SINTEF Technical Approval

TG 2375

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Provided listed on
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SINTEF confirms that

Daltex FNS 92 and 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
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2. Product description

Daltex FNS 92 and Daltex FNS 125 wind barrier and roofing underlay are made of a micro porous breathable polypropylene film which is sandwiched between two layers of spun bonded polypropylene fibres. The products are UV-stabilized and intended for use as combined roofing underlays and airtight breather membranes. Measures and weights are given in Table 1.

The products are available in several colours. The width is not standard and can be supplied up to 3.0 m.

Table 1
Measures and weights of Daltex FNS

Property	FNS 92	FNS 125	Tolerance	Unit
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/10m
Mass per unit	92	125	-10 / +10	g/m^2

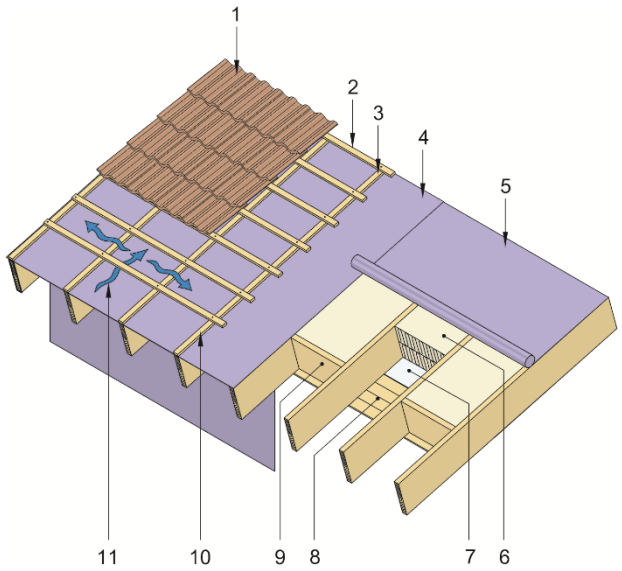
Measured according to EN 1848-2 and 1849-2

3. Fields of application

Daltex FNS 92 and Daltex FNS 125 are intended for as wind barriers in thermal insulated wooden wall and roof constructions, and as combined roofing underlays and wind barriers in thermal insulated, pitched wooden roofs with ventilated, discontinuous roofing and external drainage. Examples of the products used in roofs and walls are shown in Fig. 1 and Fig. 2.

The products are particularly suitable for roofs with continuous thermal insulation from eaves to ridge.

Daltex FNS 92 and Daltex FNS 125 may also be applied for rebuilding old roofs with thermal insulation placed in the plane of the roof.



No.	Description
1	Roofing tiles or sheet
2	Roofing battens
3	Counter-battens, see clause 6
4	Daltex FNS 92 and 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 the roofing

Fig. 1
Principle of to build up roof construction with Daltex FNS 92 orDaltex FNS 125 used as combined roofing underlay and wind barrier

The product can be used as combined roofing underlay and wind barrier on roofs in buildings in fire class 1, 2 and 3 and hazard class 1-6.

The products can be used as a wind barrier on walls in buildings in fire class 1 and in buildings up to 3 floors. For other use, a fire safety analysis must be performed.

Table 2
Material and construction data for Daltex FNS 92 and Daltex FNS 125 wind barrier and roofing underlay

Property	Test method	FNS 92		FNS 125		Unit
		DoP[1)]	Control limit [2)]	DoP[1)]	Control limit [2)]	
Water tightness,	EN 1928	W1	W1	W1	W1	Class / 2 kPa
Rain tightness, Construction (18° roof slope)	NT Build 421	-	600[3)]	-	600[3)]	Pa pressure diff.
Air tightness, material	EN 12114	-	< 0,5	-	< 0,5	$m^3/(m^2h$ 50 Pa)
Air tightness, construction	12114	-	< 0,5 [3)]	-	< 0,5 [3)]	$m^3/(m^2h$ 50 Pa)
Water absorption (35° roof slope)	NT Build 304	-	Not performed	-	0,3 [3)]	kg/m^2
Water vapour resistance (50/94 % RH, 20 °C)	EN ISO 12752	0,027 ± 0,004	≤ 0,031 [3)]	0,031 ± 0,004	≤ 0,035 [3)]	m (s_d-value)
Tensile strength L: T:	EN 12311-1	230 (- 50) 125 (- 25)	≥ 180 ≥ 100	285 (- 55) 165 (-30)	≥ 230 ≥ 135	N/50mm
Elongation at break L: T:	EN 12311-1	65 ± 20 70 ± 20	≥ 45 ≥ 50	55 (- 20) 85 (- 20)	≥ 35 ≥ 65	%
Tear resistance (nail shank) L: T:	EN 12310-1	75 (- 30) 80 (- 30)	≥ 45 ≥ 50	125 (- 25) 120 (- 20)	≥ 100 ≥ 100	N
Dimensional stability L: T:	EN 1107-2	-	- 1 - 0,5	-	- 1 - 1	%

[1)] The manufacturers Declaration of performance, DoP
[2)] Control limit shows values, product has to satisfy during internal factory production control and audit testing.
[3)] Result from type testing

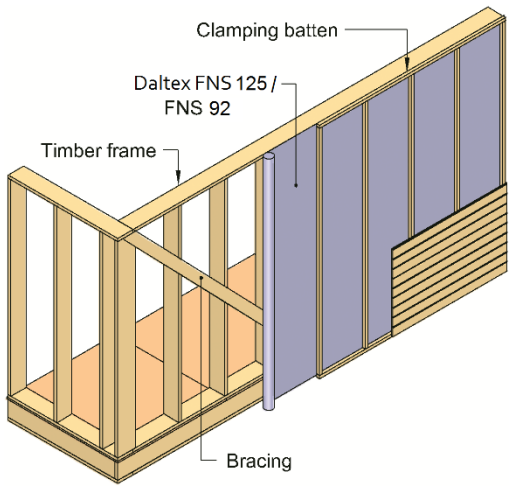


Fig. 2
Daltex FNS 92 and FNS 125 used as a wind barrier in timber frame wall

4. . Properties

General
Material and construction properties are shown in Table 2. The product complies with the requirements recommended by SINTEF concerning watertightness, airtightness and water vapour permeability.

Reaction to fire class
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 considered to have satisfactory durability based on laboratory testing before- and after accelerated artificial climate ageing. The products must be protected against direct exposure to UV radiation in the complete construction. The products must be covered as soon as possible after installation at roofs and walls, without unnecessary delay.

5. Environmental aspects

Substances hazardous to health and environment
Daltex FNS 92 and Daltex FNS 125 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. The product shall be delivered to an authorized waste treatment plant for energy recovery.

Environmental declaration
No environmental declaration (EPD) has been worked out for Daltex FNS 92 and Daltex FNS 125.

6. Special conditions for use and installation

General
Daltex FNS 92 and Daltex FNS 125 shall be installed in a way that provides both a windtight and a watertight layer at walls and roofs.

Daltex FNS 92 and Daltex FNS 125, used as wind barriers, shall follow the principles showed in Byggforskserien (SINTEF Building Research Design Guides), among others 523.255 and 525.101.

Daltex FNS 92 and Daltex FNS 125, used as combined roofing underlays and wind barriers, shall follow the principles showed in SINTEF Building Research Design Guides 525.102.

The wall cladding and the roofing should be installed as soon as possible after Daltex FNS 92 and Daltex FNS 125 has been installed in order to prevent that the products are freely exposed for a longer period of time. Thermal insulation, vapour barrier and the ceiling should not be installed until the roofing has been installed, and the underlay is checked to be properly installed.

Combined roofing underlays and wind barriers should not be used at especially exposed places where experience shows that drifting snow often may be packed between the roofing and the roofing underlay.

Wind bracing
Daltex FNS 92 and Daltex FNS 125 have no bracing function. A separate wind brace must be installed in the wall and possibly in the ceiling.

Installation as roofing underlay
Daltex FNS 92 and Daltex FNS 125 shall be installed continuously from the ridge to the eaves without transversal joints. Longitudinal overlap joints must be clamped continuously between counter battens and the rafters.

Span
Daltex FNS 92 and Daltex FNS 125 are not to be used on roofs where the spacing between the rafters is more than 600 mm.

Roof pitch
The roof pitch must be minimum 15°. On small roofs, e.g. shed dormers on low rise houses, the roof pitch may be 15° provided that the overlap joints are particularly well clamped by the counter battens fastened with screws.

Dimensions of counter battens and ventilation space
The roofing shall have a ventilated space between the roofing and the underlay. Recommended heights of counter battens are shown in table 3.

The counter battens shall be fixed with 3,1 mm galvanized, square nails spaced maximum 300 mm. The length of the nails should be approx. 2,5 times the thickness of the counter battens. Screws or nails of equivalent capacity and durability can alternatively be used.

Table 3.
Recommended height of counter battens depending on roof pitch and roof length

Roof pitch	Roof length (m) [1]		
	≤ 7.5	10	15
18° – 30°	36	36 + 36	48 + 48
31° – 40°	30	36	36 + 23
≥ 41°	23	36	36 + 23

[1] Measured along the pitched roof from eave to ridge

In order to maintain the pressure at the overlaps, the moisture content of the rafters should be less than 20% when they are installed.

Connections to other components and structures
Daltex FNS 92 and Daltex FNS 125 shall be installed with airtight connections to the exterior wind barrier, and with airtight overlaps at the ridge and connections between separate roof planes. Connections towards openings in the roof such as roof windows, chimneys etc. must also be made both water- and airtight.

Construction details for combined roofing underlays and wind barriers are shown in Building Research Design Guide 525.102.

Roofs with attics
Daltex FNS 92 and Daltex FNS 125 has sufficient low vapour resistance to be used as roofing underlay in non-ventilated attic spaces, e.g. as shown in fig. 3.

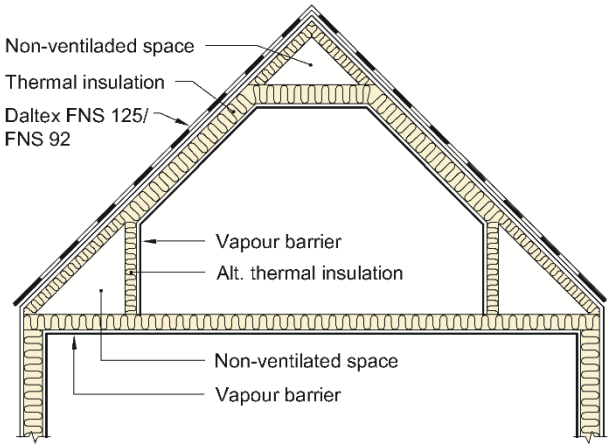


Fig. 3
Example of Daltex FNS 92 and FNS125 roofing underlay used in a roof construction with trussed rafters and partially non-ventilated spaces. The end walls in the non-ventilated spaces must also have thermal insulation and a wind barrier, and any openings to the rooms must have airtight doors/hatches.

Combination with sarking board
The products may be applied as roofing underlay in combination with wooden board sheathing, e.g. in constructions where thermal insulation is placed as shown in fig. 4. When reconstructing old roofs, the old roofing must be removed before the new vapour open underlay, counter battens and new roofing, are installed.

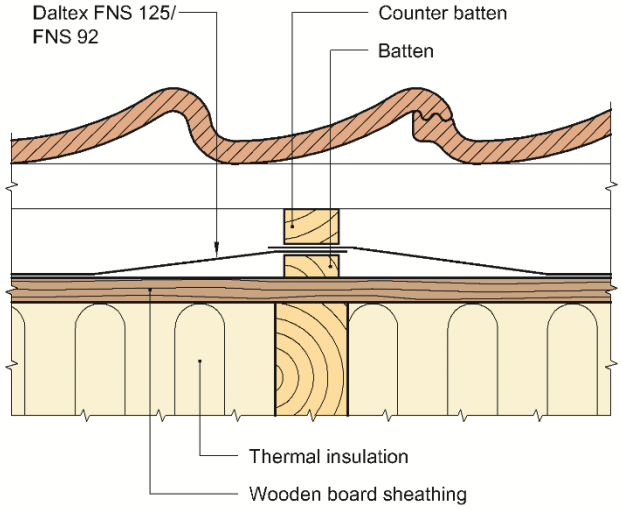


Fig. 4
Breathable roofing underlay placed on wooden board sheathing, with thermal insulation beneath. The overlap joints are continually clamped between battens and counter battens to insure air- and watertightness.

7. Factory production control
Daltex FNS 92 and Daltex FNS 125 are produced by Don & Low Ltd., Scotland.

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

The manufacturing of Daltex FNS 92 and Daltex FNS 125 is subjected to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer's quality management system is certified by British Standards Institution, BSI, towards ISO 9001:2008, certificate no.FM 45536.

8. Basis for the approval

The evaluation of Daltex FNS 92 and Daltex FNS 125 are 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

Daltex FNS 92 and Daltex FNS 125 shall be marked on the packaging with the name of the product, role dimensions, and production code or date.

Daltex FNS 92 and Daltex FNS 125 are CE marked in accordance with EN 13859-1.

The approval mark for SINTEF Technical Approval No. 2375 may also be used.

10. Liability

The holder/manufacturer 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

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Approval Manager