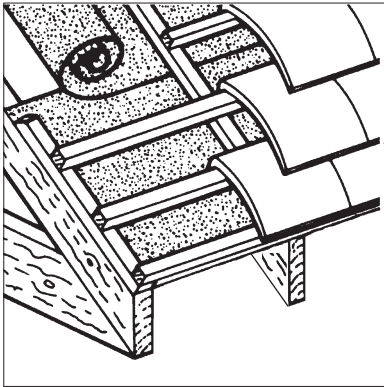


## Product



- THIS DETAIL SHEET RELATES TO VAPR-FREE IN NON-VENTILATED COLD PITCHED ROOF SYSTEMS.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the products' position regarding the Building Regulations and general information relating to the product, and the Conditions of Certification.

## Design Data

### 1 General

1.1 VapR-free is satisfactory for use in dwellings with non-ventilated tiled or slated roofs of any conventional plan and of any size. Features<sup>(1)</sup> successfully assessed include:

- duo pitched
- mono-pitched
- hipped
- mansard
- gable ends
- verges
- abutments
- valleys
- room in roof
- dormers
- timber sarking<sup>(2)</sup>.

- (1) For roofs incorporating other features, non-conventional roof geometries or construction materials, the advice of the Certificate holder should be sought.
- (2) As Scottish practice, with slates nailed through the breather membrane directly onto timber planks (nominally 150 mm wide with a 2 mm gap) without battens.

1.2 The product can be installed by draping over rafters and securing with tiling battens, or installed taut over rafters and secured with counter battens and tiling battens.

1.3 In conventionally-ventilated roof constructions, energy loss by ventilation can account for up to 25% of the total heat lost through the roof. The non-ventilated system will substantially reduce this mechanism of heat loss.

1.4 In non-ventilated roof systems, the risk of condensation is equivalent to, or less than, that attending conventionally-ventilated cold roof systems.

### 2 Strength

The product will resist the loads associated with installation and may be considered at least equal in strength to Types 1F and 5U reinforced bitumen underlay as defined in BS 747 : 2000.

### 3 Wind loading

3.1 Project design wind speeds should be determined and wind uplift calculated, in accordance with BS 6399-2 : 1997.

3.2 Wind loading on the underlay should be calculated in accordance with BS 5534 : 2003, Section 5.5.2.7 (see Table 3 of Detail Sheet 1 for acceptable wind load with specific batten spacings for draped product using a 25 mm deep tiling batten).

### 4 Risk of condensation



4.1 Typical values for water vapour resistance are given in Table 1.

Table 1 Water vapour resistance

Material	Vapour resistance (MNsg <sup>-1</sup> )
VapR-free	0.25 (maximum)
Traditional felt underlay	570 (maximum)
Polyethylene sheet (0.15 mm)	450

4.2 The complete roof construction, ceiling boards to roof tiles, must be considered as a total system with regard to condensation risk. It is important that the products are laid in accordance with the Certificate holder's instructions and this Certificate to prevent excessive condensation as defined in the national Building Regulations and Standards thus:

### England and Wales

Approved Document F

### Scotland

Technical Standards, Part G of the Provisions deemed to satisfy the Standards

### Northern Ireland

Technical Booklet C.

4.3 All penetrations into and out of the roof space must be properly sealed in accordance with the Certificate holder's instructions. Vent stacks, boiler flues, for example, passing through the roof space must additionally be sealed along their length.

4.4 Subsequent penetrations into the roof space must be properly sealed to ensure the integrity of the non-ventilated cold pitched roof system is maintained. This can be achieved by the use of a butyl adhesive tape.

4.5 It is essential to limit the rate of water vapour transfer into the loft space from the dwelling below. Appropriate measures include:

- the dwelling below the roof must be ventilated in accordance with national Building Regulations and Standards for the dispersal and rapid dilution of water vapour
- for rooms that may experience high humidity, such as kitchens, utility rooms and bathrooms — the ventilation rates should be in accordance with the guidance documents supporting current national Building Regulations and Standards
- all water tanks in the loft space must be covered and all pipework lagged
- ceiling penetrations must be sealed and loft hatches made convection tight by using a compressible draught seal.

4.6 For additional protection, the use of a vapour control layer/vapour check plasterboard can be considered.

## Installation

### 5 General

5.1 VapR-free in Non-Ventilated Cold Pitched Roof Systems must be installed and fixed in accordance with the Certificate holder's instructions, this Certificate and the relevant recommendations of BS 5534 : 2003 and BS 8000-6 : 1990. Installation can be carried out under all conditions normal to roofing work.

5.2 In open eaves construction, it is recommended to use eaves guards, eg VapR-free Eaves Carrier<sup>(1)</sup>, to conduct water into the gutter.

(1) Outside the scope of this Certificate.

### 6 Procedure

#### Draped and loose laps

6.1 The underlays should be installed as an unsupported system, and fixed in the traditional method for roof tile underlays, ie draped between the rafters.

6.2 Overlaps must be provided with the minimum dimensions given in Table 2.

Table 2 Minimum overlaps

Roof pitch (°)	Horizontal lap (mm)	Vertical lap (mm)
12.5 to 14	225	100
15 to 34	150	100
35+	100	100

#### Taut

6.3 The underlays should be laid either vertically, eaves to eaves, or horizontally, parallel to the eaves. In both instances the underlay must be pulled taut and not allowed to drape. Each sheet of underlay should be stapled to hold it in position prior to the counter battens being fixed.

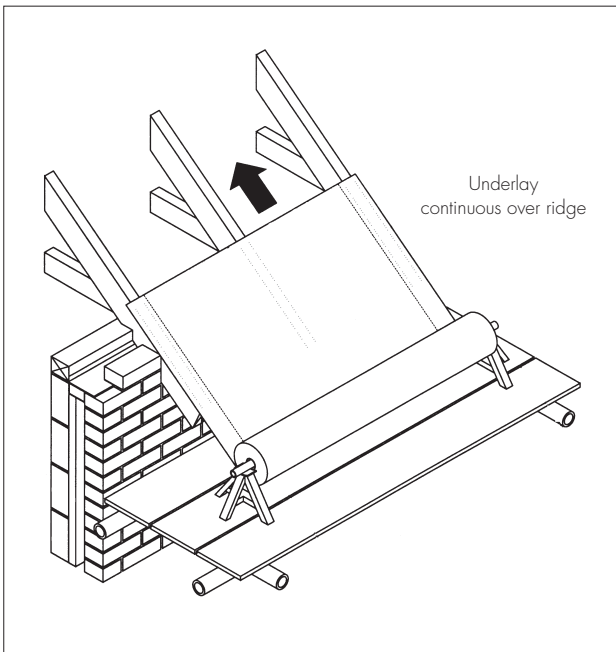
#### Taut — Parallel-to-eaves installation

6.4 When laid horizontally, the products must be pulled taut and not draped from gable to gable and stapled or nailed to hold securely in position. Counter battens (minimum thickness 25 mm) are then fixed to the rafter.

#### Taut — Eaves-to-eaves installation

6.5 Using the method shown in Figure 1, the products should be supported by a bar and stand, and the end of the product drawn up and over the ridge and down to the opposite eaves, keeping the product taut (see Figure 1). Each sheet of underlay is stapled to hold it in position prior to the counter battens being fixed.

Figure 1 Eaves-to-eaves installation



6.6 The underlay is cut off with a knife, and the supports moved along at each repeat of the procedure.

6.7 The edge laps of the underlay should be formed on rafters and secured to them by counter battens (minimum thickness 25 mm) fixed at 300 mm centres. The battens for tiling are fixed to the counter battens leaving an air space between the underlay and the tiles for drainage and natural air movement for moisture dispersal.

6.8 Detailing of abutments, verges and hips must be in accordance with the Certificate holder's instructions.

### Timber plank sarking

6.9 For fully supported roofs (traditional Scottish), the slates can be nailed through the underlay into the timber plank sarking, normally 150 mm wide with a 2 mm gap.

## 7 Finishing

7.1 Detailing of abutments, verges and hips must be in accordance with the Certificate holder's instructions.

7.2 To achieve a convection-tight loft space, it is important that the following details are maintained (see also section 4.5 of this Detail Sheet):

- all penetrations, eg pipework, electrical fittings to the loft space, must be sealed
- the loft hatch must be securely sealed to ensure a draught-free fit
- the insulation must be pushed into the eaves and against the underlay to avoid gaps.

7.3 The tiling and slating must be carried out in accordance with the relevant clauses of BS 5534 : 2003, BS 8000-6 : 1990 and the Certificate holder's instructions, especially when using tightly-jointed slates or tiles.

## Bibliography

BS 747 : 2000 *Reinforced bitumen sheets for roofing — Specification*

BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*

BS 8000-6 : 1990 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*



On behalf of the British Board of Agrément

Date of issue: 12th October 2004

Chief Executive

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