SINTEF Technical Approval

TG 20521

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Provided listed on
www.sintefcertification.no

SINTEF confirms that

Anti'con Diffo HQ

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

Tectis AS
Isebakkeveien 55
1788 Halden
www.tectis.no

2. Product description

Anti'con Diffo HQ is made of a UV-stabilized two layer spun bonded nonwoven polypropylene fabric sandwiching a monolitic vapour open film. Anti'con Diffo HQ is intended for use as a combined roofing underlay and wind barrier.

Table 1
Geometric properties for Anti'con Diffo HQ

Property	Measure	Unit	Tolerance
Roll, length	25 / 50	m	± 0,1 m
Roll, width - Anti'con Diffo HQ	1,3 / 1,5 / 3	m	+ 2 -0 mm
Mass per unit - Anti'con Diffo HQ 230 - Anti'con Diffo HQ 135	 230 135	g/m²	± 5%

3. Fields of application

Anti'con Diffo HQ can be used as a wind barrier in thermal insulated wooden walls and roof constructions, and as a combined roofing underlay and wind barrier in thermal insulated pitched wooden roofs with ventilated, discontinuous roofing and external drainage, see Fig. 1. and Fig. 2.

Anti'con Diffo HQ is particularly suitable for roofs with continuous thermal insulation from eaves to ridge and may also be applied in pitched wooden roofs with heated rooms in parts of the attic, and above uninsulated attic spaces.

Anti'con Diffo HQ can be used on roofs in buildings in hazard class 1-6 in fire class 1, 2 and 3.

Anti'con Diffo HQ can be used as wind barrier on walls in hazard class 1-6 in fire class 1 in buildings up to three floors if each dwelling unit has direct access to the ground level (not via stairs or staircases). For other use, a fire safety analysis must be performed.

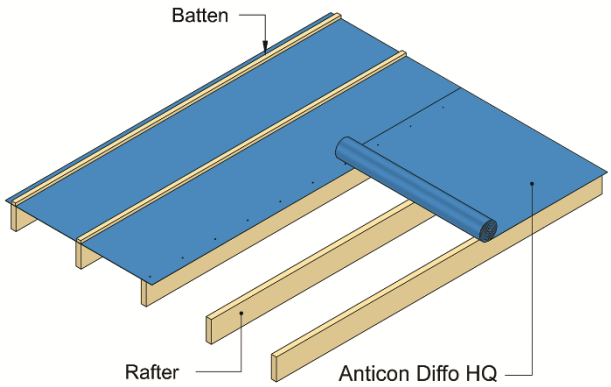

Fig.1
Anti'con Diffo HQ mounted along the rafters

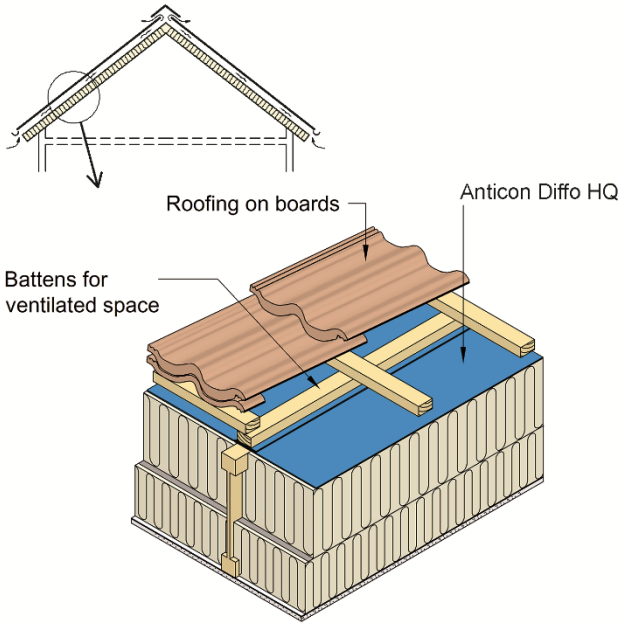

Fig. 2
Basic roof construction using Anti'con Diffo HQ as a combined roof underlayer and wind barrier

Table 2
Anti'con Diffo HQ product properties

Property	Test method EN	Anti'con Diffo HQ 230		Anti'con Diffo HQ 135		Unit
		Declaration of performance[1)]	Control limit[2)]	Declaration of performance[1)]	Control limit[2)]	
Dimensional stability Longiudal Transversal	EN 1107-2	- -	≤ 2 ≤ 2	0 0	≤ 0,1 ≤ 0,1	%
Water tightness	EN 1928	W1	W1	W1	W1	-
Air tightness material	EN 12114	0,012	≤ 0,012	-	< 0,05	$m^3/(m^2h50Pa)$
Air tightness construction	EN 12114	-	0,1 [3)]	-	-	$m^3/(m^2h50Pa)$
Tear resistance (nail shank) Longitudinal Transversal	EN 12310-1	255 +55/-45 315 ± 55	≥ 210 ≥ 260	180 ±50 200 ±50	≥ 130 ≥ 150	N
Tensile strength Longitudinal Transversal	EN 12311-1 EN 13859-1	410 ± 80 300 ± 60	≥ 330 ≥ 240	≥ 235 ±50 ≥ 190 ± 50	≥ 185 ≥ 140	N / 50 mm
Elongation Longitudinal Transversal	EN 12311-1 EN 13859-1	41 +9/-8 57 +8/-11	≥ 33 ≥ 46	≥ 85 ± 30 ≥ 100 ± 30	≥ 55 ≥ 70	%
Water vapour resistance, s_d-value	EN ISO 12572	0,07 -0,02/0,03	≤ 0,10	0,07 -0,02/+0,03	≤ 0,10	m
Rain tightness, construction	NT Build 421	-	Tight at 10° slope and 600 Pa pressure difference [3)]	-	-	Pa
Tread through resistance	SP 0487	-	2,2 [3)]	-	-	kN

[1)] Manufacturers Declaration of Performance, DoP
[2)] Control limit shows values, product has to satisfy during internal factory production control and audit testing
[3)] Results from type testing

4. Properties

Product properties

Product properties for Anti'con Diffo HQ are shown in table 2.

Concentrated load resistance

Based on performed tests and provided installation according to clause 6, Anti'con Diffo HQ 230 is considered to have sufficient resistance against "tread through" during the construction period.

Properties related to fire

Anti'con Diffo HQ has a reaction to fire class E according to EN 13501-1.

Durability

The durability for Anti'con Diffo HQ has been tested according to EN 13859-1 and EN 13859-2.

Anti'con Diffo HQ is considered to have satisfactory durability during a construction period but must not be exposed to direct sunlight in the finished construction. The product must be covered as soon as possible after installation on roofs and walls, without unnecessary delay.

5. Environmental aspects

Substances hazardous to health and environment

Anti'con Diffo HQ 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

Anti'con Diffo HQ shall be sorted as plastic-based materials on the building/demolition site. The product shall be delivered to an authorized waste treatment plant for material recovery.

Environmental declaration

No environmental declaration (EPD) has been worked out for Anti'con Diffo HQ.

6. Special conditions for use and installation

General

Anti'con Diffo HQ shall be installed in a way that provides both an airtight and a watertight layer. All joints must be clamped with minimum 50 mm overlaps. Combined roofing underlay applications shall follow the principles showed in Building Research Design Guide no. 525.102 *Isolerte skrå tretak med kombinert undertak og vindsperre,* 520.308 *Yttervegger og tak i trehus med 30 minutters brannmotstand, 520.322 Brannmotstand for vegger av tre, mur og betong* and the instructions given by the manufacturer.

Design considerations

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

The wall cladding and the roofing should be finished as soon as possible after Anti'con Diffo HQ have been installed, in order to prevent that the underlay or the wind barrier is freely exposed for a longer period of time. Thermal insulation, vapour barrier and the ceiling shall not be installed until the roofing has been installed and the underlay is checked to be properly mounted.

When using Anti'con Diffo HQ, the roof pitch must be minimum 10°.

Installation
Anti'con Diffo HQ shall be installed parallel to the rafters and be clamped continuous as shown in Fig. 1.

In order to minimize the pressure at the overlaps due to shrinkage of the rafters, the moisture content of the rafters should be less than 20% when installed.

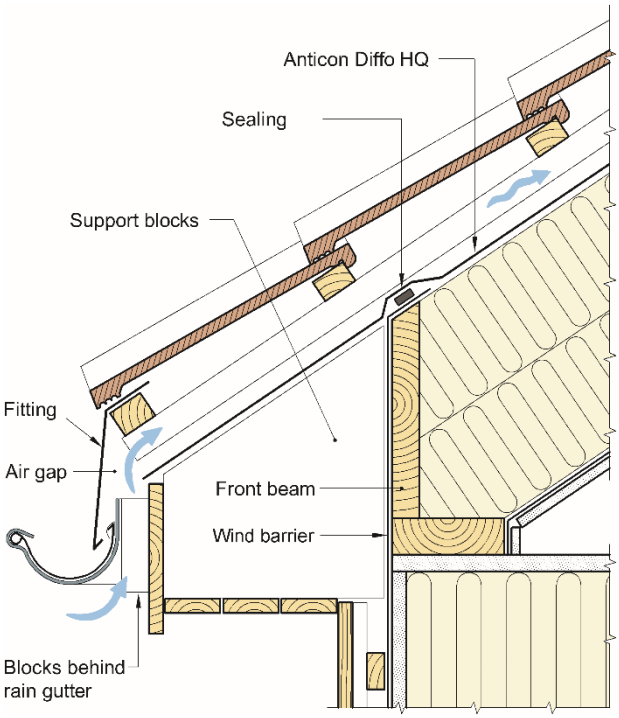

Fig. 3
Example of connection between wall/roof in a construction with eaves without thorough rafters. The connection between wind barrier and Anti'con Diffo HQ is here sealed at the top of the front beam.

Dimensions of counter battens and ventilation space
The roofing shall have a ventilated space between the roofing and the underlay. For roofs with a maximum length between eaves and ridge of approx. 7 m the following minimum thicknesses of counter battens should be used depending on the roof pitch:

< 30°:	36 mm
31º - 40°:	30 mm
≥ 41°:	23 mm

For larger roofs the distance between the underlay and the roofing battens should be increased, see Building Research Design Guide no. 525.102 *Isolerte skrå tretak med kombinert undertak og vindsperre.*

Maximum thickness of the counter battens used for clamping shall be 36 mm.

The counter battens shall be fixed by screws or nails spaced at maximum 300 mm. It is recommended to use screws with plain shank on the part which penetrates the counter battens. For roof pitches above 18º, alternatively 3.1 mm hot galvanized square nails can be used or also grooved nails with a length of 2.5 times the thickness of the counter battens.

Connections to other components and structures
Anti'con Diffo HQ shall be installed with airtight connections to the wind barrier on the external side of the wall. Connections towards installed bushings like chimneys, skylights, pipes etc. shall be performed in such way that they are air- and watertight. Fig. 3 shows an example of a connection between Anti'con Diffo HQ and wind barrier, and Fig. 4 shows a chimney bushing using a prefabricated bushing sleeve.

Roofs with attics
Even if a combined roof underlayer and wind barrier is best suitable for roofs where the vapour barrier is continuous installed along the roof, Anti'con Diffo HQ can also be as a roofing underlay when there is a living room in part of the attic, see Building Research Design Guide no. 525.107 *Skrå tretak med oppholdsrom på deler av loftet*.

Combination with wooden board sheeting
Anti'con Diffo HQ may be applied as roofing underlay in combination with wooden board sheeting provided a total water vapour resistance of maximum s_d-value = 0.5 m.

Using wooden sheeting made of plywood or OSB-boards, the water vapour resistance must be documented.

Anti'con Diffo HQ can be assembled directly to wooden board sheetings made of spruce or pine in old roofs which are reconstructed and insulated. The insulation can then be placed as shown in Fig. 5 after the old roofing has been removed.

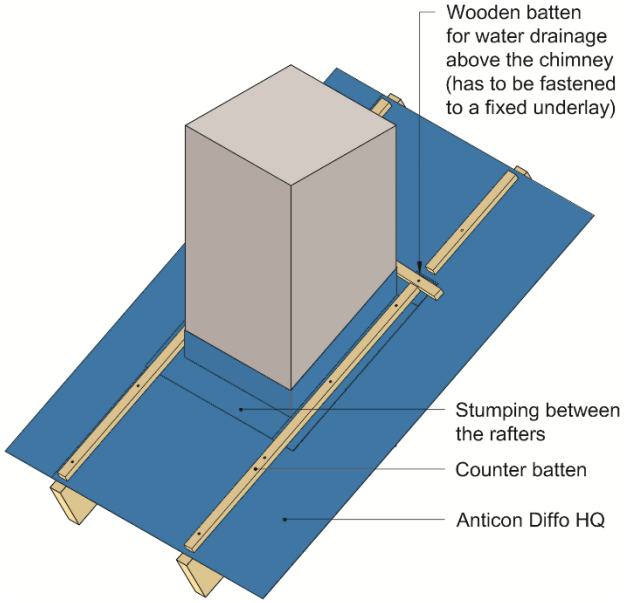

Fig. 4
Example of assembling a chimney bushing using a prefabricated bushing sleeve

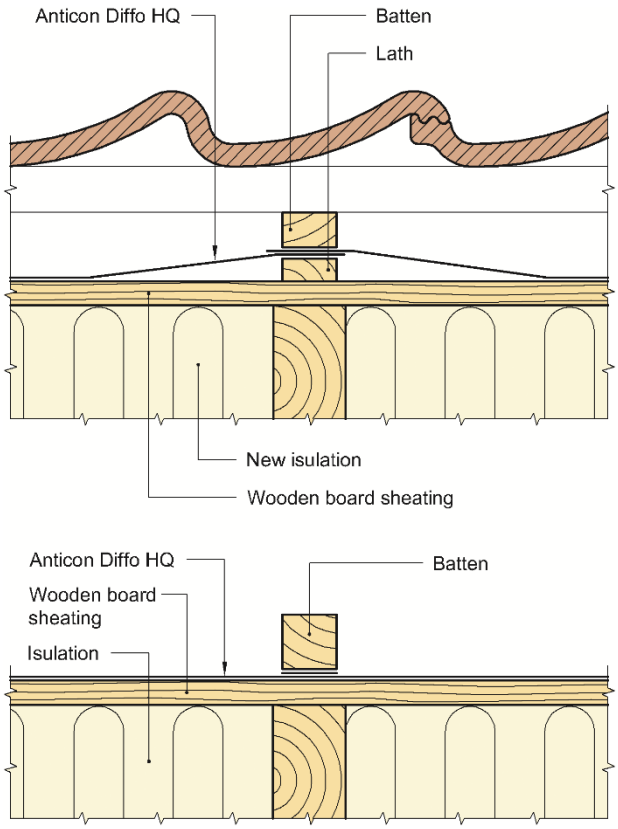

Fig. 5
Anti'con Diffo HQ assembled on a rough surface and wooden board sheeting which is insulated on the beneath side. When reconstructing old roofs, the old, not breathable, roofing must be removed. Wooden battens can be used beneath the overlapping joints to ensure adequate air tightness, through screw- and nail holes.

7. Factory production control

Anti'con Diffo HQ is produced in Finland for Tectis AS.

The holder of the approval is responsible for the factory production control in order to ensure that Anti'con Diffo HQ is produced in accordance with the preconditions applying to this approval.

The manufacturing of Anti'con Diffo HQ is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer has a quality system certified by Inspecta Sertifiointi Oy according to ISO 9001:2015.

8. Basis for the approval

The evaluation of Anti'con Diffo HQ 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

Each roll of the product shall be marked with its brand name and approval holder's name.

Anti'con Diffo HQ are CE marked in accordance with EN 13859-1 and EN 13859-2.

The approval mark for SINTEF Technical Approval No. 20521 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

Hans Boye Skogstad
Approval Manager