

SINTEF confirms that

Cembrit Windstopper

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

Cembrit Holding A/S
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2. Product description

Cembrit Windstopper is a fibre-cement board for use as wind barrier. The board is part of a wind barrier layer system which also include Cembrit Windstopper Tape, corrosion protected Cembrit screws for wood, Cembrit screws for steel and Cembrit clout nails.

Cembrit Windstopper boards are made from portland-cement and limestone filler reinforced with cellulose and polypropylene fibres. The surface has a light grey colour.

The approval covers Cembrit Windstopper Extreme with nominal thickness 4.5 mm and 9 mm, and Cembrit Windstopper Basic with nominal thickness 9 mm.

Cembrit Windstopper Extreme boards have lower flexural strength than Cembrit Windstopper Basic, as shown in Table 1.

Standard width is 1200 mm and standard length 2700 mm. The boards may also be ordered in special dimensions with maximum width 1250 mm and maximum length 3150 mm.

The board surface shall not be treated.

Thickness tolerance is $\pm 10\%$ of nominal thickness measured according to EN 12467. Width tolerance is ± 4 mm, and length tolerance is ± 5 mm. Edge straightness tolerance is maximum 2 mm/m, and edge squareness tolerance is maximum 3 mm.

Cembrit Windstopper Basic is CE-marked in accordance with EN 12467 for Category D sheets, strength Class 2 and Level I.

Cembrit Windstopper Extreme is CE-marked in accordance with EN 12467 for Category A sheets, strength Class 1 and Level I.

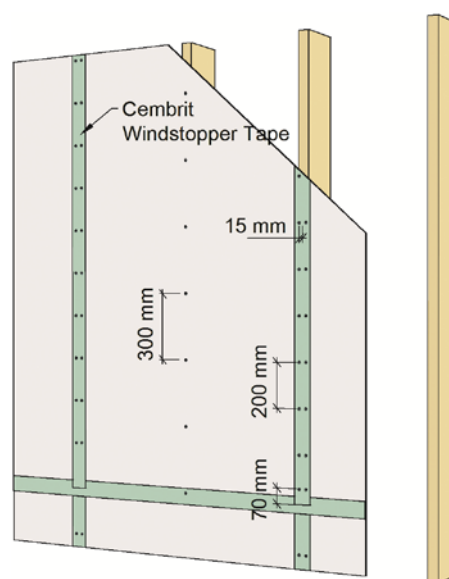


Fig. 1
 Cembrit Windstopper installed on timber studs

Cembrit Windstopper Tape is a single sided tape to be used over all joints between boards. The tape is delivered in 50 mm and 75 mm widths.

3. Fields of application

The Cembrit Windstopper system may be used as a wind barrier layer on timber or steel frame walls with external ventilated cladding.

Cembrit Windstopper may also be used as sheathing and wind barrier in floors over crawl space foundations.

Cembrit Windstopper Basic og Extreme may be used in buildings in fire class 1, 2 and 3.

4. Properties

4.1 Material properties

Table 1 shows material properties for Cembrit Windstopper boards.

Table 1
Product properties for Cembrit Windstopper

Property	Test method	Cembrit Windstopper Extreme		Cembrit Windstopper Basic	Unit
		Thickness		Thickness	
		4,5 mm	9 mm	9 mm	
Modulus of rupture ²⁾	EN 12467	≥ 4	≥ 4	≥ 7	N/mm ²
Air tightness Material ¹⁾	EN 12114	≤ 0,03	≤ 0,03	≤ 0,03	m ³ /m ² h50Pa
Air tightness Construction, with tape over all joints ¹⁾	EN 12114	≤ 0,05	≤ 0,05	≤ 0,05	m ³ /m ² h50Pa
Rain tightness Construction, with tape over all joints ¹⁾	EN 12865	Tight at 450 Pa	Tight at 1050 Pa	Tight at 1050 Pa	Pa
Water vapour resistance $s_d^{1)2)}$	ISO 12572 (50/93 % RF 23°C)	0,4	0,5	0,3	m
Water impermeability ¹⁾	EN 12467	Tight after 24 h in 20 mm water	Tight after 24 h in 20 mm water	Tight after 24 h in 20 mm water	-
Durability - Freeze/thaw - Heat/rain - Warm water - Soak/dry	EN 12467	Pass	Pass	Pass	-
Density	EN 12467	1450 ± 15 %			kg/m ³

¹⁾ Result from type testing

²⁾ Control limit for the control testing performed by the manufacturer and for audit testing

4.2 Load resistance

When the boards are fixed to a wall framework as described in cl. 6, the board layer can normally be assumed to give sufficient wind bracing to one and two storey low-rise houses when all internal walls have sheet covering.

4.3 Reaction to fire

The boards are classified as A2-s1,d0 according to EN 13501-1.

4.4 Fire resistance

The fire resistance according to EN 13501-2 for 9 mm Cembrit Windstopper Basic and Extreme is K₂10, when installed directly on underlays with a density of at least 300 kg/m³.

4.5 Thermal resistance

The thermal resistance of the boards is 0.036 m²K/W according to EN ISO 10456:2007.

4.6 Durability

Cembrit Windstopper Basic and Extreme, and Cembrit Windstopper Tape have been assessed on the basis of laboratory testing. The wind barrier system has been exposed to artificial climate aging for a period of four weeks according to NT Build 495.

Cembrit Windstopper Tape has been exposed to artificial climate aging for a period of two weeks according to NT Build 495, followed by thermal aging in 24 weeks according to EN 1296.

It is estimated that the wind barrier system may stay exposed to external climate for up to 12 months before a cladding is installed on the outside.

5. Environmental aspects

5.1 Substances hazardous to health and environment

Cembrit Windstopper 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.

5.2 Waste treatment/recycling

Cembrit Windstopper shall be sorted as residual waste and delivered to an authorized waste treatment plant for disposal.

5.3 Environmental declaration

An environmental declaration (EPD) according to EN 15804 has been worked out for Cembrit Windstopper boards. Table 2 shows the environmental indicators. For full environmental declaration see EPD no. MD-16001-EN at www.epddanmark.dk.

Table 2

Environmental declaration according to EN 15804 for Cembrit Windstopper. Cradle to port (Finland). Declared unit is 1 ton.

Indicator	Value
Global warming, kg CO ₂ equivalent	5,41E+02
Total energy consumption, MJ	10.82 E+02

6. Special conditions for use and installation

6.1 Design considerations

Cembrit Windstopper shall be fixed to a timber frame with minimum 48 mm thick studs, or to steel profiles with minimum 40 mm wide flanges. The boards shall be installed on studs with maximum c/c 600 mm stud spacing.

In the final construction the wind barrier layer shall only be used with an external rain screen as protection.

6.2 Installation

The boards are fixed to the wall frame with screws or clout nails spaced 200 mm along the long edges and 300 mm elsewhere. The distance between screws or nails and the board edges shall be minimum 15 mm, and distance to the corners minimum 70 mm., see fig. 1.

The screw or nail heads shall be level with the board surface. The diameter of clout nail heads shall be minimum 8 mm. If other types of nails with smaller head are applied the nails shall be covered by a tape in the same way as for joints between boards (cl. 6.3).

Connections to foundations, window- and door openings, roof and wind barrier penetrations shall follow the principles shown in relevant Building Research Design Guides.

When used as sheathing and wind barrier in floors over crawl space foundations Cembrit Windstopper boards are fixed with screws spaced 200 mm along all edges. The distance between screws and the board edges shall be minimum 15 mm, and distance to the corners minimum 70 mm.

Penetrations of the wind barrier layer in structures with a classified fire resistance shall have a documented fire resistance performance which do not reduce the fire resistance performance of the boards.

6.3 Joint sealing

All joints between boards shall be sealed with Cembrit Windstopper Tape, see fig. 1.

The board surface shall be dry and free from dust before the tape is applied.

Minimum effective width shall be 50 mm. At tape joints the overlap shall be minimum 25 mm.

6.4 Transport and storage

The boards shall be covered during transportation.

The boards shall be stored on a level support in a dry place. If stored outside the boards shall be protected from moisture, dirt and mechanical strain by a ventilated tarpaulin.

7. Factory production control

The Cembrit Windstopper boards are produced by Cembrit Production Oy, Lohja, Finland.

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 factory production of the boards is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

Cembrit Holding A/S has a management quality system certified according to ISO 9001:2000 by Bureau Veritas Quality International, certificate no. 8000117.

8. Basis for the approval

- SP report 4P06718A, Air tightness for Cembrit Windstopper Extreme, dated 15-10-2014 (air tightness material)
- SP report 4P06718B, Air tightness for Cembrit Windstopper Extreme, dated 20-10-2014 (air tightness construction)
- SINTEF report 102009083-4, Cembrit Windstopper Accelerated climate ageing, dated 08-06-2016 (durability)
- SINTEF report 102013137, 3M FAST-F 8067 Tape adhered to Cembrit Windstopper Basic and Extreme, dated 21-07-2016 (durability tape)
- SP test report 6F003517, Testing of tape according to SP method 1380 version 3, dated 04-04-2016 (type testing)
- MPA BAU HANNOVER, test report 154443, Initial type testing according to EN 12467 Cembrit Windstopper Extreme, dated 26-01-2016. (type testing)
- MPA BAU HANNOVER, test report 161377, Initial type testing according to EN 12467 Cembrit Windstopper Basic 9mm, dated 27-06-2016. (initial type testing according to EN 12467)
- MPA BAU HANNOVER, test report 155750, Determination of water vapour transmission properties according to EN Cembrit Windstopper Basic 9mm, dated 19-01-2016. (water vapour resistance)
- SINTEF report 102006618-4, Cembrit Windstopper Rain tightness testing April 2016, dated 02-06-2016 (rain tightness)
- Lund University, Faculty of Engineering, LTH, Diaphragm action of timber frame wall with external gypsum or Minerit board. Report dated 04-08-2014 (stiffness)
- MPA BAU HANNOVER, test report 155796, Reaction to fire testing according to EN 113823 Cembrit Windstopper Basic, dated 21-01-2016 (fire)
- MPA BAU HANNOVER, Reaction to fire classification report 160457, Cembrit Windstopper Basic, dated 08-02-2016 (fire)
- MPA BAU HANNOVER, Reaction to fire classification report 160179, Cembrit Windstopper Extreme 4.5 mm, dated 13-01-2016 (fire)
- DBI, Danish Institute of Fire and Security Technology, Reaction to fire classification report PCA10358A, Cembrit Windstopper Basic 9 mm, dated 25-11-2015 (fire)

- VTT, Classification of fire resistance in accordance with EN 13501 report no. VTT-S-07875-12, Fire resistance test Cembrit Windstopper Extreme, dated 19-12-2012 (fire)
- SINTEF report 102006618-4, Cembrit Windstopper Accelerated climate ageing Cembrit Windstopper Basic 9 mm and Extreme 4,5 mm, dated 02-01-2017 (durability)
- VTT, report no. VTT-S-02162-17, Testing of Cembrit fiber-cement boards for wall diaphragm use, dated 18-04-2017 (load resistance)
- MPA BAU HANNOVER, report 191534, Initial type testing according to EN 12467, category A on fibre cement flate sheets Cembrit Windstopper Extreme 4,5 and 9mm, dated 26-08-2019.
- MPA BAU HANNOVER, rapport 191534, Complementary Testing according to EN 12467, category A on fibre cement flate sheets Cembrit Windstopper Extreme 4,5 og 9mm, dated 26-08-2019. (complimentary testing to report no. MPA 154443 according to. EN 12467)
- DTI, Danish Technological intitute, rapport 864115r1, Testing Cembrit Windstopper Extreme 4,5 and 9 mm-Heat-Rain according to EN 12467, category A on fibre cement flate sheets, dated 28-08-2019.
- Eurofins Expert Services, rapport EUFI29-20000802-T1, Audit testing Cembrit Windstopper Extreme and Basic, the air permeability test (EN12114) and the water vapour transmission properties (EN ISO 12572); dated 23-03-2020
- MPA BAU HANNOVER, rapport 202103 expert report regarding dust addition- reaction to fire properties; dated :28-05- 2020
- MPA BAU HANNOVER, rapport 202350 expert report regarding dust addition- reaction to fire properties; dated 28-05- 2020

9. Marking

The product is CE-marked in accordance with EN 12467.

The approval mark for SINTEF Technical Approval No. 20411 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

A handwritten signature in blue ink that reads "Hans Boye Skogstad".

Hans Boye Skogstad
Godkjenningsleder