Environmental Product Declaration

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

EUROSYSTEM A+/SUPER FR A+
EUROSYSTEM A+ V/SUPER FR A+ V
45 - 70 - 95 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-P01587
Publication:	2020-01-22
Revision:	2021-03-26
Validity:	2026-03-25

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
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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:
[X] 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:
[X] Yes [ ] No

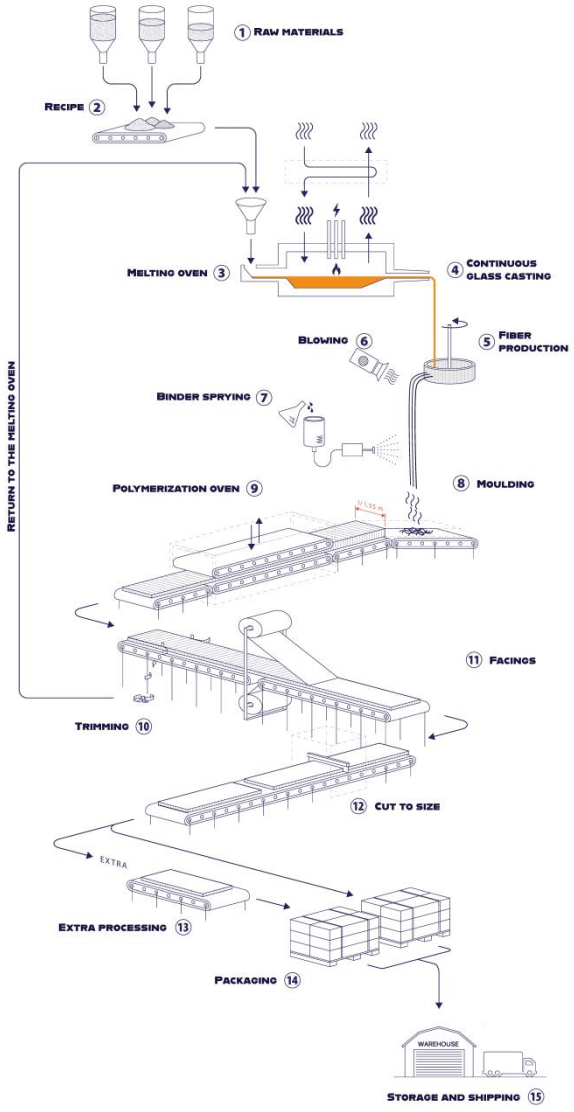
The EPD owner has the sole ownership, liability, and responsibility for the EPD.

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)

Name and location of production site:
Eurofibre Spa – via Venier 41 – 30020 Marcon (VE)



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).

Product information

Product name:
EUROSYSTEM A⁺ /SUPER FR A⁺
EUROSYSTEM A⁺ V/SUPER FR A⁺ V
45-70-95 mm

Product description:
EUROSYSTEM A⁺/SUPER FR A⁺
Roll in Termover® glass wool with organic binder totally formaldehyde free, unfaced and with the characteristics in accordance with EN 13162, shown in the table below.

Product description:
EUROSYSTEM A⁺ V/SUPER FR A⁺ V
Roll in Termover® glass wool with organic binder totally formaldehyde free, faced with a glass tissue (V) and with the characteristics in accordance with EN 13162, shown in the table below.

Parameter			Thickness (EN 823)		
			45 mm	70 mm	95 mm
Density	(EN 1602)	kg/m³	12	12	12
Conductivity	(EN 13162)	W/(mK)	0,039	0,039	0,039
Resistance	(EN 13162)	m²K/W	1,15	1,79	2,43

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.

Geographical scope:
Italy – specific product EPD

UN CPC code:
371

LCA information

Declared unit:
1 m² of thermal insulation product with specific R_D value ready for market distribution and usable according to the applications provided in Annex A of the Standard EN 16783:2017.
Resistance: different for each thickness.

Applications EUROSYSTEM: **WZ WI WTR**
Applications SUPER FR: **DAD DZ VR**

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 assoiated 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%.

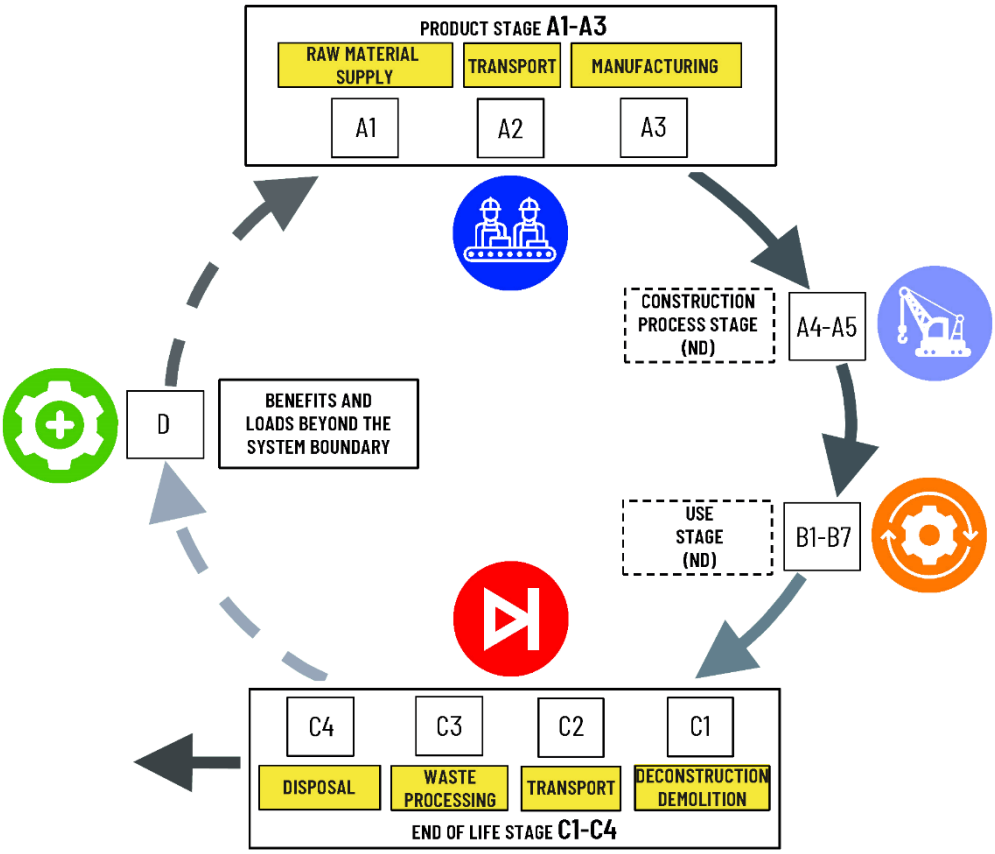
The method chosen to assess the potential environmental impacts of the product covered by this study is provided by the standard EN 15804 (CEN, 2019).

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 gCO_2eq/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 havana paper, glue, polyethylene, polyethylene per multi-pack, adhesive labels, stretch film, caps and loaded on pallet to be sent to customers. Havana paper is composed of 100% recycled material, polyethylene from 54% recycled material and multi-pack polyethylene from 60% 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 EUROSYSTEM A+/SUPER FR A+ 45 mm are given

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Global Warming Potential total	kg CO_2 eq	8,85E-1	3,11E-2	2,34E-1	0,00E+0	4,81E-3	1,38E-2	8,25E-3	-2,97E-1	1,18E+0
Global Warming Potential fossil fuels	kg CO_2 eq	8,35E-1	3,11E-2	2,77E-1	0,00E+0	4,80E-3	-2,25E-3	3,46E-3	-2,89E-1	1,15E+0
Global Warming Potential biogenic	kg CO_2 eq	4,91E-2	1,47E-5	-4,40E-2	0,00E+0	1,38E-6	1,61E-2	4,79E-3	-6,64E-3	2,60E-2
Global Warming Potential land use and land use change	kg CO_2 eq	1,79E-4	9,07E-6	1,47E-4	0,00E+0	1,41E-6	-4,60E-5	4,89E-7	-6,12E-4	2,91E-4
Depletion potential of the stratospheric ozone layer	kg CFC_{11} eq	2,15E-7	7,36E-9	2,07E-8	0,00E+0	1,11E-9	-1,11E-9	1,22E-9	-5,73E-8	2,44E-7
Acidification potential, Accumulated Exceedence	mol H^+ eq	7,77E-3	1,81E-4	1,68E-3	0,00E+0	2,45E-5	-1,19E-4	2,49E-5	-3,91E-3	9,56E-3
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq	2,20E-4	2,66E-6	1,65E-4	0,00E+0	3,88E-7	-6,16E-6	2,24E-7	-1,57E-4	3,82E-4
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq	7,36E-4	4,69E-5	4,11E-4	0,00E+0	8,26E-6	-1,17E-5	1,80E-5	-3,68E-4	1,21E-3
Eutrophication potential, Accumulated Exceedence	mol N eq	2,01E-2	5,19E-4	5,93E-3	0,00E+0	9,09E-5	-3,39E-4	9,91E-5	-1,49E-2	2,64E-2
Formation potential of tropospheric ozone	kg NMVOC eq	2,30E-3	1,58E-4	1,29E-3	0,00E+0	2,57E-5	-5,12E-5	2,95E-5	-1,32E-3	3,74E-3
Abiotic depletion potential for non fossil resources*	kg Sb eq	9,74E-7	6,58E-8	3,54E-7	0,00E+0	1,44E-8	-6,04E-8	2,74E-9	-2,41E-6	1,35E-6
Abiotic depletion for fossil sources potential*	MJ	2,10E+1	4,92E-1	3,13E+0	0,00E+0	7,38E-2	-2,54E-1	8,19E-2	-6,05E+0	2,45E+1
Water (user) deprivation potential, deprivation-weighted water consumption	m^3 world eq. depriv.	2,48E-1	3,55E-3	2,48E-1	0,00E+0	5,03E-4	-1,40E-2	5,29E-4	-3,02E-1	4,86E-1

*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 1,18E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (75,22%), in particular: electricity (37,38%), methane and diesel (20,80%), binders and oils (12,35%) and vitrifiable materials (1,88%). Module A2 has a more limited contribution, equal to 2,63%, while module A3 overall contribute for 19,85%. In particular the workings of the line have an impact for 15,82%, the packagings for 2,29%, while the management of waste and other plant consumption contribute overall for 1,43%. Overall modules C1-C4 contribute for 2,22%.

For the impact category **Climate change - fossil** a value of 1,15E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (72,65%), in particular: electricity (35,49%), methane and diesel (22,65%), binders and oils (12,76%) and vitrifiable materials (1,76%). Module A2 has a more limited contribution, equal to 2,70%, while module A3 overall contribute for 24,12%. In particular the workings of the line have an impact for 15,76%, the packagings for 6,79%, while the management of waste and other plant consumption contribute overall for 1,56%. Overall modules C1-C4 contribute for 0,52%.

For the impact category **Climate change - biogenic** a value of 2,60E-02 kg CO_2 eq was obtained. The A1 module contain 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 2,91E-04 kg CO_2 eq was obtained. Module A1 contains the main impact sources (61,62%), in particular: electricity (11,86%), methane and diesel (8,82%), binders and oils (35,00%) and vitrifiable materials (5,94%). Module A2 has a more limited contribution, equal to 3,12%, while module A3 overall contribute for 50,43%. In particular the workings of the line have an impact for 4,80%, the packagings for 42,07%, while the management of waste and other plant consumption contribute overall for 3,56%. Overall modules C1-C4 reduce the impact for -15,17%.

For the impact category **Ozone Depletion** a value of 2,44E-07 kg CFC_{11} eq was obtained. Module A1 contains the main impact sources (88,01%), in particular: electricity (21,46%), methane and diesel (58,83%), binders and oils (6,69%) and vitrifiable materials (1,03%). Module A2 has a more limited contribution, equal to 3,02%, while module A3 overall contribute for 8,47%. In particular the workings of the line have an impact for 3,38%, the packagings for 3,98%, while the management of waste and other plant consumption contribute overall for 1,12%. Overall modules C1-C4 contribute for 0,50%.

For the impact category **Acidification** a value of 9,56E-03 mol H^+ eq was obtained. Module A1 contains the main impact sources (81,23%), in particular: electricity (52,14%), methane and diesel (6,87%), binders and oils (20,54%) and vitrifiable materials (1,68%). Module A2 has a more limited contribution, equal to 1,90%, while module A3 overall contribute for 17,60%. In particular the workings of the line have an impact for 13,00%, the packagings for 3,66%, while the management of waste and other plant consumption contribute overall for 0,94%. Overall modules C1-C4 reduce the impact for -0,72%.

For the impact category **Eutrophication aquatic freshwater** a value of 3,82E-04 kg P eq was obtained (equal to 1,17E-03 kg PO_4^{3-} eq). Module A1 contains the main impact sources (57,54%), in particular: electricity (33,90%), methane and diesel (2,31%), binders and oils (19,84%) and vitrifiable materials (1,48%). Module A2 has a more limited contribution, equal to 0,70%, while module A3 overall contribute for 43,22%. In particular the workings of the line have an impact for 38,76%, the packagings for 3,67%, while the management of waste and other plant consumption contribute overall for 0,79%. Overall modules C1-C4 reduce the impact for -1,45%.

For the impact category **Eutrophication aquatic marine** a value of 1,21E-03 kg N eq was obtained. Module A1 contains the main impact sources (60,89%), in particular: electricity (34,51%), methane and diesel (9,91%), binders and oils (13,03%) and vitrifiable materials (3,44%). Module A2 has a more limited contribution, equal to 3,88%, while module A3 overall contribute for 34,03%. In particular the workings of the line have an impact for 27,04%, the packagings for 5,39%, while the management of waste and other plant consumption contribute overall for 1,60%. Overall modules C1-C4 contribute for 1,20%.

For the impact category **Eutrophication terrestrial** a value of 2,64E-02 mol N eq was obtained. Module A1 contains the main impact sources (76,16%), in particular: electricity (62,28%), methane and diesel (5,00%), binders and oils (7,03%) and vitrifiable materials (1,84%). Module A2 has a more limited contribution, equal to 1,97%, while module A3 overall contribute for 22,44%. In particular the workings of the line have an impact for 18,57%, the packagings for 3,04%, while the management of waste and other plant consumption contribute overall for 0,83%. Overall modules C1-C4 reduce the impact for -0,56%.

For the impact category **Photochemical ozone formation** a value of 3,74E-03 kg NMVOC eq was obtained. Module A1 contains the main impact sources (61,29%), in particular: electricity (26,46%), methane and diesel (15,59%), binders and oils (15,71%) and vitrifiable materials (3,53%). Module A2 has a more limited contribution, equal to 4,21%, while module A3 overall contribute for 34,39%. In particular the workings of the line have an impact for 24,05%, the packagings for 7,30%, while the management of waste and other plant consumption contribute overall for 3,04%. Overall modules C1-C4 contribute for 0,11%.

For the impact category **Depletion of abiotic resources - mineral and metals** a value of 1,35E-06 kg Sb eq was obtained. Module A1 contains the main impact sources (72,12%), in particular: electricity (8,19%), methane and diesel (4,67%), binders and oils (57,42%) and vitrifiable materials (1,83%). Module A2 has a more limited contribution, equal to 4,87%, while module A3 overall contribute for 26,22%. In particular the workings of the line have an impact for 12,71%, the packagings for 11,00%, while the management of waste and other plant consumption contribute overall for 2,51%. Overall modules C1-C4 reduce the impact for -3,21%.

For the impact category **Depletion of abiotic resources - fossil fuels** a value of 2,45E+01 MJ was obtained. Module A1 contains the main impact sources (85,60%), in particular: electricity (29,12%), methane and diesel (45,01%), binders and oils (10,46%) and vitrifiable materials (1,02%). Module A2 has a more limited contribution, equal to 2,01%, while module A3 overall contribute for 12,79%. In particular the workings of the line have an impact for 4,07%, the packagings for 6,64%, while the management of waste and other plant consumption contribute overall for 2,08%. Overall modules C1-C4 reduce the impact for -0,40%.

For the impact category **Water use** a value of 4,86E-01 m3 depriv. was obtained. Module A1 contains the main impact sources (50,93%), in particular: electricity (14,86%), methane and diesel (-1,24%), binders and oils (30,82%) and vitrifiable materials (6,50%). Module A2 has a more limited contribution, equal to 0,73%, while module A3 overall contribute for 51,00%. In particular the workings of the line have an impact for 40,77%, the packagings for 8,55%, while the management of waste and other plant consumption contribute overall for 1,68%. Overall modules C1-C4 reduce the impact for -2,67%.

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	2,35E-1	4,18E-3	2,51E-1	0,00E+0	5,32E-4	-3,55E-3	7,89E-4	-1,30E-1	4,88E-1
Use of renewable primary energy resources used as raw materials	MJ	3,55E-1	1,49E-3	8,33E-1	0,00E+0	2,46E-4	-2,04E-1	3,21E-4	-1,81E-1	9,86E-1
Total use of renewable primary energy	MJ	5,90E-1	5,67E-3	1,08E+0	0,00E+0	7,77E-4	-2,08E-1	1,11E-3	-3,11E-1	1,47E+0
Use of non-renewable primary energy excluding resources used as raw materials	MJ	2,10E+1	4,92E-1	2,58E+0	0,00E+0	7,38E-2	-2,54E-1	8,19E-2	-6,06E+0	2,39E+1
Use of non-renewable primary energy resources used as raw materials	MJ	0,00E+0	0,00E+0	5,46E-1	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	5,46E-1
Total use of non-renewable primary energy	MJ	2,10E+1	4,92E-1	3,13E+0	0,00E+0	7,38E-2	-2,54E-1	8,19E-2	-6,05E+0	2,45E+1
Secondary material	kg	0,00E+0	0,00E+0	1,56E-2	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	1,56E-2
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	6,12E-3	9,63E-5	6,04E-3	0,00E+0	1,34E-5	-3,16E-4	9,55E-5	-6,71E-3	1,20E-2

Waste production and outflows

Waste production

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Hazardous waste disposed	kg	3,64E-5	2,94E-7	2,04E-3	0,00E+0	4,66E-8	-4,63E-7	3,03E-8	-5,83E-6	2,08E-3
Non-hazardous waste disposed	kg	8,54E-2	3,41E-2	2,48E-1	0,00E+0	3,48E-3	-1,12E-3	5,57E-1	4,73E-1	9,27E-1
Radioactive waste disposed	kg	2,99E-5	3,33E-6	1,04E-5	0,00E+0	4,99E-7	-2,99E-7	5,56E-7	-9,76E-6	4,43E-5

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	1,07E-2	0,00E+0	0,00E+0	1,73E-2	0,00E+0	0,00E+0	2,80E-2
Materials for energy recovery	kg	0,00E+0	0,00E+0	2,04E-4	0,00E+0	0,00E+0	9,11E-3	0,00E+0	0,00E+0	9,31E-3
Exported energy	MJ	0,00E+0	0,00E+0	9,56E-4	0,00E+0	0,00E+0	4,84E-2	0,00E+0	0,00E+0	4,93E-2

GWP-GHG Indicator

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
GWP-GHG	kg CO_2 eq	8,47E-1	3,11E-2	2,79E-1	0,00E+0	4,81E-3	-2,37E-3	7,51E-3	-2,95E-1	1,17E+0

Environmental Information
Potential environmental impact

The values for the product EUROSYSTEM A+V/SUPER FR A+V 45 mm are given

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Global Warming Potential total	kg CO_2 eq	1,02E+0	4,38E-2	2,43E-1	0,00E+0	5,13E-3	1,23E-2	9,06E-3	-3,19E-1	1,33E+0
Global Warming Potential fossil fuels	kg CO_2 eq	9,69E-1	4,38E-2	2,96E-1	0,00E+0	5,13E-3	-6,40E-3	3,69E-3	-3,11E-1	1,31E+0
Global Warming Potential biogenic	kg CO_2 eq	5,06E-2	1,91E-5	-5,26E-2	0,00E+0	1,47E-6	1,87E-2	5,37E-3	-7,13E-3	2,21E-2
Global Warming Potential land use and land use change	kg CO_2 eq	3,26E-4	1,28E-5	1,75E-4	0,00E+0	1,51E-6	-5,21E-5	5,31E-7	-6,57E-4	4,64E-4
Depletion potential of the stratospheric ozone layer	kg CFC_{11} eq	2,31E-7	1,03E-8	2,24E-8	0,00E+0	1,19E-9	-1,40E-9	1,31E-9	-6,15E-8	2,65E-7
Acidification potential, Accumulated Exceedence	mol H^+ eq	8,91E-3	2,45E-4	1,91E-3	0,00E+0	2,62E-5	-1,48E-4	2,68E-5	-4,20E-3	1,10E-2
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq	2,63E-4	3,72E-6	1,72E-4	0,00E+0	4,15E-7	-1,05E-5	2,44E-7	-1,69E-4	4,29E-4
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq	9,03E-4	6,76E-5	4,53E-4	0,00E+0	8,82E-6	-1,64E-5	1,97E-5	-3,96E-4	1,44E-3
Eutrophication potential, Accumulated Exceedence	mol N eq	2,23E-2	7,47E-4	6,65E-3	0,00E+0	9,70E-5	-4,10E-4	1,07E-4	-1,60E-2	2,95E-2
Formation potential of tropospheric ozone	kg NMVOC eq	2,85E-3	2,24E-4	1,41E-3	0,00E+0	2,75E-5	-7,26E-5	3,18E-5	-1,42E-3	4,46E-3
Abiotic depletion potential for non fossil resources*	kg Sb eq	1,64E-6	1,01E-7	3,72E-7	0,00E+0	1,54E-8	-1,19E-7	2,96E-9	-2,59E-6	2,02E-6
Abiotic depletion for fossil sources potential*	MJ	2,35E+1	6,89E-1	3,42E+0	0,00E+0	7,88E-2	-3,06E-1	8,83E-2	-6,50E+0	2,75E+1
Water (user) deprivation potential, deprivation-weighted water consumption	m^3 world eq. depriv.	3,10E-1	4,95E-3	2,77E-1	0,00E+0	5,37E-4	-1,61E-2	5,81E-4	-3,25E-1	5,77E-1

*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 1,33E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (76,48%), in particular: electricity (33,72%), methane and diesel (18,80%), binders and oils (19,56%) and vitrifiable materials (1,68%). Module A2 has a more limited contribution, equal to 3,26%, while module A3 overall contribute for 18,25%. In particular the workings of the line have an impact for 14,99%, the packagings for 2,02%, while the management of waste and other plant consumption contribute overall for 0,93%. Overall modules C1-C4 contribute for 1,93%.

For the impact category **Climate change - fossil** a value of 1,31E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (73,91%), in particular: electricity (31,84%), methane and diesel (20,35%), binders and oils (20,15%) and vitrifiable materials (1,57%). Module A2 has a more limited contribution, equal to 3,34%, while module A3 overall contribute for 22,56%. In particular the workings of the line have an impact for 14,82%, the packagings for 5,91%, while the management of waste and other plant consumption contribute overall for 1,83%. Overall modules C1-C4 contribute for 0,18%.

For the impact category **Climate change - biogenic** a value of 2,21E-02 kg CO_2 eq was obtained. The A1 module contain 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 4,64E-04 kg CO_2 eq was obtained. Module A1 contains the main impact sources (70,35%), in particular: electricity (7,61%), methane and diesel (5,67%), binders and oils (53,30%) and vitrifiable materials (3,77%). Module A2 has a more limited contribution, equal to 2,76%, while module A3 overall contribute for 37,70%. In particular the workings of the line have an impact for 3,35%, the packagings for 26,14%, while the management of waste and other plant consumption contribute overall for 8,21%. Overall modules C1-C4 reduce the impact for -10,80%.

For the impact category **Ozone Depletion** a value of 2,65E-07 kg CFC_{11} eq was obtained. Module A1 contains the main impact sources (87,22%), in particular: electricity (20,21%), methane and diesel (55,67%), binders and oils (10,38%) and vitrifiable materials (0,96%). Module A2 has a more limited contribution, equal to 3,90%, while module A3 overall contribute for 8,46%. In particular the workings of the line have an impact for 3,63%, the packagings for 3,63%, while the management of waste and other plant consumption contribute overall for 1,20%. Overall modules C1-C4 contribute for 0,42%.

For the impact category **Acidification** a value of 1,10E-02 mol H^+ eq was obtained. Module A1 contains the main impact sources (81,25%), in particular: electricity (46,47%), methane and diesel (6,14%), binders and oils (27,15%) and vitrifiable materials (1,48%). Module A2 has a more limited contribution, equal to 2,23%, while module A3 overall contribute for 17,38%. In particular the workings of the line have an impact for 13,07%, the packagings for 3,16%, while the management of waste and other plant consumption contribute overall for 1,14%. Overall modules C1-C4 reduce the impact for -0,86%.

For the impact category **Eutrophication aquatic freshwater** a value of 4,29E-04 kg P eq was obtained (equal to 1,31E-03 kg PO_4^{3-} eq). Module A1 contains the main impact sources (61,39%), in particular: electricity (30,87%), methane and diesel (2,11%), binders and oils (27,07%) and vitrifiable materials (1,34%). Module A2 has a more limited contribution, equal to 0,87%, while module A3 overall contribute for 40,05%. In particular the workings of the line have an impact for 35,72%, the packagings for 3,24%, while the management of waste and other plant consumption contribute overall for 1,09%. Overall modules C1-C4 reduce the impact for -2,30%.

For the impact category **Eutrophication aquatic marine** a value of 1,44E-03 kg N eq was obtained. Module A1 contains the main impact sources (62,92%), in particular: electricity (29,72%), methane and diesel (8,57%), binders and oils (21,70%) and vitrifiable materials (2,94%). Module A2 has a more limited contribution, equal to 4,71%, while module A3 overall contribute for 31,53%. In particular the workings of the line have an impact for 25,16%, the packagings for 4,50%, while the management of waste and other plant consumption contribute overall for 1,87%. Overall modules C1-C4 contribute for 0,84%.

For the impact category **Eutrophication terrestrial** a value of 2,95E-02 mol N eq was obtained. Module A1 contains the main impact sources (75,62%), in particular: electricity (57,06%), methane and diesel (4,60%), binders and oils (12,29%) and vitrifiable materials (1,67%). Module A2 has a more limited contribution, equal to 2,53%, while module A3 overall contribute for 22,54%. In particular the workings of the line have an impact for 18,82%, the packagings for 2,70%, while the management of waste and other plant consumption contribute overall for 1,02%. Overall modules C1-C4 reduce the impact for -0,70%.

For the impact category **Photochemical ozone formation** a value of 4,46E-03 kg NMVOC eq was obtained. Module A1 contains the main impact sources (63,80%), in particular: electricity (22,71%), methane and diesel (13,43%), binders and oils (24,66%) and vitrifiable materials (3,00%). Module A2 has a more limited contribution, equal to 5,02%, while module A3 overall contribute for 31,49%. In particular the workings of the line have an impact for 22,21%, the packagings for 6,07%, while the management of waste and other plant consumption contribute overall for 3,20%. Overall modules C1-C4 reduce the impact for -0,30%.

For the impact category **Depletion of abiotic resources - mineral and metals** a value of 2,02E-06 kg Sb eq was obtained. Module A1 contains the main impact sources (81,56%), in particular: electricity (5,61%), methane and diesel (3,20%), binders and oils (71,50%) and vitrifiable materials (1,24%). Module A2 has a more limited contribution, equal to 5,01%, while module A3 overall contribute for 18,44%. In particular the workings of the line have an impact for 8,93%, the packagings for 7,31%, while the management of waste and other plant consumption contribute overall for 2,21%. Overall modules C1-C4 reduce the impact for -5,02%.

For the impact category **Depletion of abiotic resources - fossil fuels** a value of 2,75E+01 MJ was obtained. Module A1 contains the main impact sources (85,56%), in particular: electricity (26,49%), methane and diesel (41,13%), binders and oils (17,02%) and vitrifiable materials (0,92%). Module A2 has a more limited contribution, equal to 2,50%, while module A3 overall contribute for 12,44%. In particular the workings of the line have an impact for 4,24%, the packagings for 5,86%, while the management of waste and other plant consumption contribute overall for 2,34%. Overall modules C1-C4 reduce the impact for -0,51%.

For the impact category **Water use** a value of 5,77E-01 m^3 depriv. was obtained. Module A1 contains the main impact sources (53,70%), in particular: electricity (12,81%), methane and diesel (-1,08%), binders and oils (36,42%) and vitrifiable materials (5,55%). Module A2 has a more limited contribution, equal to 0,86%, while module A3 overall contribute for 48,04%. In particular the workings of the line have an impact for 38,92%, the packagings for 7,15%, while the management of waste and other plant consumption contribute overall for 1,96%. Overall modules C1-C4 reduce the impact for -2,60%.

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	3,38E-1	5,69E-3	2,93E-1	0,00E+0	5,68E-4	-6,65E-3	8,52E-4	-1,40E-1	6,32E-1
Use of renewable primary energy resources used as raw materials	MJ	4,30E-1	2,13E-3	9,57E-1	0,00E+0	2,63E-4	-2,31E-1	3,46E-4	-1,94E-1	1,16E+0
Total use of renewable primary energy	MJ	7,69E-1	7,82E-3	1,25E+0	0,00E+0	8,30E-4	-2,37E-1	1,20E-3	-3,34E-1	1,79E+0
Use of non-renewable primary energy excluding resources used as raw materials	MJ	2,35E+1	6,89E-1	2,84E+0	0,00E+0	7,88E-2	-3,06E-1	8,83E-2	-6,50E+0	2,69E+1
Use of non-renewable primary energy resources used as raw materials	MJ	0,00E+0	0,00E+0	5,82E-1	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	5,82E-1
Total use of non-renewable primary energy	MJ	2,35E+1	6,89E-1	3,42E+0	0,00E+0	7,88E-2	-3,06E-1	8,83E-2	-6,50E+0	2,75E+1
Secondary material	kg	0,00E+0	0,00E+0	1,54E-2	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	1,54E-2
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	7,91E-3	1,34E-4	6,75E-3	0,00E+0	1,43E-5	-3,68E-4	1,03E-4	-7,21E-3	1,45E-2

Waste production and outflows

Waste production

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Hazardous waste disposed	kg	3,94E-5	4,19E-7	2,18E-3	0,00E+0	4,97E-8	-7,52E-7	3,28E-8	-6,26E-6	2,22E-3
Non-hazardous waste disposed	kg	1,09E-1	4,63E-2	2,64E-1	0,00E+0	3,71E-3	-2,62E-3	5,99E-1	5,09E-1	1,02E+0
Radioactive waste disposed	kg	3,77E-5	4,66E-6	1,13E-5	0,00E+0	5,33E-7	-4,05E-7	5,99E-7	-1,05E-5	5,43E-5

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	2,28E-2	0,00E+0	0,00E+0	1,71E-2	0,00E+0	0,00E+0	3,99E-2
Materials for energy recovery	kg	0,00E+0	0,00E+0	1,56E-3	0,00E+0	0,00E+0	9,02E-3	0,00E+0	0,00E+0	1,06E-2
Exported energy	MJ	0,00E+0	0,00E+0	5,81E-3	0,00E+0	0,00E+0	4,80E-2	0,00E+0	0,00E+0	5,38E-2

GWP-GHG Indicator

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
GWP-GHG	kg CO_2 eq	9,81E-1	4,38E-2	2,98E-1	0,00E+0	5,13E-3	-6,53E-3	8,22E-3	-3,17E-1	1,33E+0

Environmental Information
Potential environmental impact

The values for the product EUROSYSTEM A+/SUPER FR A+ 70 mm are given

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Global Warming Potential total	kg CO_2 eq	1,37E+0	4,81E-2	3,57E-1	0,00E+0	7,46E-3	2,14E-2	1,27E-2	-4,62E-1	1,81E+0
Global Warming Potential fossil fuels	kg CO_2 eq	1,29E+0	4,80E-2	4,23E-1	0,00E+0	7,46E-3	-3,05E-3	5,35E-3	-4,50E-1	1,77E+0
Global Warming Potential biogenic	kg CO_2 eq	7,55E-2	2,27E-5	-6,68E-2	0,00E+0	2,14E-6	2,45E-2	7,34E-3	-1,03E-2	4,06E-2
Global Warming Potential land use and land use change	kg CO_2 eq	2,79E-4	1,40E-5	2,24E-4	0,00E+0	2,20E-6	-7,06E-5	7,57E-7	-9,52E-4	4,50E-4
Depletion potential of the stratospheric ozone layer	kg CFC_{11} eq	3,30E-7	1,14E-8	3,13E-8	0,00E+0	1,73E-9	-1,68E-9	1,89E-9	-8,91E-8	3,75E-7
Acidification potential, Accumulated Exceedence	mol H^+ eq	1,20E-2	2,81E-4	2,53E-3	0,00E+0	3,81E-5	-1,79E-4	3,86E-5	-6,08E-3	1,47E-2
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq	3,41E-4	4,11E-6	2,53E-4	0,00E+0	6,03E-7	-9,03E-6	3,47E-7	-2,45E-4	5,90E-4
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq	1,14E-3	7,26E-5	6,22E-4	0,00E+0	1,28E-5	-1,74E-5	2,76E-5	-5,73E-4	1,86E-3
Eutrophication potential, Accumulated Exceedence	mol N eq	3,10E-2	8,05E-4	8,92E-3	0,00E+0	1,41E-4	-5,11E-4	1,54E-4	-2,32E-2	4,05E-2
Formation potential of tropospheric ozone	kg NMVOC eq	3,55E-3	2,44E-4	1,95E-3	0,00E+0	3,99E-5	-7,64E-5	4,58E-5	-2,06E-3	5,76E-3
Abiotic depletion potential for non fossil resources*	kg Sb eq	1,53E-6	1,02E-7	5,43E-7	0,00E+0	2,23E-8	-8,71E-8	4,26E-9	-3,75E-6	2,11E-6
Abiotic depletion for fossil sources potential*	MJ	3,23E+1	7,60E-1	4,76E+0	0,00E+0	1,15E-1	-3,83E-1	1,27E-1	-9,42E+0	3,77E+1
Water (user) deprivation potential, deprivation-weighted water consumption	m^3 world eq. depriv.	3,87E-1	5,48E-3	3,74E-1	0,00E+0	7,80E-4	-2,14E-2	8,15E-4	-4,70E-1	7,47E-1

*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 1,81E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (75,37%), in particular: electricity (37,28%), methane and diesel (20,78%), binders and oils (12,63%) and vitrifiable materials (1,88%). Module A2 has a more limited contribution, equal to 2,63%, while module A3 overall contribute for 19,68%. In particular the workings of the line have an impact for 15,62%, the packagings for 2,32%, while the management of waste and other plant consumption contribute overall for 1,44%. Overall modules C1-C4 contribute for 2,23%.

For the impact category **Climate change - fossil** a value of 1,77E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (72,84%), in particular: electricity (35,40%), methane and diesel (22,62%), binders and oils (13,05%) and vitrifiable materials (1,77%). Module A2 has a more limited contribution, equal to 2,71%, while module A3 overall contribute for 23,89%. In particular the workings of the line have an impact for 15,58%, the packagings for 6,74%, while the management of waste and other plant consumption contribute overall for 1,58%. Overall modules C1-C4 contribute for 0,55%.

For the impact category **Climate change - biogenic** a value of 4,06E-02 kg CO_2 eq was obtained. The A1 module contain 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 4,50E-04 kg CO_2 eq was obtained. Module A1 contains the main impact sources (62,08%), in particular: electricity (11,78%), methane and diesel (8,76%), binders and oils (35,62%) and vitrifiable materials (5,92%). Module A2 has a more limited contribution, equal to 3,11%, while module A3 overall contribute for 49,83%. In particular the workings of the line have an impact for 4,67%, the packagings for 41,58%, while the management of waste and other plant consumption contribute overall for 3,57%. Overall modules C1-C4 reduce the impact for -15,02%.

For the impact category **Ozone Depletion** a value of 3,75E-07 kg CFC_{11} eq was obtained. Module A1 contains the main impact sources (88,09%), in particular: electricity (21,47%), methane and diesel (58,74%), binders and oils (6,85%) and vitrifiable materials (1,04%). Module A2 has a more limited contribution, equal to 3,04%, while module A3 overall contribute for 8,36%. In particular the workings of the line have an impact for 3,26%, the packagings for 3,98%, while the management of waste and other plant consumption contribute overall for 1,12%. Overall modules C1-C4 contribute for 0,52%.

For the impact category **Acidification** a value of 1,47E-02 mol H^+ eq was obtained. Module A1 contains the main impact sources (81,63%), in particular: electricity (52,06%), methane and diesel (6,85%), binders and oils (21,03%) and vitrifiable materials (1,68%). Module A2 has a more limited contribution, equal to 1,91%, while module A3 overall contribute for 17,16%. In particular the workings of the line have an impact for 12,58%, the packagings for 3,63%, while the management of waste and other plant consumption contribute overall for 0,95%. Overall modules C1-C4 reduce the impact for -0,69%.

For the impact category **Eutrophication aquatic freshwater** a value of 5,90E-04 kg P eq was obtained (equal to 1,81E-03 kg PO_4^{3-} eq). Module A1 contains the main impact sources (57,73%), in particular: electricity (33,71%), methane and diesel (2,30%), binders and oils (20,24%) and vitrifiable materials (1,48%). Module A2 has a more limited contribution, equal to 0,70%, while module A3 overall contribute for 42,95%. In particular the workings of the line have an impact for 38,53%, the packagings for 3,62%, while the management of waste and other plant consumption contribute overall for 0,80%. Overall modules C1-C4 reduce the impact for -1,37%.

For the impact category **Eutrophication aquatic marine** a value of 1,86E-03 kg N eq was obtained. Module A1 contains the main impact sources (61,32%), in particular: electricity (34,56%), methane and diesel (9,91%), binders and oils (13,38%) and vitrifiable materials (3,47%). Module A2 has a more limited contribution, equal to 3,91%, while module A3 overall contribute for 33,52%. In particular the workings of the line have an impact for 26,55%, the packagings for 5,36%, while the management of waste and other plant consumption contribute overall for 1,61%. Overall modules C1-C4 contribute for 1,24%.

For the impact category **Eutrophication terrestrial** a value of 4,05E-02 mol N eq was obtained. Module A1 contains the main impact sources (76,54%), in particular: electricity (62,44%), methane and diesel (5,01%), binders and oils (7,23%) and vitrifiable materials (1,85%). Module A2 has a more limited contribution, equal to 1,99%, while module A3 overall contribute for 22,01%. In particular the workings of the line have an impact for 18,14%, the packagings for 3,03%, while the management of waste and other plant consumption contribute overall for 0,84%. Overall modules C1-C4 reduce the impact for -0,53%.

For the impact category **Photochemical ozone formation** a value of 5,76E-03 kg NMVOC eq was obtained. Module A1 contains the main impact sources (61,68%), in particular: electricity (26,46%), methane and diesel (15,58%), binders and oils (16,09%) and vitrifiable materials (3,55%). Module A2 has a more limited contribution, equal to 4,24%, while module A3 overall contribute for 33,92%. In particular the workings of the line have an impact for 23,61%, the packagings for 7,24%, while the management of waste and other plant consumption contribute overall for 3,07%. Overall modules C1-C4 contribute for 0,16%.

For the impact category **Depletion of abiotic resources - mineral and metals** a value of 2,11E-06 kg Sb eq was obtained. Module A1 contains the main impact sources (72,35%), in particular: electricity (8,06%), methane and diesel (4,61%), binders and oils (57,88%) and vitrifiable materials (1,81%). Module A2 has a more limited contribution, equal to 4,81%, while module A3 overall contribute for 25,71%. In particular the workings of the line have an impact for 12,44%, the packagings for 10,78%, while the management of waste and other plant consumption contribute overall for 2,48%. Overall modules C1-C4 reduce the impact for -2,87%.

For the impact category **Depletion of abiotic resources - fossil fuels** a value of 3,77E+01 MJ was obtained. Module A1 contains the main impact sources (85,74%), in particular: electricity (29,09%), methane and diesel (44,92%), binders and oils (10,70%) and vitrifiable materials (1,02%). Module A2 has a more limited contribution, equal to 2,02%, while module A3 overall contribute for 12,62%. In particular the workings of the line have an impact for 3,93%, the packagings for 6,58%, while the management of waste and other plant consumption contribute overall for 2,11%. Overall modules C1-C4 reduce the impact for -0,38%.

For the impact category **Water use** a value of 7,47E-01 m^3 depriv. was obtained. Module A1 contains the main impact sources (51,82%), in particular: electricity (14,88%), methane and diesel (-1,24%), binders and oils (31,65%) and vitrifiable materials (6,54%). Module A2 has a more limited contribution, equal to 0,73%, while module A3 overall contribute for 50,10%. In particular the workings of the line have an impact for 39,88%, the packagings for 8,51%, while the management of waste and other plant consumption contribute overall for 1,71%. Overall modules C1-C4 reduce the impact for -2,65%.

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	3,65E-1	6,46E-3	3,74E-1	0,00E+0	8,25E-4	-5,12E-3	1,22E-3	-2,02E-1	7,42E-1
Use of renewable primary energy resources used as raw materials	MJ	5,51E-1	2,30E-3	1,26E+0	0,00E+0	3,82E-4	-3,13E-1	4,98E-4	-2,81E-1	1,51E+0
Total use of renewable primary energy	MJ	9,15E-1	8,76E-3	1,64E+0	0,00E+0	1,21E-3	-3,18E-1	1,72E-3	-4,84E-1	2,25E+0
Use of non-renewable primary energy excluding resources used as raw materials	MJ	3,23E+1	7,60E-1	3,92E+0	0,00E+0	1,15E-1	-3,83E-1	1,27E-1	-9,42E+0	3,68E+1
Use of non-renewable primary energy resources used as raw materials	MJ	0,00E+0	0,00E+0	8,39E-1	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	8,39E-1
Total use of non-renewable primary energy	MJ	3,23E+1	7,60E-1	4,76E+0	0,00E+0	1,15E-1	-3,83E-1	1,27E-1	-9,42E+0	3,77E+1
Secondary material	kg	0,00E+0	0,00E+0	2,39E-2	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	2,39E-2
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	9,56E-3	1,49E-4	9,11E-3	0,00E+0	2,08E-5	-4,84E-4	1,48E-4	-1,04E-2	1,85E-2

Waste production and outflows

Waste production

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Hazardous waste disposed	kg	5,60E-5	4,55E-7	3,12E-3	0,00E+0	7,23E-8	-6,81E-7	4,70E-8	-9,06E-6	3,17E-3
Non-hazardous waste disposed	kg	1,34E-1	5,28E-2	3,79E-1	0,00E+0	5,40E-3	-1,57E-3	8,66E-1	7,36E-1	1,44E+0
Radioactive waste disposed	kg	4,63E-5	5,14E-6	1,57E-5	0,00E+0	7,75E-7	-4,47E-7	8,64E-7	-1,52E-5	6,83E-5

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	1,55E-2	0,00E+0	0,00E+0	2,63E-2	0,00E+0	0,00E+0	4,18E-2
Materials for energy recovery	kg	0,00E+0	0,00E+0	3,35E-4	0,00E+0	0,00E+0	1,38E-2	0,00E+0	0,00E+0	1,41E-2
Exported energy	MJ	0,00E+0	0,00E+0	1,67E-3	0,00E+0	0,00E+0	7,34E-2	0,00E+0	0,00E+0	7,51E-2

GWP-GHG Indicator

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
GWP-GHG	kg CO_2 eq	1,31E+0	4,81E-2	4,26E-1	0,00E+0	7,46E-3	-3,23E-3	1,15E-2	-4,59E-1	1,80E+0

EPD®

Environmental Information
Potential environmental impact

The values for the product EUROSYSTEM A+V/SUPER FR A+V 70 mm are given

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Global Warming Potential total	kg CO_2 eq	1,47E+0	6,17E-2	3,69E-1	0,00E+0	7,70E-3	1,94E-2	1,31E-2	-4,78E-1	1,95E+0
Global Warming Potential fossil fuels	kg CO_2 eq	1,40E+0	6,17E-2	4,41E-1	0,00E+0	7,70E-3	-6,72E-3	5,49E-3	-4,66E-1	1,91E+0
Global Warming Potential biogenic	kg CO_2 eq	7,68E-2	2,74E-5	-7,21E-2	0,00E+0	2,21E-6	2,62E-2	7,65E-3	-1,07E-2	3,86E-2
Global Warming Potential land use and land use change	kg CO_2 eq	4,28E-4	1,80E-5	2,41E-4	0,00E+0	2,27E-6	-7,41E-5	7,86E-7	-9,86E-4	6,16E-4
Depletion potential of the stratospheric ozone layer	kg CFC_{11} eq	3,45E-7	1,46E-8	3,31E-8	0,00E+0	1,78E-9	-1,90E-9	1,96E-9	-9,23E-8	3,94E-7
Acidification potential, Accumulated Exceedence	mol H^+ eq	1,30E-2	3,49E-4	2,77E-3	0,00E+0	3,93E-5	-2,01E-4	4,01E-5	-6,29E-3	1,60E-2
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq	3,70E-4	5,25E-6	2,60E-4	0,00E+0	6,23E-7	-1,28E-5	3,61E-7	-2,53E-4	6,23E-4
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq	1,28E-3	9,49E-5	6,66E-4	0,00E+0	1,32E-5	-2,14E-5	2,88E-5	-5,93E-4	2,06E-3
Eutrophication potential, Accumulated Exceedence	mol N eq	3,28E-2	1,05E-3	9,71E-3	0,00E+0	1,46E-4	-5,65E-4	1,60E-4	-2,41E-2	4,33E-2
Formation potential of tropospheric ozone	kg NMVOC eq	3,99E-3	3,15E-4	2,07E-3	0,00E+0	4,12E-5	-9,41E-5	4,75E-5	-2,13E-3	6,37E-3
Abiotic depletion potential for non fossil resources*	kg Sb eq	2,08E-6	1,40E-7	5,57E-7	0,00E+0	2,31E-8	-1,39E-7	4,42E-9	-3,88E-6	2,67E-6
Abiotic depletion for fossil sources potential*	MJ	3,44E+1	9,72E-1	5,03E+0	0,00E+0	1,18E-1	-4,22E-1	1,32E-1	-9,75E+0	4,02E+1
Water (user) deprivation potential, deprivation-weighted water consumption	m^3 world eq. depriv.	4,38E-1	7,00E-3	4,06E-1	0,00E+0	8,06E-4	-2,27E-2	8,51E-4	-4,87E-1	8,30E-1

*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 1,95E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (75,79%), in particular: electricity (35,25%), methane and diesel (19,66%), binders and oils (16,37%) and vitrifiable materials (1,76%). Module A2 has a more limited contribution, equal to 3,15%, while module A3 overall contribute for 18,96%. In particular the workings of the line have an impact for 15,33%, the packagings for 2,13%, while the management of waste and other plant consumption contribute overall for 1,19%. Overall modules C1-C4 contribute for 2,01%.

For the impact category **Climate change - fossil** a value of 1,91E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (73,30%), in particular: electricity (33,39%), methane and diesel (21,35%), binders and oils (16,90%) and vitrifiable materials (1,65%). Module A2 has a more limited contribution, equal to 3,24%, while module A3 overall contribute for 23,12%. In particular the workings of the line have an impact for 15,23%, the packagings for 6,19%, while the management of waste and other plant consumption contribute overall for 1,71%. Overall modules C1-C4 contribute for 0,34%.

For the impact category **Climate change - biogenic** a value of 3,86E-02 kg CO_2 eq was obtained. The A1 module contain 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 6,16E-04 kg CO2 eq was obtained. Module A1 contains the main impact sources (69,42%), in particular: electricity (8,74%), methane and diesel (6,51%), binders and oils (49,82%) and vitrifiable materials (4,35%). Module A2 has a more limited contribution, equal to 2,93%, while module A3 overall contribute for 39,19%. In particular the workings of the line have an impact for 3,71%, the packagings for 30,03%, while the management of waste and other plant consumption contribute overall for 5,45%. Overall modules C1-C4 reduce the impact for -11,53%.

For the impact category **Ozone Depletion** a value of 3,94E-07 kg CFC_{11} eq was obtained. Module A1 contains the main impact sources (87,45%), in particular: electricity (20,70%), methane and diesel (56,82%), binders and oils (8,94%) and vitrifiable materials (0,99%). Module A2 has a more limited contribution, equal to 3,69%, while module A3 overall contribute for 8,39%. In particular the workings of the line have an impact for 3,51%, the packagings for 3,73%, while the management of waste and other plant consumption contribute overall for 1,16%. Overall modules C1-C4 contribute for 0,47%.

For the impact category **Acidification** a value of 1,60E-02 mol H^+ eq was obtained. Module A1 contains the main impact sources (81,26%), in particular: electricity (48,66%), methane and diesel (6,42%), binders and oils (24,62%) and vitrifiable materials (1,56%). Module A2 has a more limited contribution, equal to 2,18%, while module A3 overall contribute for 17,32%. In particular the workings of the line have an impact for 12,97%, the packagings for 3,31%, while the management of waste and other plant consumption contribute overall for 1,04%. Overall modules C1-C4 reduce the impact for -0,76%.

For the impact category **Eutrophication aquatic freshwater** a value of 6,23E-04 kg P eq was obtained (equal to 1,91E-03 kg PO_4^{3-} eq). Module A1 contains the main impact sources (59,40%), in particular: electricity (32,39%), methane and diesel (2,21%), binders and oils (23,39%) and vitrifiable materials (1,41%). Module A2 has a more limited contribution, equal to 0,84%, while module A3 overall contribute for 41,65%. In particular the workings of the line have an impact for 37,31%, the packagings for 3,39%, while the management of waste and other plant consumption contribute overall for 0,95%. Overall modules C1-C4 reduce the impact for -1,89%.

For the impact category **Eutrophication aquatic marine** a value of 2,06E-03 kg N eq was obtained. Module A1 contains the main impact sources (62,00%), in particular: electricity (31,65%), methane and diesel (9,10%), binders and oils (18,11%) and vitrifiable materials (3,15%). Module A2 has a more limited contribution, equal to 4,62%, while module A3 overall contribute for 32,38%. In particular the workings of the line have an impact for 25,87%, the packagings for 4,78%, while the management of waste and other plant consumption contribute overall for 1,73%. Overall modules C1-C4 contribute for 1,00%.

For the impact category **Eutrophication terrestrial** a value of 4,33E-02 mol N eq was obtained. Module A1 contains the main impact sources (75,76%), in particular: electricity (59,27%), methane and diesel (4,77%), binders and oils (9,97%) and vitrifiable materials (1,74%). Module A2 has a more limited contribution, equal to 2,43%, while module A3 overall contribute for 22,41%. In particular the workings of the line have an impact for 18,68%, the packagings for 2,80%, while the management of waste and other plant consumption contribute overall for 0,93%. Overall modules C1-C4 reduce the impact for -0,60%.

For the impact category **Photochemical ozone formation** a value of 6,37E-03 kg NMVOC eq was obtained. Module A1 contains the main impact sources (62,61%), in particular: electricity (24,25%), methane and diesel (14,32%), binders and oils (20,82%) and vitrifiable materials (3,22%). Module A2 has a more limited contribution, equal to 4,95%, while module A3 overall contribute for 32,53%. In particular the workings of the line have an impact for 22,94%, the packagings for 6,47%, while the management of waste and other plant consumption contribute overall for 3,12%. Overall modules C1-C4 reduce the impact for -0,08%.

For the impact category **Depletion of abiotic resources - mineral and metals** a value of 2,67E-06 kg Sb eq was obtained. Module A1 contains the main impact sources (78,06%), in particular: electricity (6,46%), methane and diesel (3,69%), binders and oils (66,47%) and vitrifiable materials (1,44%). Module A2 has a more limited contribution, equal to 5,23%, while module A3 overall contribute for 20,86%. In particular the workings of the line have an impact for 10,19%, the packagings for 8,42%, while the management of waste and other plant consumption contribute overall for 2,26%. Overall modules C1-C4 reduce the impact for -4,16%.

For the impact category **Depletion of abiotic resources - fossil fuels** a value of 4,02E+01 MJ was obtained. Module A1 contains the main impact sources (85,51%), in particular: electricity (27,66%), methane and diesel (42,83%), binders and oils (14,06%) and vitrifiable materials (0,96%). Module A2 has a more limited contribution, equal to 2,42%, while module A3 overall contribute for 12,50%. In particular the workings of the line have an impact for 4,17%, the packagings for 6,10%, while the management of waste and other plant consumption contribute overall for 2,23%. Overall modules C1-C4 reduce the impact for -0,43%.

For the impact category **Water use** a value of 8,30E-01 m^3 depriv. was obtained. Module A1 contains the main impact sources (52,80%), in particular: electricity (13,59%), methane and diesel (-1,14%), binders and oils (34,44%) and vitrifiable materials (5,92%). Module A2 has a more limited contribution, equal to 0,84%, while module A3 overall contribute for 48,89%. In particular the workings of the line have an impact for 39,49%, the packagings for 7,57%, while the management of waste and other plant consumption contribute overall for 1,83%. Overall modules C1-C4 reduce the impact for -2,54%.

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	4,54E-1	8,09E-3	4,21E-1	0,00E+0	8,52E-4	-7,83E-3	1,27E-3	-2,10E-1	8,77E-1
Use of renewable primary energy resources used as raw materials	MJ	6,27E-1	2,99E-3	1,35E+0	0,00E+0	3,94E-4	-3,28E-1	5,16E-4	-2,91E-1	1,65E+0
Total use of renewable primary energy	MJ	1,08E+0	1,11E-2	1,77E+0	0,00E+0	1,25E-3	-3,36E-1	1,79E-3	-5,01E-1	2,53E+0
Use of non-renewable primary energy excluding resources used as raw materials	MJ	3,44E+1	9,72E-1	4,17E+0	0,00E+0	1,18E-1	-4,23E-1	1,32E-1	-9,76E+0	3,93E+1
Use of non-renewable primary energy resources used as raw materials	MJ	0,00E+0	0,00E+0	8,61E-1	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	8,61E-1
Total use of non-renewable primary energy	MJ	3,44E+1	9,72E-1	5,03E+0	0,00E+0	1,18E-1	-4,22E-1	1,32E-1	-9,75E+0	4,02E+1
Secondary material	kg	0,00E+0	0,00E+0	2,36E-2	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	2,36E-2
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	1,10E-2	1,89E-4	9,88E-3	0,00E+0	2,15E-5	-5,17E-4	1,54E-4	-1,08E-2	2,08E-2

Waste production and outflows

Waste production

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Hazardous waste disposed	kg	5,87E-5	5,89E-7	3,28E-3	0,00E+0	7,47E-8	-9,28E-7	4,88E-8	-9,39E-6	3,33E-3
Non-hazardous waste disposed	kg	1,56E-1	6,59E-2	3,95E-1	0,00E+0	5,57E-3	-2,90E-3	8,97E-1	7,63E-1	1,52E+0
Radioactive waste disposed	kg	5,34E-5	6,57E-6	1,66E-5	0,00E+0	8,00E-7	-5,33E-7	8,96E-7	-1,57E-5	7,77E-5

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	2,56E-2	0,00E+0	0,00E+0	2,60E-2	0,00E+0	0,00E+0	5,16E-2
Materials for energy recovery	kg	0,00E+0	0,00E+0	1,29E-3	0,00E+0	0,00E+0	1,36E-2	0,00E+0	0,00E+0	1,49E-2
Exported energy	MJ	0,00E+0	0,00E+0	4,80E-3	0,00E+0	0,00E+0	7,26E-2	0,00E+0	0,00E+0	7,74E-2

GWP-GHG Indicator

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
GWP-GHG	kg CO_2 eq	1,42E+0	6,17E-2	4,43E-1	0,00E+0	7,70E-3	-6,91E-3	1,20E-2	-4,75E-1	1,93E+0

Environmental Information
Potential environmental impact

The values for the product EUROSYSTEM A+/SUPER FR A+ 95 mm are given

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Global Warming Potential total	kg CO_2 eq	1,82E+0	6,33E-2	4,63E-1	0,00E+0	1,01E-2	2,90E-2	1,67E-2	-6,26E-1	2,40E+0
Global Warming Potential fossil fuels	kg CO_2 eq	1,72E+0	6,33E-2	5,51E-1	0,00E+0	1,01E-2	-2,78E-3	7,16E-3	-6,11E-1	2,35E+0
Global Warming Potential biogenic	kg CO_2 eq	1,01E-1	3,01E-5	-8,75E-2	0,00E+0	2,89E-6	3,19E-2	9,56E-3	-1,40E-2	5,47E-2
Global Warming Potential land use and land use change	kg CO_2 eq	3,69E-4	1,85E-5	2,91E-4	0,00E+0	2,97E-6	-9,14E-5	1,02E-6	-1,29E-3	5,92E-4
Depletion potential of the stratospheric ozone layer	kg CFC_{11} eq	4,39E-7	1,50E-8	4,00E-8	0,00E+0	2,34E-9	-2,12E-9	2,56E-9	-1,21E-7	4,97E-7
Acidification potential, Accumulated Exceedence	mol H^+ eq	1,60E-2	3,72E-4	3,18E-3	0,00E+0	5,15E-5	-2,26E-4	5,22E-5	-8,25E-3	1,94E-2
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq	4,52E-4	5,41E-6	3,35E-4	0,00E+0	8,16E-7	-1,04E-5	4,67E-7	-3,32E-4	7,83E-4
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq	1,51E-3	9,62E-5	7,98E-4	0,00E+0	1,73E-5	-2,13E-5	3,67E-5	-7,77E-4	2,44E-3
Eutrophication potential, Accumulated Exceedence	mol N eq	4,13E-2	1,07E-3	1,13E-2	0,00E+0	1,91E-4	-6,50E-4	2,08E-4	-3,15E-2	5,34E-2
Formation potential of tropospheric ozone	kg NMVOC eq	4,72E-3	3,23E-4	2,52E-3	0,00E+0	5,40E-5	-9,33E-5	6,19E-5	-2,79E-3	7,58E-3
Abiotic depletion potential for non fossil resources*	kg Sb eq	2,01E-6	1,33E-7	7,12E-7	0,00E+0	3,02E-8	-9,43E-8	5,75E-9	-5,09E-6	2,80E-6
Abiotic depletion for fossil sources potential*	MJ	4,30E+1	1,00E+0	6,09E+0	0,00E+0	1,55E-1	-4,85E-1	1,72E-1	-1,28E+1	4,99E+1
Water (user) deprivation potential, deprivation-weighted water consumption	m^3 world eq. depriv.	5,11E-1	7,23E-3	4,74E-1	0,00E+0	1,06E-3	-2,76E-2	1,09E-3	-6,38E-1	9,67E-1

*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 2,40E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (75,73%), in particular: electricity (37,58%), methane and diesel (20,94%), binders and oils (12,50%) and vitrifiable materials (1,90%). Module A2 has a more limited contribution, equal to 2,62%, while module A3 overall contribute for 19,30%. In particular the workings of the line have an impact for 15,30%, the packagings for 2,28%, while the management of waste and other plant consumption contribute overall for 1,43%. Overall modules C1-C4 contribute for 2,26%.

For the impact category **Climate change - fossil** a value of 2,35E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (73,21%), in particular: electricity (35,71%), methane and diesel (22,80%), binders and oils (12,91%) and vitrifiable materials (1,79%). Module A2 has a more limited contribution, equal to 2,70%, while module A3 overall contribute for 23,48%. In particular the workings of the line have an impact for 15,29%, the packagings for 6,62%, while the management of waste and other plant consumption contribute overall for 1,57%. Overall modules C1-C4 contribute for 0,62%.

For the impact category **Climate change - biogenic** a value of 5,47E-02 kg CO_2 eq was obtained. The A1 module contain 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 5,92E-04 kg CO_2 eq was obtained. Module A1 contains the main impact sources (62,39%), in particular: electricity (11,97%), methane and diesel (8,88%), binders and oils (35,51%) and vitrifiable materials (6,03%). Module A2 has a more limited contribution, equal to 3,12%, while module A3 overall contribute for 49,27%. In particular the workings of the line have an impact for 4,52%, the packagings for 41,19%, while the management of waste and other plant consumption contribute overall for 3,56%. Overall modules C1-C4 reduce the impact for -14,78%.

For the impact category **Ozone Depletion** a value of 4,97E-07 kg CFC_{11} eq was obtained. Module A1 contains the main impact sources (88,37%), in particular: electricity (21,62%), methane and diesel (58,92%), binders and oils (6,79%) and vitrifiable materials (1,05%). Module A2 has a more limited contribution, equal to 3,02%, while module A3 overall contribute for 8,05%. In particular the workings of the line have an impact for 3,04%, the packagings for 3,90%, while the management of waste and other plant consumption contribute overall for 1,11%. Overall modules C1-C4 contribute for 0,56%.

For the impact category **Acidification** a value of 1,94E-02 mol H^+ eq was obtained. Module A1 contains the main impact sources (82,31%), in particular: electricity (52,77%), methane and diesel (6,92%), binders and oils (20,91%) and vitrifiable materials (1,71%). Module A2 has a more limited contribution, equal to 1,92%, while module A3 overall contribute for 16,40%. In particular the workings of the line have an impact for 11,87%, the packagings for 3,59%, while the management of waste and other plant consumption contribute overall for 0,95%. Overall modules C1-C4 reduce the impact for -0,63%.

For the impact category **Eutrophication aquatic freshwater** a value of 7,83E-04 kg P eq was obtained (equal to 2,40E-03 kg PO_4^{3-} eq). Module A1 contains the main impact sources (57,69%), in particular: electricity (33,92%), methane and diesel (2,31%), binders and oils (19,97%) and vitrifiable materials (1,49%). Module A2 has a more limited contribution, equal to 0,69%, while module A3 overall contribute for 42,78%. In particular the workings of the line have an impact for 38,44%, the packagings for 3,55%, while the management of waste and other plant consumption contribute overall for 0,79%. Overall modules C1-C4 reduce the impact for -1,16%.

For the impact category **Eutrophication aquatic marine** a value of 2,44E-03 kg N eq was obtained. Module A1 contains the main impact sources (62,00%), in particular: electricity (35,10%), methane and diesel (10,04%), binders and oils (13,34%) and vitrifiable materials (3,53%). Module A2 has a more limited contribution, equal to 3,94%, while module A3 overall contribute for 32,71%. In particular the workings of the line have an impact for 25,81%, the packagings for 5,30%, while the management of waste and other plant consumption contribute overall for 1,60%. Overall modules C1-C4 contribute for 1,34%.

For the impact category **Eutrophication terrestrial** a value of 5,34E-02 mol N eq was obtained. Module A1 contains the main impact sources (77,33%), in particular: electricity (63,21%), methane and diesel (5,06%), binders and oils (7,18%) and vitrifiable materials (1,88%). Module A2 has a more limited contribution, equal to 1,99%, while module A3 overall contribute for 21,14%. In particular the workings of the line have an impact for 17,32%, the packagings for 2,99%, while the management of waste and other plant consumption contribute overall for 0,83%. Overall modules C1-C4 reduce the impact for -0,47%.

For the impact category **Photochemical ozone formation** a value of 7,58E-03 kg NMVOC eq was obtained. Module A1 contains the main impact sources (62,24%), in particular: electricity (26,83%), methane and diesel (15,75%), binders and oils (16,05%) and vitrifiable materials (3,61%). Module A2 has a more limited contribution, equal to 4,26%, while module A3 overall contribute for 33,20%. In particular the workings of the line have an impact for 22,97%, the packagings for 7,16%, while the management of waste and other plant consumption contribute overall for 3,08%. Overall modules C1-C4 contribute for 0,30%.

For the impact category **Depletion of abiotic resources - mineral and metals** a value of 2,80E-06 kg Sb eq was obtained. Module A1 contains the main impact sources (71,86%), in particular: electricity (8,12%), methane and diesel (4,64%), binders and oils (57,27%) and vitrifiable materials (1,82%). Module A2 has a more limited contribution, equal to 4,75%, while module A3 overall contribute for 25,48%. In particular the workings of the line have an impact for 12,41%, the packagings for 10,60%, while the management of waste and other plant consumption contribute overall for 2,47%. Overall modules C1-C4 reduce the impact for -2,09%.

For the impact category **Depletion of abiotic resources - fossil fuels** a value of 4,99E+01 MJ was obtained. Module A1 contains the main impact sources (86,10%), in particular: electricity (29,33%), methane and diesel (45,14%), binders and oils (10,60%) and vitrifiable materials (1,03%). Module A2 has a more limited contribution, equal to 2,01%, while module A3 overall contribute for 12,21%. In particular the workings of the line have an impact for 3,65%, the packagings for 6,47%, while the management of waste and other plant consumption contribute overall for 2,09%. Overall modules C1-C4 reduce the impact for -0,32%.

For the impact category **Water use** a value of 9,67E-01 m^3 depriv. was obtained. Module A1 contains the main impact sources (52,84%), in particular: electricity (15,34%), methane and diesel (-1,27%), binders and oils (32,01%) and vitrifiable materials (6,75%). Module A2 has a more limited contribution, equal to 0,75%, while module A3 overall contribute for 49,05%. In particular the workings of the line have an impact for 38,76%, the packagings for 8,56%, while the management of waste and other plant consumption contribute overall for 1,73%. Overall modules C1-C4 reduce the impact for -2,63%.

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	4,83E-1	8,53E-3	4,61E-1	0,00E+0	1,12E-3	-5,66E-3	1,66E-3	-2,75E-1	9,50E-1
Use of renewable primary energy resources used as raw materials	MJ	7,31E-1	3,03E-3	1,64E+0	0,00E+0	5,16E-4	-4,06E-1	6,74E-4	-3,82E-1	1,97E+0
Total use of renewable primary energy	MJ	1,21E+0	1,16E-2	2,10E+0	0,00E+0	1,63E-3	-4,12E-1	2,33E-3	-6,56E-1	2,92E+0
Use of non-renewable primary energy excluding resources used as raw materials	MJ	4,30E+1	1,00E+0	5,00E+0	0,00E+0	1,55E-1	-4,86E-1	1,72E-1	-1,28E+1	4,88E+1
Use of non-renewable primary energy resources used as raw materials	MJ	0,00E+0	0,00E+0	1,09E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	1,09E+0
Total use of non-renewable primary energy	MJ	4,30E+1	1,00E+0	6,09E+0	0,00E+0	1,55E-1	-4,85E-1	1,72E-1	-1,28E+1	4,99E+1
Secondary material	kg	0,00E+0	0,00E+0	3,11E-2	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	3,11E-2
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	1,26E-2	1,96E-4	1,16E-2	0,00E+0	2,82E-5	-6,22E-4	2,01E-4	-1,42E-2	2,40E-2

Waste production and outflows

Waste production

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Hazardous waste disposed	kg	7,46E-5	5,99E-7	4,07E-3	0,00E+0	9,79E-8	-7,97E-7	6,35E-8	-1,23E-5	4,15E-3
Non-hazardous waste disposed	kg	1,76E-1	6,98E-2	4,94E-1	0,00E+0	7,31E-3	-1,56E-3	1,17E+0	1,00E+0	1,92E+0
Radioactive waste disposed	kg	6,15E-5	6,77E-6	2,02E-5	0,00E+0	1,05E-6	-5,56E-7	1,17E-6	-2,06E-5	9,01E-5

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	1,70E-2	0,00E+0	0,00E+0	3,42E-2	0,00E+0	0,00E+0	5,13E-2
Materials for energy recovery	kg	0,00E+0	0,00E+0	4,17E-4	0,00E+0	0,00E+0	1,79E-2	0,00E+0	0,00E+0	1,84E-2
Exported energy	MJ	0,00E+0	0,00E+0	2,01E-3	0,00E+0	0,00E+0	9,55E-2	0,00E+0	0,00E+0	9,75E-2

GWP-GHG Indicator

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
GWP-GHG	kg CO_2 eq	1,74E+0	6,33E-2	5,54E-1	0,00E+0	1,01E-2	-3,01E-3	1,52E-2	-6,23E-1	2,38E+0

Environmental Information
Potential environmental impact

The values for the product EUROSYSTEM A+V/SUPER FR A+V 95 mm are given

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Global Warming Potential total	kg CO_2 eq	2,01E+0	8,23E-2	5,23E-1	0,00E+0	1,03E-2	2,33E-2	1,71E-2	-6,43E-1	2,67E+0
Global Warming Potential fossil fuels	kg CO_2 eq	1,90E+0	8,23E-2	6,10E-1	0,00E+0	1,03E-2	-9,73E-3	7,29E-3	-6,27E-1	2,60E+0
Global Warming Potential biogenic	kg CO_2 eq	1,07E-1	3,69E-5	-8,79E-2	0,00E+0	2,96E-6	3,31E-2	9,78E-3	-1,44E-2	6,19E-2
Global Warming Potential land use and land use change	kg CO_2 eq	5,42E-4	2,41E-5	3,11E-4	0,00E+0	3,04E-6	-9,57E-5	1,04E-6	-1,33E-3	7,85E-4
Depletion potential of the stratospheric ozone layer	kg CFC_{11} eq	4,78E-7	1,94E-8	4,59E-8	0,00E+0	2,39E-9	-2,49E-9	2,63E-9	-1,24E-7	5,46E-7
Acidification potential, Accumulated Exceedence	mol H^+ eq	1,77E-2	4,66E-4	3,95E-3	0,00E+0	5,27E-5	-2,65E-4	5,36E-5	-8,46E-3	2,20E-2
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq	5,00E-4	7,01E-6	3,61E-4	0,00E+0	8,35E-7	-1,79E-5	4,79E-7	-3,41E-4	8,52E-4
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq	1,72E-3	1,25E-4	9,41E-4	0,00E+0	1,77E-5	-2,88E-5	3,76E-5	-7,98E-4	2,81E-3
Eutrophication potential, Accumulated Exceedence	mol N eq	4,51E-2	1,39E-3	1,39E-2	0,00E+0	1,95E-4	-7,39E-4	2,14E-4	-3,24E-2	6,00E-2
Formation potential of tropospheric ozone	kg NMVOC eq	5,37E-3	4,18E-4	2,91E-3	0,00E+0	5,53E-5	-1,28E-4	6,35E-5	-2,87E-3	8,68E-3
Abiotic depletion potential for non fossil resources*	kg Sb eq	2,65E-6	1,85E-7	7,57E-7	0,00E+0	3,09E-8	-1,99E-7	5,91E-9	-5,22E-6	3,43E-6
Abiotic depletion for fossil sources potential*	MJ	4,72E+1	1,30E+0	6,87E+0	0,00E+0	1,59E-1	-5,56E-1	1,77E-1	-1,31E+1	5,52E+1
Water (user) deprivation potential, deprivation-weighted water consumption	m^3 world eq. depriv.	5,87E-1	9,33E-3	5,80E-1	0,00E+0	1,08E-3	-2,96E-2	1,12E-3	-6,55E-1	1,15E+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 2,67E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (75,42%), in particular: electricity (35,84%), methane and diesel (20,03%), binders and oils (15,00%) and vitrifiable materials (1,79%). Module A2 has a more limited contribution, equal to 3,07%, while module A3 overall contribute for 19,60%. In particular the workings of the line have an impact for 15,96%, the packagings for 2,06%, while the management of waste and other plant consumption contribute overall for 1,27%. Overall modules C1-C4 contribute for 1,85%.

For the impact category **Climate change - fossil** a value of 2,60E+00 kg CO_2 eq was obtained. Module A1 contains the main impact sources (73,11%), in particular: electricity (34,07%), methane and diesel (21,84%), binders and oils (15,53%) and vitrifiable materials (1,68%). Module A2 has a more limited contribution, equal to 3,16%, while module A3 overall contribute for 23,43%. In particular the workings of the line have an impact for 15,88%, the packagings for 5,88%, while the management of waste and other plant consumption contribute overall for 1,67%. Overall modules C1-C4 contribute for 0,30%.

For the impact category **Climate change - biogenic** a value of 6,19E-02 kg CO_2 eq was obtained. The A1 module contain 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 7,85E-04 kg CO_2 eq was obtained. Module A1 contains the main impact sources (69,02%), in particular: electricity (9,56%), methane and diesel (7,14%), binders and oils (47,57%) and vitrifiable materials (4,75%). Module A2 has a more limited contribution, equal to 3,07%, while module A3 overall contribute for 39,59%. In particular the workings of the line have an impact for 4,22%, the packagings for 30,66%, while the management of waste and other plant consumption contribute overall for 4,72%. Overall modules C1-C4 reduce the impact for -11,67%.

For the impact category **Ozone Depletion** a value of 5,46E-07 kg CFC_{11} eq was obtained. Module A1 contains the main impact sources (87,56%), in particular: electricity (20,84%), methane and diesel (57,54%), binders and oils (8,19%) and vitrifiable materials (1,00%). Module A2 has a more limited contribution, equal to 3,56%, while module A3 overall contribute for 8,41%. In particular the workings of the line have an impact for 3,75%, the packagings for 3,52%, while the management of waste and other plant consumption contribute overall for 1,15%. Overall modules C1-C4 contribute for 0,46%.

For the impact category **Acidification** a value of 2,20E-02 mol H^+ eq was obtained. Module A1 contains the main impact sources (80,62%), in particular: electricity (49,33%), methane and diesel (6,54%), binders and oils (23,18%) and vitrifiable materials (1,57%). Module A2 has a more limited contribution, equal to 2,12%, while module A3 overall contribute for 17,98%. In particular the workings of the line have an impact for 13,86%, the packagings for 3,12%, while the management of waste and other plant consumption contribute overall for 1,01%. Overall modules C1-C4 reduce the impact for -0,72%.

For the impact category **Eutrophication aquatic freshwater** a value of 8,52E-04 kg P eq was obtained (equal to 2,61E-03 kg PO_4^{3-} eq). Module A1 contains the main impact sources (58,73%), in particular: electricity (33,02%), methane and diesel (2,26%), binders and oils (22,02%) and vitrifiable materials (1,43%). Module A2 has a more limited contribution, equal to 0,82%, while module A3 overall contribute for 42,40%. In particular the workings of the line have an impact for 38,28%, the packagings for 3,21%, while the management of waste and other plant consumption contribute overall for 0,91%. Overall modules C1-C4 reduce the impact for -1,95%.

For the impact category **Eutrophication aquatic marine** a value of 2,81E-03 kg N eq was obtained. Module A1 contains the main impact sources (61,14%), in particular: electricity (32,25%), methane and diesel (9,32%), binders and oils (16,38%) and vitrifiable materials (3,20%). Module A2 has a more limited contribution, equal to 4,46%, while module A3 overall contribute for 33,46%. In particular the workings of the line have an impact for 27,24%, the packagings for 4,53%, while the management of waste and other plant consumption contribute overall for 1,69%. Overall modules C1-C4 contribute for 0,94%.

For the impact category **Eutrophication terrestrial** a value of 6,00E-02 mol N eq was obtained. Module A1 contains the main impact sources (75,09%), in particular: electricity (59,60%), methane and diesel (4,82%), binders and oils (8,91%) and vitrifiable materials (1,75%). Module A2 has a more limited contribution, equal to 2,31%, while module A3 overall contribute for 23,15%. In particular the workings of the line have an impact for 19,63%, the packagings for 2,62%, while the management of waste and other plant consumption contribute overall for 0,90%. Overall modules C1-C4 reduce the impact for -0,55%.

For the impact category **Photochemical ozone formation** a value of 8,68E-03 kg NMVOC eq was obtained. Module A1 contains the main impact sources (61,82%), in particular: electricity (24,82%), methane and diesel (14,72%), binders and oils (19,00%) and vitrifiable materials (3,29%). Module A2 has a more limited contribution, equal to 4,81%, while module A3 overall contribute for 33,47%. In particular the workings of the line have an impact for 24,22%, the packagings for 6,14%, while the management of waste and other plant consumption contribute overall for 3,10%. Overall modules C1-C4 reduce the impact for -0,10%.

For the impact category **Depletion of abiotic resources - mineral and metals** a value of 3,43E-06 kg Sb eq was obtained. Module A1 contains the main impact sources (77,28%), in particular: electricity (7,01%), methane and diesel (4,01%), binders and oils (64,71%) and vitrifiable materials (1,55%). Module A2 has a more limited contribution, equal to 5,38%, while module A3 overall contribute for 22,07%. In particular the workings of the line have an impact for 11,16%, the packagings for 8,54%, while the management of waste and other plant consumption contribute overall for 2,37%. Overall modules C1-C4 reduce the impact for -4,73%.

For the impact category **Depletion of abiotic resources - fossil fuels** a value of 5,52E+01 MJ was obtained. Module A1 contains the main impact sources (85,61%), in particular: electricity (28,10%), methane and diesel (43,73%), binders and oils (12,80%) and vitrifiable materials (0,97%). Module A2 has a more limited contribution, equal to 2,35%, while module A3 overall contribute for 12,44%. In particular the workings of the line have an impact for 4,50%, the packagings for 5,75%, while the management of waste and other plant consumption contribute overall for 2,19%. Overall modules C1-C4 reduce the impact for -0,40%.

For the impact category **Water use** a value of 1,15E+00 m^3 depriv. was obtained. Module A1 contains the main impact sources (51,09%), in particular: electricity (13,68%), methane and diesel (-1,16%), binders and oils (32,63%) and vitrifiable materials (5,94%). Module A2 has a more limited contribution, equal to 0,81%, while module A3 overall contribute for 50,48%. In particular the workings of the line have an impact for 41,63%, the packagings for 7,09%, while the management of waste and other plant consumption contribute overall for 1,76%. Overall modules C1-C4 reduce the impact for -2,39%.

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	5,95E-1	1,08E-2	6,13E-1	0,00E+0	1,14E-3	-1,11E-2	1,70E-3	-2,82E-1	1,21E+0
Use of renewable primary energy resources used as raw materials	MJ	8,47E-1	3,98E-3	1,72E+0	0,00E+0	5,28E-4	-4,20E-1	6,92E-4	-3,92E-1	2,15E+0
Total use of renewable primary energy	MJ	1,44E+0	1,48E-2	2,33E+0	0,00E+0	1,67E-3	-4,31E-1	2,39E-3	-6,74E-1	3,36E+0
Use of non-renewable primary energy excluding resources used as raw materials	MJ	4,72E+1	1,30E+0	5,74E+0	0,00E+0	1,59E-1	-5,57E-1	1,77E-1	-1,31E+1	5,40E+1
Use of non-renewable primary energy resources used as raw materials	MJ	0,00E+0	0,00E+0	1,12E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	1,12E+0
Total use of non-renewable primary energy	MJ	4,72E+1	1,30E+0	6,86E+0	0,00E+0	1,59E-1	-5,56E-1	1,77E-1	-1,31E+1	5,52E+1
Secondary material	kg	0,00E+0	0,00E+0	3,07E-2	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	3,07E-2
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	1,47E-2	2,53E-4	1,41E-2	0,00E+0	2,89E-5	-6,74E-4	2,06E-4	-1,45E-2	2,86E-2

Waste production and outflows

Waste production

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
Hazardous waste disposed	kg	8,11E-5	7,85E-7	4,65E-3	0,00E+0	1,00E-7	-1,29E-6	6,52E-8	-1,26E-5	4,73E-3
Non-hazardous waste disposed	kg	2,08E-1	8,80E-2	5,56E-1	0,00E+0	7,47E-3	-4,26E-3	1,20E+0	1,03E+0	2,06E+0
Radioactive waste disposed	kg	7,16E-5	8,77E-6	2,29E-5	0,00E+0	1,07E-6	-7,06E-7	1,20E-6	-2,11E-5	1,05E-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	3,59E-2	0,00E+0	0,00E+0	3,36E-2	0,00E+0	0,00E+0	6,95E-2
Materials for energy recovery	kg	0,00E+0	0,00E+0	1,37E-3	0,00E+0	0,00E+0	1,75E-2	0,00E+0	0,00E+0	1,89E-2
Exported energy	MJ	0,00E+0	0,00E+0	5,62E-3	0,00E+0	0,00E+0	9,33E-2	0,00E+0	0,00E+0	9,89E-2

GWP-GHG Indicator

INDICATOR	UNIT	A1	A2	A3	C1	C2	C3	C4	D	TOTAL
GWP-GHG	kg CO_2 eq	1,93E+0	8,23E-2	6,14E-1	0,00E+0	1,03E-2	-9,98E-3	1,55E-2	-6,39E-1	2,64E+0

Information on biogenic carbon content

The products do not contain biogenic carbon, while the content in the packaging is shown in the table below.

Product name	Value	Unit
Eurosystem A+/ Super FR A+ 45 mm	1,69E-02	kgC/UF
Eurosystem A+ V/ Super FR A+ V 45 mm	1,68E-02	kgC/UF
Eurosystem A+/ Super FR A+ 70 mm	2,57E-02	kgC/UF
Eurosystem A+ V/ Super FR A+ V 70 mm	2,54E-02	kgC/UF
Eurosystem A+ V/ Super FR A+ V 95 mm	3,35E-02	kgC/UF
Eurosystem A+ V/ Super FR A+ V 95 mm	3,28E-02	kgC/UF

Indoor air emissions

The following are the results extrapolated from VOC Emission test report Indoor Air Comfort Gold of June, 24th 2019 (test report n. 392-2019-00163302_A_EN).

EUROSYSTEM A+/SUPER FR A+
EUROSYSTEM A+ V/SUPER FR A+ V
45 - 70 - 95 mm
VOC Emission Chamber Test Parameters

PARAMETER	VALUE	PARAMETER	VALUE
Chamber volume, V[L]	119	Preconditioning period	-
Air Change rate, n[h^{-1}]	0.5	Test period	09/05/2019 - 06/06/2019
Relative humidity of supply air, RH [%]	50 ± 3	Area specific ventilation rate, q [m/h or $m^3/m^2/h$]	0.5
Temperature of supply air, T [°C]	23 ± 1	Loading factor [m^2/m^3]	1.0
		Test scenario	Wall

Additional information

The results of 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, are shown in the table below.

Product name	Value	Unit
Eurosystem A+/ Super FR A+ 45 mm	2,02E+01	MJ
Eurosystem A+ V/ Super FR A+ V 45 mm	2,36E+01	MJ
Eurosystem A+/ Super FR A+ 70 mm	3,10E+01	MJ
Eurosystem A+ V/ Super FR A+ V 70 mm	3,38E+01	MJ
Eurosystem A+ V/ Super FR A+ V 95 mm	4,09E+01	MJ
Eurosystem A+ V/ Super FR A+ V 95 mm	4,61E+01	MJ

EUROSYSTEM A⁺/SUPER FR A⁺
EUROSYSTEM A⁺ V/SUPER FR A⁺ V
45 - 70 - 95 mm
VOC Emission Test Results after 3 Days

	CAS No.	Retention time [min]	ID - Cat	Specific Conc. [µg/m³]	Toluene eq. [µg/m³]	Specific SER [µg/(m²•h)]	R_D	R_B
VOC with NIK/LCI None determined								
VOC without NIK/LCI 2-Propenoic acid *	79-10-7	2.99	2	43	43	22		
Sum of VOC without NIK/LCI				43	43	22		
VVOC compounds None determined								
TVVOC				< 5	< 5	< 3		
SVOC compounds None determined								
TSVOC				< 5	< 5	< 3		
Carcinogens								
Total carcinogens				< 1	< 1	< 1		
Aldehydes								
Formaldehyde	50-00-0		1	< 3		< 2		
Acetaldehyde	75-07-0		1	16		8.0	0.013	0.013
Propionaldehyde	123-38-6		1	< 3		< 2		
Butyraldehyde	123-72-8		1	< 3		< 2		
2-butenal	123-73-9		1	< 5		< 3		
Glutaraldehyde	111-30-8		1	< 5		< 3		
R-values							0.013	0.013
TVOC				43	43	22		

EUROSYSTEM A+/SUPER FR A+
EUROSYSTEM A+ V/SUPER FR A+ V
45 - 70 - 95 mm
VOC Emission Test Results after 28 Days

	CAS No.	Retention time [min]	ID - Cat	Specific Conc. [µg/m³]	Toluene eq. [µg/m³]	Specific SER [µg/(m²•h)]	R_D	R_B
VOC with NIK/LCI None determined								
VOC without NIK/LCI 2-Propenoic acid *	79-10-7	2.82	2	5.7	5.7	2.8		
Sum of VOC without NIK/LCI				5.7	5.7	2.8		
VVOC compounds None determined								
TVVOC				< 5	< 5	< 3		
SVOC compounds None determined								
TSVOC				< 5	< 5	< 3		
Carcinogens								
Total carcinogens				< 1	< 1	< 1		
CMR substances								
Benzene	71-43-2		1	< 1		< 1		
Trichloroethylene	79-01-6		1	< 1		< 1		
Dibutylphthalate (DBP)*	84-74-2		1	< 1		< 1		
Diethylhexylphthalate (DEHP)*	117-81-7		1	< 1		< 1		
Aldehydes								
Formaldehyde	50-00-0		1	< 3		< 2		
Acetaldehyde	75-07-0		1	10		5.1	0.0085	0.0085
Propionaldehyde	123-38-6		1	< 3		< 2		
Butyraldehyde	123-72-8		1	< 3		< 2		
2-butenal	123-73-9		1	< 3		< 2		
Glutaraldehyde	111-30-8		1	< 3		< 2		
R-values							0.0085	0.0085
TVOC				5.7	5.7	2.8		

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, percent
- age 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 hexafloride 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

- General Programme Instructions of the International EPD® System. Version 3.01
- Construction Products and construction services 2019:14 version 1.1 valid until 2024-12-20
- c-PCR 005 thermal insulation products (EN 16783:2017)
- European Residual Mixes. Results of the calculation of Residual Mixes for the calendar year 2019. AIB, 2020

Standard

- CEN, 2019, EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction works, European Committee for Standardization (CEN), Brussels
- CEN, 2016, PD CEN7TR 16970:2016 Sustainability of construction works – Guidance for the implementation of EN 15804. European Committee for Standardization (CEN), Brussels
- CEN, 2017, EN 16783:2017 Thermal insulation products – Product Category Rules (PCR) for factory made and in-situ formed products for preparing environmental product declarations, European Committee for Standardization (CEN), Brussels
- ISO 2020a, ISO 14040:2006/Amd 1:2020 Environmental management – Life cycle assessment – Principles and framework – Amendment 1, International Organization for Standardisation (ISO), Ginevra
- ISO 2020b, ISO 14044:2006/Amd 2:2020 Environmental management - Life cycle assessment - Requirements and guidelines - Amendment 2, International Organization for Standardisation (ISO), Ginevra

Internal documents

- Eurofibre, 2019. Building products catalog (internal document)
- Eurofibre, 2020. Quality management of LCA Inventory data for the creation and updating of EPDs (internal procedure P08-11)
- Eurofibre, 2020 Life Cycle Assessment study of nine building insulations. Third Party Report rev. 02 17/02/2021

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