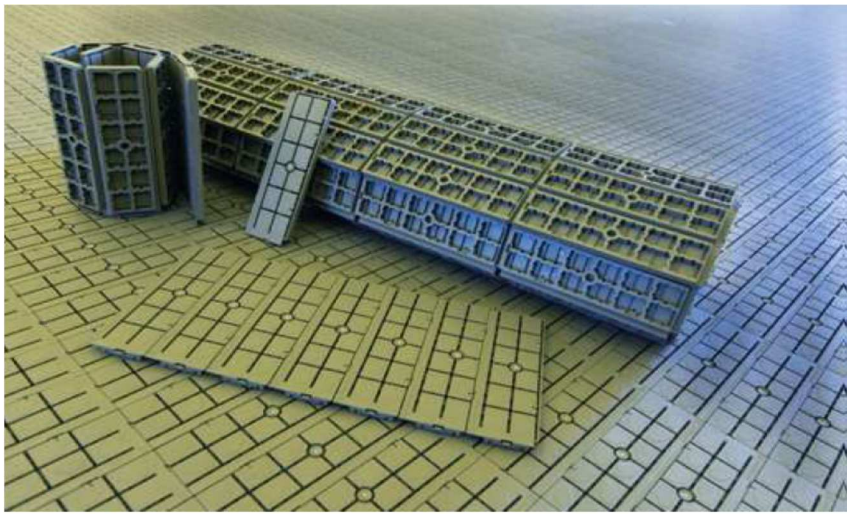
Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 for:

FLOORING SYSTEM



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-02917
Publication date:	2021-07-19
Valid until:	2026-07-18

Programme information

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

Product category rules (PCR): Construction products and construction services, 2012:01, version 2.33 valid until 2021-12-31
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Marcel Gómez Ferrer, Marcel Gómez Consultoria Ambiental, info@marcelgomez.com Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Name and contact information of LCA practitioners:
Esalex srl – info@esalex.eu

Company information

Owner of the EPD: Telegi srl

Contact: Federico Trischitta, email: federico.trischitta@telegi.com

Description of the organisation:
TELEGI S.r.l. is a qualified company in design and production of complex Defense systems.

Professionalism and experience, matured in the last twenty years, matched with a continuous company innovation and effective productive flexibility.
Company strength is the capability to develop and integrate electronic, electric and telemetric technologies to mechanic technologies, assigned to field usage.

Certification

- UNI EN ISO 9001:2008 Certificate, issued by Bureas Veritas Italy SPA
- AQAP-2110 CERTIFICATE issued by Defense Ministry-DGAT
- FGAS Certificate accrediting REG. CE 303/2008 issued by Bureas Veritas Italy SPA
- C.C. NATO A5387

More information: www.telegi.com

Name and location of production site:
Telegi s.r.l.
Via Catania 16
00041 Pavona (Roma), Italy
T. +39 06 93490011
telegi@telegi.com

Product information

Product name: Modular flooring system

Product identification:
This EPD covers the modular flooring system composed by tiles of polypropylene. Each tile has the following dimension:

- Length 338 mm
- Width 104,95 mm
- Thickness 17,85 mm
- Mass: 0,15 kg/per unit.

UN CPC code: 36910 - Floor coverings of plastics, in rolls or in the form of tiles; wall or ceiling coverings of plastics

Geographical scope: Italian

Product description:
The product has been designed for the construction of flooring for shelter, tents and temporary passages. The structure is composed by the union of single elements without limits of surface. This product has high-load capacity and offers easy, fast, tool-free assembly, disassembly and transport.

The characteristics of use are:

- Elasticity
- Durability
- Light weight
- Designed for repetitive use
- Self draining design
- Auto-levelling
- Furling
- Modular
- Rugged polypropylene.

Technical specification:

Characteristic	
Maximum compressive load (Rm)	104
Compressive yeld strengths (Yc)	32
Ultimate compressive strengths (UCS)	36
Fire reaction class	Class 1

LCA information

Functional unit: 1 m^2 of flooring system weighting 4,5 kg
The study comprises the raw material extraction, raw material transportation, manufacturing, transportation to costumer, installation, use of product, product end of life.

Reference service life: 10 years

Time representativeness: primary data refer to 2020 year. The generic data has been updated in 2019 (Ecoinvent 3.6).

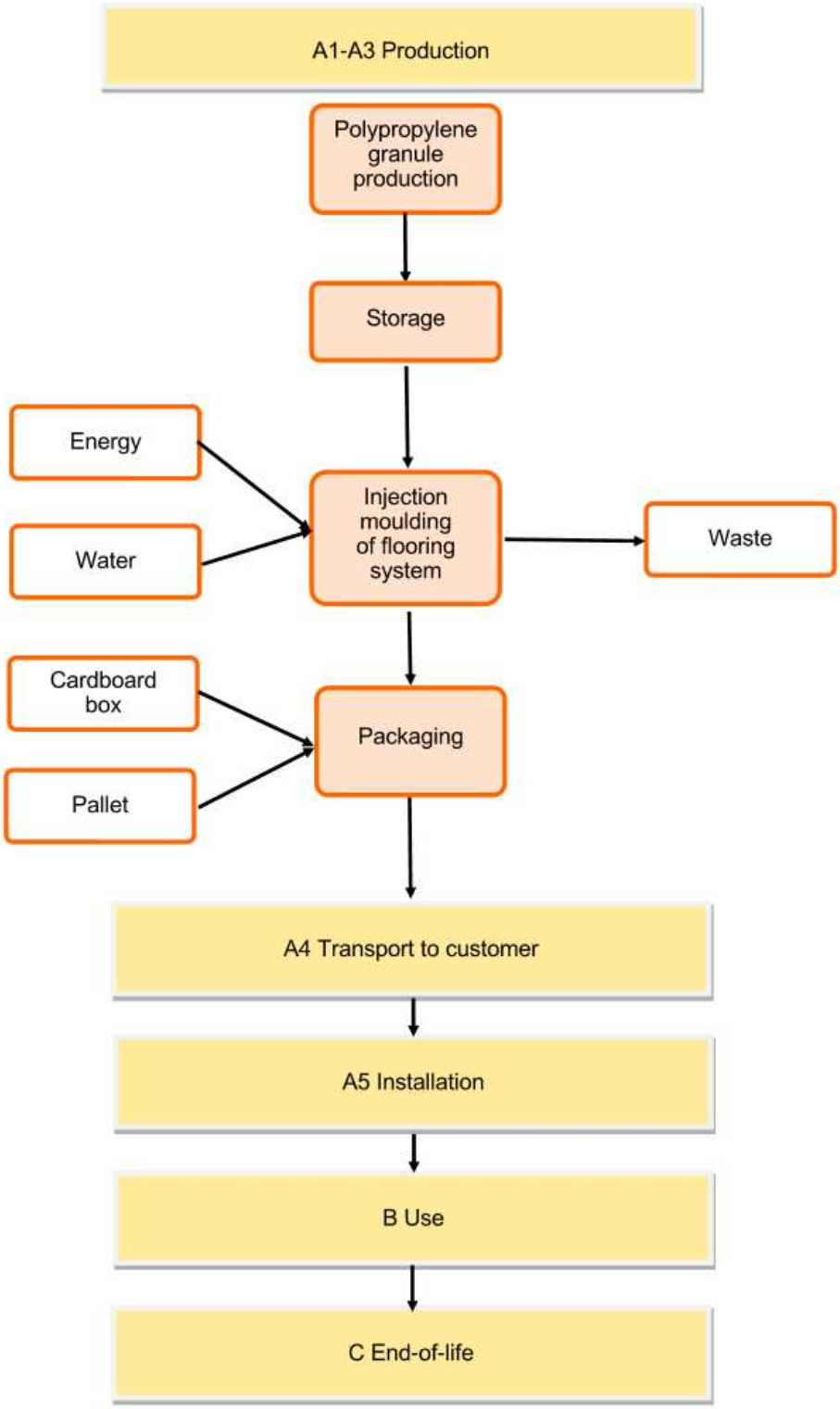
Database(s) and LCA software used: for the elaboration of data SimaPro 9.1.0.8; the database used is Ecoinvent 3.6.

Description of system boundaries: cradle-to-grave (A-B-C) + module D

Excluded lifecycle stages: all life stages are included in the LCA study

More information: www.telegi.com

System boundary is presented in the flow chart below:


A1-A3 Production
Polypropylene granule production
Storage
Energy
Water
Injection moulding of flooring system
Waste
Cardboard box
Pallet
Packaging
A4 Transport to customer
A5 Installation
B Use
C End-of-life

Additional information:

- During the carrying out of the study, as indicated by the PCR, it was preferable to avoid the allocation. In the cases where avoiding the allocation was not possible, an allocation based on physical criterion is carried
- Electricity: for the production phase in A3 module, the electrical supplier production mix (2019) is used. 1 kWh = 0,376 Kg CO2eq.
- Cut-off: at least 95% of the energy and materials used by module has been introduced, as well as 99% of the total use of energy and materials
- The modularity principle, as well as the polluter payer principle have been followed
- The next processes have not been included since its impact is not significant:
    - Environmental impact from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process.
    - Personnel-related impacts, such as transportation to and from work.
- The impact method used are:
    - CML-IA v. 3.06
    - Cumulative energy demand v. 1.00 for resource use
    - EDIP 2003 v. 1.07 for waste production
    - GHG Protocol for biogenic CO_2 v. 1.02
    - AWARE v.1.02 for water footprint.
- Scope of the EPD: Italy
- The intended use of the EPD is for B2B communication.
- The specific data refers to the year 2020 and are found directly from the manufacturers using internal management systems. When primary data were not available secondary data are used from literature, from certified studies and from validated databases (Ecoinvent 3.6). For the choice of generic data the following requirement have been met: geographical representativeness, technological equivalence, time representativeness

The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

Modules declared, geographical scope

	Product stage		Construction process stage			Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy

- Module A1 – Raw material supply: this module includes the extraction of raw material.
- Module A2 – Transport: this module includes the transportation of raw materials from the production site to the Telegi supplier gate
- Module A3 – Manufacturing: this module considers the Telegi supplier (injection moulding of tiles) processes, including consumption of energy, resources and packaging. Output flows include production waste and packaging of raw materials.
- A4 – Transport: this module considers the transport of product to construction site.

PARAMETER	DESCRIPTION	VALUE
Vehicle type used for transport		Truck
Vehicle load capacity		5,79 ton (from Ecoinvent)
Fuel type and consumption	Litre of fuel (kg of fuel for ton*km transported)	0,0374 - diesel, low –sulfur (from Ecoinvent)
Distance to central warehouse or storage, if relevant	km	Not considered
Distance to construction site	Km	700
Capacity utilisation (including empty returns)	%	24,13%
Bulk density of transported products	Kg/m^3	236,89
Volume capacity utilisation factor	/	1

- Module A5 – Installation: this module considers the installation of product

PARAMETER	DESCRIPTION	VALUE
Auxiliary materials for installation		No auxiliary material is used for installation
Use of water	m^3	0
Use of other resources	kg	0
Quantitative description of energy type and consumption during the preparation and installation process	Electric energy kWh	0
Direct emissions to ambient air, soil and water	kg	0
Waste materials on the building site, generated by the product's installation; specified by type	Cardboard - kg	0,30
Output materials (specified by type) as result of waste processing at the construction site e.g. of collection for recycling, for energy recovery, disposal; specified by route	Landfill	Packaging: recycling (paper 88,4%) and landfill (paper 11,6%,).
Vehicle type used for transport specified for all waste and output material types		For packaging waste: lorry of 7,5-16 metric ton.
Vehicle load capacity		Lorry of 7.5-16 metric ton - 3,29 (from Ecoinvent)
Fuel type and consumption	Litre of fuel type per distance	For lorry of 7.5-16 metric ton: 0,0473 kg of diesel, low – sulfur (data from Ecoinvent)
Capacity utilisation (including empty returns)	%	For lorry of 7.5-16 metric ton: 28%
Volume capacity utilisation factor		1
Transportation distance	Km	50 Km (for transport of product packaging waste)

- Module B – Use stage: the product doesn't require any use, maintenance, repair, replacement, refurbishment and it isn't necessary use of energy or water for his use.
- Module C1 – Deconstruction/demolition: The product is uninstalled manually and a sucker only is necessary, without the use of energy.
- Module C2 – Transport to waste processing: the product is then transported to disposal; the scenario provides the transport for 50 km.
- Module C3 - Waste processing for reuse, recovery and/or recycling: the product is send to landfill and there isn't any reuse, recovery or recycling.
- Module C4 - Disposal: the product is totally disposed in landfill.

PARAMETER	VALUE / DESCRIPTION
Collection process specified by type	The 4,5 kg of product are sent to landfill
Recovery system specified by type	There is no recovery, recycling or reuse
Disposal specified by type	100% landfill
Assumptions for scenario development (e.g. transportation)	16-32 ton truck. Fuel consumption: 25 l/100 Km Distance: 50 km

Content declaration

Product

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Polypropylene	4,50	0	0
TOTAL	4,50		
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Cardboard box	0,15	3,37	
Europallet	0,09	1,94	
TOTAL	0,24		

There are no SVHC substances in the product more than 0,1 % of weight of the product.

Environmental performance

Potential environmental impact

Results per functional unit															
Indicator		Total A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming potential (GWP)	Fossil (kg CO_2 eq.)	1,05E+01	1,48E+00	3,92E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,14E-01	0,00E+00	4,94E-01	0,00E+00
	Biogenic (kg CO_2 eq.)	1,17E+00	9,72E-03	6,49E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,16E-03	0,00E+00	8,39E-04	0,00E+00
	Land use and land transformation (kg CO_2 eq.)	4,02E-03	5,33E-04	2,35E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,47E-05	0,00E+00	2,51E-05	0,00E+00
	TOTAL (kg CO_2 eq.)	1,16E+01	1,49E+00	6,88E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,15E-01	0,00E+00	4,95E-01	0,00E+00
Depletion potential of the stratospheric ozone layer (ODP) (kg CFC 11 eq.)		3,74E-07	2,72E-07	6,76E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,99E-08	0,00E+00	1,18E-08	0,00E+00
Acidification potential (AP) (kg SO_2 eq.)		3,51E-02	5,74E-03	1,94E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E-04	0,00E+00	3,15E-04	0,00E+00
Eutrophication potential (EP) (kg PO_4^{3-} eq.)		3,70E-03	1,02E-03	2,93E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,11E-05	0,00E+00	1,08E-04	0,00E+00
Formation potential of tropospheric ozone (POCP) (kg C_2H_4 eq.)		2,19E-03	2,00E-04	1,20E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,67E-05	0,00E+00	8,50E-05	0,00E+00
Abiotic depletion potential - Elements (kg Sb eq.)		9,68E-05	4,07E-05	1,21E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,69E-06	0,00E+00	5,10E-07	0,00E+00
Abiotic depletion potential - Fossil resources (MJ, net calorific value)		3,38E+02	2,22E+01	5,90E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,66E+00	0,00E+00	1,10E+00	0,00E+00
Water scarcity potential (m^3 eq)		6,17E+00	6,40E-02	5,81E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,19E-03	0,00E+00	4,90E-02	0,00E+00

Use of resources

Results per functional unit																
Indicator	**Unit**	**Total A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Primary energy resources - Renewable	Use as energy carrier (MJ)	1,58E+01	3,20E-01	1,49E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,67E-02	0,00E+00	1,97E-02	0,00E+00
	Used as raw materials (MJ)	1,47E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	TOTAL	1,63E+02	3,20E-01	1,49E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,67E-02	0,00E+00	1,97E-02	0,00E+00
Primary energy resources - Non-renewable	Use as energy carrier (MJ)	3,57E+02	2,27E+01	6,11E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,71E+00	0,00E+00	1,13E+00	0,00E+00
	Used as raw materials (MJ)	2,13E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	TOTAL	5,70E+02	2,27E+01	6,11E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,71E+00	0,00E+00	1,13E+00	0,00E+00
Secondary material (kg)		0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels (MJ)		0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels (MJ)		0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water (m3)		3,21E-02	4,27E-03	2,06E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,43E-04	0,00E+00	1,28E-03	0,00E+00

Waste production and output flows

Waste production

Results per functional unit															
Indicator	**Total A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed (kg)	7,87E-05	5,94E-05	1,44E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,75E-06	0,00E+00	1,72E-06	0,00E+00
Non-hazardous waste disposed (kg)	6,12E-01	1,08E+00	3,68E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,20E-02	0,00E+00	4,50E+00	0,00E+00
Radioactive waste disposed (kg)	2,20E-04	1,54E-04	3,89E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,14E-05	0,00E+00	6,71E-06	0,00E+00

Output flows

Results per functional unit															
PARAMETER	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use (kg)	0,00E+00	0,00E+00	8,75E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling (kg)	6,14E-02	0,00E+00	1,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery (kg)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity (MJ)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal (MJ)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional information

No further information is provided.

References

- General Programme Instructions of the International EPD® System. Version 2.5
- PCR 2012:01. CONSTRUCTION PRODUCTS AND CONSTRUCTION SERVICES. Version 2.33
- ISO 14040:2006 Environmental management-Life Cycle Assessment - Principles and framework
- ISO 14044:2006 Environmental management-Life Cycle Assessment-Requirements and guidelines
- ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures
- EN 15804:2012+A1:2013, Sustainability of construction works — Environmental product declarations
- Project report rev. 1 – Flooring system

EPD®

www.environdec.com