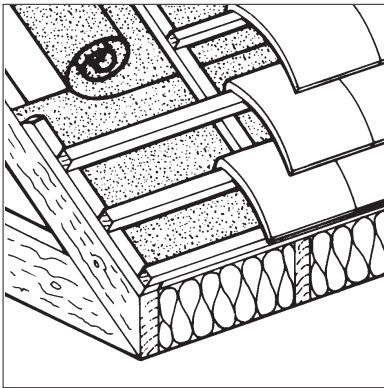


## Product



- THIS DETAIL SHEET RELATES TO VAPR-FREE IN WARM 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 as an underlay in tiled and slated warm pitched roofs constructed in accordance with the relevant clauses of BS 5534 : 2003.

1.2 The product is installed directly over insulation and secured with counter battens or, if draped over the counterbattens, the tiling battens.

### 2 Strength

The product will resist the loads associated with installation and, for design purposes, may be considered equal in strength to a Type 1F reinforced bitumen underlay as defined in BS 747 : 2000.

### 3 Wind loading

3.1 The product when fully supported or draped over counterbattens has adequate resistance to the wind uplift forces likely to be experienced in most locations in the British Isles.

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

### 4 Risk of condensation

4.1 VapR-free has a significantly higher water vapour permeability than that quoted as a minimum for conventional roof tile underlays in BS 5534 : 2003, which also describes the factors to be considered in reducing condensation to a satisfactory minimum.

4.2 The product may be used without a ventilated air space between the product and the insulation provided the passage of moisture through the rest of the roof structure is controlled and the system is convection-tight.

4.3 Condensation risk assessment calculations in accordance with BS 5250 : 2002 should be carried out for specific applications. When using thermal insulation with a low vapour resistance, a vapour control layer on the warm side of the insulation may be required. Where the roof may be subject to high humidity conditions (eg kitchens, swimming pools, bathrooms) a vapour control layer should be considered with all types of insulation.

4.4 The product may be used supported in roofs using sarking boards of either softwood, grade P4 chipboard or water-resistant grade plywood (as for standard Scottish practice), with either continuous insulation or insulation placed between rafters. The insulation used should have a low vapour permeability (eg expanded or extruded polystyrene, PUR and PIR) so it can be considered as a vapour check. However, since the roof decking may be significantly below the dew-point for long periods during winter conditions with no significant ventilation, then the following conditions should be observed:

- insulation boards should be tightly butted against the rafter and details
- joints between insulation boards should be tightly fitted and taped
- sources of moisture (eg watertanks) in the roof should be covered and placed so they are well ventilated
- cold roof spaces created by partially inclined ceiling should be ventilated

- ingress of moisture to the roof space should be restricted by sealing around pipe penetrations and consideration given to a vapour control layer at ceiling level.

4.5 Typical values of 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

## Installation

### 5 General

5.1 VapR-free in Warm 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 the underlay should be dressed under the gutter. Alternatively, the use of eaves guards [eg VapR-free Eaves Carrier<sup>(1)</sup>] is recommended to conduct the water into the gutter.

(1) Outside the scope of this Certificate.

### 6 Procedure

6.1 The underlay is laid over the support with the grey side uppermost, and secured with counter battens (minimum thickness 12 mm) to the support or rafter using corrosion-resistant staples or galvanized clout nails. The battens for tiling are fixed to the counter battens leaving an air space between the underlay and the tiles for drainage

and ventilation. The product can be installed either horizontally (parallel to the eaves) or vertically (eaves to eaves). In both instances the product must be stretched over the entire roof surface, pulled taut and not allowed to drape. Alternatively, the membrane may be installed draped over counter battens, with sufficient drape to allow drainage of liquid water under the tiling battens.

6.2 Each sheet of underlay should be stapled to hold it in position prior to the counter battens being fixed.

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

Table 2 Minimum overlaps

Roof pitch (°)	Horizontal lap (mm)	Vertical lap (mm)
12.5 to 14	150	100
15 to 34	100	100
35+	75	100

6.4 The vapour resistance of the insulation material should be taken into account when deciding if a vapour control layer is required (see section 4 of this Detail Sheet).

## Bibliography

BS 747 : 2000 Reinforced bitumen sheets for roofing — Specification

BS 5250 : 2002 Code of practice for control of condensation in buildings

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

BS 6399-2 : 1997 Loading for buildings — Code of practice for wind loads

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

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Chief Executive