

**IRISH AGRÉMENT BOARD
 CERTIFICATE NO. 06/0259**

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FAKRO Eurotop Roof Tile Underlays

Souscouche de couverture en tuiles Unterlage für Ziegeldach

NSAI Agrément (Irish Agrément Board) is designated by Government to issue European Technical Approvals.

NSAI Agrément Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2010**.



PRODUCT DESCRIPTION:

This Certificate relates to the FAKRO Eurotop range of roof tile underlays for use on tiled or slated pitched roofs:

- Eurotop N15
- Eurotop N35
- Eurotop S4
- Eurotop S65

FAKRO Eurotop roof tile underlays are manufactured by laminating a water vapour permeable film between two layers of non-woven polypropylene.

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2010.

USE:

The material is manufactured for use under tiles or slates on open rafter (unsupported) or fully supported pitched roofs.

The underlays may be used in the following roof systems:

1. Ventilated in a cold roof system.
2. Non-ventilated in a cold roof system.
3. Non-ventilated in a warm roof system.

The installation of these roof systems using FAKRO Eurotop roof tile underlays is described in Section 2.4 of this certificate.

FAKRO Eurotop roof tile underlays provide a barrier which:

- Prevents the ingress of windblown rain, dust and snow.
- Minimises the effects of wind load generated under wind gusts acting on slates and tiles when installed in accordance with this Certificate.
- Offers superior resistance to tearing during installation.
- Remains flexible at low ambient temperatures.

- Facilitates the control of surface and interstitial condensation in the roof by allowing the safe dispersal of water vapour.
- Reduces heat loss caused by air movement through the attic space once installed with no ventilation.

MANUFACTURE & MARKETING:

The products are manufactured on behalf of:

FAKRO Sp. Z o.o.,
Wegierska 144 a,
33-300 Nowy Sacz,
Poland.

The products are marketed by:

Tradecraft Building Products Ltd,
Unit 2,
Tougher Business Park,
Newbridge Road,
Naas,
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1.1 ASSESSMENT

In the opinion of NSAI Agrément, FAKRO Eurotop roof tile underlays if used in accordance with this Certificate can meet the requirements of the Building Regulations 1997 to 2010, as indicated in Section 1.2 of this Irish Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 to 2010

REQUIREMENTS:

Part D – Materials and Workmanship

D3 – FAKRO Eurotop roof tile underlays, as certified in this Certificate, are comprised of ‘proper materials’ fit for their intended use (see Part 4 of this Certificate).

D1 – FAKRO Eurotop roof tile underlays, as certified in this Certificate, meet the requirements of the building regulations for workmanship.

Part A - Structure

A1 – Loading

Tests indicate that roofs incorporating FAKRO Eurotop roof tile underlays meet the requirements provided the installations comply with the conditions set out in Section 2.4 and Part 3 of this Certificate.

Part B – Fire Safety

B4 – External Fire Spread

FAKRO Eurotop roof tile underlays will not prejudice the external fire resistance of the roof, as indicated in Section 4.1 of this Certificate.

Part C – Site Preparation and Resistance to Moisture

C4 – Resistance to Weather and Ground Moisture

FAKRO Eurotop roof tile underlays meet the requirements when installed as indicated in Section 2.4 of this Certificate.

Part F – Ventilation

F2 – Condensation in Roofs

FAKRO Eurotop roof tile underlays will provide water vapour permeability significantly in excess of that quoted as a minimum for conventional roof tile underlays in BS 5534-1:2003 *Code of practice for slating and tiling – Design*, and hence, movement of moisture vapour will take place through the underlays.

In a non-ventilated roof system where FAKRO Eurotop roof tile underlays are installed in accordance with this Certificate and the supplied instructions, the underlay can prevent excessive

condensation in a roof or in a roof void above an insulated ceiling as is required by the requirement F2 of the Technical Guidance Document to Part F of the Building Regulations 1997 to 2010.

Where the FAKRO Eurotop roof tile underlays are installed with ventilation, the design guidelines contained in Section 2 of the TGD to Part F of the Building Regulations 1997 to 2009 and BS 5250:2002 *Code of practice for control of condensation in buildings* must be met when installing this product.

FAKRO Eurotop roof tile underlays can be treated as vapour permeable underlays when considering the ventilation requirements of the roof.

Part L – Conservation of Fuel and Energy

L1 – Conservation of Fuel and Energy

Based on the measured vapour resistance of the FAKRO Eurotop roof tile underlays, roofs incorporating insulation can meet the requirements of Part L of the Building Regulations 1997 to 2010.

Where FAKRO Eurotop roof tile underlays are installed with ventilation and the ceiling has to be fixed to the soffit of the rafters as in dormer roof construction, a continuous ventilation space of at least 50mm should be arranged as shown in Diagram 6D of TGD to Part F of the Building Regulations 1997 to 2010. **In these circumstances it will be necessary to install a vapour control layer on the warm side of the insulation.**

2.1 PRODUCT DESCRIPTION

FAKRO Eurotop roof tile underlays are watertight, vapour permeable, flexible membranes intended for use as underlays on unsupported or supported pitched roofs, constructed in accordance with ICP 2:2002 *Irish code of practice for slating and tiling*.

2.2 MANUFACTURE

FAKRO Eurotop roof tile underlays are manufactured by laminating a water vapour permeable film between two layers on non-woven polypropylene to form breathable roof tile underlays.

The nominal characteristics of the underlays are given in Table 1 below.

Eurotop N15	Value/Units
Width	1.5 m
Length	50 m
Thickness	0.460 mm
Weight	115 g/m ²
Colour	Green upper surface White lower surface
Eurotop N35	Value/Units
Width	1.5 m
Length	50 m
Thickness	0.500 mm
Weight	135 g/m ²
Colour	Green upper surface White lower surface
Eurotop S4	Value/Units
Width	1.5 m
Length	50 m
Thickness	0.5 mm
Weight	155 g/m ²
Colour	Green upper surface White lower surface
Eurotop S65	Value/Units
Width	1.5 m
Length	50 m
Thickness	0.5 mm
Weight	165 g/m ²
Colour	Green upper surface White lower surface

Table 1: Nominal Characteristics

2.2.1 Quality Control

Quality control checks are carried out on the incoming raw materials, during production and on the finished product. These checks include visual inspection and checks on dimensions (length, width), weight, tensile strength and elongation, tear resistance and hydrostatic head (water penetration resistance).

2.3 DELIVERY, STORAGE AND MARKING

FAKRO Eurotop roof tile underlays are supplied in rolls and delivered to site individually wrapped in polythene. A technical leaflet bearing the product name, NSAI Agrément logo and Certificate number, is included with each roll or available on request. Labels with lot identifiers are attached to each roll for traceability.

Rolls should be stored on a flat level, smooth, clean, dry surface and be kept under cover to protect from long-term exposure to UV light. Care must be taken to avoid contact with solvents and with materials containing volatile organic components such as coal tar, and timbers newly treated with solvent based preservative (creosote). Reasonable precautions must be taken in handling the rolls to prevent damage, such as tears or perforations, occurring before and during installation, and prior to the application of the roof covering.

The rolls must not be exposed to a naked flame or other ignition source.

2.4 INSTALLATION

2.4.1 General

FAKRO Eurotop roof tile underlays must be installed and fixed in accordance with this Certificate, the Certificate holder's instructions, and the relevant recommendations of ICP 2:2002 and BS 5534-1:2003.

2.4.2 Installation Procedure

Installation of FAKRO Eurotop roof tile underlays can be carried out in all conditions normal to pitched roofing work. In roof construction it is important to remember that the FAKRO Eurotop roof tile underlays are the second line of defence in excluding water penetrating the roof. For this reason the following list of criteria must be met to comply with the requirements of this Certificate:

- Installation commences by unrolling the FAKRO Eurotop roof tile underlay horizontally across the rafters, starting at the eaves and working towards the ridges of the roof. The coloured side should be uppermost.
- When installed in traditional manner, unsupported without counter battens, each horizontal run must be installed with a minimum drape of 10 to 15mm between the rafters at 600mm centres to permit free drainage of water into the gutter.

- When tacking the underlay to the rafters it is recommended that a 3mm diameter x 20mm long extra large head felt nails of copper, aluminium alloy or galvanised steel be used. The underlay should be tacked at the head of the sheet only, at centres not exceeding 1200mm. It is important that all tacking nails be covered by the overlap of the next underlay course so that the minimal headlap is maintained between the tacks and the lower edge of the overlapping underlay.
- Overlaps of the underlay should be in accordance with those stated in Table 2, which are taken from ICP 2:2002.

Roof Pitch	Horizontal lap		Vertical lap
	Partially Supported	Fully Supported	
Pitch < 22.5°	225 mm	100 mm	100 mm
22.5° < Pitch < 35°	150 mm	100 mm	100 mm
Pitch > 35°	100 mm	75 mm	100 mm

Table 2: Minimum Overlaps

- Where overlaps do not coincide with a batten, consideration should be given to either including an extra batten at the overlap or increasing the membrane overlap to coincide with the next batten.
- Batten gauges should not exceed that recommended by the tile/slate manufacturer for the particular tile/slate being used. In areas where the wind speed is greater than 48 m/s ICP 2:2002 should be followed.
- Moisture content of battens at time of fixing should not exceed 22%. Where timbers on roofs have been treated with wood preservative due to high moisture content of timbers, it is essential that manufacturer's guidance be sought in relation to chemical attack from preservative on roofing underlay.
- At the eaves, the use of an eaves carrier, i.e. type 5U felt, to meet specifications of BS 747:2000 *Specifications for roofing felts* must be used. This felt should be laid typically in accordance with Table 2 and dressed 50mm into the gutter. In open eaves construction, the use of eaves guards is recommended. The provision of a tilting fillet/continuous ply support or proprietary eaves ventilation tray is also required to avoid water being trapped behind the fascia board.
- FAKRO Eurotop roof tile underlays are not designed to withstand the weight of operatives or tiles being loaded out. Where pressure on the membrane over a rafter is unavoidable, it should be noted that the underlay does not offer substantial grip, particularly at overlaps.
- Where the underlay becomes damaged for whatever reason, repairs can be carried out by overlaying the damaged area with a layer of additional material ensuring a 150mm overlap all round, ensuring that the up-slope side is overlapped by the next highest horizontal run of underlay, and secured under a batten.
- Standard methods of workmanship should be used to apply the underlay at penetrations and abutments. It must be ensured that the membrane is turned up at least 50mm at all abutments to be overlapped by the flashings, and that it overlaps the lining tray by at least 100mm at the back face of any abutment.
- Courses of underlay over a hip should be overlapped by at least 150mm. Each course should overlap the underlay course on the adjacent elevation of the roof.
- Where hips and valleys occur, lay an additional strip of at least 600mm wide, running continuously from eaves to hip. In valleys, the 600mm wide strip of underlay must be laid over the gutter bed, but under the main roof underlay, and held down by valley battens when used. The main roof underlay must be dressed over the valley battens in this case.
- For duo pitch roofs not requiring ridge ventilation, underlay from each side of the ridge should overlap the other side by at least 225mm. For mono pitch roofs not requiring ridge ventilation, the underlay should extend over the mono ridge and the top fascia board by at least 100mm. Where proprietary ventilating ridge systems are specified, detailing of the underlay should be in accordance with the Certificate holder's recommendations.
- When used in warm roof design, a vapour control layer (500 gauge polythene or equivalent) should be installed on the warm side of the insulation. The roof should be counter-battened to allow a 50mm unobstructed air path between the membrane and the tiles.
- Reference should be made to BS 5250:2002 section 8.4.2, for counter batten and ventilation requirements on tiled and slated roofs.
- When used in non-ventilated cold roof design where the insulation is laid on top of the ceiling, it is essential that a vapour control

layer be used on the warm side of the insulation, and all perforations for pipes, electrical cables etc. should be sealed. The vapour control layer should be turned up around the edge of the insulation and sealed to the walls and soffit to inhibit warm humid air entering the attic.

- After the underlay is installed, it should be covered by the finished roof covering as soon as practicable, to minimise the effects of long term exposure to UV light.
- FAKRO Eurotop roof tile underlays are not suitable for use in flat roof construction.

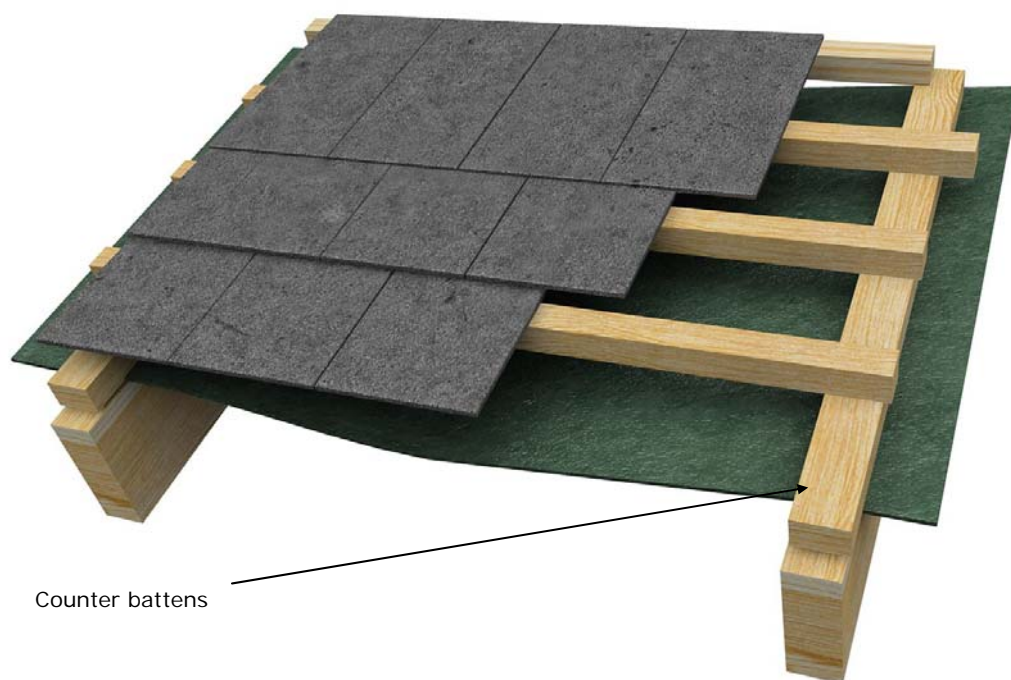


Figure 1: Cold roof detail – With counter battens

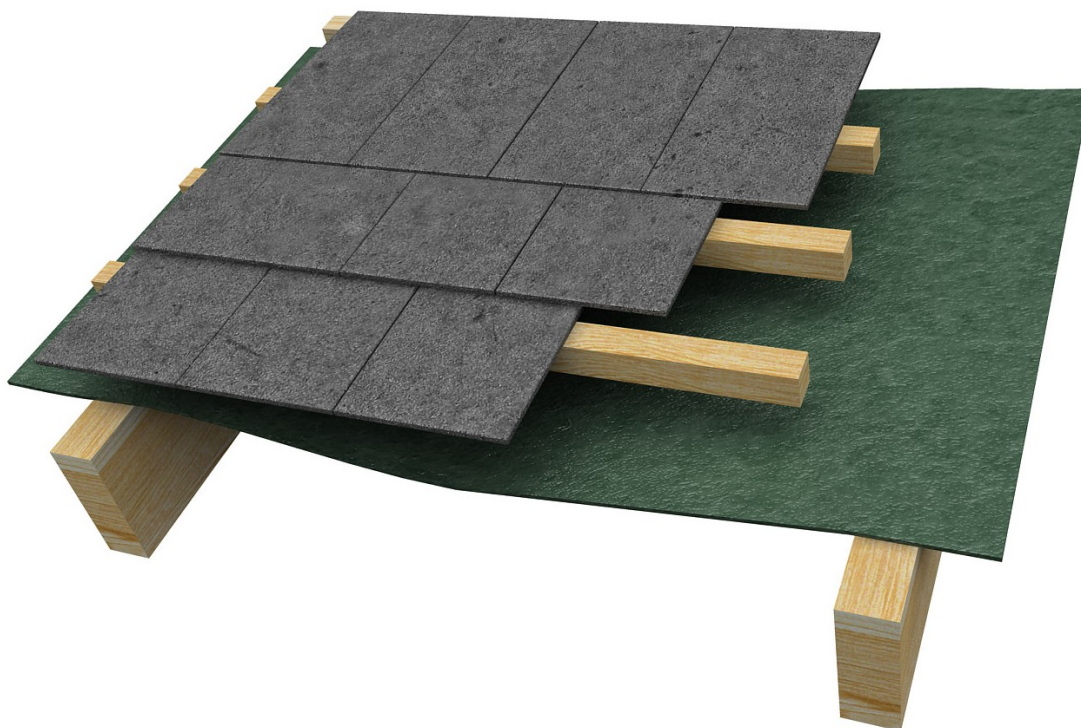


Figure 2: Cold roof detail – Without counter battens

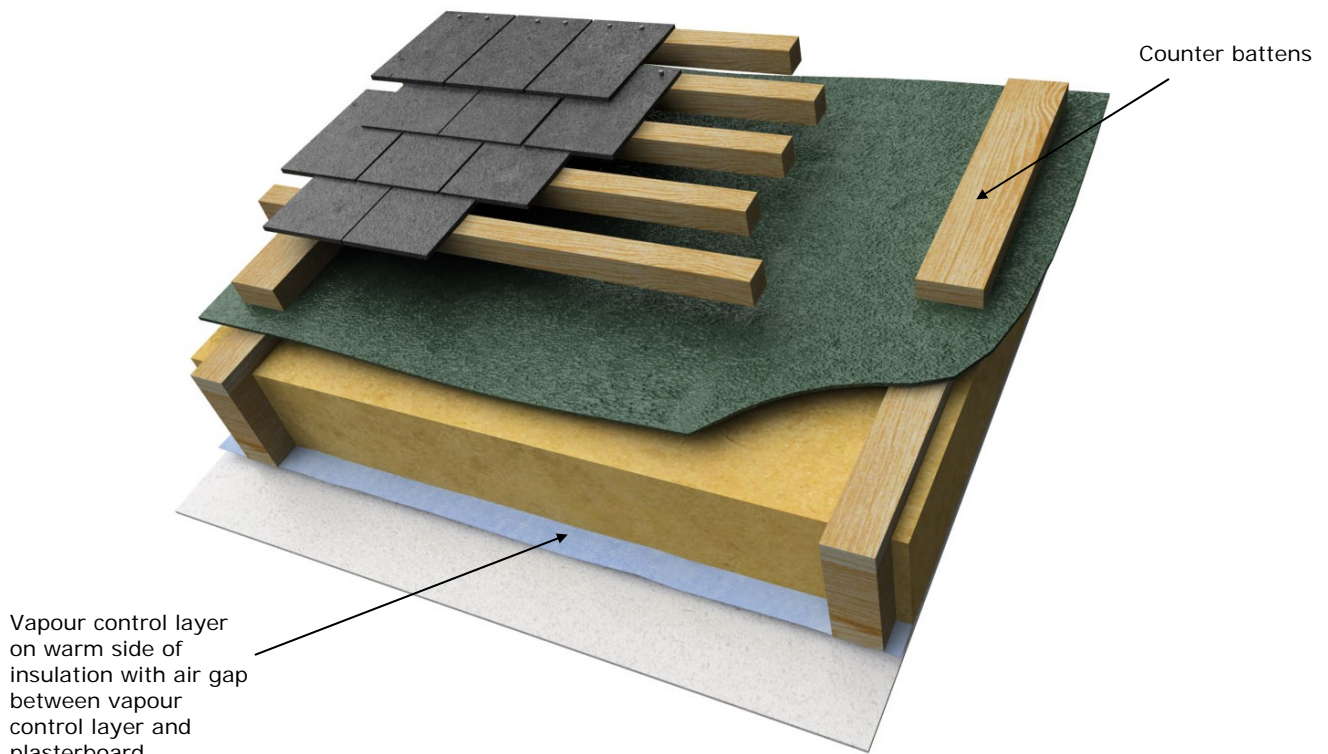


Figure 3: Warm roof detail – With counter battens

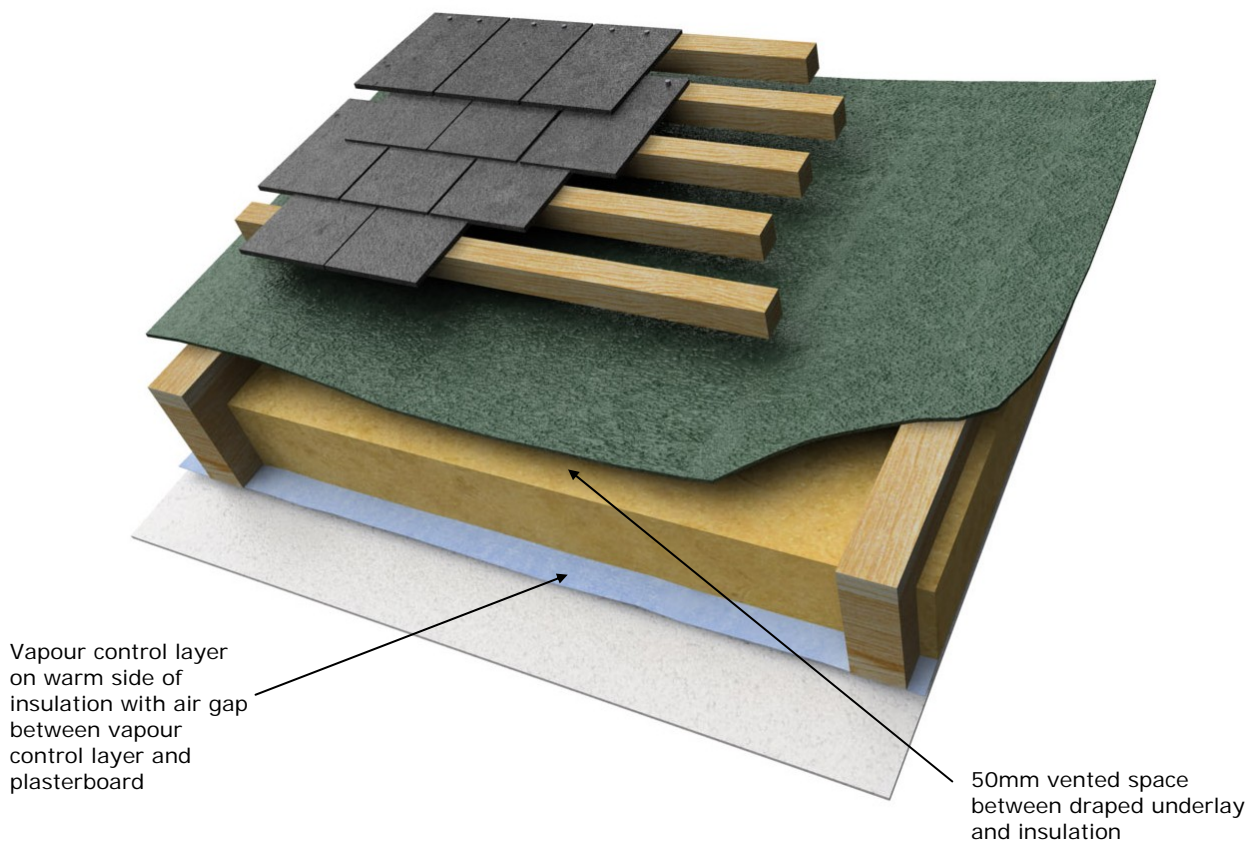


Figure 4: Warm roof detail – Without counter battens



Figure 5: Sealed cold roof ridge detail

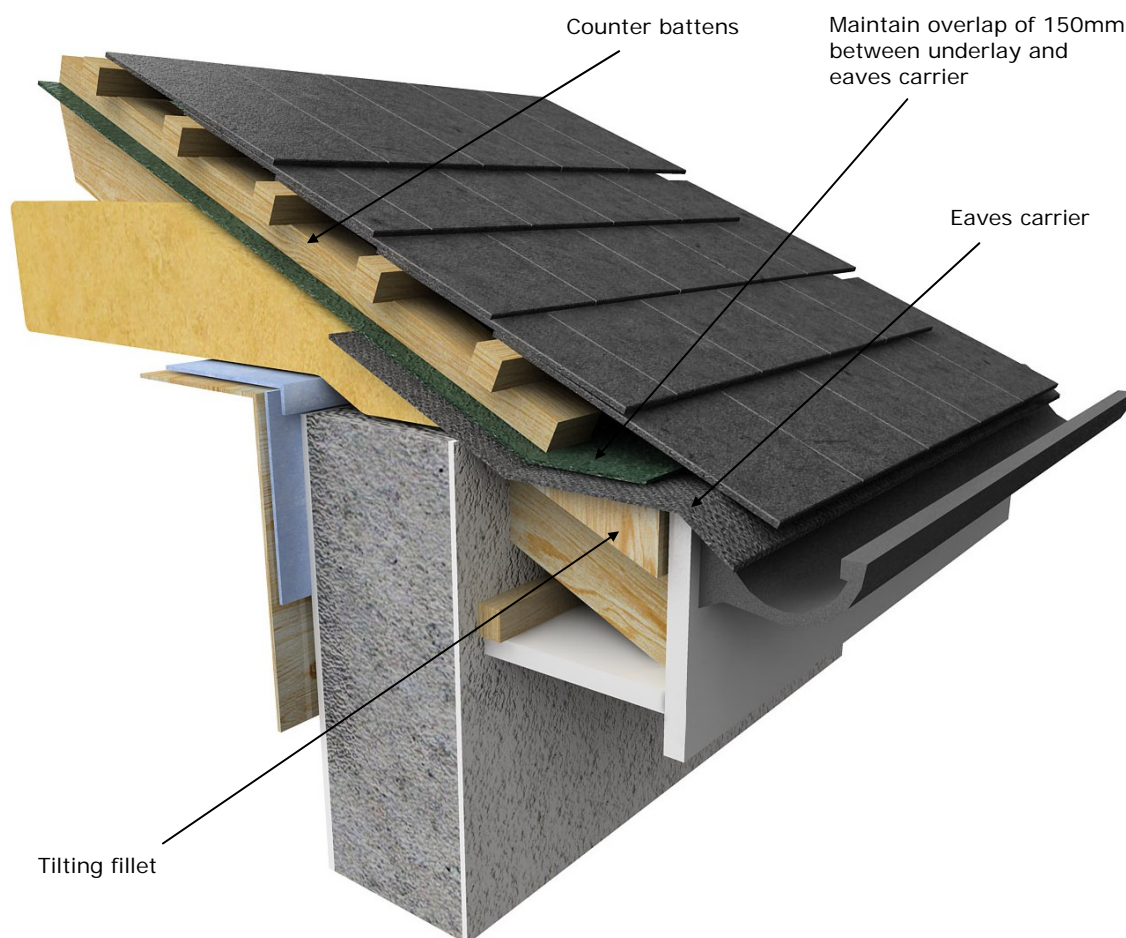


Figure 6: Eaves detail for non-ventilated cold roof

3.1 GENERAL

FAKRO Eurotop roof tile underlays provide a satisfactory underlay in tiled and slated pitched roofs constructed in accordance with ICP 2:2002, BS 5534-1:1997 and BS 8000-6:1990 *Code of practice for slating and tiling of roofs and claddings*.

3.2 STRENGTH

FAKRO Eurotop roof tile underlays will resist the loads associated with the installation phase of the roof.

FAKRO Eurotop roof tile underlays have adequate resistance to withstand typical uplift values for various rafter/batten centres.

Design wind speeds should be determined – the maximum net wind pressure must not exceed 2.5 kPa as calculated in accordance with BS 6399-2:1997 *Code of practice for wind loads*.

3.3 WEATHERTIGHTNESS

Tests confirm that FAKRO Eurotop roof tile underlays will resist the passage of water, wind-blown snow and dust into the interior of a building under all conditions to be found in a roof constructed to ICP 2:2002, BS 5534:Part 1:1997 and BS 8000:Part 6:1990.

The underlays may be used to provide temporary waterproofing to the structure of the building prior to the installation of slates or tiles. It is however recommended that this period of time be kept to a minimum in accordance with the manufacturer's guidance.

3.4 VENTILATION

When used unsupported or over un-insulated sarking board, FAKRO Eurotop roof tile underlays may be treated as permeable underlays when considering the need for additional ventilation of the roof space over the minimum required in BS 5250:2002, Sections 8.4.2.1 to 8.4.2.3.

Ventilation of the space between the underlay and the insulation may not be required if the designer is satisfied that the roof system is convection-tight for the life of the building. When there is no ventilation of the space between the underlay and the insulation, the space between the roof covering and the underlay should be ventilated. Ventilation may be provided through the slate/tile assembly.

In conventional ventilated warm roof systems where the ceiling has to be fixed to the soffit of the rafters and insulation is fitted between

rafters, as in dormer roof construction, a continuous ventilation space of at least 50mm should be arranged for as shown in Diagram 6D of TGD to Part F of the Building Regulations 1997 to 2010. In these circumstances it will be necessary to install a vapour control layer at the warm side of the insulation. The vapour control layer should be of a minimum 500 gauge polyethylene or its equivalent with sealed laps.

It is essential that roofs be constructed so as to minimise the risk of moisture vapour entering the attic space and forming condensation. In accordance with good building construction practice, all openings for services and trap doors should be draught sealed, and trap doors should not be located in bathrooms, shower rooms or kitchens.

A vapour control layer should be used with all types of insulation.

4.1 BEHAVIOUR IN FIRE

FAKRO Eurotop roof tile underlays have similar properties in relation to fire to polythene sheets and so will present no additional fire hazard to a roof structure in which they are incorporated.

Tests indicate that there is a risk of fire spread if FAKRO Eurotop roof tile underlays are accidentally ignited during maintenance works, etc. (e.g. by a roofer or plumbers torch). As with all types of sarking material, care must be taken during building and maintenance to avoid the material becoming ignited.

When the products are used in a fully supported situation, the reaction to fire will be determined by the supporting deck.

FAKRO Eurotop roof tile underlays being combustible materials must be separated from chimneys and flues as indicated in cl. 2.15, 2.16 and 2.17 of TGD to Part J of the Building Regulations 1997 to 2010.

Toxicity is negligible when used in a roof situation.

4.2 WATER PENETRATION

FAKRO Eurotop roof tile underlays, when used in accordance with this Certificate, present no significant risk of water penetration.

4.3 WATER VAPOUR PENETRATION AND CONDENSATION RISK

FAKRO Eurotop roof tile underlays have significantly higher water vapour permeability than that quoted as a minimum for conventional roof tile underlays in BS 5534-1:2003, and hence movement of moisture vapour can take place through the underlay. The general design guides contained in BS 5250:2002 Sections 8.4.2.2 to 8.4.2.6 must be met when installing these products.

Typical values of water vapour resistance are given in Table 3.

4.4 DURABILITY AND MAINTENANCE

FAKRO Eurotop roof tile underlays, when installed in accordance with this Certificate, manufacturer's instructions and relevant codes of practice, are virtually unaffected by conditions normally found in a roof space and will have a design life comparable with that of the roof and in accordance with BS 7543:1992 *Guide to the durability of building elements, products and components*. The durability of the underlays will

be dependent on the performance of the roof covering (slates/tiles) and this could be compromised if the roof is not routinely maintained or is subjected to inappropriate traffic. Such maintenance would involve building owners having their roofs inspected annually, preferably in late autumn. Inspection should include checking for missing, damaged or loose slates/tiles and their accessories or flashings. Clogged gutters or downpipes should be unblocked and cleaned.

Material	Water Vapour Resistance (MNs/g)	Water Vapour Permeability (g/m ² /day)
Eurotop N15	0.18	>820
Eurotop N35	0.14	1527
Eurotop S4	0.18	>820
Eurotop S65	0.18	>820
Traditional felt underlay (maximum)	570	0.36
Polythene sheet (0.15mm)	450	0.46

Table 3: Water Vapour Resistance

4.5 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING:

Table 4 gives a summary of the technical investigations carried out on FAKRO Eurotop roof tile underlays.

4.6 OTHER INVESTIGATIONS

- (i) Existing data on product properties in relation to fire, toxicity, environmental impact and the effect on mechanical strength/stability and durability were assessed.
- (ii) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- (iii) Site visits were conducted to assess the practicability of installation and the history of performance in use of the product.
- (iv) Driving rain resistance was assessed.
- (v) A condensation risk analysis was performed.

Test	Method	Results			
		Eurotop N15	Eurotop N35	Eurotop S4	Eurotop S65
Tensile strength (N/50mm)	EN 12311-1	MD 230 CD 135	MD 250 CD 170	MD 360 CD 280	MD 340 CD 220
Elongation at break (%)	EN 12311-1	MD 70 CD 90	MD 70 CD 90	MD 15 CD 15	MD 60 CD 80
Tear resistance (N)	EN 12310-1	MD 100 CD 100	MD 100 CD 100	MD 190 CD 200	MD 150 CD 180
Resistance to water penetration	EN 13859-1	W1	W1	W1	W1

Table 4: Physical Properties

Part Five / Conditions of Certification

5

5.1 National Standards Authority of Ireland ("NSAI") following consultation with NSAI Agrément has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of issue so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 to 2010 and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
- (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
- (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
- (e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.

(f) the registration and/or surveillance fees due to IAB are paid.

5.2 The NSAI Agrément mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the NSAI Agrément mark and certification number and must remove them from the products already marked.

5.3 In granting Certification, the NSAI makes no representation as to;

- (a) the absence or presence of patent rights subsisting in the product/process; or
- (b) the legal right of the Certificate holder to market, install or maintain the product/process; or
- (c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.

5.4 This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act 2005, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.

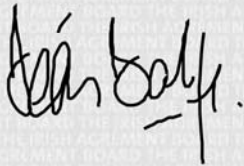
5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

NSAI Agrément

This Certificate No. **06/0259** is accordingly granted by the NSAI to **Tradecraft Building Products Ltd** on behalf of NSAI Agrément.

Date of Issue: **November 2006**

Signed



Seán Balfe
Director of NSAI Agrément

Revisions: May 2011

Additional roof tile underlay added to certificate.

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément, NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. www.nsai.ie