Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804

SN 40.01 - Modified Flour

Registration number:	EPD-Kiwa-EE-169737-EN
Issue date:	06-04-2024
Valid until:	06-04-2029
Declaration owner:	ceresan Erfurt GmbH
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

SN 40.01 - Modified Flour

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-169737-EN

1.3 VALIDITY

Issue date: 06-04-2024

Valid until: 06-04-2029

1.4 PROGRAM 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

Manufacturer: ceresan Erfurt GmbH

Address: Leipziger Straße 67 , 04420 Markranstädt

E-mail: info@ceresan-erfurt.de

Website: www.ceresan-erfurt.de

Production location: ceresan Erfurt GmbH

Address production location: Leipziger Straße 67 , 04420 Markranstädt

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 15804:2012+A2:2019 serves as the core PCR.

☐ Internal ☑ External

Lucas Pedro Berman, Senda

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-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

European Starch Industry Association, Starch Europe - Product Category Rules for Starch Industry Products

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. For the evaluation of the comparability, the following aspects have to be considered in particular:

1 General information

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 EPDs programs may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

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

LCA software*: Simapro 9.1

Characterization method: EN 15804 +A2 Method v1.0

LCA database profiles: EcoInvent version 3.6

Version database: v3.16 (2024-02-12)

** Used for calculating the characterized results of the Environmental profiles within R<THiNK.*

1.11 LCA BACKGROUND REPORT

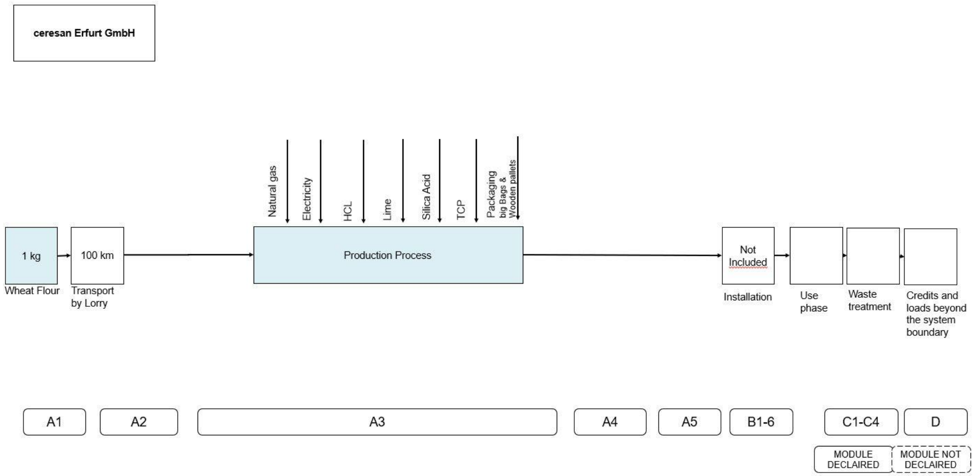
This EPD is generated on the basis of the LCA background report 'SN 40.01 - Modified Flour' with the calculation identifier ReTHiNK-69737.

2 Product

2.1 PRODUCT DESCRIPTION

Ceresan Erfurt GmbH, a medium-sized company established in 1990 in Markranstädt, Germany, specializes in processing cereal flours into technical products for the paper and gypsum board industry. One of its notable products is Ceresan SN40.01.

Following cultivation and harvesting, wheat is transported to the mill for processing into flour, with bran produced as a by-product. The flour is then conveyed to the production site and stored in silos alongside necessary process chemicals. In the manufacturing process, the flour is continuously mixed with these chemicals and subjected to heat to initiate the reaction. Post-reaction, the product undergoes temporary storage, grinding, sieving, and subsequent shipment. The product is then shipped to customers either in bulk loads directly in trucks or using big bags with wooden pallets. This production process is characterized by minimal waste generation, with no wastewater or additional by-products produced.



2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

This products have proven success in various application fields, including:

- Plasterboards (gypsum)
- Insulating materials
- Miscellaneous building materials

Notably, there's improved adhesion to paper within the gypsum matrix and paper web, accompanied by some notable boost in core strength in plasterboards.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

Since the service life of Starch is not considered, there is no need to specify a reference service life. The generic life cycle of product can be considered as 50 years for any calculations basics. As this is not a final product so random service is considered.

USED RSL (YR) IN THIS LCA CALCULATION:

50

2.4 TECHNICAL DATA

product type : powder, fluid

dry matter : 84 – 89 %

bulk density : 400 – 660 g/l

alkaline fluidity : 11 – 24 s

pH- value (10 %) : 4 – 9

colour : light ochre

smell : characteristc

toxicity : no

2.5 DESCRIPTION PRODUCTION PROCESS

The harvested wheat goes to the milling facility, where it undergoes a comprehensive processing to yield high-quality flour. As a natural by-product of this process, bran is produced. The processed flour is subsequently transported to the dedicated production site, where it finds its place in storage silos.

In tandem with the flour's journey, essential process chemicals are delivered to the manufacturing site to facilitate a seamless production process. Within the manufacturing process, the flour and chemicals seamlessly merge in a continuous operation, undergoing a carefully orchestrated reaction through the introduction of heat. Post-reaction, the resulting product is temporarily stored, further subjected to grinding and sieving processes, and ultimately prepared for shipment.

3 Calculation rules

3.1 DECLARED UNIT

Kg

The declared unit is 1 kg. Other declared units are permissible if conversion to 1 kg is depicted in a transparent manner.

bulk density : 400 – 660 g/l

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 modules C1-C4 and module D LCA. 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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN15804 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

The input data are representative for SN 40.01 New , a product of ceresan Erfurt GmbH . The data are representative for Europe.

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. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

3 Calculation rules

Use stage (B1-B3)

All (known) input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. emissions to soil, air and water, construction waste, packaging waste, end-of-life waste, etc.) related to the building fabric are considered in this LCA. 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. 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)

This stage contains the potential loads and benefits of recycling and re-use of raw materials/products. The loads contain the needed recycling processes from end-of-waste-point up to the point-of-equivalence of the substituted primary raw material and a load for secondary material that will be lost at the end-of-life stage.

The loads and benefits of recycling and reuse are included in this module. The benefits are calculated based on the primary content and the primary equivalent.

In addition, the benefits of energy recovery are granted at this stage. The amount of avoid energy is based on the Lower Heating Values of the materials and the efficiencies of the incinerators as mentioned in the NMD Determination method v1.0 or EcoInvent 3.6 (2019)

In accordance with the criteria of the reference standard, the system has been extended as far as possible to avoid attributing environmental impacts to by-products of multi-unit processes within the manufacturing process.

If necessary, distribution was applied to the inputs and outputs of the system based on physical properties (mass or volume).

There was no need to apply economic criteria.

- The manufacture of equipment used in production, buildings or any other capital goods;

- The transport of personnel to the plant;

- The transportation of personnel within the plant;

- Research and development activities;

- Long-term emissions.

3.6 ALLOCATION

Allocation has not been applied in this LCA.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

Jan 2022 - Dec 2023

3.8 ESTIMATES AND ASSUMPTIONS

The Purschase of wheat flour is considered from the Supplier which is 100Kms from production location & wheat flour mill is 20Kms from farm.

Electricity Mix is used according to the general medium voltage electricty mix of Germany (local based approach) ([E0093] Electricity (DE) - medium voltage (1kV - 24kV)).

Additional declaration of representative mixes for the relevant region is permissible.

Calculation of Biogenic carbon is calculated as specified below.

Biogenic carbon content of the wheat has been calculated according to the EN16449: Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide. The formula to calculate the carbon content: PC=Cf*((Pw*Vw)/1+(W/100))

• PC: the biogenic carbon oxidized as carbon dioxide emission form the product system into the atmosphere (e.g. energy use at the end-of-life) (expressed in kg, used amount 0.79 kg)

• Cf: the carbon fraction of biomass (oven dry mass), 0,423 as found in an Indian research publication (Kumar et al. 2014, table 3)

• Pw: the density of biomass of the product at that moisture content (expressed in kg/m3, used amount 100 kg/m3)

• Vw: the volume of the product at that moisture content (expressed in kg/m3, used amount 0.37 kg/m3)

3 Calculation rules

• W: the moisture content of the product (expressed in %, used amount 20%)

• Results: 0.79 kg stores a carbon content of 0.3525 kg C and 1.2925 kg CO2.

=((0,79*100)/(1+(20/100))*0,423*(44/12))

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2.

3.9 DATA QUALITY

The producer provides the necessary data, which is then calculated based on yearly production and distribution across various products and their respective production volumes.

4 Scenarios and additional technical information

4.1 DE-CONSTRUCTION, DEMOLITION (C1)

The following information describes the scenario for demolition at end of life.

Description	Amount	Unit
Diesel, burned in machine (incl. emissions)	0.001	l

4.2 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.

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
organic material, other (i.a. insulation) (NMD ID 52)	Lorry (Truck), unspecified (default) | market group for (GLO)	0	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	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

4.3 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 [%]
organic material, other (i.a. insulation) (NMD ID 52)	NL	0	5	95	0	0

4 Scenarios and additional technical information

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
organic material, other (i.a. insulation) (NMD ID 52)	0.000	0.050	0.950	0.000	0.000
Total	**0.000**	**0.050**	**0.950**	**0.000**	**0.000**

4.4 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.

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
organic material, other (i.a. insulation) (NMD ID 52)	0.000	0.000
Total	**0.000**	**0.000**

5 Results

For the impact assessment, the characterization factors of the LCIA method EN 15804 +A2 Method v1.0 are used. Long-term emissions (>100 years) are not considered in the impact assessment. 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 EN15804+A2

Abbreviation	Unit	A1	A2	A3	C1	C2	C3	C4	D
AP	mol H+ eqv.	5.64E-3	3.36E-5	6.79E-4	3.43E-5	1.15E-4	2.96E-4	9.00E-6	0.00E+0
GWP-total	kg CO2 eqv.	-9.93E-1	1.05E-2	2.53E-1	3.28E-3	1.99E-2	1.59E+0	4.79E-2	0.00E+0
GWP-b	kg CO2 eqv.	-1.29E+0	7.92E-6	5.77E-2	9.12E-7	9.19E-6	1.58E+0	4.49E-2	0.00E+0
GWP-f	kg CO2 eqv.	6.64E-1	1.05E-2	2.01E-1	3.28E-3	1.99E-2	8.35E-3	3.00E-3	0.00E+0
GWP-luluc	kg CO2 eqv.	1.51E-3	3.18E-6	8.26E-4	2.58E-7	7.29E-6	2.25E-6	9.00E-7	0.00E+0
EP-m	kg N eqv.	4.63E-3	7.37E-6	1.74E-4	1.51E-5	4.07E-5	1.38E-4	6.34E-5	0.00E+0
EP-fw	kg P eqv.	6.37E-5	8.32E-8	2.74E-5	1.19E-8	2.01E-7	1.70E-7	2.70E-7	0.00E+0
EP-T	mol N eqv.	2.04E-2	8.22E-5	1.76E-3	1.66E-4	4.49E-4	1.58E-3	2.45E-5	0.00E+0
ODP	kg CFC 11 eqv.	5.01E-8	2.57E-9	3.80E-3	7.08E-10	4.39E-9	1.06E-9	1.80E-10	0.00E+0
POCP	kg NMVOC eqv.	2.26E-3	3.23E-5	3.47E-4	4.57E-5	1.28E-4	4.14E-4	1.75E-5	0.00E+0
ADP-f	MJ	4.25E+0	1.70E-1	2.85E+0	4.51E-2	3.00E-1	8.62E-2	1.70E-2	0.00E+0
ADP-mm	kg Sb-eqv.	1.96E-5	1.86E-7	6.71E-3	5.03E-9	5.04E-7	5.07E-8	7.45E-9	0.00E+0
WDP	m3 world eqv.	4.28E-1	5.51E-4	3.76E-2	6.05E-5	1.07E-3	3.04E-3	5.92E-4	0.00E+0

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15084+A2

Abbreviation	Unit	A1	A2	A3	C1	C2	C3	C4	D
ETP-fw	CTUe	2.98E+1	1.35E-1	2.56E+0	2.72E-2	2.68E-1	2.14E-1	2.56E-1	0.00E+0
PM	disease incidence	3.62E-8	9.17E-10	2.19E-2	9.09E-10	1.79E-9	2.39E-9	1.05E-10	0.00E+0
HTP-c	CTUh	7.30E-10	3.28E-12	1.00E-5	9.50E-13	8.68E-12	2.80E-10	1.59E-12	0.00E+0
HTP-nc	CTUh	3.09E-8	1.48E-10	8.62E-9	2.34E-11	2.93E-10	8.85E-10	7.75E-11	0.00E+0
IR	kBq U235 eqv.	1.36E-2	7.42E-4	1.03E-2	1.93E-4	1.26E-3	2.18E-4	6.82E-5	0.00E+0
SQP	Pt	9.05E+1	1.94E-1	3.24E+0	5.76E-3	2.60E-1	2.78E-2	3.05E-2	0.00E+0

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (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	AAcidification 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

5 Results

ILCD classification	Indicator	Disclaimer
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	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

Abbreviation	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	1.79E+1	2.14E-3	6.88E-1	2.44E-4	3.76E-3	3.84E-3	7.37E-4	0.00E+0
PERM	MJ	0.00E+0	0.00E+0	9.85E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	1.79E+1	2.14E-3	7.86E-1	2.44E-4	3.76E-3	3.84E-3	7.37E-4	0.00E+0
PENRE	MJ	4.55E+0	1.80E-1	3.04E+0	4.79E-2	3.19E-1	9.28E-2	1.81E-2	0.00E+0
PENRM	MJ	0.00E+0	0.00E+0	2.35E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ	4.55E+0	1.80E-1	3.05E+0	4.79E-2	3.19E-1	9.28E-2	1.81E-2	0.00E+0
SM	Kg	0.00E+0	0.00E+0	7.15E-3	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
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
FW	M3	7.25E-2	1.93E-5	2.73E-3	2.32E-6	3.66E-5	4.62E-4	1.57E-5	0.00E+0

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	Kg	9.13E-6	4.12E-7	1.32E-5	1.23E-7	7.61E-7	2.43E-7	5.65E-8	0.00E+0
NHWD	Kg	7.86E-2	1.48E-2	2.17E-2	5.34E-5	1.90E-2	6.21E-3	5.02E-2	0.00E+0
RWD	Kg	1.75E-5	1.16E-6	1.06E-4	3.13E-7	1.97E-6	2.61E-7	8.80E-8	0.00E+0

HWD=hazardous waste disposed | **NHWD**=non hazardous waste disposed | **RWD**=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	Kg	0.00E+0	0.00E+0	1.48E-8	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	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
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
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

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:

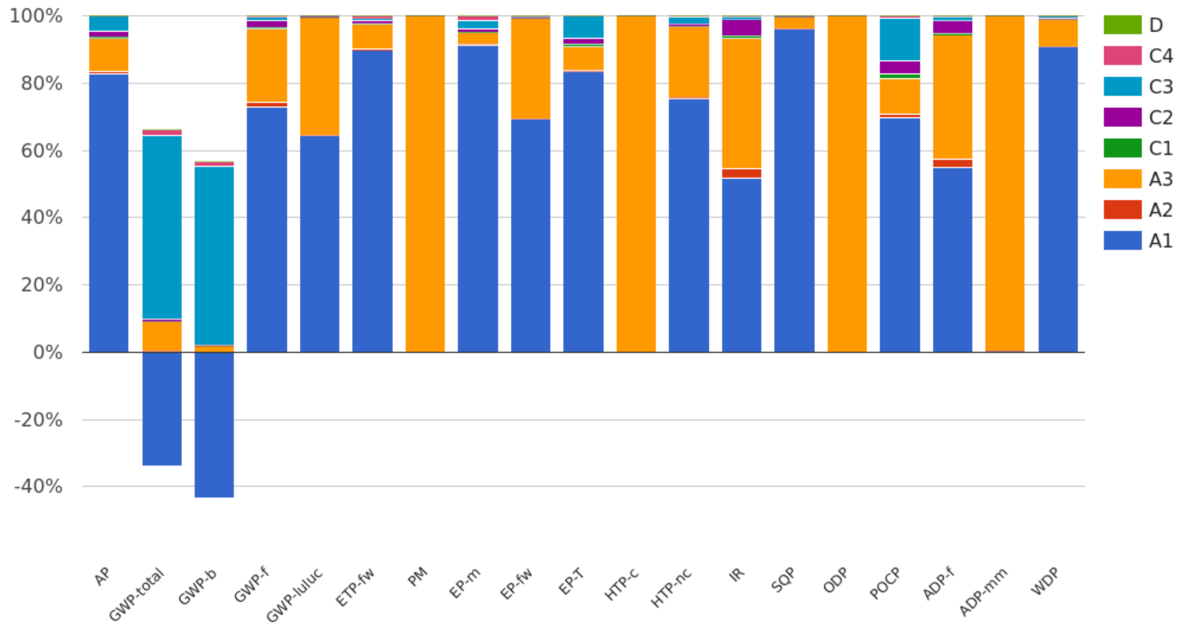
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0.35	kg C
Biogenic carbon content in accompanying packaging	0.003182	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of uptake of carbon dioxide is account in module A1 by the main parts of the product. 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.

Uptake Biogenic Carbon dioxide	Amount	Unit
product	1.29	kg CO2 (biogenic)
Packaging	0.01167	kg CO2 (biogenic)

6 Interpretation of results



The graph illustrates the manufacturing process, where the primary input predominantly originates from wheat flour, supplemented by certain additive materials facilitating starch production. Notably, the significance of wheat flour as the major raw material underscores its positive impact on the Global Warming Potential (GWP) biogenic factor. This influence contributes to the reduction of the overall GWP impact of the product.

7 References

ISO 14040
ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

ISO 14044
ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14040:2006

ISO 14025
ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804+A2
EN 15804+A2: 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

General PCR Ecobility Experts
Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

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