SINTEF

SINTEF Certification

No. 20571

Technical Approval

Issued first time: 24.05.2019
Revised:
Amended:
Valid until: 01.06.2024
Provided listed on www.sintefcertification.no

SINTEF confirms that

Mastermax Premium 150 SA-2 combined roofing underlay and wind barrier

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

Masterplast International KFT.
Árpád u. 1/A
8143 Sárszentmihály
Hungary
www.masterplastgroup.com

2. Product description

Mastermax Premium 150 SA-2 combined roofing underlay and wind barrier is a three-layer membrane of thermally bonded non-woven polypropylene fabric, sandwiching a microporous film, to achieve a vapour open membrane. Measures, grammage and tolerances are given in table 1.

Mastermax Premium 150 SA-2 is dark grey and labelled with its name, and information in white letters regarding installation.

Table 1
Measures, grammage and tolerances for Mastermax Premium 150 SA-2

Property	Mastermax Premium 150 SA-2	Unit	Tolerance
Grammage	150	g/m²	± 5%
Width	1,5 – 2,75 – 3,0	m	+1,5%/-0,5%
Length / Roll	50	m	+5%/-0%

Measured according EN 1848-2 and EN 1849-2.

3. Fields of application

Mastermax Premium 150 SA-2 can be used as combined roof underlayer and wind barrier on roofs in buildings in hazard class 1-6 and fire class 1, 2 and 3. Used as wind barrier on walls, the product can be used 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 stair cases). For other use, a fire safety analysis has to be performed.

Mastermax Premium 150 SA-2 can be used as a combined roofing underlay and wind barrier in pitched, thermal insulated, wooden roof constructions with ventilated, discontinuous roofing and external drainage as shown in fig. 2. Mastermax Premium 150 SA-2 can also be used as a wind barrier in thermal insulated roofs and walls.

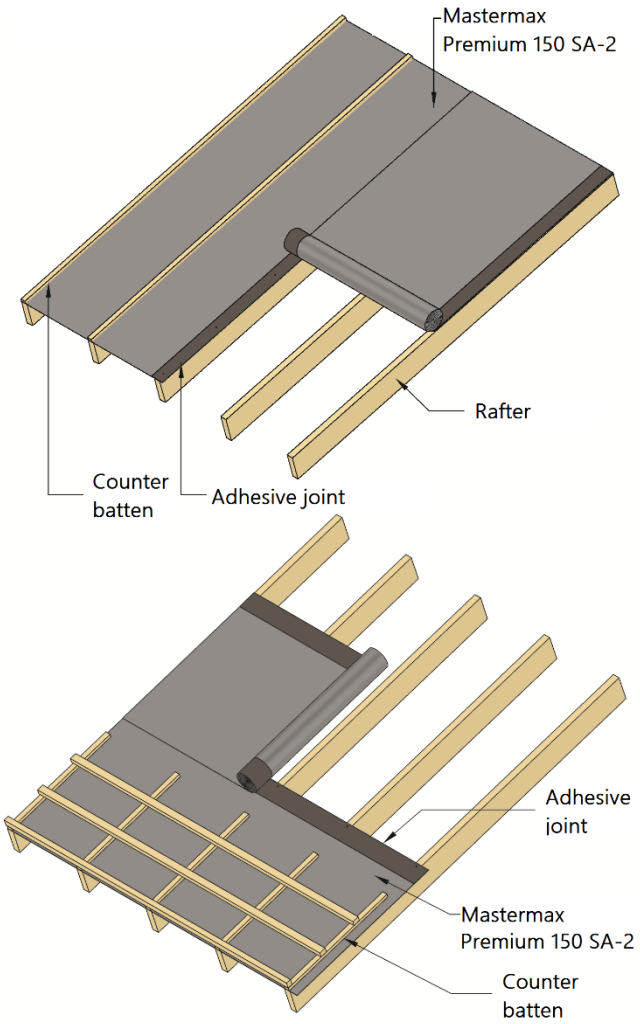


Fig. 1
Mastermax Premium 150 SA-2 combined roofing underlay and wind barrier installed longitudinal and transversal to the rafters

The membrane is particularly suitable for roofs with continuous thermal insulation from eaves to ridge. Mastermax Premium 150 SA-2 may also be installed in pitched wooden roofs with heated rooms in parts of the attic and uninsulated attic spaces.

Contact person, SINTEF: Jan Ove Busklein
Author: Holger Halstedt
www.sintefcertification.no
E-mail: certification@sintef.no

© Copyright SINTEF

Table 2: Material– and construction properties for Mastermax Premium 150 SA-2 combined roofing underlay and wind barrier

Property	Method	Mastermax Premium 150 SA-2		Unit
		DoP[1)]	Control limit[2)]	
Dimensional stability, -Longitudinal -Transversal	EN 1107-2	 < 1 < 1	 < 1 < 1	%
Water tightness	EN 1928 (A)	W1	W1	Class
Air tightness material	EN 12114	-	≤ 0,1	m³/(m²h50Pa)
Air tightness construction	EN 12114	-	≤ 0,2	m³/(m²h50Pa)
Rain tightness construction	NT Build 421	-	300[3)]	Pa
Tear resistance (nail shank) -Longitudinal -Transversal	EN 12310-1	 ≥ 200 ± 20 ≥ 190 ± 20	 ≥ 180 ≥ 170	N
Tensile strength -Longitudinal -Transversal	EN 12311-1 EN 13859-2	 ≥ 330 ± 30 ≥ 330 ± 30	 ≥ 300 ≥ 300	N / 50 mm
Fracture elongation -Longitudinal -Transversal	EN 12311-1 EN 13859-2	 ≥ 50 ± 5 ≥ 40 ± 5	 ≥ 45 ≥ 35	%
Water vapour resistance, s_d	EN ISO 12572	≤ 0,03	≤ 0,03	m

[1)] Declared value given in the manufacturers DoP (Declaration of performance)
[2)] Control limit shows values the product should satisfy during internal factory production control and audit testing
[3)] Result from type testing

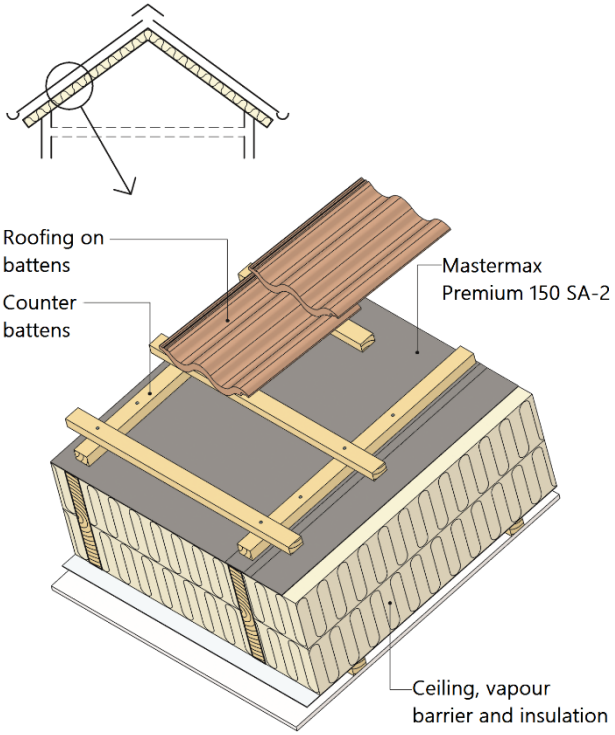


Fig. 2
Basic roof construction using Mastermax Premium 150 SA-2 as combined roofing underlay and wind barrier

4. Properties

Material properties

Material characteristics for Mastermax Premium 150 SA-2 are shown in Table 2.

Safety in case of fire

Mastermax Premium 150 SA-2 has a reaction to fire class E according to EN 13501-1.

Durability

Mastermax Premium 150 SA-2 is considered to have satisfactory durability, based on laboratory testing before- and after accelerated artificial climate ageing. The product needs to be protected against direct exposure to UV radiation in the completed construction. The product needs to be covered as soon as possible after installation at roofs and walls, without unnecessary delay.

Resistance against tread through

Resistance against tread through is not evaluated for Mastermax Premium 150 SA-2.

Air tightness construction

The airtightness of Mastermax Premium 150 SA-2 makes it possible to fulfil any requirements regarding airtightness (n_{50}) given in the building regulations, and in the Norwegian passive house standards, before the vapour barrier is installed.

5. Environmental aspects

Substances hazardous to health and environment

Mastermax Premium 150 SA-2 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 Mastermax Premium 150 SA-2.

6. Special conditions for use and installation

General

Mastermax Premium 150 SA-2 shall be installed in a way that provides both an airtight and a watertight layer on walls or roofs. The producer's guidelines, and the principles given in SINTEF Building Design guide *525.102 Isolerte skrå tretak med kombinert undertak og vindsperre*, shall be followed during installation.

Design considerations

Membrane used as combined roofing underlay and wind barrier the pitch of the roof should be in minimum 10°.

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

The roofing should be finished as soon as possible after Mastermax Premium 150 SA-2 has been installed, to prevent that the wind barrier is freely exposed to weather and/or UV radiation for a longer time period. Thermal insulation, vapour barrier and the interior lining shall not be installed before the exterior cladding or roofing has been finished and the underlay is checked.

Installation

Mastermax Premium 150 SA-2 can be installed parallel or transversal to the rafters.

In case of installation parallel to rafters, the product should be installed continuously from eave to ridge without transvers joints. All longitudinal joints need to be clamped continuously on top of a rafter.

In case of installation transversal to rafters, Mastermax Premium 150 SA-2 should be installed continuously from gable to gable. Mounting shall always start at the eave. The adhesive strips must adhere continuously to each other along all horizontal joints. Any transversal overlap needs to be clamped on top of rafters.

Because of minimizing the pressure at the overlaps due to shrinkage of the battens or the rafters, the moisture content of the timber should not exceed 20 % during installation.

Counter battens and ventilation space

Spaces between combined roofing underlay and roofing need to be ventilated. Recommended heights for counter battens related to different lengths of rafters are mentioned in table 3.

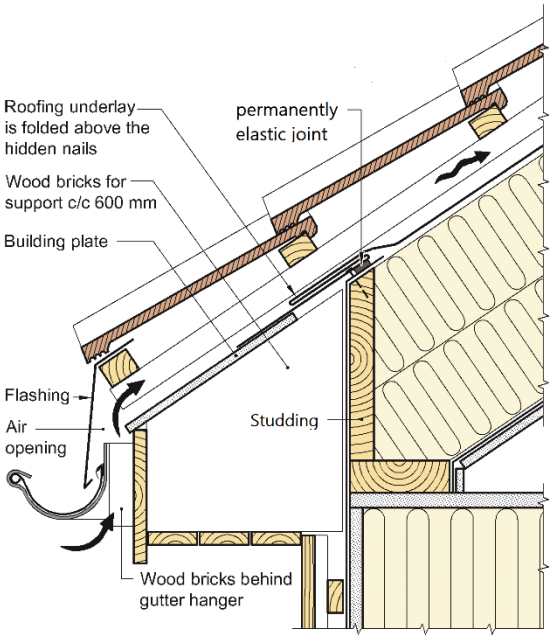


Fig. 3
Example of connection between roof and external wall where the rafters do not protrude the plane of the wall. Mastermax Premium 150 SA is installed continuously over the front edge plate. The connection between the combined roofing underlay and the wind barrier should be sealed at the top of the studding.

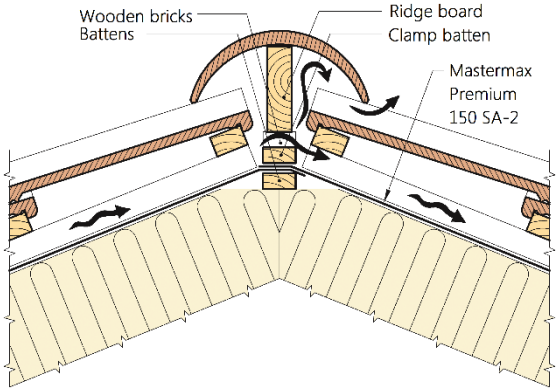


Fig. 4
Example of a ridge. The membranes should be clamped over each other at the top to ensure good airtightness.

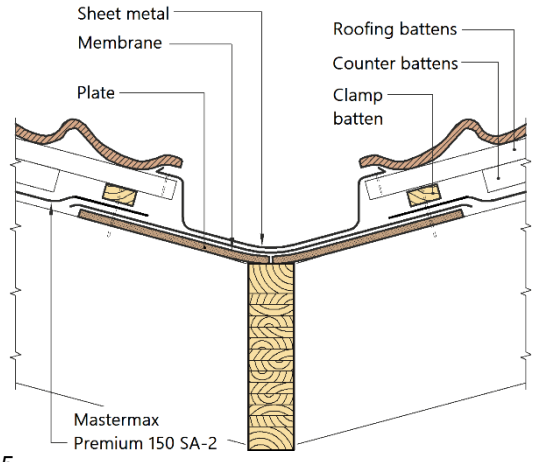


Fig. 5
Example of performance at a valley gutter. The membranes should be clamped over each other at each side of the valley gutter.

Table 3
Recommended height of counter battens (mm), depending on roof pitch and roof length.

Roof pitch	Roof length (m) [1]	
	7,5	10
< 30 °	36	36 + 36
31 – 40 °	30	36
≥ 41 °	23	36

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

For bigger sized roofs should the distances between roofing underlay and battens be increased according to SINTEF Building Design Guide *525.102 Isolerte skrå tretak med kombinert undertak og vindsperre.*

Counter battens shall not exceed 36 mm thickness to ensure sufficient clamping. Counter battens shall be fixed with screws in max c/c 300 mm distance. It is recommended to use screws with plane shank on the part which penetrates the counter battens. For pitches above 18°, 3.1 mm warm galvanised, rectangular, eventually grooved, nails with a length of 2.5 times the thickness of the counter batten, can be used.

Transitions and endings

Mastermax Premium 150 SA-2 shall be installed with airtight connections to the wind barrier of exterior walls. Other details shall also airtight performed, like ridges or valley gutters. See also fig. 4 and fig. 5.

At eaves with protruding rafters the roofing underlay shall be installed around the rafters to get clamped, together with the wind barrier of the wall, to the top-sill of the wall.

At eaves without protruding rafters, the roofing underlay can be nailed beneath the fold and then sealed to the wind barrier. See also fig. 3.

Penetrations

Penetrations through roof (chimney, roof windows, pipes etc.), need to be performed both water- and airtight. Fig. 6 shows an example for a chimney penetration.

Roofs with attics

Mastermax Premium 150 SA-2 has sufficient low vapour resistance to be used as roofing underlay in non-ventilated attic spaces, see Building Research Design Guide no. *525.107 Skrå tretak med oppholdsrom på deler av loftet.*

Combination with wooden board sheeting

Mastermax Premium 150 SA-2 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.

Mastermax Premium 150 SA-2 can be assembled directly to wooden board sheeting made of spruce or pine in refurbished roofs which are reconstructed and insulated. See examples in Fig. 7 and Fig. 8.

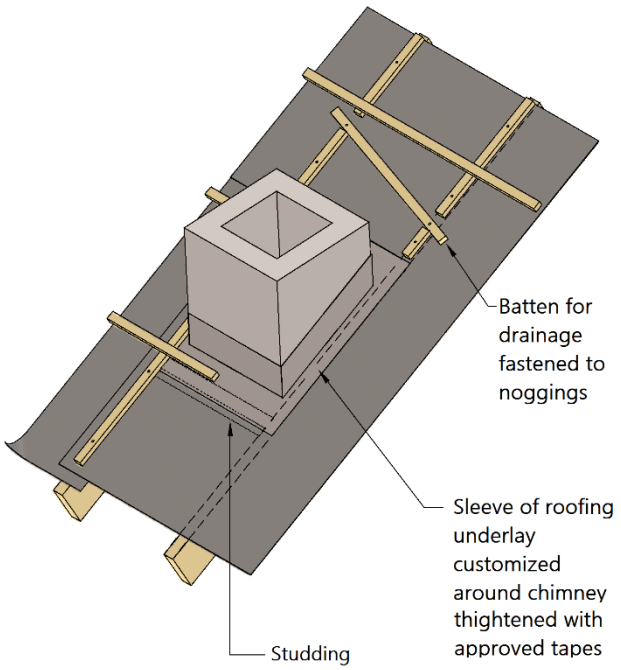


Fig. 6
Example of assembling a chimney sleeve by using Mastermax Premium 150 SA-2 and additional SINTEF approved tapes.

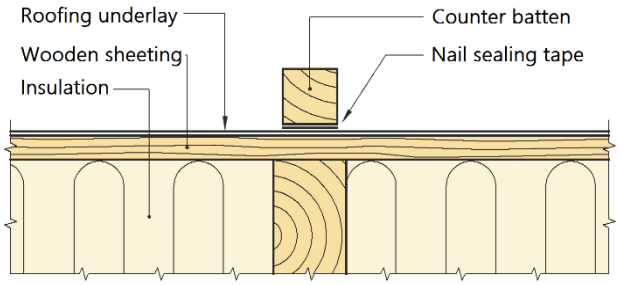


Fig. 7
Example of assembling roofing underlay on smooth wooden sheeting. To avoid leakage through nail holes a nail sealing tape can be used.

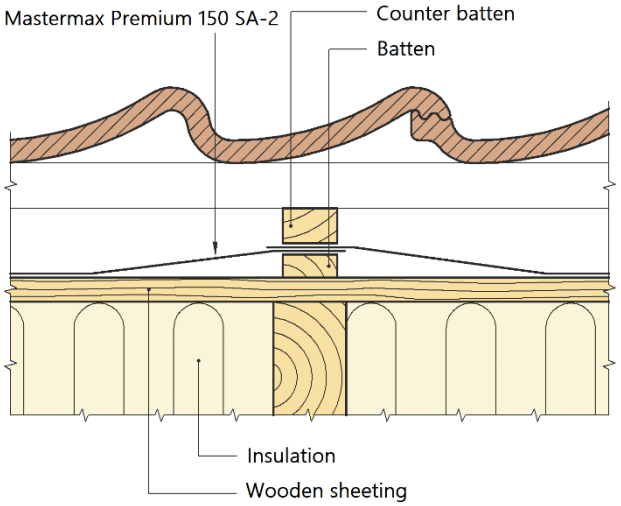


Fig. 8
Example for a transversal joint of Mastermax Premium 150 SA-2 on rough wooden sheeting.

If using wooden sheeting made of plywood or OSB-boards, the water vapour resistance should be documented. The total water vapour resistance needs to be at a maximum s_d value = 0,5 m.

On rough surfaces of wooden board sheeting, which are thermal insulated at the bottom, a counter batten needs to be installed underneath the roofing underlay to avoid leakage through overlaps (detail is shown in figure 8). This is important in cases where the surface is rough and where the joints are installed crosswise the roof boards. Notice also recommendations regarding screwing and/or nailing of counter battens, given in chapter 6.

Before reconstruction of old roofs, old roofing (all vapour tight layers) needs to be removed.

Transport and storage
Mastermax Premium 150 SA-2 shall be stored in dry conditions, where rolls are placed on pallets and wrapped.

7. Factory production control

The product is produced by Masterplast International KFT., Árpád u. 1/A, 8143 Sárszentmihály, Hungary

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

The manufacturing of the product is subject to continuous surveillance of the factory production control in accordance

The quality management system used of Masterplast Nyrt. is certified by Intercert Ltd. according EN ISO 9001, Certificate no. INTERCERT 181689.

8. Basis for the approval

The approval is based on properties documented in the following reports:

– SINTEF report 2019:00185, dated 06.02.2019, Typesting of Mastermax Premium 150 SA-2

9. Marking

Each roll of Mastermax Premium 150 SA-2 are marked with product name, name of the manufacturer and date of manufacturing. The product is CE marked in accordance with EN 13859-1. The approval mark for SINTEF Technical Approval No. 20571 may also be used.



Approval mark

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