

# Technical Approval

# **SINTEF Certification**

# No. 20017

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Provided listed on www.sintefcertification.no					

SINTEF confirms that

# Vempro Wind Barrier and Glava Bracing Stay

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**

DuPont de Nemours (Luxembourg) S.à r.l. Rue Général Patton, Contern L-2984 Luxembourg Luxembourg

# www.dupont.com

# 2. Product description

Vempro Wind Barrier is made from spun bonded nonwoven polypropylene fabric and polypropylene film. The weight is 100 + 20/-5 g/m<sup>2</sup>. The top side is blue and the underside is white. Vempro Wind Barrier is supplied as rolls with standard dimensions of 2.74 m x 25 m, 2.74 m x 50 m, 3.0 m x 50 m, 1.3 m x 50 m, and as a wind barrier strip of 0.15 m x 50 m.

Glava Bracing Stay is a T-shaped profile made of hot dipped galvanized steel for wind bracing of walls, see Fig. 1 and Fig. 5. The bracing stays are supplied in standard length 3.1 m.

As supplement to the product the following components can be delivered:

- Vempro Vindsperreremse (wind barrier strip)
- Vempro S, svillemembran (sill membrane)

# 3. Fields of application

Vempro Wind Barrier is used as an external wind barrier in thermal insulated wooden walls with aerated claddings, and in wooden roof constructions, see Fig. 1 and Fig. 2. Vempro Wind Barrier <u>cannot</u> be used as a combined roofing underlay and wind barrier.

Vempro Wind Barrier can be used as a wind barrier on roofs in buildings in hazard class 1-6 in fire class 1,2 and 3.

Vempro Wind Barrier can be used as a wind barrier on walls in hazard class 1-6 in and in homes until 3 floors where each unit has direct access to the terrain (not via staircase or staircases). For other uses must be fire safety analysis performed.





Vempro Wind Barrier used as a Wind barrier in timber frame wall together with Vempro S sill membrane and Glava Bracing Stay.

# 4. Properties

Material- and construction characteristics for Vempro Wind Barrier are shown in Table 1.

# Properties related to fire

Reaction to fire performance for the product has not been determined.

# Durability

Vempro Wind Barrier is considered to have satisfactory durability on the basis laboratory testing before- and after accelerated artificial climate ageing. The product has to be protected against direct exposure to UV radiation in the complete construction. The product has to be covered as soon as possible after installation at roofs and walls, without unnecessary delay.

# Air tightness

The airtightness of the wind barrier 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.

SINTEF is the Norwegian member of European Organisation for Technical Assessment, EOTA, and European Union of Agrément, UEAtc

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Table 1	Vempro	Wind	Barrier	Material-	and	construction	cha	aracteristics	

Property	Method	DoP <sup>1)</sup>	Control limit <sup>2)</sup>	Verdi
Dimensional stability. -Longitudinal -Transversal	EN 1107-2:2001	< 2 < 2	< 2 < 2	%
Water tightness	EN 1928:2000	W1	W1	Class
Air tightness material	EN 12114:2000	≤ 0.25	0.25	m³/(m²h50Pa)
Air tightness construction	EN 12114:2000	-	0.4 <sup>3)</sup>	m³/(m²h50Pa)
Tear resistance (nail shank) -Longitudinal -Transversal	EN 12310-1:1999	110 +40/-20 140 +40/-30	≥ 90 ≥ 110	Ν
Tensile strength -Longitudinal -Transversal	EN 12311-1:1999 EN 13859-2:2014	230 ± 50 150 ± 50	≥ 180 ≥ 100	N / 50 mm
Elongation -Longitudinal -Transversal	EN 12311-1:1999 EN 13859-2:2014	60 +40/-20 70 ± 30	≥ 40 ≥ 40	%
Water vapour resistance, s₀	EN-ISO 12572:2001	0.04 ± 0.02	< 0.06	m

<sup>1)</sup> Declared value given in the manufacturers DoP (Declaration of performance)

<sup>2)</sup> Control limit shows values the product has to satisfy during internal factory production control and audit testing

<sup>3)</sup> Results from type testing





Vempro Wind Barrier used in an insulated roof construction

# 5. Environmental aspects

#### Substances hazardous to health and environment

Vempro Wind Barrier 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

Vempro Wind Barrier shall be sorted as residual waste on the building/demolition site. 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 Vempro Wind Barrier.



Fig. 3

Example of assembling a chimney bushing using a prefabricated bushing sleeve

#### 6. Special conditions for use and installation

#### General

Vempro Wind Barrier is installed on the external side of insulated wall constructions. All the joints shall have minimum 50 mm overlap. All the joints, edges and connections to other components shall be clamped against the studs, sills, rafters etc. with batten fixed nails spaced at maximum 150 mm.

Incidentally the wind barrier shall be used according to principles given in Building Research Design Guides no. 523.255 and 525.101.



#### Fig. 4

Example of assembling a pipe bushing using a prefabricated bushing sleeve

#### **Bushings**

Installed bushings like chimneys, skylights, pipes etc. shall be performed in such way that they are air- and watertight. Fig. 3 and 4 show examples of different types of bushings.

# Glava Bracing Stay

Used in walls, Glava Bracing Stay shall always be installed in pairs as shown in Fig. 6.

The steel profiles shall be slit in (about 3 mm wide, and 14 mm deep, saw cuts) on one side of the timber frame in such way that the profiles are in plane with the studs. The bracing stays have to be fixed to sills, crossing studs and possible headers as shown i Fig. 7.

Fixing can be performed without drilling pilot holes. Possible splicing of Glava Bracing Stay can be performed by nailing through a minimum 100 mm overlapping joint across a stud. Nailing as shown in Fig. 7 has to be used, but pilot holes have to be drilled and the saw cut has to be about 4 mm.

One pair of Glava Bracing Stay per each 2,4 m wall length is regarded to be enough for permanent wind bracing of small houses with maximum two floors, without any further calculations to be performed.

Used as temporary wind bracing in the building period, for instance before the sheet covering is completed, normally one pair of Glava Bracing Stay per external wall will be sufficient.

As permanent wind bracing, the capacity for one pair of Glava Bracing Stay as shown in Fig. 6 and 7, can be set to:

- Rd = 4.2 kN per pair for walls without transoms
- Rd = 5.6 kN per pair for walls with transoms







#### Fig. 6

The angle to the horizontal plane shall be about 50°, and each bracing stay shall intersect three studs. Using several pairs of Glava Avstvingsstag on the same wall, the bracing members have to be fixed to its each area in the timber frame wall (dotted lines)





#### 7. Factory production control

The product is produced in UK for DuPont de Nemours S. à r.l.

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 with the contract regarding SINTEF Technical Approval.

The manufacturer has a quality management system which is certified by Lloyd's Register LRQA according to ISO 9001:2015, ISO 14001:2004 and OHSAS 18001:2007; certificate number 10137412. Glava bracing Stay is produced by Joma AB, Sweden.

Glava AS has a quality management system following ISO 9001.

#### 8. Basis for the approval

The approval is mainly based on verification of product properties from type testing documented in the following reports:

- SINTEF Building and Infrastructure, report 3D0226.01-B dated 20.07.2009 (material- and construction properties)
- SINTEF Byggforsk, report 3D0708 dated 02.06.2009 (Glava Bracing Stay)
- MPA MRV Materialprüfungsamt Nordrhein-Westfalen, report 220004938-1 dated 05.06.2006 (material properties)
- tBU, report 1.3/11400/0822.0.1-2009e (material properties)
- SINTEF report 102000554-4 Laboratory testing of Vempro R+ (Combined Roof Underlayer and Wind Barrier) and Vempro (Wind Barrier) produced in UK, dated 22.10.2015 (material properties, durability)

#### 9. Marking

Vempro Wind Barrier shall be marked on the packaging with the brand image of Glava, the manufacturer's product name, together with *Vempro* printed on the product. The product is also labeled with product type and production number.

The approval mark for Technical Approval No. 20017 may also be used.

The product is CE marked according to EN 13859-2.



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 Sligston

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