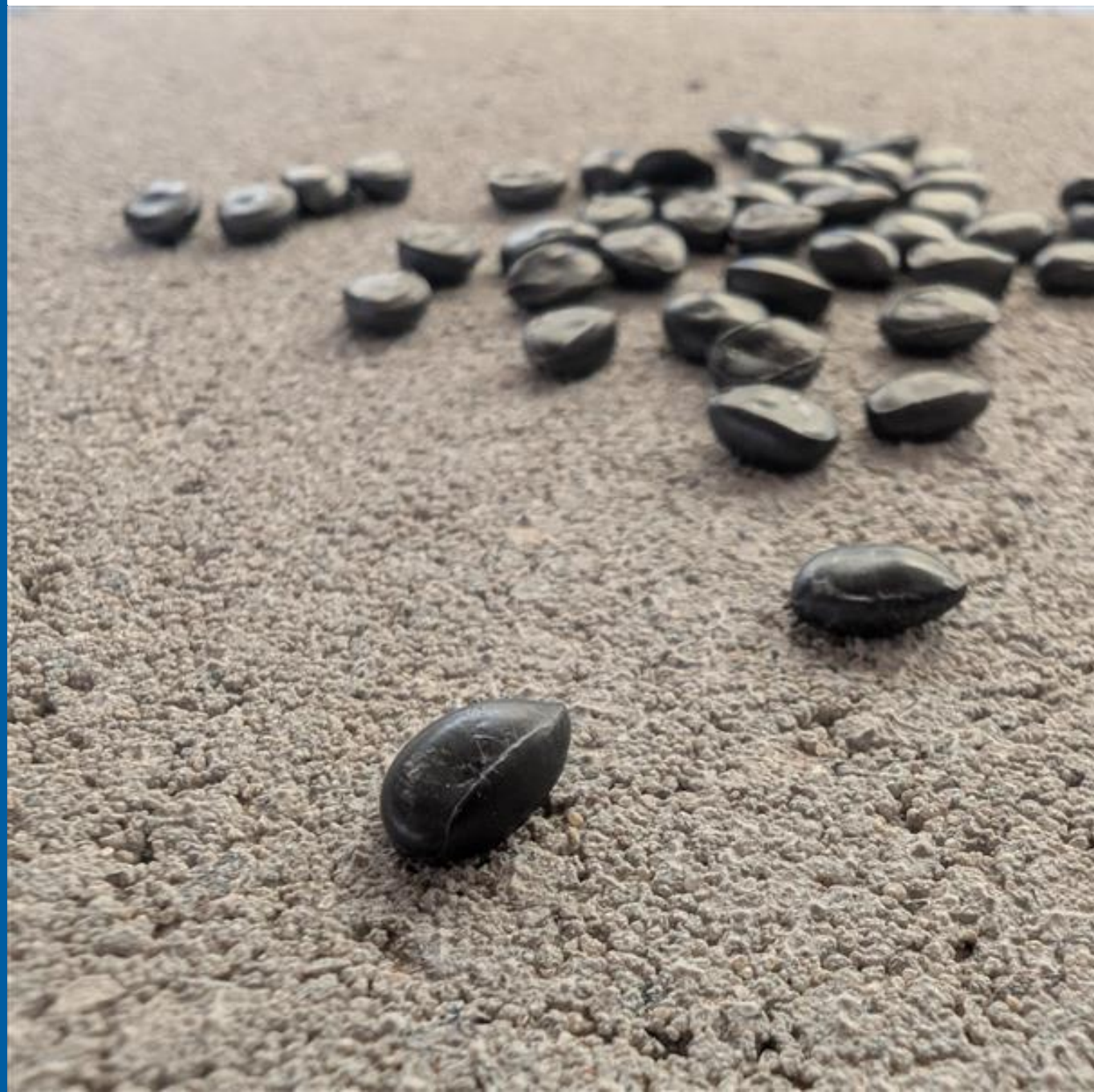
Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2:2019

BPB® ECO SPACER®



Registration number:	EPD-Kiwa-EE-221364-EN
Issue date:	24-09-2025
Valid until:	24-09-2030
Declaration owner:	REMEI & BPB GmbH & Co. KG
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

BPB® ECO SPACER®

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-221364-EN

1.3 VALIDITY

Issue date: 24-09-2025

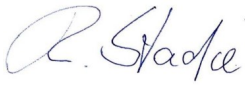
Valid until: 24-09-2030

1.4 PROGRAMME OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin
DE

Raoul Mancke

(Head of programme operations, Kiwa-Ecobility Experts)



Dr. Ronny Stadie

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Declaration owner: REMEI & BPB GmbH & Co. KG

Address: Industriestraße 4, 32825 Blomberg, DE

E-mail: info@remei-bpb.de

Website: www.remei.de

Production location: Anvis Epinal SAS

Address production location: 19 Rte d'Archettes, 88000 Epinal, FR

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804+A2:2019 serves as the core PCR.

☐ Internal ☒ External

Patrick Wortner, PeoplePlanetProfit GmbH & Co. KG.

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The programme operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-EE GPI R.3.0
Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, SOP EE 1203_R. 3.0 (27.02.2025)

Kiwa-EE GPI R.3.0 Annex B1
Kiwa-Ecobility Experts, General Programme Instructions “Product Level” – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930, SOP EE 1203_R. 3.0 (27.02.2025)

PCR B
EPD-Norway, NPCR 023 PACKAGING PRODUCTS AND SERVICES_Version 1.1 (20.12.2021)

1 General information

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804+A2:2019. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPD program operators may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2:2019 and ISO 14025.

1.10 CALCULATION BASIS

LCA method R<THINK: Ecobility Experts | EN15804+A2

LCA software*: Simapro 9.6

Characterization method: RETHINK characterization method (see references for more details)

LCA database profiles: ecoinvent (for version see references)

Version database: v3.19 (20250306)

** Simapro is used for calculating the characterized results of the Environmental profiles within R<THINK.*

1.11 LCA BACKGROUND REPORT

This EPD is generated on the basis of the LCA background report 'BPB® ECO SPACER®' with the calculation identifier ReTHiNK-121364.

2 Product

2.1 PRODUCT DESCRIPTION

This specific EPD refers to BPB® ECO SPACER®, an innovative storage protection for concrete products that combines both sustainability and efficiency.

The products included in the BPB® ECO SPACER® line are biopolymer natural fiber products with a biogenic content of up to 95%, giving them a special property: they are biodegradable and decompose into CO2, water, and soil within five years when composted. The product is biodegradable and can be returned to the natural cycle.

The product is available in Big Bags. All available packaging was used for the LCA calculations based on packaging consumption in 2024. The composition of the product is listed in the following table:

Component	Value	Unit
Biopolyester 1	58	M.-%
Biopolyester 2 (post-industrial waste)	30	M.-%
Wood	12	M.-%

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

BPB® ECO SPACER® serves as innovative storage protection for concrete products.

Its composition allows it to decompose within a certain period of time, both in nature and without leaving any residue in industrial composting. According to scientific findings, BPB® ECO SPACER® decomposes completely into CO2, water, and soil within five years.

The lentils that are visible on the surface should be swept up before and during the laying of the stones and disposed of with household waste (incineration) or in private compost. The few remaining lentils that end up in the bedding or in the joints will rot there without leaving any residue. As with all technical products, the release of BPB® ECO SPACER® into the environment should be avoided as far as possible.

BPB® ECO SPACER® ECO granules offer a sustainable solution for protecting products, especially in flat storage. They combine the advantages of efficient storage protection with environmental responsibility and help steer the industry in a more environmentally friendly direction. It is an ideal choice for companies that prefer sustainable packaging solutions and want to optimize their logistics processes at the same time.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

Since the scope of the study does not consider the entire life cycle of the product, the indication of the reference service life (RSL) is voluntary. The service life depends on the storage conditions at the factory and the weather conditions. According to the manufacturer, the RSL of BPB® ECO SPACER® is 100 years.

USED RSL (YR) IN THIS LCA CALCULATION:

100

2.4 TECHNICAL DATA

Form: Granules

Color: Anthracite

Average height: 2.5 mm ± 0.3 mm

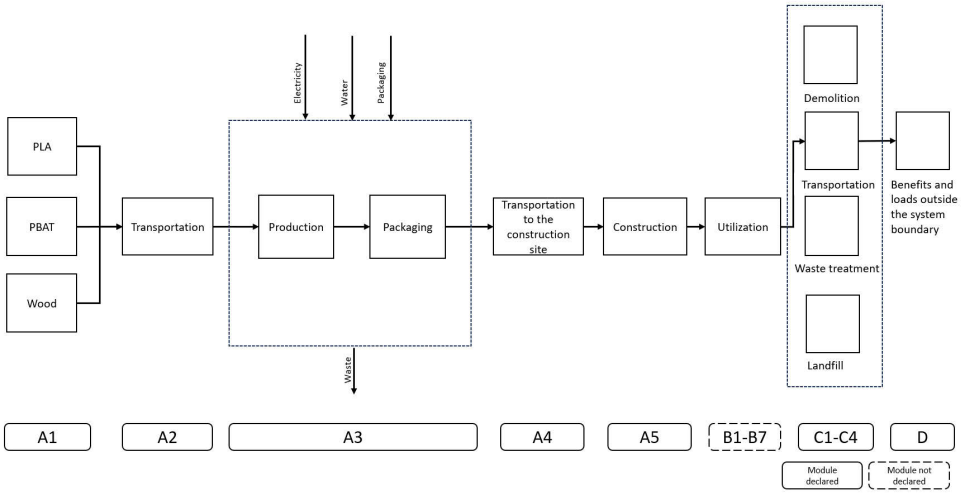
2.5 SUBSTANCES OF VERY HIGH CONCERN

This product contains no substance listed in the candidate list exceeding 0.1 % by mass.

2.6 DESCRIPTION PRODUCTION PROCESS

The manufacturing process involves a melt compounding process using raw materials, a screw extruder, and underwater pelletizing above the softening point of thermoplastic raw materials such as PLA and PBAT.

2 Product



2.7 CONSTRUCTION DESCRIPTION

The BPB® ECO SPACER® is spread directly between the layers of bricks or slabs before packaging (flat storage).

In most cases, a spreading machine is used to ensure even distribution.

The average consumption rate is approximately 20 g per square meter of concrete surface. When storing pallets on top of each other, the consumption rate must be adjusted accordingly.

3 Calculation rules

3.1 DECLARED UNIT

kilogram

1 kilogram BPB® ECO SPACER® as storage protection for flat storage

Reference unit: kilogram (kg)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	kg
Conversion factor to 1 kg	1.000000	kg

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options, modules C1-C4 and module D EPD. The life cycle stages included are as shown below:

(X = module included, ND = module not declared)

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN 15804 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for BPB® ECO SPACER®, a product of REMEI & BPB GmbH & Co. KG. The results of this EPD are representative for Germany.

3.5 CUT-OFF CRITERIA

Product stage (A1-A3)
All input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. production waste) are considered in this LCA. For each unit process, the cut-off criteria of 1% of renewable and non-renewable primary energy use and 1% of the total mass

3 Calculation rules

of this unit process are adhered to. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

Construction process stage (A4-A5)
All input flows (e.g. transportation to the construction site, additional raw material use for construction, installation energy (use) of energy use for assembly, etc.) and output flows (e.g. construction waste, packaging waste, etc.) are considered in this LCA. For each unit process, the cut-off criteria of 1% of renewable and non-renewable primary energy use and 1% of the total mass of this unit process are adhered to. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

End of life stage (C1-C4)
All input flows (e.g. energy use for demolition or disassembly, transport to waste processing, etc.) and output flows (e.g. end-of-life waste processing of the product, etc.) are considered in this LCA. For each unit process, the cut-off criteria of 1% of renewable and non-renewable primary energy use and 1% of the total mass of this unit process are adhered to. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

Benefits and loads beyond the system boundary (Module D)
All benefits and loads beyond the system boundary resulting from reusable products, recyclable materials and/or useful energy carriers leaving the product system are considered in this LCA.

The following processes are excluded:

- Water and electricity consumption of the building, if not relevant to production
- Manufacturing of equipment used in production, buildings or any other capital asset
- Transportation of personnel to the plant
- The transportation of personnel within the plant
- Research and development activities
- Long-term emissions

3.6 ALLOCATION

The energy consumption is calculated based on the total consumption at the production site in 2024 (for all products manufactured) and converted into the amount used solely for the production of the declared product. The amount of energy is given per kg of product manufactured. No allocation is performed with regard to the use of secondary materials or fuels, co-products, plant-specific production processes or multi-input systems. The polluter pays principle applies to the use of waste as a substitute for primary fuels or materials.

3.7 DATA COLLECTION & REFERENCE PERIOD

All process-specific data are collected for the reference year 2024 (01.01.2024 - 31.12.2024).

3.8 ESTIMATES AND ASSUMPTIONS

For all raw materials used (raw materials, operating materials, packaging), the transportation distance is recorded. A payload factor of 50% is used for all truck transports (suppliers, disposal transports and internal transports), which corresponds to a full delivery and empty return journey.

For Module A4 (transport from the production site to the construction site), a transport distance of 447 km by truck (50% payload) is estimated based on the market share in 2024.

The composition allows for decomposition by rotting within a certain period of time, in nature as well as in industrial composting without leaving any residue. When fully composted, BPB® ECO SPACER® decomposes into CO2, water, and soil within 5 years.

The scenarios included are currently in use and are representative for one of the most likely scenario alternatives.

3.9 DATA QUALITY

The data are based on the annual average of the year 2024. Generic datasets from the ecoinvent database V3.9.1 are used for the secondary data, which refers to reference year 2022. This database is regularly maintained and meets the requirements of EN 15804+A2 (background data not older than 10 years). All consistent datasets contained in the ecoinvent database are documented and can be viewed in the online ecoinvent documentation. In the operating data survey all relevant process-specific data could be collected. The quality of the data can be thus considered as good.

The primary data are collected and provided by REMEI & BPB GmbH & Co. KG. The assessment of data quality on the basis of EN 15941 is presented below.

Aspect	Data quality assessment

3 Calculation rules

Time-related coverage	The primary data represent the current situation of the date of study (2024) or as close as possible (<5 years). The secondary data are updated within last 10 years.
Geographical coverage	Most of the datasets selected for the LCA refer to Europe as the geographical reference.
Technology coverage	The data are representative of the technology used in production processes.
Completeness	Specific data are benchmarked with literature data. Simple validation checks (e.g. mass or energy balances) are performed.
Representativeness	The data fulfill the defined time-related, geographical, and technological scope.
Precision	The data used are as representative as possible. The data are derived from credible sources, and references are provided.
Reproducibility	Information about the method and data (reference source) are provided.
Sources of the data	The data are derived from credible sources, and references are provided.

3.10 POWER MIX

The use of green electricity is included in the calculation of the environmental impacts, which is based on the purchased electricity mix, referring to the market based approach. The share of green electricity with guarantees of origin in total electricity consumption is 100% (hydropower from France). The GWP-total of the electricity is calculated at 0.0488 kg CO2 eq. /kWh. Upstream electricity is not treated as green electricity.

4 Scenarios and additional technical information

4.1 TRANSPORT TO CONSTRUCTION SITE (A4)

For the transport from production place to assembly/user, the following scenario is assumed for module A4 of this EPD.

	Value and unit
Vehicle type used for transport	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)
Fuel type and consumption of vehicle	not available
Distance	447 km
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.2 ASSEMBLY (A5)

The following information describes the scenarios for flows entering the system and flows leaving the system at module A5.

FLOWS ENTERING THE SYSTEM

There are no significant environment impacts as a result of materials or energy used in the construction stage (A5).

FLOWS LEAVING THE SYSTEM

The following output flows leaving the system at module A5 are assumed.

Description	Value	Unit
Output materials as result of loss during construction	0	%
Output materials as result of waste processing of materials used for installation/assembly at the building site	0.000	kg
Output materials as result of waste processing of used packaging	0.032	kg

4.3 DE-CONSTRUCTION, DEMOLITION (C1)

No inputs are needed for the product at the de-construction / demolition phase

4.4 TRANSPORT END-OF-LIFE (C2)

The following distances and transport conveyance are assumed for transportation during end of life for the different types of waste processing.

4 Scenarios and additional technical information

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
REMEI 100% Composting	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	150	100	150	50	0

The transport conveyance(s) used in the scenario(s) for transport during end of life has the following characteristics.

	Value and unit
Vehicle type used for transport	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)
Fuel type and consumption of vehicle	not available
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.5 END OF LIFE (C3, C4)

The scenario(s) assumed for end of life of the product are given in the following tables. First the assumed percentages per type of waste processing are displayed, followed by the assumed amounts.

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
REMEI 100% Composting	DE	100	0	0	0	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
REMEI 100% Composting	1.000	0.000	0.000	0.000	0.000
Total	**1.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.6 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

The presented Benefits and loads beyond the system boundary in this EPD are based on the following calculated Net output flows in kilograms and Energy recovery displayed in MJ Lower Heating Value.

4 Scenarios and additional technical information

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
REMEI 100% Composting	-0.880	0.000
Total	**-0.880**	**0.000**

5 Results

For the impact assessment long-term emissions (>100 years) are not considered. The results of the impact assessment are only relative statements that do not make any statements about end-points of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER KILOGRAM

CORE ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	-2.16E-1	7.83E-2	1.51E-2	-1.22E-1	6.88E-2	5.77E-2	0.00E+0	2.24E-2	0.00E+0	2.20E-1	-6.86E-3
GWP-f	kg CO_2 eq.	4.15E-3	7.78E-2	6.12E-2	1.43E-1	6.85E-2	1.11E-2	0.00E+0	2.23E-2	0.00E+0	0.00E+0	-6.83E-3
GWP-b	kg CO_2 eq.	-2.20E-1	2.05E-4	-4.62E-2	-2.66E-1	2.23E-5	4.66E-2	0.00E+0	7.25E-6	0.00E+0	2.20E-1	-1.59E-5
GWP-luluc	kg CO_2 eq.	4.01E-5	2.78E-4	6.56E-5	3.84E-4	2.44E-4	3.49E-6	0.00E+0	7.94E-5	0.00E+0	0.00E+0	-1.34E-5
ODP	kg CFC 11 eq.	8.02E-11	1.35E-9	4.38E-10	1.87E-9	1.22E-9	3.07E-10	0.00E+0	3.96E-10	0.00E+0	0.00E+0	-4.72E-10
AP	mol H+ eq.	2.72E-5	3.64E-4	1.38E-4	5.29E-4	3.28E-4	1.52E-5	0.00E+0	1.07E-4	0.00E+0	0.00E+0	-4.79E-5
EP-fw	kg P eq.	6.55E-7	7.56E-7	1.77E-6	3.18E-6	6.81E-7	4.19E-8	0.00E+0	2.21E-7	0.00E+0	0.00E+0	-2.30E-7
EP-m	kg N eq.	7.93E-6	1.38E-4	2.74E-5	1.74E-4	1.25E-4	6.08E-6	0.00E+0	4.05E-5	0.00E+0	0.00E+0	-1.41E-5
EP-T	mol N eq.	9.02E-5	1.47E-3	3.18E-4	1.88E-3	1.33E-3	6.72E-5	0.00E+0	4.32E-4	0.00E+0	0.00E+0	-2.27E-4
POCP	kg NMVOC eq.	3.45E-5	5.03E-4	1.25E-4	6.63E-4	4.54E-4	1.92E-5	0.00E+0	1.48E-4	0.00E+0	0.00E+0	-4.59E-5
ADP-mm	kg Sb-eq.	1.80E-8	2.38E-7	4.76E-7	7.32E-7	2.15E-7	7.46E-9	0.00E+0	6.97E-8	0.00E+0	0.00E+0	-5.86E-9
ADP-f	MJ	7.29E-2	1.09E+0	5.71E-1	1.73E+0	9.81E-1	2.05E-2	0.00E+0	3.19E-1	0.00E+0	0.00E+0	-1.08E-1
WDP	m3 world eq.	2.11E-3	5.73E-3	1.62E-2	2.40E-2	5.36E-3	6.19E-4	0.00E+0	1.74E-3	0.00E+0	0.00E+0	-7.81E-4

GWP-total=Global Warming Potential total (GWP-total) | **GWP-f**=Global Warming Potential fossil fuels (GWP-fossil) | **GWP-b**=Global Warming Potential biogenic (GWP-biogenic) | **GWP-luluc**=Global Warming Potential land use and land use change (GWP-luluc) | **ODP**=Depletion potential of the stratosperic ozon layer (ODP) | **AP**=Acidification potential, Accumulated Exceedance (AP) | **EP-fw**=Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater) | **EP-m**=Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine) | **EP-T**=Eutrophication potential, Accumulated Exceedance (EP-terrestrial) | **POCP**=Formation potential of tropospheric ozone (POCP) | **ADP-mm**=Abiotic depletion potential for non fossil resources (ADP mm) | **ADP-f**=Abiotic depletion for fossil resources potential (ADP fossil) | **WDP**=Water (user) deprication potential, deprivation-weighted water consumption (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	disease incidence	1.34E-9	6.13E-9	1.66E-9	9.13E-9	6.76E-9	1.71E-10	0.00E+0	2.20E-9	0.00E+0	0.00E+0	-6.41E-10
IR	kBq U235 eq.	3.31E-4	4.25E-4	9.21E-4	1.68E-3	3.83E-4	3.61E-5	0.00E+0	1.24E-4	0.00E+0	0.00E+0	-4.63E-5
ETP-fw	CTUe	2.26E-2	8.27E-1	1.51E-1	1.00E+0	7.24E-1	1.27E-1	0.00E+0	2.35E-1	0.00E+0	0.00E+0	-1.73E-2
HTP-c	CTUh	1.23E-11	4.03E-11	7.53E-11	1.28E-10	3.63E-11	9.24E-12	0.00E+0	1.18E-11	0.00E+0	0.00E+0	-4.94E-12
HTP-nc	CTUh	5.14E-11	1.14E-9	6.31E-10	1.82E-9	7.88E-10	4.14E-11	0.00E+0	2.56E-10	0.00E+0	0.00E+0	-1.29E-10
SQP	Pt	3.20E+0	8.58E-1	4.07E+0	8.13E+0	7.74E-1	1.27E-2	0.00E+0	2.52E-1	0.00E+0	0.00E+0	-9.39E-1

PM=Potential incidence of disease due to PM emissions (PM) | **IR**=Potential Human exposure efficiency relative to U235 (IRP) | **ETP-fw**=Potential Comparative Toxic Unit for ecosystems (ETP-fw) | **HTP-c**=Potential Comparative Toxic Unit for humans (HTP-c) | **HTP-nc**=Potential Comparative Toxic Unit for humans (HTP-nc) | **SQP**=Potential soil quality idex (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2

5 Results

ILCD classification	Indicator	Disclaimer
	Potential Soil quality index (SQP)	2

Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	-1.08E+0	1.54E-2	6.99E-1	-3.64E-1	1.39E-2	1.15E-3	0.00E+0	4.51E-3	0.00E+0	0.00E+0	-2.21E-1
PERM	MJ	1.68E+0	0.00E+0	3.89E-1	2.07E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	6.01E-1	1.54E-2	1.09E+0	1.70E+0	1.39E-2	1.15E-3	0.00E+0	4.51E-3	0.00E+0	0.00E+0	-2.21E-1
PENRE	MJ	7.29E-2	1.16E+0	4.25E-1	1.66E+0	9.82E-1	2.05E-2	0.00E+0	3.19E-1	0.00E+0	0.00E+0	-1.02E-1
PENRM	MJ	0.00E+0	0.00E+0	1.46E-1	1.46E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-6.34E-3
PENRT	MJ	7.29E-2	1.16E+0	5.71E-1	1.80E+0	9.82E-1	2.05E-2	0.00E+0	3.19E-1	0.00E+0	0.00E+0	-1.08E-1
SM	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	0.00E+0	0.00E+0
RSF	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	0.00E+0	0.00E+0
NRSF	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	0.00E+0	0.00E+0
FW	m^3	7.10E-5	1.73E-4	3.80E-4	6.24E-4	2.37E-4	2.86E-5	0.00E+0	7.71E-5	0.00E+0	0.00E+0	-1.55E-5

PERE=Use of renewable primary energy excluding renewable primary energy resources used as raw materials | **PERM**=Use of renewable primary energy resources used as raw materials | **PERT**=Total use of renewable primary energy resources | **PENRE**=Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | **PENRM**=Use of non-renewable primary energy resources used as raw materials | **PENRT**=Total use of non-renewable primary energy resources | **SM**=Use of secondary material | **RSF**=Use of renewable secondary fuels | **NRSF**=Use of non-renewable secondary fuels | **FW**=Net use of fresh water

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	Kg	2.41E-7	6.94E-6	1.28E-2	1.28E-2	6.26E-6	1.02E-7	0.00E+0	2.03E-6	0.00E+0	0.00E+0	-4.36E-7
NHWD	Kg	9.12E-4	7.19E-2	6.46E-3	7.93E-2	6.48E-2	3.17E-2	0.00E+0	2.11E-2	0.00E+0	0.00E+0	-6.36E-4
RWD	Kg	2.62E-7	2.49E-7	7.59E-7	1.27E-6	2.25E-7	2.73E-8	0.00E+0	7.30E-8	0.00E+0	0.00E+0	-3.41E-8

HWD=Hazardous waste disposed | **NHWD**=Non-hazardous waste disposed | **RWD**=Radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	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	0.00E+0	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.61E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	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	0.00E+0	0.00E+0
EET	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	0.00E+0	1.41E-1
EEE	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	0.00E+0	8.19E-2

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy, Thermic | **EEE**=Exported Energy, Electric

5 Results

5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER KILOGRAM

BIOGENIC CARBON CONTENT

The following Information describes the biogenic carbon content in (the main parts of) the product at the factory gate per kilogram:

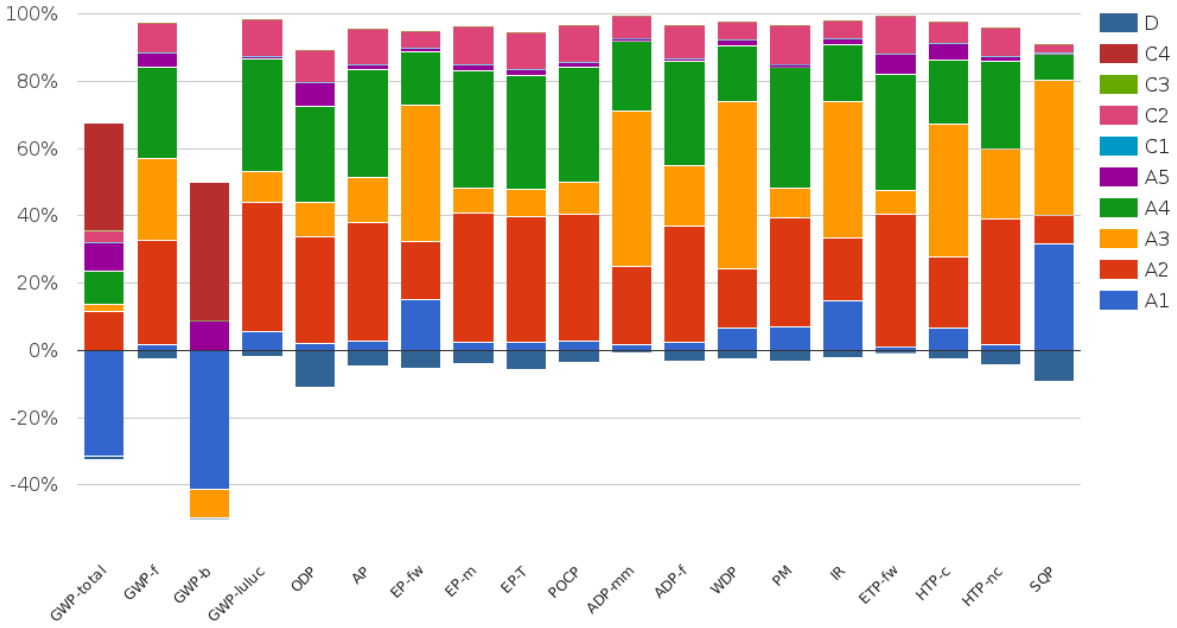
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0.06	kg C
Biogenic carbon content in accompanying packaging	0.01265	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of carbon dioxide uptake is taken into account. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results. One kilogram of biogenic Carbon content is equivalent to 44/12 kg of biogenic carbon dioxide uptake.

Uptake Biogenic Carbon dioxide	Amount	Unit
product	0.22	kg CO2 (biogenic)
Packaging	0.04639	kg CO2 (biogenic)

6 Interpretation of results



In the impact category of GWP-total, raw material extraction (module A1) and composting in module C4 contribute mostly. Module A1 has a negative GWP-total result, as the removal of biogenic carbon from previous product systems upon entry into the product system is characterized by -1 kg CO2 eq./kg CO2. Within Module A1, r-PLA and r-PBAT are considered as burden-free, while wood chips contribute negatively to the GWP-total due to the uptake of biogenic CO2 in biomass from previous product systems.

7 References

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EN 15804:2012+A2:2019/AC:2021, Sustainability of Buildings - Environmental Product Declarations - Framework Development Rules by Product Category

Kiwa-EE GPI R.3.0
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EN 15941
EN 15941:2024-10, Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data

Technical data sheet BPB® ECO SPACER®
Technical data sheet BPB® ECO SPACER® - ECO SPACER GRANULES as storage protection for flat storage, March 2025

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