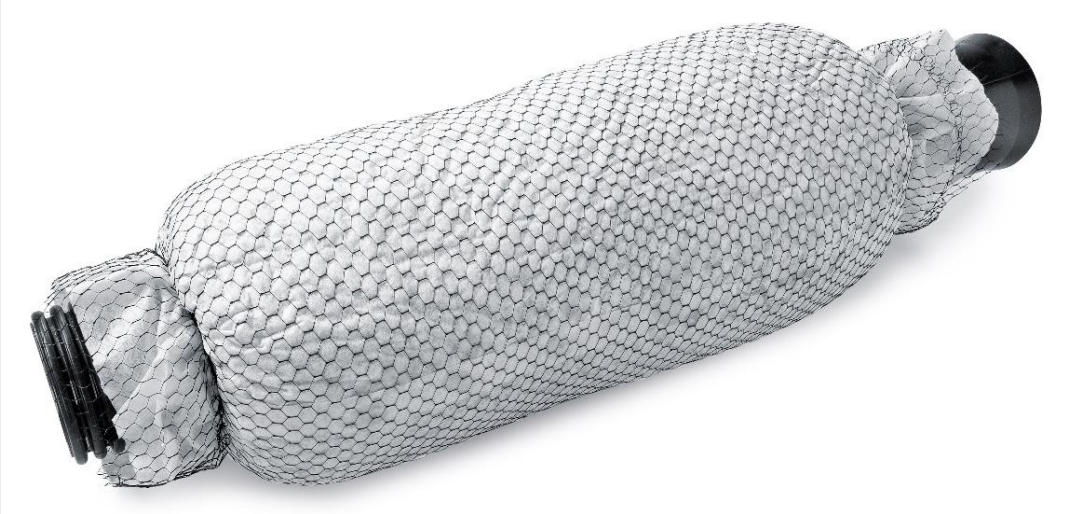
PRODUCT ENVIRONMENTAL AND HEALTH DECLARATION FORM

ENVIRONMENTAL AND HEALTH PRODUCT DECLARATION

In accordance with the NF EN 15804+A2 standard
and its national supplement NF EN 15804/CN

DRAINPLUS DRAINAGE SYSTEM (D370L6SN8 and D300L6SN8)



Declaration owner: Storopack Inc.
Address: Amerikastraat 1, Ittervoort, Limburg 6014 CE, The Netherlands
FDES registration number: 20260148481
Published: 2025-11-25
Version: 1

Contents

Warning

The information contained in this declaration is provided under the responsibility of Storopack Inc. (declarant of the FDES) in accordance with NF EN 15804+A2 and the national supplement NF EN 15804/CN.

Any use, in whole or in part, of the information provided in this document must at least be accompanied by the full reference of the original EPDS as well as its producer, who will be able to provide a complete copy.

The CEN standard EN 15804+A2 and the national supplement NF EN 15804/CN serve as the rules for defining product categories (SPCs).

NOTE The literal translation of "EPD (Environmental Product Declaration)" is "DEP" (Declaration Environnementale de Produit). However, in France, the term FDES (Environmental and Health Declaration Sheet) is commonly used, which includes both the Environmental Declaration and Health Information for the product that is the subject of this FDES. The FDES is therefore indeed a "DEP" supplemented by health information.

Reading guide

Reading example: -9.0 E -03 = -9.0 x 10-3

The following display rules apply:

- When the result of the inventory calculation is zero, then the value zero is displayed
- Abbreviation used: N/A: Not applicable

  UF: Functional Unit

- The units used are specified in front of each flow: the kilogram "kg", the gram "g", the kilowatt-hour "kWh", the megajoule "MJ", the square metre "m²", the kelvin "K", the watt "W", the kilometre "km", the millimetre "mm".
  - CODIFAB: Professional Committee for the Development of the French Furniture and Wood Industries.
  - FBF: French Banking Federation
  - GDBAT: Management of end-of-life wood construction product waste
  - BR1: Class BR1 waste corresponds to recovered wood
  - BR2: Class BR2 waste corresponds to recovered wood, classified as non-hazardous waste, which does not meet the acceptance criteria in class A and class BR1.
  - ISDND: Non-hazardous waste storage facility

Precautions for using FDES in product comparisons

Environmental declarations of construction products may not be comparable if they do not comply with EN 15804.

The NF EN 15804+A2 standard specifies in *§ 5.3 Comparability of EPDs* for construction products*, the conditions under which construction products can be compared, based on the information provided by the FDES:

"Therefore, a comparison of the environmental performance of construction products using EPD information should be based on the use of the products and their impact on the building and should take into account the entire life cycle (all information modules)."

NOTE 1 Outside the context of the environmental assessment of a building, EPDs are not tools for comparing construction products and services.

NOTE 2 For the assessment of the contribution of buildings to sustainable development, a comparison of environmental aspects and impacts should be undertaken in conjunction with the socio-economic aspects and impacts relating to the building.

NOTE 3 For the interpretation of a comparison, reference values are required.

General information

1. Name and address of the registrant: Storopack Inc.
   Amerikastraat 1, Ittervoort, Limburg 6014 CE, The Netherlands
2. The site(s), manufacturer or group of manufacturers or their representatives for which the FDES is representative: Ittervoort, The Netherlands
3. Type of EPD: Cradle to Grave
4. EPD Type: Individual, based on average product
5. Identification of the product by name or by an explicit designation or by the trade number(s): DRAINplus D370L6SN8 and DRAINplus D300L6SN8
6. Validity framework: 5 years
7. Independent external verification carried out according to the ISO 14025 Environmental Declaration Programme (version 1) by: Gregory Herfray

The CEN standard EN 15804 and the NF EN 16783 standard serve as SPCs).
The EN 15804+A2 standard serves as a reference PCR. Independent third-party verification in accordance with ISO 14025 and EN 15804+A2, ☐ Internal ☒ external
Third-Party Verification Gregory Herfray, gregory.herfray@recto-eko.fr
ISO 14025 Program Registration Number : 20260148481
Registrant Holder: Storopack Inc. **Address:** Amerikastraat 1, Ittervoort, Limburg 6014 CE, Netherland
Verification date : 25/11/2025
Validity period: 31/12/2030
(a) Rules for defining product categories b) Optional for business-to-business communication, mandatory for communication between a business and its customers (see EN ISO 14025:2010, 9.4)
FDES-INIES Program Address: HQE Association. 4 Avenue du Rector Poincaré 750116 Paris Website: http://www.inies.fr/acceuil/
Technical support: Marcel Gómez Consultoría Ambiental Email:info@marcelgomez.com www.marcelgomez.com

8. Commercial references/identification of the product by name: DRAINplus drainage system D370L6SN8 and D300L6SN8
9. Place of production: Netherlands

Description of the functional unit and the product

Description of the Functional Unit

The functional unit is the reference used to express all the data in this Life Cycle Assessment. In this case, manufacturing, transport and end-of-life ("from cradle to grave").

Functional unit: 1 linear meter of DRAINplus drainage system installed with an average weight of 1.7 kg, and its packaging, with a reference life of 50 years. (According to NF EN 15804+A2/CN Table H.2 — List of default DVRs by product category).

The mass of the product in the functional unit (UF) is 1.7 kg/m. The functional unit also includes the packaging. In total, the reference flow (packaging + product) is 2.5 kg/m.

Product and Packaging Description

DRAINplus is a drainage and infiltration system developed by Storopack, offering a large absorption surface. Pre-assembled and versatile, DRAINplus is an all-in-one system designed to meet the needs of professionals. Made from recycled materials, it is also 100% recyclable, making it a sustainable and environmentally friendly solution.

This system has many advantages for installers and tradesmen. It saves time and reduces the need for labor and machinery. The fully enclosed hoses are flexible and can be bent in any direction, ensuring quick, simple and ergonomic installation – whether lengthwise or on an interconnected level. In addition, DRAINplus can be used horizontally or vertically, providing maximum flexibility for the drainage of properties and simplifying the implementation of various drainage solutions.

BENEFITS AT A GLANCE

- All-in-one: Suitable for soil drainage, water treatment and rainwater infiltration.
- Flexible: Can be installed horizontally or vertically, connected lengthwise or on an interconnected level, and bent in all directions.
- Simple: Quick and easy installation thanks to its optimized design.
- Efficient: Its large absorption surface (up to 1.25 square meters per linear meter) allows it to handle a large volume of water.
- Lightweight: One meter of pipe weighs only 1.4 kilograms for a diameter of 300 millimeters and 2.1 kilograms for a diameter of 370 millimeters.

Drainage systems, on the other hand, are delivered wrapped in plastic films and placed on a wooden pallet.

Description of the product's use (areas of application)

DRAINplus is a pre-assembled, all-in-one system designed to accommodate multiple applications, including draining collected water, progressive rainwater infiltration into the ground, and water treatment.

Other technical features not included in the Functional Unit

AVAILABLE SIZES:

The hoses are available in lengths of 1, 3 or 6 meters, with a diameter of 110/300 millimeters or 160/370 millimetres (hose diameter/DRAINplus diameter). All those variants are available with an SN 4 or SN 8 classification.

For the LCA and EPD results, the weighted average of the weights per linear meter of the two products was used as a reference, as shown in the table below.

	Standard	Unit	Drainplus D370L6SN8	Drainplus D300L6SN8
SPECIFICATION DRAINplus				
Drainage area per running metre		M^2	1,2	0,95
Outer Diameter		MM	370	300
Weight per unit		kg/m	2.1	1,4
Available Length		M	1m /3m /6m	1m /3m /6m
Water storage		Liter	55	35
Specification of Perforated Drainage Pipes				
Outer Diameter		MM	160	110
Inner diameter		MM	139	95
Nominal Stiffness 4	EN ISO 9969	KN/m^2	SN8	SN8
Perforation Type		360º		
Geotextile Specifications - JT Nonwoven Polypropylene				
Identification Properties Thickness at 2 kPa		mm	1.35	1.35
Mechanical MD/CMD	EN ISO 100319	KN/m^2	6,0/8,0	6,0/8,0
CBR puncture resistance	ISO12236	N	1200	1200
Hydraulic properties Vertical permeability		l/m^2s (mm/s)	100	100
Aperture size	EN ISO 12956	Micron	130	130
Mass per unit area	ISO 9864	g/m^2	100	100
HDeps Specification				
Bulk Weight	UNE ore ISO	kg/M^3	9	9
Diameter/Size		MM	20/20/30	20/20/30
Water absorption 7 days		%	<2	<2
Water absorption 21 days		%	<2.5	<2.5
Non-toxic to fauna and flora				
Net specifications				
Outer Diameter		MM	370	300
Weight per unit		g/m	35	45
Mesh Type		Square	16	16

For more information, visit the https://www.storopack.fr/ website.

Description of the main components and/or materials of the product

The composition of the product is as follows. The UF is equal to 1 m.

Table 2. Product composition DRAINplus

Product Components	Mass/UF, kg	Recycled content (post-consumer), w%	Biogenic content, %
Double-walled polyethylene pipe	8.96E-01	55%	-
Expanded polystyrene (bulk)	6.05E-01	99%	-
Non-woven geotextile	1.41E-01	0%	-
Extruded plastic tubular net	3.62E-02	0%	-
Glue	7.62E-04	0%	-
Component, packaging	**Mass/UF, kg**	**Recycled content (post-consumer), w%**	**Biogenic content, kg C/UF**
Palette	7.74E-01	0%	3.87E-01
Plastic film	3.21E-03	0%	-
Total	7.77E-01	0%	3.87E-01

Specify whether the product contains substances from the candidate list according to the REACH regulation (if greater than 1% by mass)

The products studied do not include, during their life cycle, hazardous substances on the list of "Substances of Very High Concern" subject to authorization (SVHC) at a percentage greater than 0.1% of the weight of the product.

Storopack Inc. confirms that after analyzing the formulation of DRAINPlus, our product is compliant with the REACH regulation, in accordance with the report issued by the external laboratory Interek under number 221018031GZU-001. The REACH Regulation deals with Substances of Very High Concern (SVHCs), which are published by the European Chemicals Agency (ECHA) and listed in Annex XVII of the REACH Regulation.

Proof of fitness for use

The suitability for use of the DRAINplus drainage system was verified by determining the load-bearing capacity of the EPS support material by means of a CBR test in accordance with NEN-EN 14227-2, thus ensuring its durability and mechanical behavior in service.

Distribution channel (B2B or B2C)

The FDES resulting from this study is mainly intended for Business to Business (B2B) communication, as the main target audience will be a professional in the construction sector (engineer, architect or others).

Description of the Reference Lifespan

The lifespan of the product is the same as that of the building, i.e. 50 years. This system is used mainly for the drainage of collected water, the gradual infiltration of rainwater into the ground and the treatment of water.

Table 3. Reference Service Life Description

PARAMETER	DRAINPLUS UNITS (EXPRESSED PER FUNCTIONAL UNIT)
Reference life	The chosen lifespan is 50 years. This corresponds to the lifespan indicated in Table H.2 of Annex H of the national supplement NF EN15804/CN for wall waterproofing and waterproofing products
Functional properties of the product (ex-factory) and finishes, etc.	This study focuses on two models of the DRAINplus drainage system (D370L6SN8 and D300L6SN8). The main technical characteristics of the product are specified in the product data sheet, which can be consulted on https://www.storopack.fr/. The products leave the factory ready to be installed.
Theoretical application parameters (if imposed by the manufacturer, including references to appropriate application requirements and codes)	DRAINplus is a pre-assembled, all-in-one system designed to accommodate multiple applications, including draining collected water, progressive rainwater infiltration into the ground, and water treatment. For more information, see the installation manual on https://www.storopack.fr/.
Assumed quality of work when installation conforms to manufacturer's instructions	No construction work required. For more information, ask for the manufacturer's data sheet depending on the model.
Indoor environment (for indoor applications), e.g. temperature, humidity, chemical exposure	Temperature is from -20° to 80°C. For more information, ask for the manufacturer's data sheet depending on the model.
Outdoor environment (for outdoor applications), e.g. weather, pollutants, UV and wind exposure, building orientation, shading, temperature	Not required.
Conditions of use, e.g. frequency of use, mechanical exposure	For single use. For more information, ask for the manufacturer's data sheet depending on the model.
Maintenance, e.g. frequency required, type and quality and replacement of replaceable components	Not required. For more information, ask for the manufacturer's data sheet depending on the model.

Biogenic carbon content information

Table 4. Biogenic carbon content

BIOGENIC CARBON CONTENT	EXPRESSED PER FUNCTIONAL UNIT (1 m)
Biogenic carbon content of the product (ex-factory) (kg C)	0
Biogenic carbon content of the associated packaging (at the factory door) (kg C)	3.87E-01

Life Cycle Stages

The Life Cycle Assessment on which this EPD is based is carried out in accordance with the NF EN 15804+A2 standard and its national supplement NF EN 15804+A2/CN.

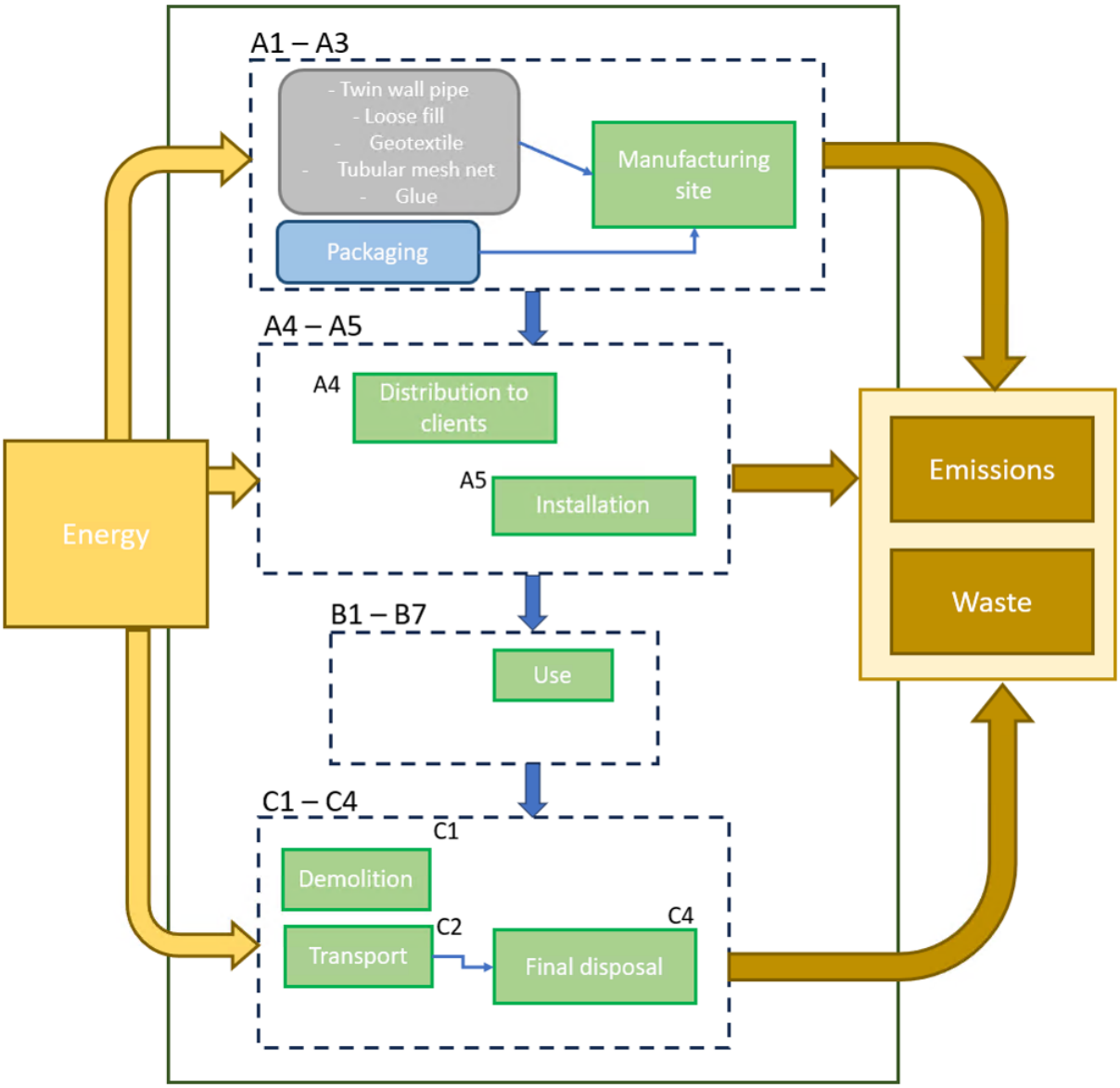


Figure 1. Diagram with system limits

Table 5. Modules reported geographical scope, specific share of data (in GWP-GEI indicator) and data variation.

PRODUCTION STAGE			STAGE OF THE CONSTRUCTION PROCESS		USE STEP							END-OF-LIFE STAGE				BENEFITS AND COSTS BEYOND THE BOUNDARIES OF THE SYSTEM
Raw material sourcing	Transportation to the factory	Manufacturing	Transportation to the construction site	Installation	Usage	Care	Repair	Substitution	Rehabilitation	In-service energy use	Use of water in service	Deconstruction/Demolition	Transportation	Waste management	Elimination	Benefits beyond the system
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

X: Module included in LCA, DEM: Module not reported

Production Stage (A1-A3)

The production stage is subdivided into three modules: A1, A2 and A3, which represent the supply of raw materials, transport to the manufacturer and manufacturing, respectively. These modules are described below and include additional technical information.

- **Raw material (A1)**

This module considers the acquisition of the raw materials necessary for the composition of the products. In the case of DRAINplus drainage systems, their composition is as follows: 62% to 45% polyethylene, 43% to 29% expanded polystyrene, 10% to 7% non-woven geotextile, 2% extruded tubular plastic, and less than 1% glue.

- **Transportation (A2)**

The raw materials are transported from Germany, France, Italy, Turkey and the Netherlands to the factory. The modelling includes the road transport of each raw material to deliver to the Storopack Netherlands manufacturing plant for further processing, with an average of 541 km.

- **Manufacturing (A3)**

At this stage, all elementary inflows and outflows related to the annual production of the drainage system for the year 2023 were inventoried from primary data. This data includes the amount and type of raw materials, packaging, energy and water sources used, as well as the waste generated. No allocation was required.

The quantity of drainage system produced includes production losses, estimated at 0.20%, which have been incorporated into the calculations for this phase.

Storopack's electricity supplier in the Netherlands is Essent, which offers an energy mix consisting of 96% wind and 4% solar, with an emission factor of 8.66E-04 kg CO_2/kWh.

Figure 2. Diagram with system limits

The model will focus on auxiliary materials, packaging, energy and water consumption, and emissions.

Construction Stage (A4-A5)

- **Product transport (A4)**

For the drainage system, the total distance per road was 3,500 km per international distance by truck (NF EN 15804+A2/CN, 6.3.9 Development of scenarios at the product level, A19: Supplement on the development of scenarios at the product level)

Table 6. Specifications of the different types of transport used.

Scenario Information	UNITS (expressed by functional unit)
Fuel type and consumption of the vehicle or type of vehicle used for transportation, e.g. long-distance truck, boat, etc.	Transport truck 16 - 32 tons EURO 6. Fuel consumption: 51 L/100 km. Transoceanic container ship.
Average distance to site: France	International distance travelled by truck: 3500 km
Capacity used	% supported in Ecoinvent 3.9. Weighted average distance to customer site taken into account.
Surface density of the conveyed product	1.58 kg/m3
Volumetric capacity utilization factor (factor: =1 or <1 or 21 for compressed or packaged products) Installation in the building (if applicable)	1

- **Product Installation and Construction Process (A5)**

This module includes all the materials and energy needed to install the product. Transport and waste management are also considered.

The installation is carried out manually and does not require any auxiliary equipment.

Packaging waste, such as wooden pallet and plastic film, is disposed of in landfills.

Table 7. Related information A5

Scenario Information	UNITS (expressed by functional unit)
Ancillary inputs for installation (specified by material)	Not used
Water use	Not used
Use of other resources	Not used
Quantitative description of the type of energy (regional mix) and consumption during the installation process	Not used
Waste materials at the construction site prior to the treatment of waste generated by the product installation (specified by type)	DRAINplus: 3.36E-03 kg (0.2% losses) Discharge
Outgoing materials (specified by type) generated by waste treatment at the construction site, e.g. collection for recycling, energy recovery, disposal (specified by route)	**NF EN 15804+A2/CN end-of-life scenarios are applied** - Wooden pallet: 7.74E-01 kg (reused, components for reuse (CRU)) - Plastic film: 3.21E-03 kg (landfill) Transport: Truck from 16 to 32 tons Distance travelled: 50 km
Direct emissions to ambient air, soil and water	Not concerned

Stage of use (B1-B7)

At this stage, the following modules are considered:

- B1: Direct use of the product
- B2: Maintenance
- B3: Repair
- B4: Replacement
- B5: Rehabilitation
- B6: Operational Energy Consumption
- B7: Operational Water Consumption

The direct use phase of the product (B1) has a value of 0. In addition, since no power consumption is required during the use of the product, the B6 phase also has a value of 0.

The technical properties of the product (hardness, resistance to scratches, abrasion or stains, etc.) make it unnecessary to repair, replace or rehabilitate the DRAINplus, so that the phases, B2, B3, B4 and B5 have a value of 0.

- **B1 – Use**

The performance of the product is such that a lifespan of 50 years can be assumed, which is equivalent to the lifespan of the building.

- **B2 – Maintenance**

Table 8. Related Information B2

Scenario Information	UNITS (expressed by functional unit)
Maintenance Process	N/A
Maintenance cycle	N/A
Auxiliary inputs for maintenance (e.g. cleaning products to be specified kg/cycle, etc.)	N/A
Maintenance waste (specify materials)	N/A
Net Fresh Water Consumption During Maintenance	N/A
Energy inputs during maintenance (e.g., vacuum cleaning, type of energy carrier (e.g., electricity and quantity, if applicable and relevant)	N/A

- **B3- Repair**

Table 9. Step B3 Information

Scenario Information	UNITS (expressed by functional unit)
Maintenance Process	N/A
Maintenance cycle	N/A
Auxiliary inputs for maintenance (e.g. cleaning products to be specified kg/cycle, etc.)	N/A
Maintenance waste (specify materials)	N/A
Net Fresh Water Consumption During Maintenance	N/A
Energy inputs during maintenance (e.g., vacuum cleaning, type of energy carrier (e.g., electricity and quantity, if applicable and relevant)	N/A

- **B4 – Replacement**

Table 10. Step B4 Information

Scenario Information	UNITS (expressed by functional unit)
Maintenance Process	N/A
Maintenance cycle	N/A
Auxiliary inputs for maintenance (e.g. cleaning products to be specified kg/cycle, etc.)	N/A
Maintenance waste (specify materials)	N/A
Net Fresh Water Consumption During Maintenance	N/A
Energy inputs during maintenance (e.g., vacuum cleaning, type of energy carrier (e.g., electricity and quantity, if applicable and relevant)	N/A

- **B5 - Renovation**

Table 11. Step B5 Information

Scenario Information	UNITS (expressed by functional unit)
Maintenance Process	N/A
Maintenance cycle	N/A
Auxiliary inputs for maintenance (e.g. cleaning products to be specified kg/cycle, etc.)	N/A
Maintenance waste (specify materials)	N/A
Net Fresh Water Consumption During Maintenance	N/A
Energy inputs during maintenance (e.g., vacuum cleaning, type of energy carrier (e.g., electricity and quantity, if applicable and relevant)	N/A

- **B6 - In-Service Energy Use**

Table 12. Step B Information

Scenario Information	UNITS (expressed by functional unit)
Auxiliaries specified by material	N/A
Net Freshwater Consumption	N/A
Type of energy carrier: electricity, natural gas, district heating, etc.	N/A
Equipment Power	N/A
Characteristic performance, e.g., energy efficiency, emissions, variation in performance depending on usage, etc.	N/A
Other assumptions for scenario construction, e.g., frequency and duration. Appropriate units of use, number of occupants	N/A

- **B7-Use of water in service**

Table 13. Step B7 Information

Scenario Information	UNITS (expressed by functional unit)
Auxiliaries specified by material	N/A
Net Freshwater Consumption	N/A
Type of energy carrier: electricity, natural gas, district heating, etc.	N/A
Equipment Power	N/A
Characteristic performance, e.g., energy efficiency, emissions, variation in performance depending on usage, etc.	N/A
Other assumptions for scenario construction, e.g., frequency and duration. Appropriate units of use, number of occupants	N/A

End of life (C1-C4)

This stage includes the following different end-of-life modules: C1, deconstruction, demolition; C2, transport to waste treatment; C3, treatment of waste with a view to its reuse, recovery and/or recycling; C4, elimination.

C1: Deconstruction

C2: Transport of waste treatment

C3: Waste treatment for reuse, recovery and/or recycling

C4: Final Elimination

- **Deconstruction/Demolition (C1)**

According to the Product Environmental Footprint Category Rules (PEFCR) for Products in Buildings 2019, the demolition of the product has a diesel consumption of 0.043 MJ/kg.

- **Transport to the waste treatment center(C2)**

Transport of non-hazardous waste: 50 km (in accordance with 6.3.9 Product-level scenario development, A19: Product-level scenario development supplement)

- **Waste treatment (C3)**

Since the product can be divided into several parts, its landfilling has been selected as an end-of-life scenario, in accordance with the end-of-life scenario defined by the NF EN 15804+A2/CN standard.

- **Waste disposal (C4)**

100% of the product is landfilled

Table 14. End of life

Process	UNITS (expressed by functional unit)
Collection process specified by type	0 kg individually collected
	Collection with mixed construction waste:
	1.68 kg
Recovery system specified by type	0 kg for reuse
	0 kg for recycling
	0 for energy recovery
Disposal specified by type	1.68 kg disposed of in landfill (100%)
Assumptions for scenario development	Product demolition waste is transported over 50 km by Euro 5 trucks of 7.5 to 16 tons, with a consumption of 25 liters per 100 km to the final treatment site or depot.

Module D

In the present study, there are no benefits beyond the system because the end of life of the product is landfill

Information for Life Cycle Assessment Calculation

Table 16. LCA Information

CONFIGURATION	VALUE
Product category rules	The NF E15804+A2 standard "Contribution of construction works to sustainable development - Environmental product declarations - Rules governing the categories of construction products" accompanied by its national supplement NF E15804+A2/CN.
Product category rules	The inventory data comes from the production site's own data for the year 2023, as well as from the internationally recognized Ecoinvent 3.9 database included in the SimaPro 9.5 software
Geographical boundaries	The specific data used in the manufacturing process was provided by the manufacturer itself and is therefore representative of the region. Wherever possible, generic data representative of the country (such as the electricity generation profile) or of wider territories (the Netherlands) were used. The product is made in China and used worldwide.
Geographical and temporal representativeness	Country of production: Netherlands Year of production data: 2023 Secondary Database: Ecoinvent 3.9
Time period under review	Data collected from Storopack Inc. refers to production in 2023.
Secondary data	The generic data selected to produce raw materials, and the production of fuels and electricity come from the Ecoinvent 3.9 database, the latest version available. SimaPro 9.5 software was used to model the life cycle inventory and calculate the results. Specific data on raw material quantities and energy requirements were obtained directly from the factory, which is the production site for all the elements analyzed. In any case, they refer to the full year 2023.
Allocation	A breakdown was made based on the mass of waste generated, consumables used and energy consumed in manufacturing, based on the proportion of product production to total plant production in 2023 in phase A3. Transport to the implementation site in phase A4 is calculated from the distances and total masses transported, adjusted to the functional unit (weighted average).
Cut-off rules	In case of insufficient or missing data, a threshold of 1% is applied for the use of renewable and non-renewable energy, as well as for the total mass input. The life cycle inventory presented in this report prioritizes the integration of a minimum of 95% of all ground and energy inputs and outputs of the base system. In particular, only the transport aspect is considered for waste destined for recycling operations. Some processes are explicitly excluded from the scope of the study, including the manufacture of production equipment and capital equipment, the transportation of personnel to and from the plant, research and development activities, and long-term emissions.
Environmental Assessment Methods	The impact indicators and categories used for the environmental assessment are those specified in the NF EN 15804+A2/CN standard and its national annex. The SimaPro 9.5 software was used for environmental assessment, with the Ecoinvent 3.9 database.
Variability of results	The average of two products will be reported (DRAINPLUS D370L6SN8 and D300L6SN8). The variability is <22% compared to the average, the weighted average results are presented. Variability of the control indicators was calculated.

LCA Results

The following tables summarize the results of the LCA. Due to rounding, totals may not add up to the sum of rounding. MND: module not declared. For energy indicators used as raw material: a negative value corresponds to the change in use from raw material to fuel (in the case of incineration, for example). Application of Annex I of the NF EN15804/NC standard.

The following lifecycle impact assessment methods were used in SimaPro to calculate these results:

The CML-IA impact method v4.07 was used, as well as the EDIP (2003) v1.07 method for the waste generation indicators and the Cumulative Energy Demand v1.11 method for the resource consumption indicators.

The following abbreviations are used:

Table 17. Abbreviations

Environmental impacts: -GWP: Global Warming Potential -GWP-fossil: Global warming - Fossil -GWP-biogenic: Global warming - Biogenic -GWP luluc: Global Warming - Land Use and Land Use Change -ODP: Ozone Layer Depletion Potential -AP: Acidification potential -EP: Eutrophication potential -POCP: Photochemical Ozone Creation Potential -ADPE: Depletion of abiotic resources (elements) -ADPF: Depletion of abiotic resources (fossil) -PM: Fine particle emissions -IRP: Ionizing radiation (human health) -ETP-fw: Ecotoxicity -HTP-c: Human toxicity, carcinogenic effects -HTP-nc: Human toxicity, non-cancer effects -SQP: Land Use Impacts/ Soil Quality -WDP: Deprive Water of Use (WDP)	Waste management: -HWD: Hazardous Waste Disposal -NHWD: Non-Hazardous Waste Disposal -RWD: Radioactive Waste Disposal
Resource Utilization: -PERE: Use of renewable primary energy excluding renewable primary energy resources used as raw materials -PERM: Use of renewable primary energies used as raw materials -PERT: Total use of renewable primary energy resources (primary energy and renewable primary energy resources used as raw materials) -PENRE: Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials -PENRM: Use of non-renewable primary energies used as raw materials -PENRT: Total use of non-renewable primary energy resources (primary energy and non-renewable primary energy resources used as raw materials) -SM: Use of secondary materials -RSF: Use of secondary renewable fuels -NRSF: Use of non-renewable secondary fuels -NFW: Net Freshwater Use	**Other flows and indicators:** -CRU: Components for reuse -MFR: Materials to be recycled -SEA: Materials for energy recovery -EEE: Exported Electrical Energy -EET: Thermal Energy Exported -EGPE: Exported Gas Energy and Process Energy

Table 18. DRAINplus® Benchmark Environmental Impacts. Results per UF (1 m)

Environmental impacts	Production stage	Construction stage		Stage of use							End-of-life stage				D Benefits and costs beyond the limits of the system
	A1/A2/A3	A4 Transportation	A5 Installation	B1 Usage	B2 Care	B3 Repair	B4 Substitution	B5 Rehabilitation	B6 Energy use	B7 Water use	C1 Deconstruction / Demolition	C2 Transportation	C3 Waste treatment	C4 Elimination	
Climate change – total *kg CO_2 equiv/UF*	2.65E+00	6.51 E-01	1.43 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.83E-03	1.25 E-02	0.00 E+00	9.38 E-03	0.00 E+00
Climate change – fossil fuels *kg CO_2 equivalent/UF*	4.06E+00	6.51 E-01	1.06 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.82E-03	1.25 E-02	0.00 E+00	9.37 E-03	0.00 E+00
Climate change – biogenic *kg CO_2 equiv/UF*	-1.42E+00	0.00 E+00	1.42 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Climate change – land use and land cover transformation *kg CO_2 equiv/UF*	1.97E-03	1.32 E-05	2.22 E-06	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.79E-07	2.46 E-07	0.00 E+00	$3.73E-06	0.00 E+00
Ozone depletion kg *CFC 11 equiv* /UF	2.29E-06	1.46 E-08	1.85 E-10	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.08E-10	2.71 E-10	0.00 E+00	1.26 E-10	0.00 E+00
Mole acidification *of H+ equiv / UF*	1.08E-02	8.41 E-04	4.57 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.53E-05	1.58 E-05	0.00 E+00	7.98 E-05	0.00 E+00
Aquatic eutrophication, freshwater *kg of P equiv / UF*	7.95E-05	5.29 E-07	8.62 E-08	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.84E-09	9.85 E-09	0.00 E+00	1.03 E-07	0.00 E+00
Marine aquatic eutrophication *kg of N equiv / UF*	2.24E-03	2.07 E-04	4.07 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.07E-05	3.91 E-06	0.00 E+00	3.45 E-05	0.00 E+00
Terrestrial eutrophication *mole of N equiv / UF*	2.36E-02	2.00 E-03	1.95 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.34E-04	3.81 E-05	0.00 E+00	3.75 E-04	0.00 E+00
Photochemical ozone formation *kg NMCOV equiv/UF*	1.57E-02	1.58 E-03	8.44 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	9.82E-05	2.96 E-05	0.00 E+00	1.12 E-04	0.00 E+00
Depletion of abiotic resources (minerals & metals) *kg Sb equiv/UF*	6.97E-07	2.32 E-08	3.72 E-10	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.87E-10	4.31 E-10	0.00 E+00	3.57 E-10	0.00 E+00
Depletion of abiotic resources (fossil fuels) *MJ/UF*	7.77E+01	8.96 E+00	1.35 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.98E-02	1.67 E-01	0.00 E+00	1.21 E-01	0.00 E+00
Water requirement *m3 of equivalent deprivation in the world / UF*	6.51E-01	8.21 E-03	2.86 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.15E-04	1.53 E-04	0.00 E+00	$4.04E-04	0.00 E+00

Table 19. Additional environmental impacts of DRAINplus®. Results per UF (1 m)

Environmental impacts	Production stage	Construction stage		Stage of use							End-of-life stage				D Benefits and costs beyond the limits of the system
	A/A2/A3	A4 Transportation	A5 Installation	B1 Usage	B2 Care	B3 Repair	B4 Substitution	B5 Rehabilitation	B6 Energy use	B7 Water use	C1 Deconstruction / Demolition	C2 Transportation	C3 Waste treatment	C4 Elimination	
Fine particle emissions *Disease index / UF*	1.70E-07	5.14 E-08	1.33 E-09	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.84E-09	7.55 E-10	0.00 E+00	2.07 E-09	0.00 E+00
Ionizing radiation (human health) *kBq of U235 equiv/UF*	5.94E-02	1.43 E-03	6.93 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.06E-05	2.65 E-05	0.00 E+00	1.08 E-04	0.00 E+00
Ecotoxicity (freshwater) *CTUe/UF*	2.06E+01	4.51 E+00	1.01 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.42E-02	8.15 E-02	0.00 E+00	5.05 E-02	0.00 E+00
Human toxicity, carcinogenic effects *CTUh/UF*	9.09E-10	4.46 E-11	1.05 E-12	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	3.83E-13	7.98 E-13	0.00 E+00	8.35 E-13	0.00 E+00
Human toxicity, non-cancer effects *CTUh/UF*	1.96E-08	5.90 E-09	1.55 E-10	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	9.57E-12	8.92 E-11	0.00 E+00	2.51 E-11	0.00 E+00
Land Use Impacts / Soil Quality *Dimensionless / UF*	3.51E+01	1.70 E-02	1.36 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.70E-04	3.17 E-04	0.00 E+00	2.94 E-01	0.00 E+00

Table 20. Use of DRAINplus® resources. Results per UF (1 m)

Resource Utilization	Production stage	Construction stage		Stage of use							End-of-life stage				D Benefits and costs beyond the limits of the system
	A/A2/A3	A4 Transportation	A5 Installation	B1 Usage	B2 Care	B3 Repair	B4 Substitution	B5 Rehabilitation	B6 Energy use	B7 Water use	C1 Deconstruction / Demolition	C2 Transportation	C3 Waste treatment	C4 Elimination	
Use of renewable primary energy, excluding renewable primary energy resources used as feedstock - *MJ/UF*	4.87E+00	2.36 E-02	1.83 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.75E-04	4.39 E-04	0.00 E+00	2.95 E-03	0.00 E+00
Use of renewable primary energy resources as raw materials - *MJ/UF*	3.71E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) - *MJ/UF*	8.58E+00	2.36 E-02	1.83 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.75E-04	4.39 E-04	0.00 E+00	2.95 E-03	0.00 E+00
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstock - *MJ/UF*	1.92E+01	9.53 E+00	1.44 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	9.55E-02	1.77 E-01	0.00 E+00	1.28 E-01	0.00 E+00
Use of non-renewable primary energy resources as raw materials - *MJ/UF*	6.40E+01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - MJ/UF	8.33E+01	9.53 E+00	1.44 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	9.55E-02	1.77 E-01	0.00 E+00	1.28 E-01	0.00 E+00
Secondary material use - *kg/UF*	1.09E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Use of secondary renewable fuels - *MJ/UF*	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Use of non-renewable secondary fuels - *MJ/UF*	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Net Freshwater Use - *m3/UF*	1.70E-02	3.75 E-04	1.20 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.46E-06	6.98 E-06	0.00 E+00	1.67 E-05	0.00 E+00

Table 21. Category of DRAINplus® waste. Results per UF (1 m)

Waste category	Production stage	Construction stage		Stage of use							End-of-life stage				D Benefits and costs beyond the limits of the system
	A/A2/A3	A4 Transportation	A5 Installation	B1 Usage	B2 Care	B3 Repair	B4 Substitution	B5 Rehabilitation	B6 Energy use	B7 Water use	C1 Deconstruction / Demolition	C2 Transportation	C3 Waste treatment	C4 Elimination	
Hazardous waste disposed of - *kg/UF*	9.49E-04	5.92 E-05	8.30 E-07	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.00E-07	1.10 E-06	0.00 E+00	6.77 E-07	0.00 E+00
Non-hazardous waste disposed of - *kg/UF*	6.60E-02	4.37 E-04	7.77 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.63E-06	8.13 E-06	0.00 E+00	1.68 E+00	0.00 E+00
Radioactive waste disposed of - *kg/UF*	4.26E-05	7.69 E-07	4.19 E-08	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.38E-09	1.43 E-08	0.00 E+00	6.78 E-08	0.00 E+00

Table 22. Outflows from DRAINplus®. Results per UF (1 m)

Outings	Production stage	Construction stage		Stage of use							End-of-life stage				D Benefits and costs beyond the limits of the system
	A/A2/A3	A4 Transportation	A5 Installation	B1 Usage	B2 Care	B3 Repair	B4 Substitution	B5 Rehabilitation	B6 Energy use	B7 Water use	C1 Deconstruction / Demolition	C2 Transportation	C3 Waste treatment	C4 Elimination	
Components for reuse - *kg/UF*	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+ 00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Materials for recycling - *kg/UF*	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+ 00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Materials for energy recovery - *kg/UF*	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+ 00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Electrical Energy Supplied Outdoors - *MJ/UF*	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+ 00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Steam Energy Supplied Outdoors - *MJ/UF*	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+ 00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Gas and process energy *supplied externally* - *MJ/UF*	0.00E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00E+ 00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00

Table 23. Aggregation of environmental impacts in the different modules to achieve a "Total Stage" or a "Total Life Cycle".

ENVIRONMENTAL IMPACTS Aggregation of the different modules to achieve a "Total Stage" or "Total Life Cycle"							
Impacts/Flows	**Units**	**Production stage A1 to A3**	**Construction stage A4 + A5**	**Stage of use B1 – B7**	**End-of-life stage C1 to C4**	**Total Life Cycle**	**Benefits and costs beyond the limits of the system**
Baseline environmental impacts							
Climate change – total *kg CO_2 equiv/UF*	Kg CO_2 eq	2.65E+00	2.08E+00	0.00E+00	2.87E-02	4.75E+00	0.00E+00
Climate change – fossil fuels *kg CO2 equivalent/UF*	Kg CO_2 eq	4.06E+00	6.62E-01	0.00E+00	2.87E-02	4.75E+00	0.00E+00
Climate change – biogenic *kg CO_2 equiv/UF*	Kg CO_2 eq	-1.42E+00	1.42E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Climate change – land use and land cover change *kg CO_2 equiv/UF*	Kg CO_2 eq	1.97E-03	1.54E-05	0.00E+00	4.26E-06	1.99E-03	0.00E+00
Ozone depletion kg *CFC 11 equiv* /UF	Kg CFC 11 eq	2.29E-06	1.47E-08	0.00E+00	5.05E-10	2.31E-06	0.00E+00
Mole acidification *of H+ equiv / UF*	Kg SO_2 eq	1.08E-02	8.86E-04	0.00E+00	1.61E-04	1.18E-02	0.00E+00
Aquatic eutrophication, freshwater *kg of P equiv / UF*	Kg P eq	7.95E-05	6.16E-07	0.00E+00	1.19E-07	8.02E-05	0.00E+00
Marine aquatic eutrophication *kg of N equiv / UF*	Kg *N* eq	2.24E-03	2.47E-04	0.00E+00	6.91E-05	2.55E-03	0.00E+00
Terrestrial eutrophication *mole of N equiv / UF*	mol N eq	2.36E-02	2.19E-03	0.00E+00	7.47E-04	2.65E-02	0.00E+00
Photochemical ozone formation *kg NMCOV equiv/UF*	Kg C2H4 eq	1.57E-02	1.66E-03	0.00E+00	2.39E-04	1.76E-02	0.00E+00
Depletion of abiotic resources (minerals & metals) *kg Sb equiv/UF*	Kg Sb eq	6.97E-07	2.35E-08	0.00E+00	1.08E-09	7.22E-07	0.00E+00
Depletion of abiotic resources (fossil fuels) *MJ/UF*	GM	7.77E+01	9.10E+00	0.00E+00	$3.77E-01	8.72E+01	0.00E+00
Water requirement *m3 of equivalent deprivation in the world / UF*	m^3	6.51E-01	8.49E-03	0.00E+00	6.71E-04	6.60E-01	0.00E+00
Additional environmental impacts.							
Fine particle emissions *Disease index / UF*	Disease Index (Pt)	1.70E-07	5.27E-08	0.00E+00	4.67E-09	2.27E-07	0.00E+00
Ionizing radiation (human health) *kBq of U235 equiv/UF*	KBq of the U235 equivalent	5.94E-02	1.50E-03	0.00E+00	$1.45E-04	6.10E-02	0.00E+00
Ecotoxicity (freshwater) *CTUe/UF*	CTUe	2.06E+01	4.61E+00	0.00E+00	1.76E-01	2.53E+01	0.00E+00
Human toxicity, carcinogenic effects *CTUh/UF*	CTUh	9.09E-10	4.56E-11	0.00E+00	2.02E-12	9.57E-10	0.00E+00
Human toxicity, non-cancer effects *CTUh/UF*	CTUh	1.96E-08	6.05E-09	0.00E+00	1.24E-10	2.58E-08	0.00E+00

ENVIRONMENTAL IMPACTS Aggregation of the different modules to achieve a "Total Stage" or "Total Life Cycle"							
Impacts/Flows	**Units**	**Production stage A1 to A3**	**Construction stage A4 + A5**	**Stage of use B1 – B7**	**End-of-life stage C1 to C4**	**Total Life Cycle**	**Benefits and costs beyond the limits of the system**
Land use related impacts/Soil quality (SQP)	No dimensions	3.51E+01	$1.54E-01	0.00E+00	2.95E-01	3.55E+01	0.00E+00
Resource Utilization							
Use of renewable primary energy, excluding renewable primary energy resources used as feedstock - *MJ/UF*	MJ, net calorific value	4.87E+00	2.54E-02	0.00E+00	3.57E-03	4.90E+00	0.00E+00
Use of renewable primary energy resources as raw materials - *MJ/UF*	MJ, net calorific value	3.71E+00	0.00E+00	0.00E+00	0.00E+00	3.71E+00	0.00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) - *MJ/UF*	MJ, net calorific value	8.58E+00	2.54E-02	0.00E+00	3.57E-03	8.61E+00	0.00E+00
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstock - *MJ/UF*	MJ, net calorific value	1.92E+01	9.67E+00	0.00E+00	4.01E-01	2.93E+01	0.00E+00
Use of non-renewable primary energy resources as raw materials - *MJ/UF*	MJ, net calorific value	6.40E+01	0.00E+00	0.00E+00	0.00E+00	6.40E+01	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - MJ/UF	MJ, net calorific value	8.33E+01	9.67E+00	0.00E+00	4.01E-01	9.33E+01	0.00E+00
Secondary material use - *kg/UF*	Kg	1.09E+00	0.00E+00	0.00E+00	0.00E+00	1.09E+00	0.00E+00
Use of secondary renewable fuels - *MJ/UF*	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels - *MJ/UF*	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net Freshwater Use - *m3/UF*	m^3	1.70E-02	3.87E-04	0.00E+00	2.81E-05	1.75E-02	0.00E+00
Waste category							
Hazardous waste disposed of - *kg/UF*	Kg	9.49E-04	6.00E-05	0.00E+00	2.38E-06	1.01E-03	0.00E+00
Non-hazardous waste disposed of - *kg/UF*	Kg	6.60E-02	7.78E-01	0.00E+00	1.68E+00	2.52E+00	0.00E+00
Radioactive waste disposed of - *kg/UF*	Kg	4.26E-05	8.10E-07	0.00E+00	8.65E-08	4.35E-05	0.00E+00

ENVIRONMENTAL IMPACTS Aggregation of the different modules to achieve a "Total Stage" or "Total Life Cycle"							
Impacts/Flows	**Units**	**Production stage A1 to A3**	**Construction stage A4 + A5**	**Stage of use B1 – B7**	**End-of-life stage C1 to C4**	**Total Life Cycle**	**Benefits and costs beyond the limits of the system**
Outings							
Components for reuse - *kg/UF*	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling - *kg/UF*	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery - *kg/UF*	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Electrical Energy Supplied Outdoors - *MJ/UF*	GM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Steam Energy Supplied Outdoors - *MJ/UF*	GM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Gas and process energy *supplied externally* - *MJ/UF*	GM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional information on the emission of hazardous substances into indoor air, soil and water during the use phase

The correct use of the products described does not pose any danger to water, air or soil. They are inert when used in accordance with their intended use. No health damage is expected with normal use.

During the life cycle of the product, no hazardous substances on the "List of Substances of Very High Concern (SVHC)" were used at a percentage greater than 0.1% of the weight of the product.

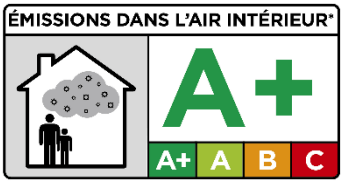
The LCA was carried out in accordance with the NF-EN 15804+A2 standard and its national addition NF-EN 15804+A2/CN for the preparation of Environmental and Health Declaration Sheets (ESDFs) for Construction Products.

This document aims to provide accessible, accurate and comparable information on the environmental and health performance of a finished product, defined by its Functional Unit.

Indoor air

VOCs and formaldehyde (if relevant)

Not concerned



Resistance to fungal growth development (if any)

Not concerned

Radioactive emissions (if applicable)

Any radioactive emissions from the product under investigation are below the activity concentration indices established in the European Union. For more information, please contact Storopack Inc.

Soil and water (if applicable)

Not applicable because the product is not in contact with water intended for human consumption, runoff, seepage, groundwater, or surface water.

Contribution of the product to the quality of life inside buildings

Product characteristics that contribute to the creation of hygrothermal comfort conditions in the building.

Antibacterial activity

Not concerned

Product characteristics that contribute to the creation of acoustic comfort conditions in the building.

Not concerned

Product characteristics that contribute to the creation of visual comfort conditions in the building.

Not concerned

Product characteristics that contribute to the creation of olfactory comfort conditions in the building.

Not concerned

Additional information (optional)

Not concerned

References

- ISO 14040:2006. Environmental management - Life cycle assessment - Principles and framework.
- ISO 14044:2006. Environmental Management - Life Cycle Assessment - Requirements and Guidelines.
- ISO 14025:2006. Environmental Labelling and Declarations - Type III Environmental Declarations - Principles and Procedures.
- Decree No. 2021-1674 of 16 December 2021 on the environmental declaration of construction and decoration products as well as electrical, electronic and HVAC equipment.
- NF EN 15804+A2/CN October 2022: Contributions of construction works to sustainable development – Environmental product declarations – Rules governing the categories of construction products – National supplement to NF EN 15804+A2
- Decree of 14 December 2021 on the environmental declaration of products intended for use in building structures and the environmental declaration of products used for the calculation of the environmental performance of buildings.
- Decree of 14 December 2021 on the environmental declaration of products intended for use in construction works, as well as the environmental declaration of products used to calculate the environmental performance of buildings.
- INIES Verification Program Regulations (August 2023).
- INIES-December-2023-Programme-Regulation, Decree No. 2021-1674 of 16 December 2021 on the environmental declaration of construction and decoration products as well as electrical, electronic and HVAC equipment
- Order of 20 October 2022 amending the Order of 14 December 2021 relating to the environmental declaration of products intended for use in building structures and the environmental declaration of products used for the calculation of the environmental performance of buildings.
- Decree of 14 December 2021 on the environmental declaration of products intended for use in building structures and the environmental declaration of products used for the calculation of the environmental performance of buildings.
- Decree of 14 December 2021 on the verification by independent third party of environmental declarations of products intended for use in building works and environmental declarations of products used for the calculation of the environmental performance of buildings.
- Marcel Gómez Consultoría Ambiental. Life cycle assessment for DRAINplus. Barcelona, Spain (2024).
- CODIFAB and FAF (2023). GDBAT Summary: Management of end-of-life wood construction product waste – Phase 2: LCA modelling of the management of wood waste classes BR1 and BR2. Edition 1
- Product Environmental Footprint Class (PEFCR) Rules for Buildings, 2019