

Environmental Product Declaration



In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

ULTRAPAN V KAR thickness 100 mm



from

EUROFIBRE SPA – VENEZIA

Product category rules (PCR): PCR 2019:14 (v1.1) CPC 371, c-PCR 005 (v1.0)

Geographical scope: The performances are calculated with reference to the plant of Marcon-Venice. The market is International.

Programme:	The International EPD® System
Programme operator:	EPD International AB
EPD registration number:	S-P01589
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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

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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction products and construction services (v1.1 del 14/09/2020) CPC 371, c-PCR 005 Thermal insulation product (v 1.0 del 20/12/2019)

PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☒ EPD process certification ☐ EPD verification

Third party verifier: CSQA Certificazioni srl, Via San Gaetano 74, Thiene (VI)

In case of accredited certification bodies:

Accredited by: ACCREDIA

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 from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:

Eurofibre Spa – via Venier 41 – 30020 Marcon (VE)

Conctat person:

Cristina Fregolent tecnico.commerciale@eurofibre.it

Technical support:

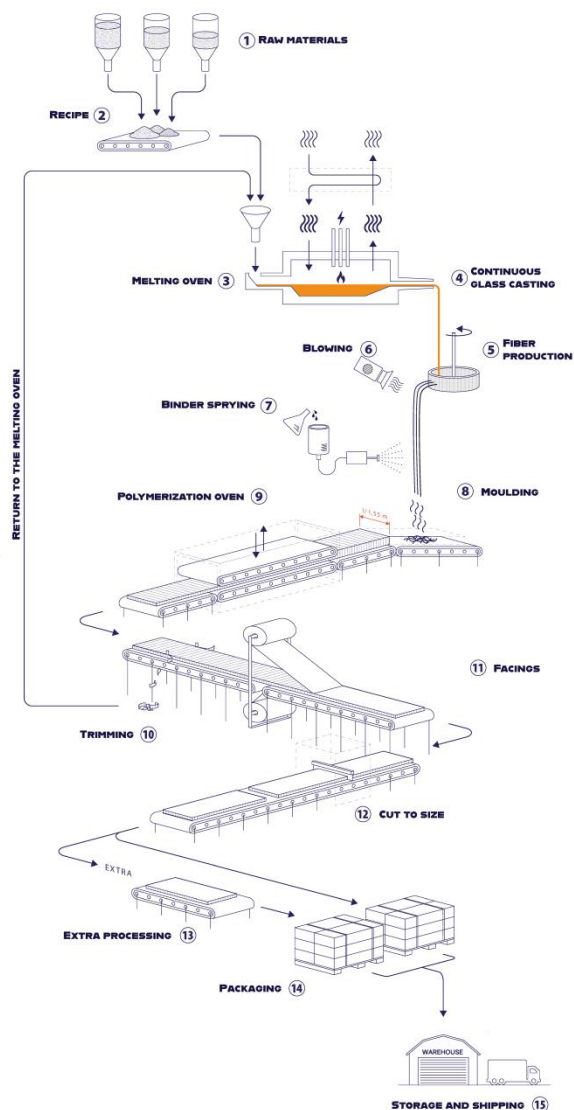
Spin Life Srl, Spin-Off dell'Università di Padova – via E. degli Scrovegni 29 – 35131 Padova (PD)

Description of the organization:

Eurofibre Spa is located in the industrial area of the Municipality of Marcon (VE). The company is located near the Provincial Road 40 (Via Mattei) and the A4 Venice-Trieste. Since its foundation in 1981, in the Marcon Venezia plant, Eurofibre has constantly implemented its own technology necessary to produce glass wool insulations to meet the increasingly complex and stringent needs of the building and industrial market. Eurofibre is synonymous of innovation, production and commercial flexibility for high-tech solutions offered in multiple segments of thermal, acoustic and fire insulation market. To date, Eurofibre has developed different types of glass wool, distinguished by traditional brands TERMOVER® and EUROVER®, and from innovatives EUROVER EVO®, EUROVER 2000®, TERMOVER AG, TERMOVER NG and TERMOVER A+. The productions are structured on a wide range of thicknesses (from 6 to 250 mm) and a variety of customized coverings and packaging, according to the customers' needs. The set of industrial activities, facilitated by the strategic geographical position, has allowed Eurofibre to develop a constant presence in the European market as well as in the national one. The need to meet the quality standards of the different national and international markets, in addition to the need to constantly demonstrate compliance with the regulations relating to environmental and safety aspects related to industrial production, made it necessary to implement an Integrated Quality System (ISO 9001), Environment (ISO 14001) and Safety (ISO 45001).

Name and location of production site:

Eurofibre Spa – via Venier 41 – 30020 Marcon (VE)



Product information

Product name:

ULTRAPAN V KAR 100 mm

Product description:

Board in Termover® glass wool with organic binder, faced with glass tissue (V), kraft paper, aluminium, glass mesh (KAR) and with the following characteristics in accordance with EN 13162:

Parameter			Value
Density	(EN 1602)	kg/m ³	30
Conductivity	(EN 13162)	W/(mK)	0,032
Thickness	(EN 823)	mm	100
Resistance	(EN 13162)	m ² K/W	3,12

The Eurofibre's glass wool is compliant with the Note Q of (CE) Regulation n. 1272/2008 of the European Parliament and of the Council concerning the classification, labeling and packaging of substances and blends

UN CPC code:

371

Geographical scope:

Italy – specific product EPD

LCA information

Declared unit:

1 m² of thermal insulation product with specific R₀ value ready for market distribution and usable according to the applications provided in Annex A of the Standard EN 16783:2017.

Resistance: 3,12 m²K/W

Applications:

DAD DZ WAB WZ WH WI WTH WTR

Time representativeness:

The primary data cover the period January 2019 - December 2019.

Database and software used:

Database Ecoinvent 3.5; Software SimaPro version 9.0.

System boundaries and process units excluded:

The system boundaries include the mandatory modules A1, A2, A3, C1, C2, C3, C4 and D provided by the Standard EN 15804 (CEN, 2019), as shown in the following table according to an application of type "from cradle to gate with module C1-C4 and module D". It is emphasized that the construction, maintenance and disposal of the infrastructures, intended as building, and the occupation of industrial land were not considered, since it is considered that their contribution to the environmental impact relative to the declared is negligible. Consumption of oils for machine maintenance and water treatment are included. It should also be noted that the distribution, use and disposal phases of the product after use are not included in the study.

The following table shows the scenarios adopted for the modeling of modules C1, C2, C3, C4 and D.

MODULE	SCENARIO
C1	The impacts associated with the demolition are assumed to be negligible.
C2	The end-of-life product is sent to disposal with the CER code of chapter 17. The landfill disposal at a distance of 50 km is taken as a scenario. The means of transport is represented by the following dataset Transport, freight lorry, 16-32 EUR 4.
C3	The product after the demolition activities is not recovered. This module therefore contains only the benefits and impacts due to the recycling and energy recovery of product packaging materials.
C4	After demolition, the product is disposed in the landfills, the dataset used is Inert waste for final disposal CH treatment of inert waste, inert waste material landfill. This choice is dictated by the fact that the waste is classified with the CER code of chapter 17.
D	This module contains the potential impacts and benefits associated with the recycling of the product aimed at the production of new glass wool in the event that waste management takes place in an optimal way. The calculated value is excluded from the sum of the total impacts. It is assumed that there is no loss of material during the collection and pre-treatment of waste. The included scenarios are currently in use and are representative of one of the most likely alternatives.

The parameter chosen for the initial inclusion of input and output elements is based on the definition of a cut-off level of 1%, in terms of mass, energy and environmental relevance. This means that a process has been neglected if it is

responsible for less than 1% of the total mass, primary energy and total impact. However all the processes for which the data are available have been taken into consideration, even if with a contribution of less than 1%.

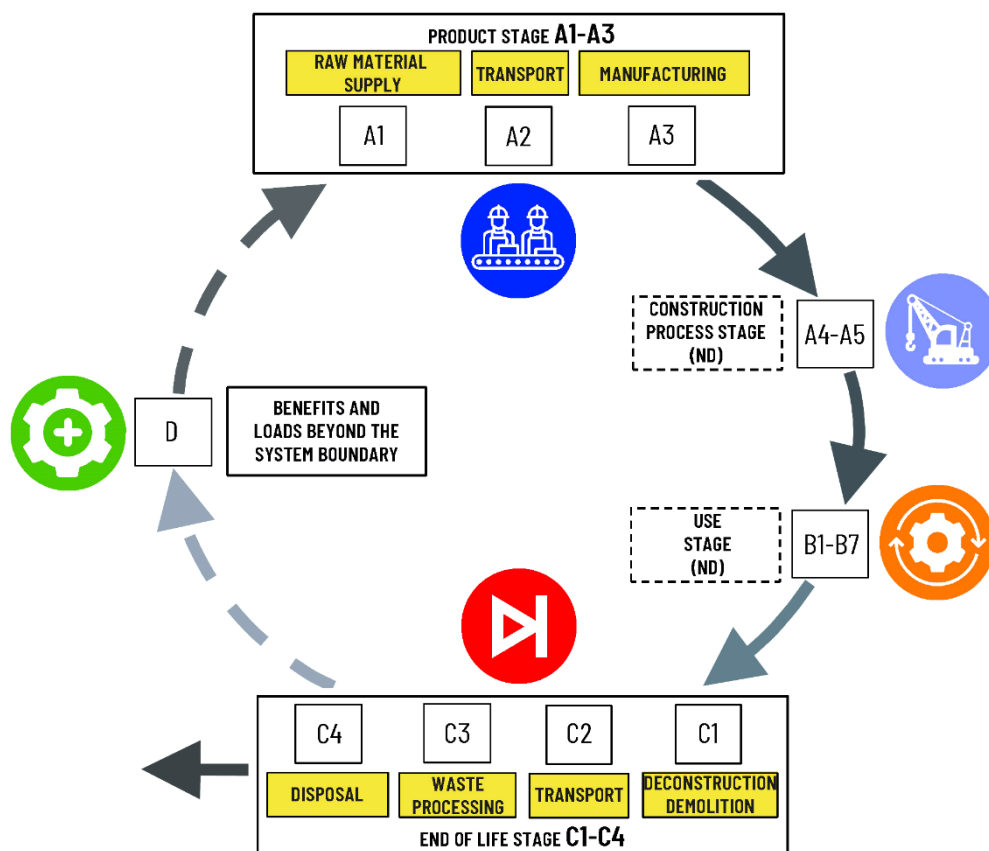
The method chosen to assess the potential environmental impacts of the product covered by this study is provided by the standard EN 15804 (CEN, 2019).

Modeling of electrical energy (Module A3): The modeling of electricity consumption in Module A3 was carried out using the Italian national residual mix, using as a source of data from the latest AIB report (AIB, 2020). The breakdown of the energy sources used is given. The emission factor obtained is equal to 646 gCO₂eq/kWh.

SOURCE	RESIDUAL MIX 2019
Renewables Unspecified	0,80%
Solar	4,36%
Wind	1,10%
Hydro&Marine	2,05%
Geothermal	0,01%
Biomass	1,17%
Nuclear	9,02%
Fossil Unspecified	5,65%
Lignite	0,50%
Hard Coal	17,75%
Gas	55,89%
Oil	1,70%
TOTALE	100,00%

Product Stage			Construction Stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw Materials Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-Recovery- Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

ND=Non declared



Content information

The product does not contain substances included in the "Candidate list of substances of very high concern (SVHC) for authorization" in percentage higher than 0,1%¹.

Packaging:

Distribution:

The product is packed with polyethylene bags, polyethylene per multi-pack, adhesive labels, stretch film, caps and loaded on pallet to be sent to customers. Polyethylene bags are composed of 70% recycled material, stretch film from 45% recycled material.

Recycled material:

Origin of the recycled material (pre-consumer or post-consumer) in the product:

The batch materials, the binders and the oils used do not contain recycled material.

¹ http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp

Environmental Information

Potential environmental impact

The values for the product **ULTRAPAN V KAR 100 mm** are given

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Global Warming Potential total	kg CO ₂ eq	5,89E+0	1,68E-1	1,31E+0	0,00E+0	2,84E-2	4,83E-2	3,23E-2	-1,73E+0	7,47E+0
Global Warming Potential fossil fuels	kg CO ₂ eq	5,69E+0	1,68E-1	1,61E+0	0,00E+0	2,83E-2	-2,32E-2	2,26E-2	-1,69E+0	7,50E+0
Global Warming Potential biogenic	kg CO ₂ eq	1,94E-1	7,85E-5	-3,04E-1	0,00E+0	8,12E-6	7,16E-2	9,75E-3	-3,88E-2	-2,85E-2
Global Warming Potential land use and land use change	kg CO ₂ eq	2,73E-3	4,91E-5	5,39E-4	0,00E+0	8,35E-6	-4,19E-5	2,88E-6	-3,57E-3	3,29E-3
Depletion potential of the stratospheric ozone layer	kg CFC ₁₁ eq	1,26E-6	3,98E-8	1,09E-7	0,00E+0	6,56E-9	-8,75E-9	7,25E-9	-3,35E-7	1,42E-6
Acidification potential, Accumulated Exceedence	mol H ⁺ eq	4,31E-2	9,46E-4	1,91E-2	0,00E+0	1,45E-4	-9,34E-4	1,47E-4	-2,28E-2	6,24E-2
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq	1,43E-3	1,43E-5	9,71E-4	0,00E+0	2,29E-6	-5,01E-5	1,35E-6	-9,19E-4	2,37E-3
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq	4,91E-3	2,35E-4	3,16E-3	0,00E+0	4,87E-5	-9,26E-5	1,07E-4	-2,15E-3	8,37E-3
Eutrophication potential, Accumulated Exceedence	mol N eq	1,23E-1	2,60E-3	7,23E-2	0,00E+0	5,36E-4	-2,71E-3	5,90E-4	-8,73E-2	1,97E-1
Formation potential of tropospheric ozone	kg NMVOC eq	1,71E-2	8,01E-4	9,20E-3	0,00E+0	1,52E-4	-3,79E-4	1,72E-4	-7,73E-3	2,70E-2
Abiotic depletion potential for non fossil resources*	kg Sb eq	7,30E-6	3,60E-7	1,61E-6	0,00E+0	8,49E-8	-5,08E-7	1,65E-8	-1,41E-5	8,86E-6
Abiotic depletion for fossil sources potential*	MJ	1,41E+2	2,66E+0	1,78E+1	0,00E+0	4,36E-1	-2,13E+0	4,87E-1	-3,54E+1	1,60E+2
Water (user) deprivation potential, deprivation-weighted water consumption	m ³ world eq. depriv.	1,37E+0	1,91E-2	1,84E+0	0,00E+0	2,97E-3	-2,81E-2	3,50E-3	-1,77E+0	3,21E+0

*The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

For the impact category **Climate change - total** a value of 7,47E+00 kg CO₂ eq was obtained. Module A1 contains the main impact sources (78,78%), in particular: electricity (34,66%), methane and diesel (20,00%), binders and oils (9,99%) and vitrifiable materials (1,65%). Module A2 has a more limited contribution, equal to 2,25%, while module A3 overall contribute for 17,51%. In particular the workings of the line have an impact for 18,14%, the packagings for -1,21%, while the management of waste and other plant consumption contribute overall for 0,56%. Overall modules C1-C4 contribute for 1,46%.

For the impact category **Climate change - fossil** a value of 7,50E+00 kg CO₂ eq was obtained. Module A1 contains the main impact sources (75,89%), in particular: electricity (31,15%), methane and diesel (19,92%), binders and oils (11,08%) and vitrifiable materials (1,47%). Module A2 has a more limited contribution, equal to 2,24%, while module A3 overall contribute for 21,49%. In particular the workings of the line have an impact for 17,27%, the packagings for 3,49%, while the management of waste and other plant consumption contribute overall for 0,73%. Overall modules C1-C4 contribute for 0,37%.

For the impact category **Climate change - biogenic** a value of $-2,85E-02$ kg CO₂ eq was obtained. The A1 module contains the main sources of impact, in particular: electricity, vitrifiable materials, binders and oils, methane and diesel. The A2 module has a more limited contribution. The main sources of impact of the module A3 are: the workings of the line, the packagings, the management of waste and other plant contribute.

For the impact category **Climate change - land use and land use change** a value of $3,29E-03$ kg CO₂ eq was obtained. Module A1 contains the main impact sources (83,06%), in particular: electricity (6,00%), methane and diesel (4,51%), binders and oils (57,27%) and vitrifiable materials (2,86%). Module A2 has a more limited contribution, equal to 1,49%, while module A3 overall contribute for 16,38%. In particular the workings of the line have an impact for 3,51%, the packagings for 10,49%, while the management of waste and other plant consumption contribute overall for 2,38%. Overall modules C1-C4 reduce the impact for -0,93%.

For the impact category **Ozone Depletion** a value of $1,42E-06$ kg CFC₁₁ eq was obtained. Module A1 contains the main impact sources (89,12%), in particular: electricity (21,15%), methane and diesel (59,78%), binders and oils (3,95%) and vitrifiable materials (0,97%). Module A2 has a more limited contribution, equal to 2,81%, while module A3 overall contribute for 7,72%. In particular the workings of the line have an impact for 5,80%, the packagings for 0,86%, while the management of waste and other plant consumption contribute overall for 1,05%. Overall modules C1-C4 contribute for 0,36%.

For the impact category **Acidification** a value of $6,24E-02$ mol H⁺ eq was obtained. Module A1 contains the main impact sources (68,98%), in particular: electricity (45,73%), methane and diesel (6,16%), binders and oils (8,38%) and vitrifiable materials (1,40%). Module A2 has a more limited contribution, equal to 1,52%, while module A3 overall contribute for 30,53%. In particular the workings of the line have an impact for 27,94%, the packagings for 2,06%, while the management of waste and other plant consumption contribute overall for 0,53%. Overall modules C1-C4 reduce the impact for -1,03%.

For the impact category **Eutrophication aquatic freshwater** a value of $2,37E-03$ kg P eq was obtained (equal to $7,28E-03$ kg PO₄³⁻ eq). Module A1 contains the main impact sources (60,44%), in particular: electricity (31,21%), methane and diesel (2,14%), binders and oils (9,88%) and vitrifiable materials (1,30%). Module A2 has a more limited contribution, equal to 0,60%, while module A3 overall contribute for 40,91%. In particular the workings of the line have an impact for 37,82%, the packagings for 2,61%, while the management of waste and other plant consumption contribute overall for 0,49%. Overall modules C1-C4 reduce the impact for -1,96%.

For the impact category **Eutrophication aquatic marine** a value of $8,37E-03$ kg N eq was obtained. Module A1 contains the main impact sources (58,66%), in particular: electricity (28,55%), methane and diesel (8,38%), binders and oils (10,21%) and vitrifiable materials (2,71%). Module A2 has a more limited contribution, equal to 2,80%, while module A3 overall contribute for 37,79%. In particular the workings of the line have an impact for 33,75%, the packagings for 3,04%, while the management of waste and other plant consumption contribute overall for 0,99%. Overall modules C1-C4 contribute for 0,75%.

For the impact category **Eutrophication terrestrial** a value of $1,97\text{E-}01$ mol N eq was obtained. Module A1 contains the main impact sources (62,70%), in particular: electricity (47,90%), methane and diesel (3,94%), binders and oils (5,45%) and vitrifiable materials (1,35%). Module A2 has a more limited contribution, equal to 1,32%, while module A3 overall contribute for 36,78%. In particular the workings of the line have an impact for 34,83%, the packagings for 1,48%, while the management of waste and other plant consumption contribute overall for 0,47%. Overall modules C1-C4 reduce the impact for -0,80%.

For the impact category **Photochemical ozone formation** a value of $2,70\text{E-}02$ kg NMVOC eq was obtained. Module A1 contains the main impact sources (63,25%), in particular: electricity (20,97%), methane and diesel (12,64%), binders and oils (10,61%) and vitrifiable materials (2,66%). Module A2 has a more limited contribution, equal to 2,96%, while module A3 overall contribute for 33,99%. In particular the workings of the line have an impact for 28,06%, the packagings for 4,20%, while the management of waste and other plant consumption contribute overall for 1,73%. Overall modules C1-C4 reduce the impact for -0,20%.

For the impact category **Depletion of abiotic resources - mineral and metals** a value of $8,86\text{E-}06$ kg Sb eq was obtained. Module A1 contains the main impact sources (82,33%), in particular: electricity (7,15%), methane and diesel (4,04%), binders and oils (31,06%) and vitrifiable materials (1,52%). Module A2 has a more limited contribution, equal to 4,06%, while module A3 overall contribute for 18,20%. In particular the workings of the line have an impact for 12,40%, the packagings for 3,73%, while the management of waste and other plant consumption contribute overall for 2,07%. Overall modules C1-C4 reduce the impact for -4,59%.

For the impact category **Depletion of abiotic resources - fossil fuels** a value of $1,60\text{E+}02$ MJ was obtained. Module A1 contains the main impact sources (87,98%), in particular: electricity (25,48%), methane and diesel (40,41%), binders and oils (6,89%) and vitrifiable materials (0,85%). Module A2 has a more limited contribution, equal to 1,66%, while module A3 overall contribute for 11,11%. In particular the workings of the line have an impact for 6,24%, the packagings for 4,00%, while the management of waste and other plant consumption contribute overall for 0,87%. Overall modules C1-C4 reduce the impact for -0,75%.

For the impact category **Water use** a value of $3,21\text{E+}00$ m³ depriv. was obtained. Module A1 contains the main impact sources (42,77%), in particular: electricity (12,87%), methane and diesel (-1,13%), binders and oils (10,64%) and vitrifiable materials (5,35%). Module A2 has a more limited contribution, equal to 0,59%, while module A3 overall contribute for 57,30%. In particular the workings of the line have an impact for 52,41%, the packagings for 4,27%, while the management of waste and other plant consumption contribute overall for 0,62%. Overall modules C1-C4 reduce the impact for -0,67%.

The indicators Potential incidence of disease due to PM emissions (PM), Potential Human exposure efficiency relative to U235 (IRP), Potential Comparative Toxic Unit for Ecosystems (ETP-fw), Potential Comparative Toxic Unit for humans (HTP-c), Potential Comparative Toxic Unit for humans (HTP-nc) and Potential soil quality index (SQP) are not declared (ND) in this document.

Use of resources

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Use of renewable primary energy excluding resources used as raw materials	MJ	1,97E+0	2,25E-2	2,34E+0	0,00E+0	3,14E-3	-4,22E-2	4,63E-3	-7,60E-1	4,30E+0
Use of renewable primary energy resources used as raw materials	MJ	3,92E+0	8,07E-3	4,96E+0	0,00E+0	1,45E-3	-4,13E-1	1,89E-3	-1,06E+0	8,48E+0
Total use of renewable primary energy	MJ	5,89E+0	3,05E-2	7,29E+0	0,00E+0	4,59E-3	-4,55E-1	6,52E-3	-1,82E+0	1,28E+1
Use of non-renewable primary energy excluding resources used as raw materials	MJ	1,40E+2	2,66E+0	1,60E+1	0,00E+0	4,36E-1	-2,13E+0	4,87E-1	-3,54E+1	1,58E+2
Use of non-renewable primary energy resources used as raw materials	MJ	8,65E-1	0,00E+0	1,76E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	2,62E+0
Total use of non-renewable primary energy	MJ	1,41E+2	2,66E+0	1,78E+1	0,00E+0	4,36E-1	-2,13E+0	4,87E-1	-3,54E+1	1,60E+2
Secondary material	kg	7,50E-2	0,00E+0	2,83E-2	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	1,03E-1
Renewable secondary fuels	MJ	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0
Non-renewable secondary fuels	MJ	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0
Net use of fresh water	m ³	3,55E-2	5,17E-4	4,47E-2	0,00E+0	7,92E-5	-6,40E-4	5,68E-4	-3,92E-2	8,07E-2

Waste production and outflows

Waste production

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Hazardous waste disposed	kg	2,32E-4	1,59E-6	1,20E-2	0,00E+0	2,75E-7	-4,53E-6	1,83E-7	-3,40E-5	1,22E-2
Non-hazardous waste disposed	kg	2,44E-1	1,80E-1	1,32E+0	0,00E+0	2,05E-2	-8,34E-3	3,29E+0	2,77E+0	5,05E+0
Radioactive waste disposed	kg	1,69E-4	1,80E-5	5,53E-5	0,00E+0	2,95E-6	-2,53E-6	3,30E-6	-5,70E-5	2,46E-4

Outflows

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Components for reuse	kg	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0
Material for recycling	kg	0,00E+0	0,00E+0	9,04E-2	0,00E+0	0,00E+0	8,48E-2	0,00E+0	0,00E+0	1,75E-1
Materials for energy recovery	kg	0,00E+0	0,00E+0	3,19E-3	0,00E+0	0,00E+0	7,09E-2	0,00E+0	0,00E+0	7,41E-2
Exported energy	MJ	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0

GWP-GHG Indicator

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
GWP-GHG	kg CO ₂ eq	5,76E+0	1,68E-1	1,63E+0	0,00E+0	2,84E-2	-2,41E-2	3,08E-2	-1,72E+0	7,59E+0

Information on biogenic carbon content

The biogenic carbon content in the product is 3,45E-02 kgC/UF, while the content in the packaging is 1,10E-01 kgC/UF.

Additional information

The embodied energy, understood as the energetic consumptions for the production of the raw materials and their transport, let alone for the processes of distribution and disposal of the finished product is 7,63E+01 MJ.

Indoor air emissions

Eurofibre glass wool products have a minimal and irrelevant impact on indoor building emission levels. Salthammer et al. 2010 notes that "the presence of mineral wool had no influence on the formaldehyde level in the house".

Type and data source

Choosing the data to be used for the LCA study, primary data collected from Eurofibre were endorsed through a measurement campaign carried out between September 2020 and November 2020 in the Marcon (Ve) plant. The primary data cover the period January 2019 - December 2019 and relate to:

- the transport of incoming materials for the production, as well as the auxiliary materials as e.g. the oxygen (distance covered, type of fuel, Euroclass of the vehicles, payload, percentage of vehicle load);
- waste produced (quantity and type) and raw materials used (quantity and type);
- the production process of insulation at Eurofibre (mass balance and energy consumption);
- internal transport and operating machines used at Eurofibre;
- the transport of the waste produced to the destination plant (distance covered, type of fuel, Euro class of the vehicles, vehicle load, percentage of vehicle load);
- diesel and methane consumption for heating;
- lighting and compressed air consumption.

In the event that primary data or models are not available for the calculation of such data, secondary data obtained by consulting internationally recognized databases have been used, favoring the use of the most up-to-date ones where possible. The secondary data in particular concern:

- the combustion processes of the vehicles: emissions, maintenance, use of the road network, fuel consumption (Ecoinvent data sets 3.5 version);
- operating machines: emissions (Ecoinvent 3.5 data sets);
- electricity: distribution network, sulfur hexafluoride emissions, losses (Ecoinvent data set 3.5);
- the production of the materials used (Ecoinvent 3.5 data sets).

The proxy data are less than 10% as required by the program rules.

Reference

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