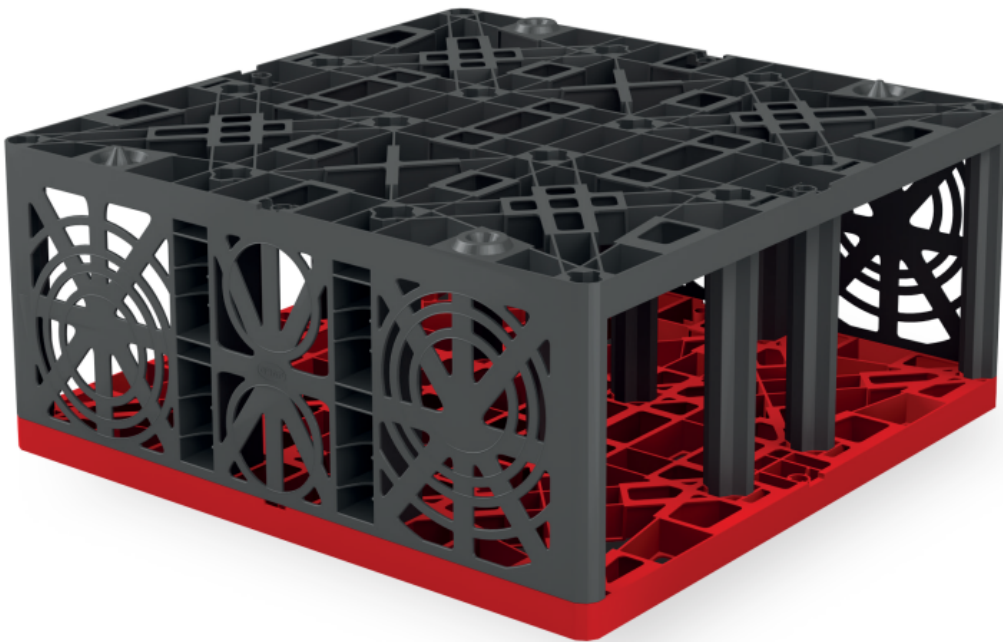




Environmental Product Declaration

« Ecobloc FLEX »

Version of 22/05/2024



Disclaimer

The information contained in this declaration is the responsibility of GRAF (producer of the EPD) in accordance with NF EN 15804+A2 and the national supplement NF EN 15804/CN.

Any use, total or partial, of the information provided in this document must at least be accompanied by a full reference to the original EPD and to its producer, who will be able to provide a complete copy.



Reading guide

Details that make it easier to read the declaration or the data contained in the declaration.

The display of data and results complies with the requirements of standard EN 15804.

In the following tables, 2.63 E-05 should be read as 2.63×10^{-5} (scientific notation).

The units used are specified in front of each flux and are :

- The kilogram (kg),
- The cubic metre (m^3),
- The kilowatt-hour (kWh),
- The megajoule (MJ).

Abbreviations :

- LCA : Life Cycle Assessment
- RLC : Reference Life Cycle
- FU : Functional Unit

Precautions for using the EPD to compare products

Construction product EPDs may not be comparable if they do not comply with standard NF EN 15804+A2.

NF EN 15804+A2 defines in § 5.3 Comparability of EPDs for construction products, the conditions under which construction products can be compared, on the basis of the information provided by the EPD :

"A comparison of the environmental performance of construction products using information from EPDs must be based on the use of the products and their impact on the building, and must take into account the entire life cycle (all information modules)".



General information

Names and addresses of manufacturers : **GRAF DISTRIBUTION**

The manufacturer for which the EPD is representative : **GRAF SAS**

Type of EPD : **"From the cradle to the grave"**

Type of EPD : **Individual**

Description of the functional unit (or declared unit) and the product

1. Description of the functional unit (or declared unit) :

"1 m³ of rainwater stored temporarily in an infiltration basin, for a reference lifetime of 50 years."

2. Product description :

The ECOBLOC FLEX infiltration system consists of a base plate on which individual modules are stacked. These polypropylene elements are assembled on site.

3. Description of product use (areas of application) :

The main function of ECOBLOC FLEX modules is to manage rainwater in urban environments.

Range of applications :

Infiltration/attenuation tank : temporary storage for gradual infiltration of water into the ground.

4. Description of the main components and/or materials of the product :

Assembly of PP modules with a void ratio of 95%. The reference mass for storing a m³ of water is 49.3 kg of recycled PP (R-PP) per FU.

5. Specify whether the product contains substances on the REACH candidate list (if more than 1% by mass) :

The product does not contain any substances on the REACH candidate list.



Parameters	Values
Reference lifetime	50 years : period after which it is assumed that a major renovation of an infrastructure will take place.
Declared properties of the product (on leaving the factory) and finishes, etc., ...	Compliance with Agreement certificate 15/5200 issued by the BBA Product Sheet 1.
Theoretical application parameters (if imposed by the manufacturer), including references to appropriate practices.	Compliance with the technical file drawn up by the applicant and annexed to the BBA Technical Assessment.
Assumed quality of the work, where the installation complies with the manufacturer's instructions	Good.
Indoor environment (for indoor applications), e.g. temperature, humidity, exposure to chemicals	Not applicable.
Conditions of use, e.g. frequency of use, chemical exposition	Non-stop use. No chemical substances.

Life cycle stages

Production stage, A1-A3

Description of :

- **Stage A1** : regeneration of R-PP pellets in Europe.
- **Stage A2** : transport of raw materials to the processing site.
- **Stage A3** : injection and shaping of the geocellulars. No loss (internal recycling).

Construction stage, A4-A5

Description of :

- **The transport stage** : from production workshops to worksites : road transport (estimated 300 km) ;
- **Geocellulars construction stage** : based on data from an actual 10 m³ construction site. This stage takes into account additional products such as geotextile, end plates, base plates, mounting clips, fuel for installation machinery and transport/processing of packaging waste.



Parameters	Values
Type of fuel and consumption of the vehicle or type of vehicle used for transport, e.g. long-distance lorry, ship, etc.	Heavy road vehicles Transport, freight, lorry 16-32 metric ton, EURO6
Distance to building site	300 km
Capacity utilisation (including empty returns)	40 t truck, load factor 16 %, with 0 % empty returns
Bulk density of products transported	Normal for plastic items
Volume capacity utilisation coefficient	1

Details of installation :

Parameters	Values
Auxiliary inputs for installation (specified by material)	None
Water use	No water used on building site
Other resources used	Geotextile 0.22 kg/FU Gravel 87 kg/FU
Quantitative description of the type of energy (regional mix) and consumption during the installation process	Gas oil digger, compactor, excavated land and gravel transport : 0.93 kg/FU
Waste generated on the construction site prior to treatment of waste generated by the installation of the product (specified by type)	Strapping 0.04 kg PP support 0.239 kg
Materials (specified by type) generated by the treatment of waste on the construction site, e.g. collection for recycling, energy recovery, disposal (specified by flow)	Strapping : <ul style="list-style-type: none"> - 64% incineration - Remainder landfill PP support : <ul style="list-style-type: none"> - 80 % Recycling - Remainder landfill
Direct emissions into the environment (Air, soil and water)	None



End-of-life stage C1-C4

Description of :

- The stage of demolition, transport and treatment of end-of-life waste.

Parameters	Values
Collect process specified by type	50 % of the underground geocellulars are extracted and recycled, the other 50 % are left in place. 24.65 kg/FU
Waste treatment system specified by type	kg for reuse None kg for recycling 24.65 kg/FU kg for energy recovery 12.32 kg/FU
Disposal specified by type	kg for landfilling 12.32 kg/FU

Information for calculating the life cycle analysis

Product Category Rules used	Description : the PCR is standard EN 15804+A2
System limits	Description : "from cradle to grave"
Allocations	Description : the common functions of the production site (utilities, waste, etc.) are allocated to the products in R-PP in proportion to the mass produced on the site.
Geographical and temporal representativeness of primary data	Description : primary data (collected on site), secondary data (from databases such as ECOINVENT V9.3.0.3, SimaPro).
Variability of results	Description : Not applicable, individual declaration.



Results of the life cycle analysis

Environmental impact		Production stage					Stage in the construction process					Use stage					End-of-life stage					Total Lifecycle	Benefits D					
		Unit					Total A1-A3					Total A4-A5					Total B							Total C1-C4				
		A1	A2	A3	A4	A5	A1	A4	A5	Total A4-A5	Total B	C1	C2	C3	C4	Total C1-C4												
Climate change	kg CO2 eq	2,56E+00	1,25E+00	2,28E+01	2,66E+01	5,18E-01	1,06E+00	1,58E+00	0,00E+00	4,25E-01	5,86E+00	8,94E+00	1,26E+01	2,78E+01	5,61E+01	-2,11E+01												
Ozone depletion	kg CFC11 eq	9,83E-07	2,86E-07	8,16E-07	2,09E-06	1,22E-07	2,23E-07	3,45E-07	0,00E+00	8,91E-08	1,29E-06	6,33E-07	2,33E-07	2,23E-06	4,66E-06	-1,31E-06												
Ionising radiation	kBq U-235 eq	5,14E-01	1,13E-01	2,35E+00	2,97E+00	4,16E-02	6,83E-02	1,10E-01	0,00E+00	2,73E-02	3,59E-01	4,91E-01	7,92E-02	9,57E-01	4,04E+00	-3,16E+00												
Photochemical ozone formation	kg NMVOC eq	2,29E-02	4,20E-03	3,03E-02	5,74E-02	2,95E-03	1,43E-02	1,73E-02	0,00E+00	5,74E-03	5,75E-02	2,45E-02	9,44E-03	9,71E-02	1,72E-01	-8,59E-02												
Particulate matter	disease inc.	3,61E-07	8,93E-08	4,51E-07	9,02E-07	4,79E-08	2,85E-07	3,33E-07	0,00E+00	1,14E-07	7,92E-07	4,33E-07	1,30E-07	1,47E-06	2,70E-06	-1,19E-06												
Human toxicity, non-cancer	CTUh	5,61E-08	1,48E-08	1,76E-07	2,47E-07	6,69E-09	6,42E-09	1,31E-08	0,00E+00	2,57E-09	2,93E-08	8,09E-08	1,52E-08	1,28E-07	3,88E-07	-2,22E-07												
Human toxicity, cancer	CTUh	1,61E-08	5,18E-10	5,88E-09	2,25E-08	1,93E-10	6,85E-10	8,77E-10	0,00E+00	2,74E-10	8,60E-10	1,29E-08	6,51E-10	1,47E-08	3,80E-08	-1,72E-08												
Acidification	mol H+ eq	2,40E-02	4,31E-03	6,43E-02	9,26E-02	2,61E-03	1,08E-02	1,34E-02	0,00E+00	4,33E-03	3,70E-02	2,42E-02	6,67E-03	7,21E-02	1,78E-01	-1,09E-01												
Eutrophication, freshwater	kg P eq	1,14E-03	8,65E-05	2,49E-02	2,61E-02	3,39E-05	4,91E-05	8,29E-05	0,00E+00	1,96E-05	1,09E-04	1,16E-03	1,07E-04	1,39E-03	2,76E-02	-7,27E-03												
Eutrophication, marine	kg N eq	5,30E-03	1,15E-03	1,51E-02	2,15E-02	9,04E-04	4,76E-03	5,67E-03	0,00E+00	1,91E-03	1,49E-02	9,79E-03	2,71E-02	5,37E-02	8,09E-02	-2,38E-02												
Eutrophication, terrestrial	mol N eq	5,79E-02	1,25E-02	1,12E-01	1,83E-01	9,88E-03	5,21E-02	6,20E-02	0,00E+00	2,08E-02	1,63E-01	7,63E-02	2,62E-02	2,87E-01	5,31E-01	-2,81E-01												
Ecotoxicity, freshwater	CTUe	8,98E+01	1,48E+01	1,80E+02	2,84E+02	6,23E+00	8,80E+00	1,50E+01	0,00E+00	3,52E+00	4,45E+01	8,24E+01	1,65E+01	1,47E+02	4,46E+02	-2,33E+02												
Land use	Pt	9,08E+02	1,59E+01	5,30E+01	9,77E+02	9,31E+00	1,98E+00	1,13E+01	0,00E+00	7,83E-01	1,40E+01	6,98E+01	3,88E+01	1,23E+02	1,11E+03	-1,91E+02												
Water use	m3 depriv.	2,32E+00	5,91E-02	1,72E+00	4,10E+00	2,68E-02	2,81E-02	5,49E-02	0,00E+00	1,12E-02	6,64E-02	1,80E+00	6,76E-01	2,55E+00	6,70E+00	-2,87E+01												
Resource use, fossils	MJ	1,20E+02	1,94E+01	2,31E+02	3,70E+02	8,11E+00	1,45E+01	2,26E+01	0,00E+00	5,81E+00	7,97E+01	8,79E+01	1,73E+01	1,91E+02	5,83E+02	-5,43E+02												
Resource use, minerals and metals	kg Sb eq	3,55E-05	4,17E-06	1,22E-04	1,62E-04	1,22E-06	5,47E-07	1,77E-06	0,00E+00	2,19E-07	5,20E-06	4,31E-05	2,27E-06	5,08E-05	2,14E-04	-1,73E-04												
Climate change - Fossil	kg CO2 eq	4,43E+00	1,25E+00	1,90E+01	2,47E+01	5,16E-01	1,06E+00	1,58E+00	0,00E+00	4,24E-01	5,85E+00	8,94E+00	8,14E+00	2,34E+01	4,96E+01	-2,23E+01												
Climate change - Biogenic	kg CO2 eq	6,23E-03	3,06E-03	3,80E+00	3,81E+00	1,09E-03	1,12E-03	2,21E-03	0,00E+00	4,48E-04	4,99E-03	0,00E+00	4,48E+00	4,48E+00	8,30E+00	-1,39E+01												
Climate change - Land use and LU change	kg CO2 eq	1,17E-02	4,14E-04	1,81E-02	3,02E-02	1,45E-04	1,12E-04	2,57E-04	0,00E+00	4,46E-05	5,41E-04	5,03E-03	3,16E-04	5,93E-03	3,64E-02	-1,78E-02												
Human toxicity, non-cancer - organics	CTUh	3,64E-09	5,64E-10	4,59E-09	8,80E-09	2,45E-10	1,95E-10	4,41E-10	0,00E+00	7,81E-11	2,37E-09	2,90E-09	8,42E-09	1,38E-08	2,30E-08	-9,90E-09												
Human toxicity, non-cancer - inorganics	CTUh	2,65E-08	2,94E-09	2,34E-08	5,28E-08	1,36E-09	4,42E-09	5,78E-09	0,00E+00	1,77E-09	1,75E-08	1,71E-08	4,23E-09	4,06E-08	9,92E-08	-9,90E-08												
Human toxicity, non-cancer - metals	CTUh	2,85E-08	1,13E-08	1,49E-07	1,89E-07	5,10E-09	1,84E-09	6,94E-09	0,00E+00	7,36E-10	9,56E-09	6,16E-08	1,04E-08	8,24E-08	2,78E-07	-1,17E-07												
Human toxicity, cancer - organics	CTUh	1,33E-08	2,01E-10	1,28E-09	1,48E-08	7,45E-11	2,21E-10	2,96E-10	0,00E+00	8,86E-11	3,83E-10	3,07E-09	1,98E-10	3,74E-09	1,88E-08	-4,40E-09												
Human toxicity, cancer - inorganics	CTUh	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												
Human toxicity, cancer - metals	CTUh	2,77E-09	3,18E-10	4,60E-09	7,69E-09	1,18E-10	4,63E-10	5,82E-10	0,00E+00	1,85E-10	4,77E-10	9,81E-09	4,53E-10	1,09E-08	1,92E-08	-1,28E-08												
Ecotoxicity, freshwater - organics	CTUe	6,67E+00	1,12E+00	1,35E+00	9,14E+00	4,79E-01	8,79E-01	1,36E+00	0,00E+00	3,52E-01	5,14E+00	2,54E+00	9,62E-01	9,00E+00	1,95E+01	-3,43E+00												
Ecotoxicity, freshwater - inorganics	CTUe	1,46E+01	3,91E+00	2,17E+01	4,02E+01	1,56E+00	2,35E+00	3,91E+00	0,00E+00	9,40E-01	1,33E+01	1,74E+01	5,74E+00	3,74E+01	8,15E+01	-2,61E+01												
Ecotoxicity, freshwater - metals	CTUe	6,86E+01	9,77E+00	1,57E+02	2,35E+02	4,18E+00	5,57E+00	9,76E+00	0,00E+00	2,23E+00	2,61E+01	6,25E+01	9,84E+00	1,01E+02	3,45E+02	-2,04E+02												



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

Indoor air

Not applicable as the tanks are intended to be buried.

Land and water

PP in-ground tanks can be considered practically inert with respect to the soil and seepage water. No tests have been carried out.

The product's contribution to quality of life within the infrastructures

Product characteristics contributing to the creation of hygrothermal comfort conditions in the infrastructure

Not applicable as the tanks are intended to be buried.

Product characteristics contributing to the creation of acoustic comfort conditions in the infrastructure

Not applicable as the tanks are intended to be buried.

Product characteristics contributing to the creation of conditions of visual comfort in the infrastructure

Not applicable as the tanks are intended to be buried.

Product characteristics contributing to the creation of olfactory comfort conditions in the infrastructure

Not applicable as the tanks are intended to be buried.
