

SINTEF Technical Approval

TG 2190

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 Provided listed on
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SINTEF confirms that

Hunton Undertak / Hunton Sarket

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document



1. Holder of the approval

Hunton Fiber AS
 Postboks 633
 NO-2810 Gjøvik
www.hunton.no

2. Product description

Hunton Undertak is bitumen impregnated soft fibreboards intended for use as a combined roofing underlay and wind barrier under discontinuous roofing, see fig. 1. The boards are delivered in different thicknesses and have a bitumen impregnated layer on the top surface to avoid water penetration and makes the boards wind tight. The product is sold in the Norwegian market with the product name Hunton Undertak. The product is sold in some export markets with the product name Hunton Sarket.

Standard dimensions are shown in table 1. Plates have tongue and groove at all four edges. Geometry of mounting principle is shown in fig.2.

Table 1 Standard dimensions of Hunton Undertak

Property	Test method EN	Value	Unit	Tolerance
Thickness	324-1	18 25	mm	± 1,2 mm ± 1,8 mm
Width ¹⁾	324-1	595	mm	± 2 mm/m maks. ± 5 mm
Length ¹⁾	324-1	2420	mm	± 2 mm/m maks. ± 5 mm
Density	323	260	kg/m ³	-

¹⁾ Shown measure = total measure including tongue and groove.

3. Fields of application

Hunton Undertak can be used as combined roofing underlay and wind barrier in thermal insulated, pitched timber roofs, where the roofing is placed on battens and counter battens for ventilation and an external drainage.

Hunton Undertak is particularly applicable for pitched roofs with continuous thermal insulation from the eaves to the ridge, and for roofs with cold attics where insulation in the plane of the roof is to be installed at a later stage.

Hunton Undertak can be used in buildings in hazard classes 1-6 in fire classes 1,2 and 3.

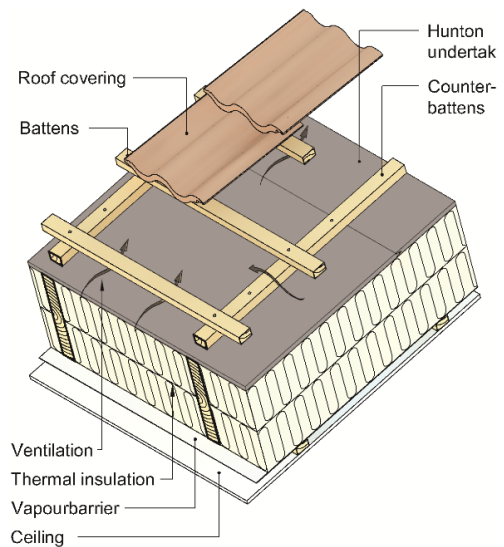


Fig. 1

Principle design of a roof with Hunton Undertak used as combined roofing underlay and breather membrane. The thermal insulation may be placed directly against the boards. Ventilation of the roof plane is provided between the boards and the roofing.

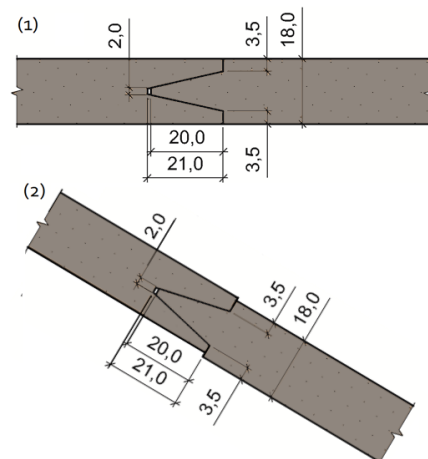


Fig. 2

Hunton Undertak. Tongue and groove profiles.

- (1) Assembling of the short edges
- (2) Assembling of the long edges with height difference to get better water drainage of the roof underlay

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Table 2

Material- and construction properties for Hunton Undertak

Property	Test method EN	Hunton Undertak 18 mm		Hunton Undertak 25 mm		Enhet
		DoP ¹⁾	Control limit ²⁾	DoP ¹⁾	Control limit ²⁾	
Properties related to combined roofing underlay and wind barrier function						
Water tightness (1 kPa)	1928	-	Tett	-	Tett	-
Rain tightness construction (≥ 18 ^o)	NT Build 421	-	550	-	550	Pa
Air permeability material	12114	0,5	0,5	0,5	0,5	m³/m²h50Pa
Air permeability construction	12114	-	0,7 ³⁾	-	0,7 ³⁾	m³/m²h50Pa
Water vapour resistance s _d	ISO 12572 (50/93% RH 23°C)	-	0,35	-	0,45	m
Thermal conductivity λ _d	12667	0,050	0,050 ³⁾	0,045	0,045 ³⁾	W/mK
Absorption of condens	NT Build 304	-	1,3	-	1,3	kg/m²
Water tightness	1928	-	tight	-	tight	-
Properties related to structural functions						
Bending strength (vert. to main surface)	310	1,4	1,4	1,1	1,1	N/mm²
E-modulus bending (vert. to main surface)	310	140	140	120	120	N/mm²
Shear capacity - nail connections against timber	NBI-method	-	108 ⁴⁾	-	108 ⁴⁾	N
Properties related to the wood fiber material						
Moisture movement	318 (30-90 % RF)	-	≤ 0,3 ³⁾	-	≤ 0,3 ³⁾	%
Thickness swelling	317	≤ 6	≤ 6	≤ 6	≤ 6	%

¹⁾ The manufacturer's Declaration of performance, DoP²⁾ Control limit shows values product has to satisfy during internal factory production control and audit testing.³⁾ Result from type testing⁴⁾ Design capacity calculated with $k_{mod} = 0,45$ (load duration: short term, climate class 2) and $\gamma_m = 1,3$

4. Properties

Material- and construction properties

Hunton Undertak are in conformity with the requirements for softboards type SB.HLS according to EN 622-4. Material- and construction properties are shown in Table 2.

Load-carrying capacity

Hunton Undertak can be used for bracing of buildings in roof pane. Shear capacity for nail connections in table 2 need to be used for considering number of nails in each rafter to achieve necessary stiffness of roof pane to transfer wind loads evenly to the construction.

Properties related to fire

Hunton Undertak has fire classification class F according to EN 13501-1

Tread through strength

Resistance against tread through is not evaluated for Hunton Undertak.

Thermal insulation

Thermal conductivity for Hunton Undertak, shown in table 2, can give a benefit to thermal insulation of the wall. The values should be used for calculation for the thermal transmission, U-value.

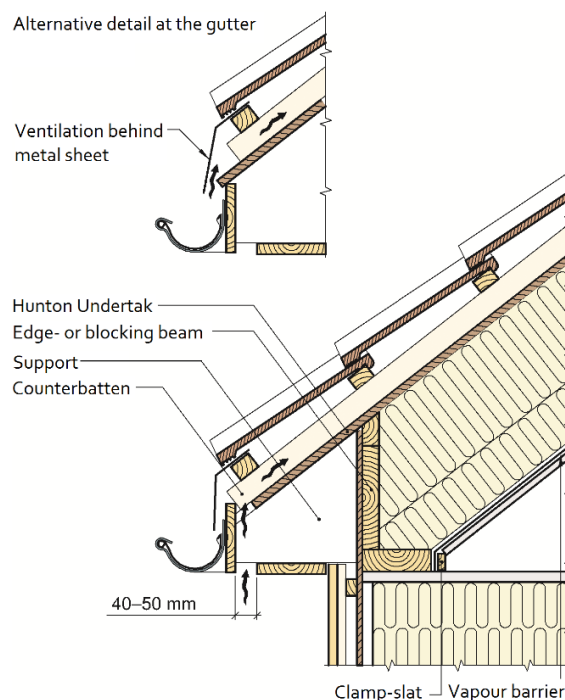


Fig. 3

Example of connection between roof and exterior wall. The joint between the boards and the edge beam or blocking must be airtight, and the boards should be fastened here with max. 100 mm nail spacing.

Airtightness construction

Hunton Undertak is sufficiently airtight to protect the insulation for cooling from wind, but not to fulfil the requirements regarding airtightness (n_{50}) given in the building regulations, and in the Norwegian passive house standards, without installing the vapour barrier.

Durability

Hunton Vindtett, which is identical to Hunton Undertak, has been used since ca. 1969. Experiences have shown that Hunton Vindtett has adequate durability as sheathing material in ordinary timber frame buildings. Furthermore, is Hunton Undertak considered to have satisfactory durability based on laboratory testing before- and after accelerated artificial climate ageing. The product must be protected against direct exposure to UV radiation in the complete construction. The product must be covered as soon as possible after installation at roofs and walls, without unnecessary delay.

Water on Hunton Undertak will creep down in the plate joints and will cause a swelling which contributes to the tightness of the joints during building phase. But reasoned to the durability of Hunton Undertak it is not favourable to have the plates steadily water exposed in the finished construction.

5. Environmental aspects

Substances hazardous to health and environment

Hunton Undertak contains no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

Waste treatment/recycling

The product shall be sorted as residual waste on the demolition site. The product shall be delivered to an authorized waste treatment plant for energy recovery.

Environmental declaration

An environmental declaration (EPD) has been worked out according to EN 15804 for Hunton Undertak. For complete documentation see EPD no. NEPD-1248-401-NO, www.epd.norge.no.

6. Special conditions for use and installation

Design considerations

Generally, installation of Hunton Undertak shall be performed according to SINTEF Building Research Design Guides No.:

- 525.102 Isolerte skrå tretak med kombinert undertak og vinsperre
- 525.106 Skrå tretak med kaldt loft
- 525.866 Undertak

The boards may also be applied on top of existing timber board sheathing when old timber roofs are renovated and supplemented with thermal insulation. The insulation may then be installed against the old sheathing as shown in fig. 7 when the old roofing felt is removed first.

Maximum span for 18 mm Hunton Undertak is c/c 600 mm.
Maximum span for 25 mm Hunton Undertak is c/c 900 mm.

Minimum roof slope for Hunton Undertak is 15 °.

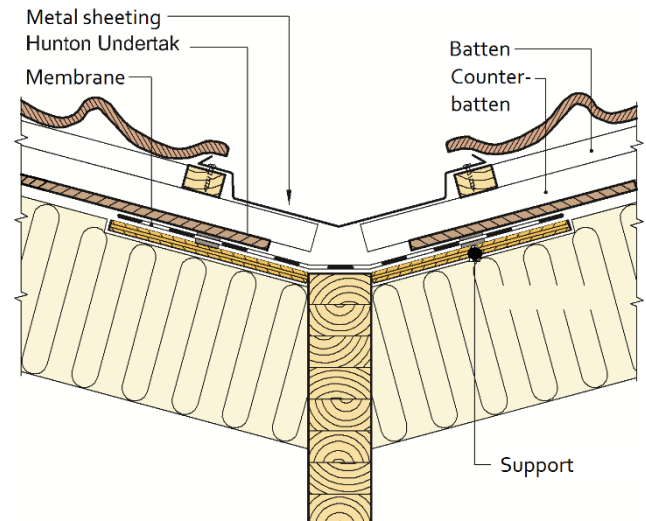


Fig. 4

A strong watertight membrane is placed on top of valley rafters before Hunton Undertak is installed.

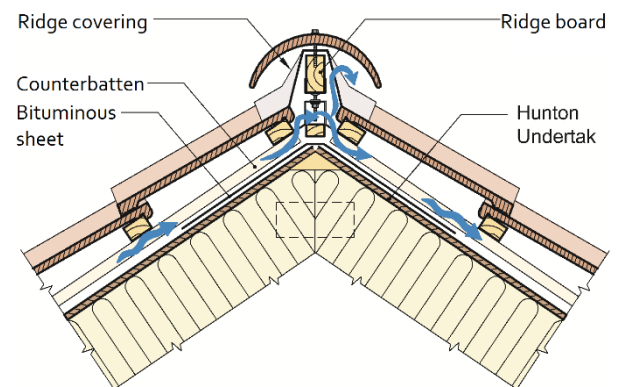


Fig. 5

Example detail at ridge. The connection between the two roof planes must be airtight. Pads are used under the ridge board in order to provide continuous ventilation across the ridge.

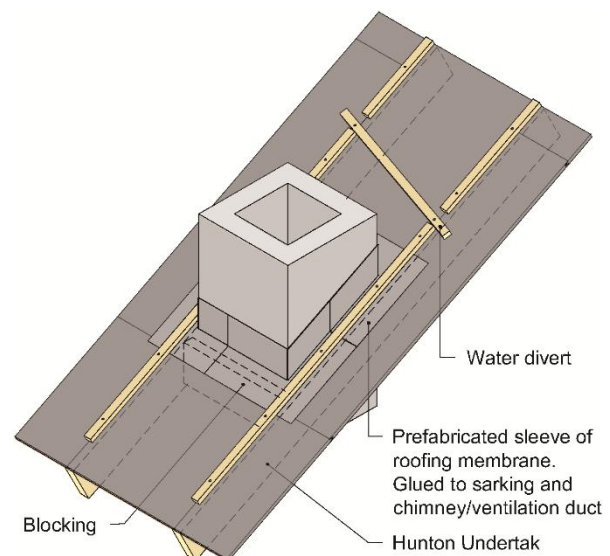


Fig. 6

Joints at openings in the roof are made tight by the use of prefabricated sleeves which are glued to Hunton Undertak with bituminous glue. Blockings should be used around the opening to provide support for the connection details.

Installation

Hunton Undertak shall be installed to achieve a both wind tight and water-repellent layer according to SINTEF Building Research Design Guides No.:

- 525.102 *Isolerte skrå tretak med kombinert Undertak og vinsperre*

The roofing shall be installed as soon as possible after the installation of Hunton Undertak to prevent a long period of free exposure to precipitation of the underlay. Thermal insulation, moisture control barrier and ceiling must not be installed before checking that the roofing underlay is properly installed.

Hunton Undertak has limited resistance against exposure of free water for long periods and shall not be used in places which are particularly exposed to driving rain and snow underneath the roof covering.

The boards are installed with the long side perpendicular to the rafters, and the end joints parallel to the roof slope shall normally be placed over a support like a truss or a rafter. The dark brown, tight bitumen impregnated layer shall be mounted to outwards.

The boards have to be fastened with slate nails, using c/c 100 mm maximum nail spacing along the edges and c/c 250 mm at intermediate supports. Recommended lengths are shown in table 3. Alternatively, may corrosion-protected staples be used, provided the staples have a min. wire-diameter of 1.8 mm, a 20 mm long back, and a length of 2,5 times thickness of the board. Nails and staples must be fixed with the head placed levelled with the board surface, not penetrating the wind tight layer.

Table 3

Recommended nail lengths for different thicknesses

Thickness mm	Slate nail dimension ¹⁾ mm
18	2,8 x 45
25	2,8 x 65

¹⁾ Head-diameter of nails in minimum 8 mm

Counter battens and ventilation

Minimum thickness of counter battens must be used according to table 3. Battens must be used according to the installation instructions for the tiles.

Table 4

Recommended height of counter battens (mm), depending on roof pitch and roof length.

Roof pitch	Minimum thickness of counter battens, in mm, for different roof lengths ¹⁾		
	7.5 m	10 m	15 m
18 – 30 °	36	36 + 36	48 + 48 ²⁾
31 – 40 °	30	36	36 + 23
≥ 41 °	23	36	36 + 23

¹⁾ Measured along the pitched roof from eave to ridge

²⁾ For large roof lengths and lower roof pitches it is most practical to use 48 mm counter battens. For such roofs screws must be used to achieve a good pinch between counter batten and rafter.

Connections and roof penetrations

Hunton Undertak shall be installed with wind tight connections to the wind barrier layer in exterior walls. Wind tight joints shall also be performed to the ridge and to connections between separate roof planes.

Penetrations of the roof such as roof windows, chimneys etc. must also be prepared both water- and wind tight. Fig. 3 – 6 shows examples of construction details for roofs with Hunton Undertak.

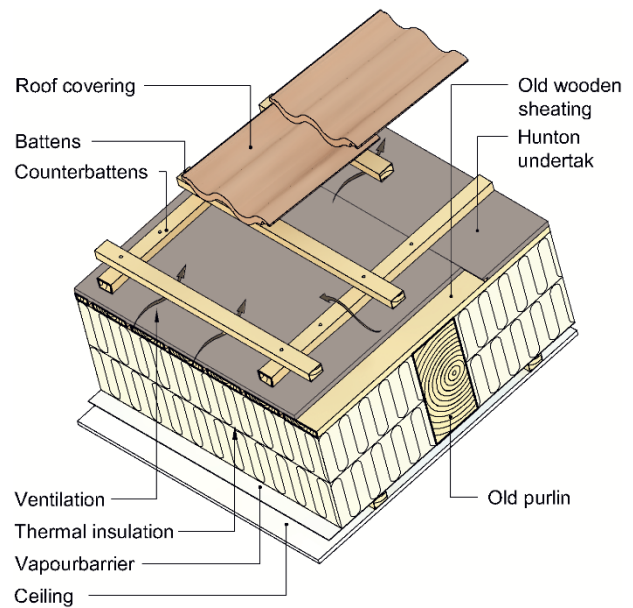


Fig. 7

Construction principle for use of Hunton Undertak in old roofs where new thermal insulation is installed. The top boards should be removed if the old timber sheathing is board on board. The old sheathing must be made airtight around the perimeter to prevent wind from blowing in between the thermal insulation and the new underlay.

Repair of damages

Small damages of the edge profiles may be repaired with bituminous glue to prepare the joints water- and wind tight. Broken boards or boards with major edge damages must be replaced.

Transportation and storage

The boards must be dry when they are installed to obtain tight joints. Hence the boards must be kept covered from rain and water during transportation and storage until the time of installation.

7. Factory production control

Hunton Undertak is produced by Hunton Fiber AS, 2810 Gjøvik, Norway.

The holder of the approval is responsible for the factory production control to ensure that Hunton Undertak is produced in accordance with the preconditions applying to this approval.

The manufacturing of Hunton Undertak is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

Hunton Fiber AS, Gjøvik, has a quality management system certified by Det Norske Veritas according to EN 9001, certificate nr. 18372-2008-AQ-NOR-NA.

8. Basis for the approval

The evaluation of Hunton Undertak is based on reports owned by the holder of the approval.

The evaluation of design and technical solutions are based on recommendations given in SINTEF Building Research Design Guides.

9. Marking

Plates have at least to be marked with their batch number. Wrapping of pallets has to be marked according to EN 13986 and EN 622-4 with name of producer, product name/quality and time of production.

Hunton Undertak is CE marked in accordance with EN 13986.

The approval mark for SINTEF Technical Approval TG 2190 may also be used.

10. Liability

The holder/manufacture has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402

for SINTEF



Hans Boye Skogstad
Approval Manager