

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for the specific product:

T-Wind Pro

from

TECCA AB



Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>PCR 2019:14 Construction Products, Version 1.3.4</i>
PCR review was conducted by: <i>The Technical Committee of the International EPD® System</i>
Life Cycle Assessment (LCA)
LCA accountability: <i>Andreas Asker & Kelly Brandt, Sweco</i>
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ EPD verification by individual verifier
Third-party verifier: <i>Martin Erlandsson, IVL Svenska Miljöinstitutet</i>
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:
☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: TECCA AB

Contact: Johan Nyman
johan.nyman@teccaworld.com

Description of the organisation: TECCA AB is a Nordic market leader developing premium solutions for building material retailers and prefabricated housing industry with focus on climate shell and protective products. Product solutions are developed from the perspective of high standards within extensive quality assurance and testing processes. The total offer also contains customized supply chain and logistics solutions. TECCA AB is owned by Volati – a Swedish industrial group formed in 2003.

Product-related or management system-related certifications: TECCA AB maintains ISO 9001 and 14001 certificates.

Name and location of production site: Valkeakoski, Finland.

Contact information: TECCA AB, Nydalavägen 14, 574 35 Vetlanda, Sweden.

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For additional information about TECCA, please visit the company web site at:

<https://www.teccaworld.com/>

Product information

Product name: T-Wind Pro

Product identification: Technically defined by EN 13859-2:2010 (Flexible sheets for waterproofing and underlays for walls).

Product description: T-Wind Pro is a nonwoven and polymer membrane for wind and moisture protection. The product is used as a flexible sheet for wind protection primary for walls in building constructions. It can be applied to walls, roofs and floor joists to prevent wind from passing into buildings. T-Wind Pro is produced with durability in specified constructions for at least 50 years with contained function.

UN CPC code: 369 Other plastic products.

Geographical scope: Modules A1-A3 and A4 represents Europe and modules A5, C and D have been modelled to represent Sweden.

LCA information

Declared unit: 1 m² T-Wind Pro.

Reference service life: The estimated service life is 60 years.

Time representativeness: 2023

Database(s) and LCA software used: Ecoinvent 3.10 and SimaPro 9.6

Description of system boundaries: Cradle to gate with modules A4, A5, C1–C4 and module D (A1–A3 + A4 + A5 + C + D)

Impact categories, units, and parameters used to describe the environmental impact were chosen according to EN15804+A2 2019 with characterization factors based on EF 3.1. The generic datasets from Ecoinvent used in the assessments include infrastructure and capital goods.

Data quality: Bill of Materials from the manufacturing process is specific, while all resources data etc used as found on generic data. Several datasets are more than 10 years old which may contribute to an uncertainty in the results. Ecoinvent is the world's biggest LCI (Life cycle inventory) data library, and the latest and most updated version was used. Ecoinvent contains data for the specific geographical regions relevant for this study.

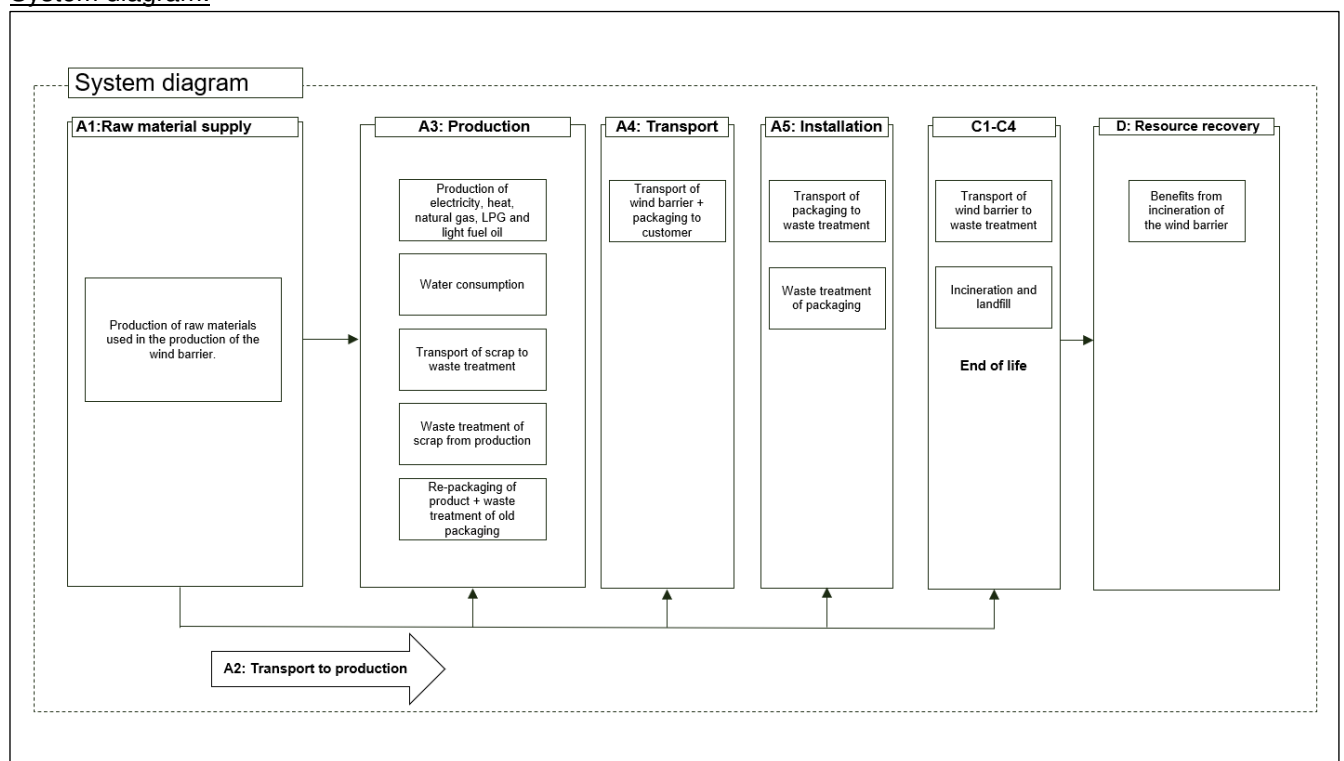
Cut-off rules: The following procedure has been followed for the exclusion of inputs and outputs:

- In the case of insufficient input data or data gaps for a unit process, the cut-off criterion is 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input to that unit process.
- The maximum neglected input flows per declared module (A1- A3) is 5 % of energy usage and mass. No cut-offs of input material have been made.

Allocation: The allocation is made in accordance with the provisions of EN 15804+A2:2019. Energy, water and scrap from the manufacturing of the wind barriers have been allocated through physical allocation. The physical allocation has been based on the total product output (kg) in the production during 2023.

An overview of the system is presented below in the system diagram.

System diagram:



More information:

A description of the modules is presented below.

Product stage [A1-A3]:

The product stage includes the impacts from extraction and processing of raw materials and components used for the manufacturing of the wind barriers. The packaging for the wind barriers is also included in these modules, which includes the raw materials and production of the packaging materials. The production of purchased electricity, heating and water supply is also accounted for in the product stage. Potential benefits from module A3 are not included in module D in line with chapter 6.3.5.2 in EN 15804+A2:2019

The product stage also includes impacts connected to the transports of raw materials to the manufacturing site in Valkeakoski. This includes the production of fuels and the combustion of the fuels during transport. After the wind barriers are produced, they are packed and shipped to TECCA's storage in Vetlanda and then sent to customer. The use of electricity, heat, and water as well as scrap from the manufacturing have been allocated based on the total amount (kg) of produced walls during 2023. The electricity used at the manufacturing site is produced by nuclear power and an emission factor of 7,2 g CO₂e/kWh has been included in the assessment.

Transport to installation (A4) and installation (A5):

A4: Transport to installation

Module A4 included the transport to customer. The mode of transport and transport distance is based on data for 2023 and the average distance has been calculated to 400 kilometers with a truck.

Transport of wind barriers to installation			
Type of transport and payload capacity	Capacity utilized including returns [%]	Distance [km]	Diesel consumption [l/tkm]
Truck (16-32 metric ton)	60	400	0,037

A5: Installation

Module A5 includes the waste management of the packaging materials connected to the final product. The impacts from the waste management processes are included in the module and the benefits (energy recovery) are reported in module D.

End of life stage:

C1: De-construction demolition

Module C1 includes the impacts from the de-construction of the wind barriers. The wind barriers do not require any machines or material during de-construction. No processes are therefore included in module C1.

C2: Transport to waste treatment

The transport of materials to waste treatment facilities is accounted for in module C2. This includes the impacts from the extraction of fuels and the combustion of the fuels during the transport.

C3:

The generated waste is included in module C until the state of end-of-waste or landfill is reached. The product waste is paid for by the system under study and is therefore regarded as not fulfilling the end-of-waste criteria. The incineration of the product is therefore reported in module C4.

C4:

The incineration of the product is reported for in module C4. The benefits from energy recovery at incineration of the product are included in module D. 5% of the products are assumed being sent to landfill to account for potential losses.

End of life		
Processes	Unit	Quantity per DU
Incineration with energy recovery	g	83,8
Disposal to landfill	g	4,4

Resource recovery stage:

Module D includes the recycling, reuse and recovery potential expressed as net impact and benefits due to recycling and incineration of materials. The product is sent for incineration and based on national statistics 67% is incinerated with energy recovery in the system, which produces a share of 67% heat and 33% electricity.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	EU	EU	EU	EU	SE	-	-	-	-	-	-	-	SE	SE	SE	SE	SE
Specific data used	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, g/DU	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Polypropylene non-woven	73	0%	0
Special coating polymer	14,55	0%	0
UV protection polymer	0,45	0%	0
Printing ink	0,2	0%	0
TOTAL	88,2	0%	0
Packaging materials	Weight, g/DU	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Core boards	2,0	2,3%	0,47
PE	0,3	0,3%	0
Paper roll	15,2	17,2%	0,47
LDPE	0,9	1,0%	0
TOTAL	18,4	20,9%	0,44

Results of the environmental performance indicators

The declared unit is 1 m² T-Wind Pro. The results of the studied life cycle have been analysed with the EN15804:A2 method based on EF 3.1.

Mandatory impact category indicators according to EN 15804

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	4,43E-01	8,08E-03	1,57E-04	ND	0,00E+00	8,54E-04	0,00E+00	2,26E-01	-3,05E-01
GWP-biogenic	kg CO ₂ eq.	-2,94E-02	5,54E-06	2,94E-02	ND	0,00E+00	5,85E-07	0,00E+00	1,55E-05	-3,43E-04
GWP-luluc	kg CO ₂ eq.	3,02E-04	2,64E-06	5,12E-08	ND	0,00E+00	2,79E-07	0,00E+00	3,19E-07	-1,14E-04
GWP-total	kg CO ₂ eq.	4,14E-01	8,09E-03	2,95E-02	ND	0,00E+00	8,55E-04	0,00E+00	2,26E-01	-3,06E-01
ODP	kg CFC 11 eq.	1,21E-08	1,61E-10	3,11E-12	ND	0,00E+00	1,70E-11	0,00E+00	3,42E-11	-6,23E-09
AP	mol H ⁺ eq.	1,62E-03	2,53E-05	4,90E-07	ND	0,00E+00	2,67E-06	0,00E+00	2,78E-05	-6,10E-04
EP-freshwater	kg P eq.	1,05E-04	5,39E-07	1,05E-08	ND	0,00E+00	5,70E-08	0,00E+00	2,24E-07	-8,46E-06
EP-marine	kg N eq.	3,63E-04	8,52E-06	1,65E-07	ND	0,00E+00	9,00E-07	0,00E+00	1,47E-05	-1,05E-04
EP-terrestrial	mol N eq.	3,78E-03	9,27E-05	1,80E-06	ND	0,00E+00	9,79E-06	0,00E+00	1,46E-04	-1,11E-03
POCP	kg NMVOC eq.	1,97E-03	3,96E-05	7,68E-07	ND	0,00E+00	4,18E-06	0,00E+00	3,62E-05	-7,76E-04
ADP-minerals&metals*	kg Sb eq.	2,86E-06	2,58E-08	5,01E-10	ND	0,00E+00	2,73E-09	0,00E+00	3,73E-09	-3,24E-07
ADP-fossil*	MJ	2,26E+00	9,31E-03	1,81E-04	ND	0,00E+00	9,83E-04	0,00E+00	2,77E-03	-2,59E+00
WDP*	m ³	1,30E-01	4,65E-04	9,01E-06	ND	0,00E+00	4,91E-05	0,00E+00	3,65E-04	-3,14E-02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, noncancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.

Additional mandatory and voluntary impact category indicators

The results for GWP-GHG are based on EF 3.1.

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	4,43E-01	8,09E-03	1,57E-04	ND	0,00E+00	8,54E-04	0,00E+00	2,26E-01	-3,05E-01

Resource use indicators

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	9,77E-01	1,92E-03	3,73E-05	ND	0,00E+00	2,03E-04	0,00E+00	6,06E-04	-2,83E-01
PERM	MJ	2,05E-01	0,00E+00	-2,05E-01	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,18E+00	1,92E-03	-2,05E-01	ND	0,00E+00	2,03E-04	0,00E+00	6,06E-04	-2,83E-01
PENRE	MJ	2,34E+00	9,72E-03	1,88E-04	ND	0,00E+00	1,03E-03	0,00E+00	2,90E-03	-2,59E+00
PENRM	MJ	2,19E+00	0,00E+00	-1,09E-02	ND	0,00E+00	0,00E+00	0,00E+00	-2,17E+00	0,00E+00
PENRT	MJ	4,53E+00	9,72E-03	-1,07E-02	ND	0,00E+00	1,03E-03	0,00E+00	-2,17E+00	-2,59E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	3,39E-03	1,69E-05	3,27E-07	ND	0,00E+00	1,78E-06	0,00E+00	5,29E-05	-8,07E-04
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste indicators

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Output flow indicators

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	9,49E-04	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	4,50E-02	ND	0,00E+00	0,00E+00	0,00E+00	7,60E-01	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	1,60E-01	ND	0,00E+00	0,00E+00	0,00E+00	2,69E+00	0,00E+00

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