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

StoLevell Evo

Registration number:	EPD-Kiwa-EE-162142-EN
Issue date:	20-12-2023
Valid until:	20-12-2028
Declaration owner:	Sto SE & Co. KGaA
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

StoLevell Evo

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-162142-EN

1.3 VALIDITY

Issue date: 20-12-2023

Valid until: 20-12-2028

1.4 PROGRAM OPERATOR

Kiwa-Ecobility Experts
Voltastraße 5
13355 Berlin
DE

Frank Huppertz

(Head of Kiwa-Ecobility Experts)

Prof. Dr. Frank Heimbecher

(Chairman of the independent expert committee - Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Manufacturer: Sto SE & Co. KGaA

Address: Ehrenbachstraße 1, D-79780 Stühlingen

E-mail: infoservice@sto.com

Website: https://www.sto.com

Production location: Sto Scandinavia AB

Address production location: Gesällgatan 6, 582 77 Linköping, Sweden

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)

Institut Bauen und Umwelt e.V - Complementary Product Category Rule (c-PCR): Requirements on the EPD for Mineral factory-made mortar - 12/07/2023 v3

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. 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 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: v3.15 (2023-07-12)

** 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 'StoLevell Evo' with the calculation identifier ReTHiNK-62142.

2 Product

2.1 PRODUCT DESCRIPTION

StoLevell Evo is a pumpable cementitious mortar designed as a base coat for mineral substrates, EPS and mineral wool boards. It can be applied as plastering mortar on walls, ceilings, pillars and separating walls, both indoors and outdoors. StoLevell Evo is also used as a base coat in several of Sto's facade systems.

StoLevell Evo is supplied in 25 kg small bags (paper/polyethylene plastic (PE)) or in 1000 kg big bags (polypropylene- and polyethylene plastic (PP/LDPE)).

StoLevell Evo is compliant with EN 998-1:2016 General purpose plastering mortar (GP) CS III.

Product specification

The composition of the product is described in the following table:

Materials	Weight (%)
Binder	10-20
Filler	75-85
Additives	1-2
Others (Packaging etc.)	2-3

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

StoLevell Evo is a pre-made cementitious dry mortar that is polymer modified. Pre-made dry mortar is a mortar made from raw materials that are placed into containers dry at the factory, delivered to the construction site, and then mixed with the required quantity of water to form ready-to-use mortar based on the manufacturer's instructions and conditions.

Application temperature

Lowest substrate and air temperature: +5 °C

Highest substrate and air temperature: +30 °C

Mixing ratio

4.75 L of water per 25 kg

Material preparation

Pour the water and add the dry mortar. Mix well and let it rest for approx. 5 minutes before use.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

A reference service life (RSL) as per ISO 15686-1, -2, - 7, and -8 is not declared. Provided they are used as intended and properly applied, the service life of rendering and plastering mortars made from mineral pre-made mortars on walls and ceilings has been known to be 40 years or longer (according to BBSR - The Federal Office for Building and Regional Planning). In this life cycle analysis the RSL of 50 years has been declared, equal to the useful life of the building (according to standard 15804:A2).

USED RSL (YR) IN THIS LCA CALCULATION:

50

2.4 TECHNICAL DATA

Density, dry powder: 1,200 kg/cm^3

Density, hardened: 1,600 kg/cm^3

Characteristics

- good adhesion
- weather-resistant
- highly water-repellent
- high water transmission

2.5 SUBSTANCES OF VERY HIGH CONCERN

The product does not contain substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency in a concentration more than 0,1 % (by unit weight).

The product is categorized as non-hazardous waste with code 17 01 01 (hardened mortar).

2.6 DESCRIPTION PRODUCTION PROCESS

StoLevell Evo is produced in Linköping, Sweden, by Sto Scandinavia AB. Sto Scandinavia AB is a subsidiary of Sto SE & Co. KGaA. The raw materials that are used in StoLevell Evo are

2 Product

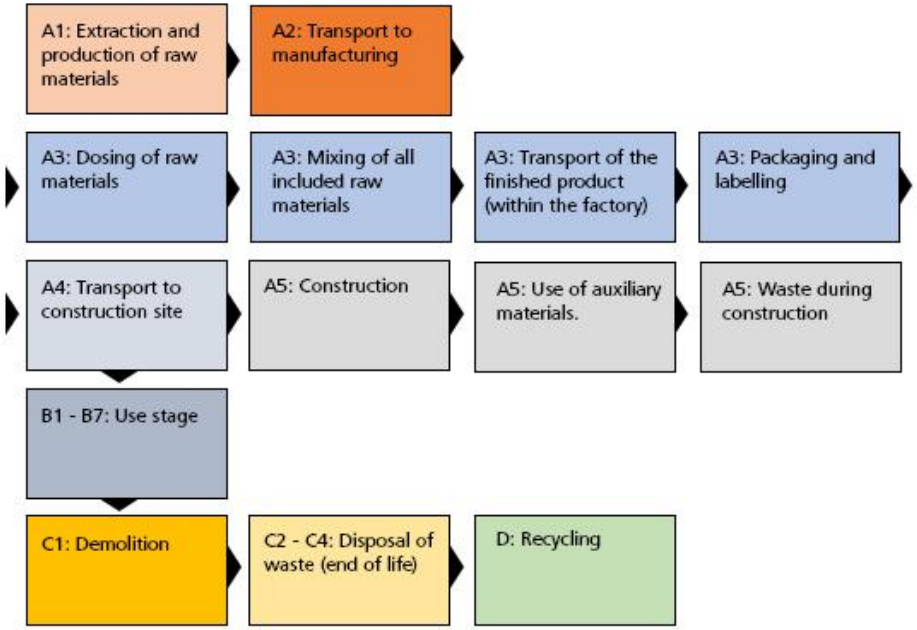
produced and transported from suppliers located in Europe. Main market is the Nordic countries.

The production process starts from raw materials that are purchased from external suppliers and transported to the manufacturing plant in Linköping. The raw materials are then stored at the plant in silos, gravimetrically dosed and intensely mixed in the production mixer according to the formula of the product. The production is a discontinuous process, in which all the components are mechanically mixed in batches. The mixed and finished product is then packaged in paper/PE bags or in big bags of PP/LDPE, put on wooden pallets, covered with wrapping material (stretch film) and stored in the production warehouse. The quality of the final product is controlled before the sale.

The energy that is used during production is electricity and also heat for warming up the factory. Emissions during production consist of indoor dust in the factory. There is no release of dust to the outdoor environment. Waste during production is less than 1% (0.14% according to production figures). Waste is in the form of cementitious dust from the mixing process.

Product Flow Diagram

This diagram shows the different life cycle stages of StoLevell Evo. The stages concerning the production process is shown under A3.



2.7 CONSTRUCTION DESCRIPTION

StoLevell Evo is a dry cementitious mortar that is mixed with water at the construction site before application. The mixed mortar is applied in layers of 6-15 mm and applied mechanically with a plaster gun or manually by hand. Surface treatment is then done with a trowel or a plasterer's float.

The drying time depends on the temperature, wind and relative air humidity. Appropriate measures need to be taken to protect ongoing or newly plastered external walls in bad weather (e.g. apply a rain cover). Hardening takes approx. 1 day per mm of layer thickness, depending on weather conditions.

At an air and substrate temperature of +20 °C and 65% relative air humidity, the layer is over-coatable after approx. 24 hours.

3 Calculation rules

3.1 DECLARED UNIT

1 kg

Declared unit is 1 kg of StoLevell Evo installed and with an RSL of 50 years. The product is in dry state according to PCR for Mineral factory-made mortar. StoLevell Evo is a pre-made cementitious dry mortar.

The scope of this LCA is cradle to gate with options, modules C1-C4 and module D. Technical life span of the products raw materials is the same as for the whole product. Reference Service Life of the product is the same as estimated lifetime of the building in which the product is being used.

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 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	X	X	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 StoLevell Evo, a product of Sto SE & Co. KGaA. The data are representative for the European Union.

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

3.5 CUT-OFF CRITERIA

Criteria for the exclusion of inputs and outputs (cut-off rules) in the LCA, information modules and any additional information are intended to support an efficient calculation procedure. They are not applied in order to hide data.

Product Stage (A1-A3)

The production stage consists of the extraction of raw materials, transportation of the raw materials, processing the raw materials into materials and the production of the product. The required energy for production, ancillary materials, packaging materials and production emissions are included.

All substantial raw materials and types of energy during production are included. Raw materials added to the product in very small amounts (less than 1%) are not included. These cut-off limits do not apply to hazardous materials or substances.

As StoLevell Evo is a mortar, there are no co-products that have to be taken into account.

Construction process stage (A4-A5)

This stage consists of the transportation of the product from production plant to the construction site.

3 Calculation rules

It also includes the loss of material during construction. The additional needed production, transport and end-of-life of the lost material during construction is included.

The end-of-life of packaging material up to the end-of-waste state or disposal of final residues is also included.

End of life stage (C1-C4)

When the end of the life stage of the building is reached, the de-construction/demolition begins. This EPD includes de-construction/demolition (C1), the necessary transport (C2) from the demolition site to the sorting location and distance to final disposal. The end of life stage includes the final disposal to landfill (C4), incineration (C3) and needed recycling processes up to the end-of-waste point (C3). Loads and benefits of recycling, re-use and exported energy are part of module D.

The prescribed waste scenarios from the NMD Determination Method V1.1 have been used for the various materials in the product.

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 V1.1 or EcoInvent 3.6 (2019).

Excluded processes

Following processes has not been taken into account in this life cycle analysis:

- The manufacture of equipment used in production, buildings or any other capital goods;
- The transportation of personnel to the production plant;
- The transportation of personnel within the production plant;
- Research and development activities;
- Long-term emissions.

3.6 ALLOCATION

The amount of electricity at the production site for StoLevell Evo comes from figures concerning the total amount of electricity being used at the site (for all products produced) and then recalculated into the amount only used for producing StoLevell Evo at the site. The amount of electricity is then shown per kg produced product.

The amount of energy used for heating at the production site for StoLevell Evo comes from figures concerning the total amount of district heating used at the site (for all products produced) and then recalculated into the amount only used to produce StoLevell Evo at the site. The amount of district heating is then shown per kg produced product.

Modularity principle has been taken into account. Since StoLevell Evo is a mortar, there are no co-products that have to be taken into account.

The producer of StoLevell Evo is under regulation from national authorities and follows the polluter pays principle.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

This EPD project has been performed during the year 2023. Production data is for the year 2022.

3.8 ESTIMATES AND ASSUMPTIONS

Mortar is categorized as mineral construction waste. The European Waste Code (EWC) for mortar is 17 01 01 (Concrete from construction and demolition activities) and is categorized as non-hazardous waste. Mortar can therefore be used in landfills. This code applies for hardened mortar.

The end of life scenario reflects the Nordic market, where 87% of mineral waste from construction and demolition is estimated to be landfilled and 13% is recycled (8).

3.9 DATA QUALITY

Specific data on the product's constituent raw materials have been collected during the year 2023. Raw material suppliers have been contacted to obtain an EPD for each raw material. In cases where suppliers did not have EPDs according to EN 15804, data from LCA database EcoInvent 3.6 were used.

3 Calculation rules

Data concerning production has been collected from the Production Management System used at the production site and the figures shown in this report is for the year 2022.

3.10 GUARANTEES OF ORIGIN

Local based approach has been applied. Therefore the Swedish consumption mix (= national production + imports - exports) was used to consider the impact of electricity. No GOs need to be specified when using this method.

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	Lorry (Truck) 16-32t, EURO6 | market for (EU)
Fuel type and consumption of vehicle	not available
Distance	200 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

For flows entering the system at A5 the following scenario is assumed for module A5.

	Value	Unit
Materials used for installation/assembly		
Surface water	0.2	kg
Energy consumption for installation/assembly		
Electricity (SE) - low voltage (max 1kV)	0.0027	kWh

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	3	%
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	0.021	kg

4 Scenarios and additional technical information

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.

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
Debris - STO Sweden	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

4.5 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 [%]
Debris - STO Sweden	NL	0	87	0	13	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
Debris - STO Sweden	0.000	0.870	0.000	0.130	0.000
Total	**0.000**	**0.870**	**0.000**	**0.130**	**0.000**

4 Scenarios and additional technical information

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.

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
Debris - STO Sweden	0.130	0.000
Total	**0.130**	**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	A4	A5	C1	C2	C3	C4	D
AP	mol H+ eqv.	4.78E-4	8.66E-5	9.61E-5	9.61E-5	3.58E-5	0.00E+0	7.32E-5	1.33E-6	4.35E-5	-3.85E-5
GWP-total	kg CO2 eqv.	1.62E-1	2.69E-2	-1.24E-2	3.35E-2	4.34E-2	0.00E+0	1.26E-2	2.13E-4	4.59E-3	-2.57E-3
GWP-b	kg CO2 eqv.	1.68E-4	2.04E-5	-2.97E-2	1.80E-5	3.36E-2	0.00E+0	5.83E-6	1.22E-6	9.08E-6	-1.09E-4
GWP-f	kg CO2 eqv.	1.62E-1	2.69E-2	1.73E-2	3.34E-2	9.75E-3	0.00E+0	1.26E-2	2.11E-4	4.58E-3	-2.44E-3
GWP-luluc	kg CO2 eqv.	4.49E-5	8.20E-6	6.87E-5	1.19E-5	1.34E-5	0.00E+0	4.62E-6	4.02E-8	1.28E-6	-1.27E-5
EP-m	kg N eqv.	9.62E-5	1.90E-5	2.43E-5	1.90E-5	9.80E-6	0.00E+0	2.58E-5	5.28E-7	1.50E-5	-1.12E-5
EP-fw	kg P eqv.	3.08E-6	2.14E-7	8.98E-7	2.67E-7	1.61E-7	0.00E+0	1.27E-7	6.59E-9	5.14E-8	-1.31E-7
EP-T	mol N eqv.	9.67E-4	2.12E-4	2.71E-4	2.13E-4	1.06E-4	0.00E+0	2.84E-4	5.87E-6	1.65E-4	-1.77E-4
ODP	kg CFC 11 eqv.	4.79E-9	6.61E-9	1.85E-9	7.61E-9	9.89E-10	0.00E+0	2.79E-9	2.74E-11	1.89E-9	-4.64E-10
POCP	kg NMVOC eqv.	3.37E-4	8.31E-5	9.70E-5	8.15E-5	3.33E-5	0.00E+0	8.12E-5	1.59E-6	4.79E-5	-3.30E-5
ADP-f	MJ	1.85E+0	4.37E-1	3.05E-1	5.06E-1	1.28E-1	0.00E+0	1.90E-1	2.84E-3	1.28E-1	-3.44E-2
ADP-mm	kg Sb-eqv.	9.25E-7	4.79E-7	2.72E-7	9.23E-7	1.07E-7	0.00E+0	3.20E-7	5.97E-10	4.19E-8	-4.47E-8
WDP	m3 world eqv.	1.51E+0	1.42E-3	1.31E-2	1.43E-3	4.64E-2	0.00E+0	6.81E-4	1.29E-5	5.74E-3	-8.27E-3

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	A4	A5	C1	C2	C3	C4	D
ETP-fw	CTUe	1.01E+0	3.48E-1	6.17E-1	4.07E-1	1.14E-1	0.00E+0	1.70E-1	2.30E-3	8.31E-2	-3.37E-1
PM	disease incidence	3.87E-9	2.36E-9	1.10E-7	2.13E-9	3.70E-9	0.00E+0	1.14E-9	2.93E-11	8.45E-10	-5.37E-10
HTP-c	CTUh	2.35E-11	8.44E-12	2.99E-11	1.13E-11	8.27E-12	0.00E+0	5.50E-12	5.46E-14	1.92E-12	-4.23E-12
HTP-nc	CTUh	7.50E-10	3.81E-10	3.47E-10	4.29E-10	9.85E-11	0.00E+0	1.86E-10	1.54E-12	5.90E-11	-1.49E-10
IR	kBq U235 eqv.	2.31E-3	1.91E-3	1.23E-3	2.21E-3	8.56E-4	0.00E+0	7.97E-4	9.00E-6	5.25E-4	-9.04E-5
SQP	Pt	9.95E-1	5.00E-1	5.59E+0	3.54E-1	2.51E-1	0.00E+0	1.65E-1	4.74E-4	2.69E-1	-1.34E+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

5 Results

ILCD classification	Indicator	Disclaimer
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	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	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.02E-1	5.50E-3	5.54E-1	7.24E-3	2.82E-2	0.00E+0	2.38E-3	1.62E-4	1.04E-3	-2.75E-1
PERM	MJ	0.00E+0	0.00E+0	2.80E-1	0.00E+0	8.39E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	1.02E-1	5.50E-3	8.34E-1	7.24E-3	3.66E-2	0.00E+0	2.38E-3	1.62E-4	1.04E-3	-2.75E-1
PENRE	MJ	1.35E+0	4.64E-1	3.03E-1	5.37E-1	1.16E-1	0.00E+0	2.02E-1	3.03E-3	1.36E-1	-3.63E-2
PENRM	MJ	6.16E-1	0.00E+0	2.17E-2	0.00E+0	1.91E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-8.21E-4
PENRT	MJ	1.97E+0	4.64E-1	3.25E-1	5.37E-1	1.35E-1	0.00E+0	2.02E-1	3.03E-3	1.36E-1	-3.71E-2
SM	Kg	9.36E-4	0.00E+0	1.31E-6	0.00E+0	2.81E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ	3.61E-2	0.00E+0	5.06E-5	0.00E+0	1.09E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	4.04E-1	0.00E+0	5.66E-4	0.00E+0	1.21E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	M3	1.81E-3	4.97E-5	2.98E-4	5.41E-5	1.01E-4	0.00E+0	2.32E-5	9.49E-7	1.37E-4	-1.94E-4

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	A4	A5	C1	C2	C3	C4	D
HWD	Kg	1.70E-5	1.06E-6	5.66E-6	1.32E-6	7.96E-7	0.00E+0	4.82E-7	4.95E-9	1.91E-7	-7.70E-8
NHWD	Kg	9.84E-3	3.80E-2	5.87E-3	2.46E-2	3.15E-2	0.00E+0	1.21E-2	3.96E-4	8.70E-1	-5.76E-4
RWD	Kg	6.73E-6	2.98E-6	1.55E-6	3.44E-6	7.98E-7	0.00E+0	1.25E-6	1.28E-8	8.41E-7	-1.22E-7

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

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	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
MFR	Kg	1.92E-5	0.00E+0	2.69E-8	0.00E+0	4.96E-3	0.00E+0	0.00E+0	1.30E-1	0.00E+0	0.00E+0
MER	Kg	8.07E-5	0.00E+0	1.13E-7	0.00E+0	2.43E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ	1.18E-4	0.00E+0	1.65E-7	0.00E+0	3.55E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.16E-2
EEE	MJ	7.81E-6	0.00E+0	1.09E-8	0.00E+0	2.35E-7	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.74E-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:

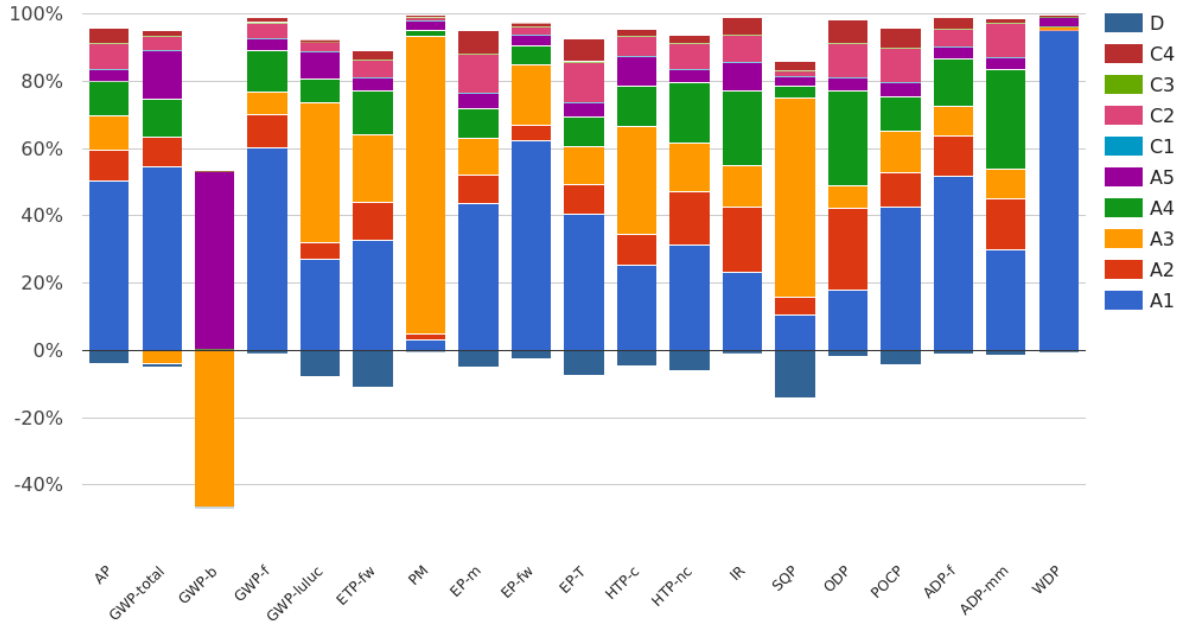
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.009091	kg C

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
Packaging	0.03333	kg CO2 (biogenic)

6 Interpretation of results



The figure above shows the influence of the different life stages on the LCA results. The raw materials for StoLevell Evo (A1) contribute the most to the total GWP values, followed by the installation and use of the product at the construction site (A5). The main environmental impacts of the product's life cycle come from the product stage A1-A3. The extraction of raw materials (A1) has the largest impact (especially for water resource utilization, GWP-fossil and eutrophication in fresh water), followed by the manufacturing stage (A3) and lastly the transportation of raw materials to the manufacturing site (A2).

7 References

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