SINTEF Technical Approval

TG 2375

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Valid until 01.09.2031
Provided listed on
www.sintefcertification.no

SINTEF confirms that

Daltex FNS 92 og Daltex FNS 125 wind barrier and roofing underlay

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

Don & Low Ltd., Nonwovens
Glamis Road, Forfar, Angus
DD8 1EY Scotland
www.donlow.co.uk

2. Product description

Daltex FNS 92 and Daltex FNS 125 are both wind barrier and combined roofing underlay and wind barriers consisting of a microporous breathable layer of polypropylene film covered with a polypropylene fleece on each side. The products are UV-stabilized.

The products are delivered on rolls with standard widths up to 3.0 m according to the customer order. The product is delivered in several colours. Dimensions and tolerances are shown in Table 1.

Table 1 Dimensions and tolerances for Daltex FNS 92 and Daltex FNS 125

Property	Objectives		Tolerances	Unit
	Daltex FNS 92	Daltex FNS 125		
Roll width	up to 3.0	up to 3.0	-0.5% / +1.5%	m
Roll length	25/30/50	25/30/50	- 0 %	m
Straightness	< 30	< 30	-	mm/10 m
Mass per unit	92	125	FNS 92: ±10 FNS 125: ±12	g/m^2

3. Fields of application

Daltex FNS 92 and Daltex FNS 125 can be used as external wind barrier in thermally insulated external walls with ventilated cladding and in roof constructions of timber under wooden board sheathing.

Daltex FNS 92 and Daltex FNS 125 can be used as combined roofing underlay and wind barrier in thermal insulated sloping roofs with ventilated roof coverings and external drainage.

Combined roofing underlay and wind barrier is particularly suitable for roofs that are continuously thermal insulated from eaves to ridge, but is also suitable for cold, unventilated attics spaces with the thermal insulation in the ceiling, and in sloping roofs with living rooms in parts of the attic. Daltex FNS 92 and Daltex FNS 125 can also be used on roofs with timber board roof sheathing that are to be thermally insulated at the roof level.

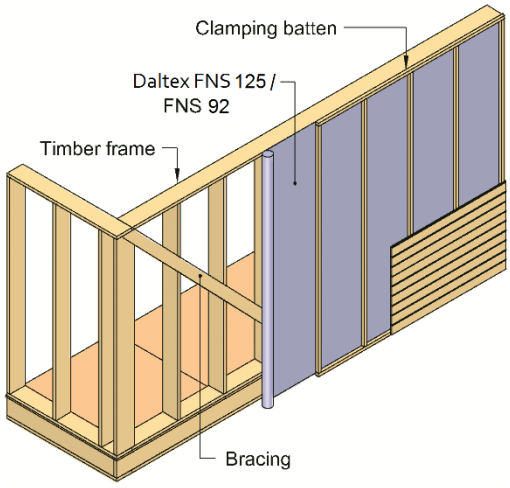


Fig. 1
Daltex FNS 92 / FNS 125 used as a wind barrier in timber frame wall

Daltex FNS 92 and Daltex FNS 125 can be used as combined roofing underlay and wind barrier on roofs in buildings in hazard class 1 - 6 with fire class 1 and 2. If the products are to be used in fire class 3, the fire safety must be documented through a fire technical analysis.

Daltex FNS 92 and Daltex FNS 125 can be used as a wind barrier on walls in buildings in fire class 1 and hazard class 1 - 6.and in buildings up to 3 floors where each housing unit has direct access to the ground (not via stairs or stairwells). For other use, fire safety must be documented by a fire safety analysis.

Daltex FNS 92 and Daltex FNS 125 can be used as roofing underlays or combined roofing underlays and wind barriers on roofs in buildings classified in hazard classes 1 - 6 with fire class 1 and 2. If the product is to be used in fire class 3, fire safety must be documented through a fire technical analysis.

4. Product performance

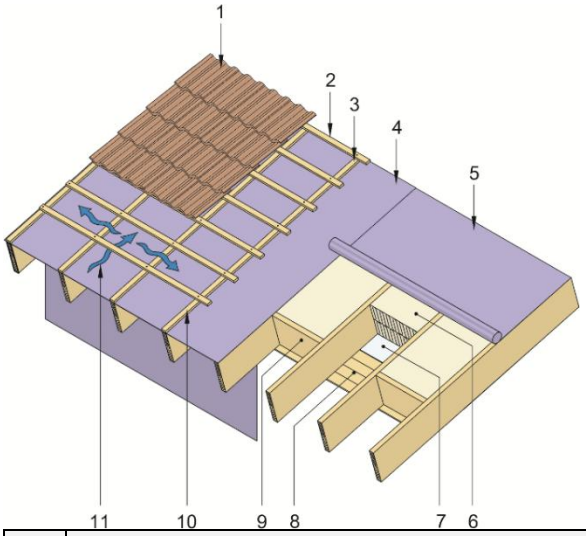
Product properties

Product and construction properties are shown in Table 2.

Table 2
Material and construction data of fresh material

Property		Test method EN	Daltex FNS 92		Daltex FNS 125		Unit
			DoP[1)]	Control limit [2)]	DoP[1)]	Control limit [2)]	
Dimensional stability	L: T:	1107-2	-	< 1 [3)] < 0.5 [3)]	-	< 1 [3)] < 1 [3)]	%
Water tightness, 2 kPa for 2 hours		1928 / 13859-1	W1	W1	W1	W1	-
Air tightness, material		12114	-	< 0.5 [3)]	-	< 0.5 [3)]	$m^3/(m^2h\ 50\ Pa)$
Air tightness, construction		12114	-	< 0.5 [3)]	-	< 0.5 [3)]	$m^3/(m^2h\ 50\ Pa)$
Rain tightness, Construction		NT Build 421	-	600 at 18° roof slope [3)]	-	600 at 18° roof slope [3)]	Pa
Water absorption		NT Build 304	-	Not performed	-	0.3 at 35° roof slope [3]	kg/m^2
Water vapour resistance	s_d value	ISO 12572	0.029 ± 0.01	≤ 0.031	0.029 ± 0.01	≤ 0.031	m
Tear resistance (nail shank)	L: T:	12310-1 / 13859-1	75 (-40) 80 (-40)	≥ 35 ≥ 40	125 (-40) 120 (-40)	≥ 85 ≥ 80	N
Tensile strength	L: T:	12311-1 / 13859-1	230 (-50) 125 (-30)	≥ 180 ≥ 95	285 (-65) 165 (-45)	≥ 220 ≥ 120	N/50mm
Elongation at break	L: T:	12311-1 / 13859-1	65 (-20) 70 (-22)	≥ 45 ≥ 48	70 (-16) 90 (-18)	≥ 54 ≥ 72	%

[1)] The manufacturers Declaration of performance, DoP
[2)] Control limit shows values, product shall satisfy during internal factory production control and audit testing.
[3)] Result from type testing
L – Longitudinal direction T – Transversal direction



No.	Description
1	Roofing tiles or sheet
2	Roofing battens
3	Counter-battens, see clause 6
4	Daltex FNS 92 or FNS 125 roofing underlay
5	Installation, laid continuously from the ridge to the eaves
6	Thermal insulation
7	Vapour barrier
8	Ceiling
9	Noggings
10	Continuously clamped overlap joints
11	Cross ventilation between roofing underlay and roofing

Fig. 2
Principle construction of roof with Daltex FNS 92 / FNS 125 used as a combined roofing underlay and wind barrier

Properties related to fire
Daltex FNS 92 has fire class E-d2 according to EN 13501-1.

Daltex FNS 125 has fire class E according to EN 13501-1.

Resistance against thread through
Resistance against tread through is not evaluated for Daltex FNS 92 and Daltex FNS 125.

Durability
Daltex FNS 92 and Daltex FNS 125 are assessed to have satisfactory durability based on laboratory testing before and after accelerated artificial climate ageing in the laboratory.

The products must be protected against direct expose to UV radiation in the finished construction. The products must be covered as soon as possible after installation, without unnecessary delay.

Airtightness
Daltex FNS 92 and Daltex FNS 125 are so tight that they allows compliance with all relevant requirements for leakage number, n50, given in TEK, and in the Norwegian passive house standards, before the internal vapor barrier layer is installed.

5. Environmental aspects

Substances hazardous to health and environment
The products contain 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 products shall be sorted as residual waste. The products 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 Roof TX optima (FNS 92) and Roof TX 125 (FNS 125). For complete documentation see EPD no. S-P-10979, www.environdec.com

6. Conditions of use

General
Combined roofing underlays and wind barriers should not be used at exposed locations where experience shows that drifting snow snow accumulation often becomes trapped under raised roofings.

Used as a combined roofing underlay and wind barrier, roofing must be installed as soon as possible after Daltex FNS 92 or Daltex FNS 125 has been installed, so that the product is not left freely exposed for a long time. Thermal insulation, vapour barrier and interior cladding should not be installed until it has been checked that the roofing underlay is properly installed and the roofing has been installed.

When used as a wind barrier, exterior cladding, roofing underlay and roofing should be installed as soon as possible after Daltex FNS 92 or Daltex FNS 125 has been installed, so that the product is not left freely exposed for a long time. Before the thermal insulation, vapour barrier and interior cladding are installed, the exterior cladding and roofing must be completed. Before work on the outer wall or roof surface begins, it must also be checked that the underlay is properly installed.

The moisture content of the rafters, wall studs and counter battens should be less than 20 percent by weight when the product is installed so that the shrinkage of the wood does not reduce the clamping of the overlaps.

Daltex FNS 92 or Daltex FNS 125 can be used as a combined roofing underlay and wind barrier for roof slopes down to and including 10° under conditions as described in general in this chapter.

Installation when used as a wind barrier
Daltex FNS 92 or Daltex FNS 125 shall be installed so that the wind barrier forms an airtight layer on the outside of thermally insulated wooden structures. All joints shall have a minimum overlap of 50 mm, and joints, edges and transitions shall be continuously clamped against studs, sill plates, rafters and similar with battens fixed with a maximum nail spacing of 150 mm.

The cover should be tightened so that it does not lie in contact with the wall cladding or roof sheathing.

The wind barrier shall be installed in accordance with the product's installation instructions, and otherwise be used in accordance with the principles shown in the SINTEF Building Research Design Guides, including 523.255 *Yttervegger av bindingsverk, Varmeisolering og tetting*, 525.101 *Skrå, luftede tretak med isolerte takflater,* 520.308 *Yttervegger og tak i trehus med 30 minutters brannmotstand* and 520.322 *Brannmotstand for vegger av tre, mur og betong*.

Installation as a combined roofing underlay and wind barrier
Daltex FNS 92 or Daltex FNS 125 shall be installed so that the underlay forms both an airtight and watertight layer.

For roof slopes down to and including 10°, the use shall follow the principles shown in the SINTEF Building Research Design Guide 525.101 *Skrå, luftede tretak med isolerte takflater, 525.106 Skrå tretak med kaldt loft,* 525.107 *Skrå tretak med oppholdsrom på deler av loftet* and 525.866 *Undertak.*

Daltex FNS 92 and Daltex FNS 125 shall be installed along the rafters.

Daltex FNS 92 and Daltex FNS 125 are continuously installed from ridge to eaves without end joints, and without clamping battens across the roof slope. The underlay shall be laid with overlaps in longitudinal joints directly over the rafters and shall be continuously clamped by counter battens.

Overlaps in joints, edge teminations and transitions on roofs
Daltex FNS 92 and Daltex FNS 125 shall be installed with airtight transitions to the wind barrier layer of the external walls, and with airtight transitions over ridges, burrs and angle channels. In addition, transitions at roof penetrations (chimneys, roof windows, ducts, etc.) must be airtight and rainproof, see Building Research Series 525.101 *Skrå, luftede tretak med isolerte takflater og* 525.866 *Undertak.* Penetrations shall be sealed with prefabricated collars with adhesive butyl strips or sealed with butyl-based tape or sealant. See Figure 3 for an example.

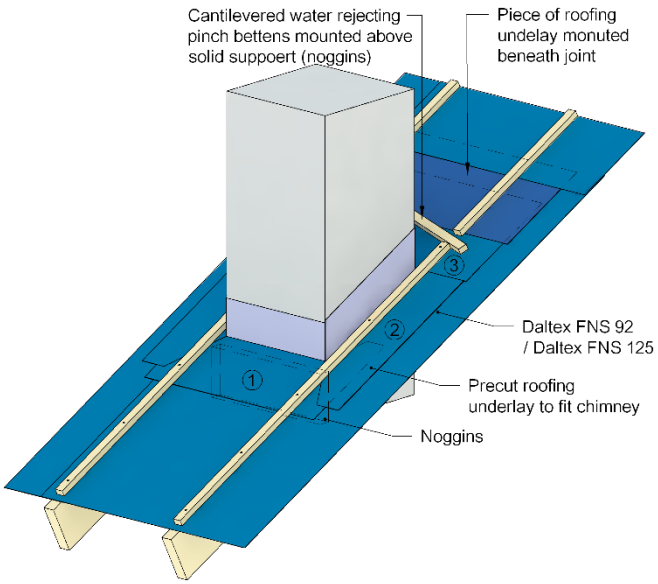


Fig. 3
Example of sealing around a chimney penetration in the roofing underlay. On site, the collar is cut to size and installed using clamping battens.

At eaves with protruding rafters, the roofing underlay shall be installed around the eaves so that it is clamped against the wind barrier of the wall. At eaves without continuous rafters, the roofing underlay shall be extended down along the edge beam and clamped against the wind barrier of the external wall. Examples are shown in the SINTEF Building Research Design Guide 525.101 *Skrå, luftede tretak med isolerte takflater* and 525.107 *Skrå tretak med oppholdsrom på deler av loftet.*

The counter battens shall be fastened to provide sufficient clamping effect for the overlaps of Daltex FNS 92 and Daltex FNS 125. Where build-ups with varying dimensions are used to achieve sufficient counter batten height, the bottom counter batten shall not exceed 36 mm in thickness.

It is recommended to fix the counter battens by screws without threads on the part that goes through the counter batten. The maximum screw or nail spacing shall be 300 mm.

Sealing tape (counter batten tape) may be used to reduce the risk of water leakage through the roofing underlay via nail or screw penetrations.

Roofs with attic
Although roofs with combined roofing underlay and wind barrier are best suited where the vapour barrier can follow the roof plane continuously on the inside, Daltex FNS 92 and Daltex FNS 125 may also be used on roofs with attic trusses and living areas in parts of the attic. See SINTEF Building Research Design Guide 525.106 *Skrå tretak med kaldt loft*, 525.107 *Skrå tretak med oppholdsrom på deler av loftet.* Daltex FNS 92 and Daltex FNS 125 can also be used in cold, unventilated attics, se Byggforskserien 525.106 *Skrå tretak med kaldt loft.*

Combination with wooden board sheating
Daltex FNS 92 and Daltex FNS 125 may be used as a vapour-permeable roofing underlay above wooden board roof sheathing, for example when upgrading older roofs to be insulated in the roof plane.

The insulation can be placed directly below the wooden board roof sheathing provided that the total water vapour resistance for the layers does not exceed an s_d-value of 0.5 m. If plywood- or OSB-boards are used, the boards must have documented water vapor resistance. When renovating old roofs, roofing with asphalt felt must be removed.

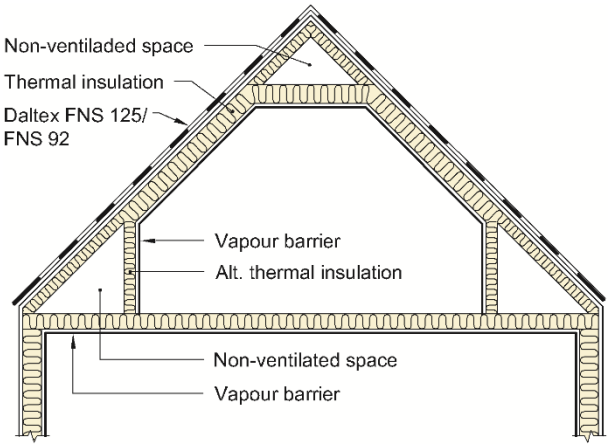


Fig. 4
Example of Daltex FNS 92 and FNS125 in roofs with trussed rafters.

7. Product and factory production control
Daltex FNS 92 and Daltex FNS 125 are produced by Don & Low Ltd., Nonwovens, Glamis Road, Forfar, Angus DD8 1EY Scotland.

The holder of the approval is responsible for maintaining the factory production control to ensure that the products are manufactured in compliance with the preconditions upon which this approval is based.

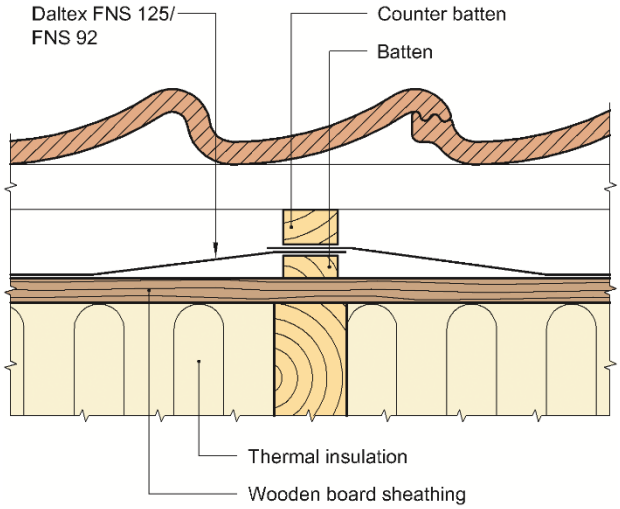


Fig. 5
Breathable roofing underlay placed on wooden board sheathing, with thermal insulation beneath. The overlap joints are continually clamped between battens and counter battens to insure air- and watertightness.

The manufacturing of the products and the manufacturer's system for factory production control (FPC) is subject to continuous surveillance in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer has a quality management system which is certified according to ISO 9001.

8. Basis for the approval
The product's characteristics are documented in reports issued by independent bodies. The technical documentation serves as the basis for SINTEF's product assessment with respect to the product standard EN 13859-1, the guidelines for SINTEF Technical Approval, and recommendations as outlined in SINTEF Building Research Design Guides.

9. Marking
The products are labelled on the packaging label with the product name, roll dimensions, production code and production date.

The products are CE marked in accordance with EN 13859-1.

The approval mark for SINTEF Technical Approval TG 2375 may also be used.

10. Liability
The holder/manufacturer has sole product liability according to current law. Claims can only be made against SINTEF under general law or other special grounds.

for SINTEF

Hans Boye Skogstad

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Approval Manager