

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804+A2:2019 for:

LIP Tile Mortars

from LIP Byggningsartikler A/S



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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Owner of the declaration and manufacturer:

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EPD Prepared by: Bureau Veritas HSE, Denmark

Standards: ISO 14025 and EN 15804+A2:2019. EPD's of other construction products may not be comparable if they do not comply with this standard.

Statement: This report records that the LCA based information and the additional information declared in the EPD meets the requirements of the European Standard EN 15804:2010+A2:2019 and PCR 2019:14 v 1.11.

Scope: This LCA study is intended to be used in cradle-to-gate with options EPD and covers the life cycle sub-modules A1-A3, A4, A5, C1-C4, and D the following mortars in table 1, all produced by LIP Bygningsartikler A/S at the same production site. The EPD will be accessible on <http://www.lip.dk/> together with safety data sheets and product information, providing information for business-to-business communication. The Geographical scope is Europe.

About LIP Bygningsartikler A/S

LIP Bygningsartikler A/S is a Danish Company, which since its founding in 1967 has produced high quality products at competitive prices.

The product range from the beginning was tile adhesive and sealants, which since then has been expanded with products within flooring putty, waterproofing, silicone, epoxy, filler compounds, etc.

All our products are continuously under internal as well as external quality control, so that we can always live up to our slogan:

LIP - when building on quality!

Product information

Products represented

LIP Tile Mortar, LIP Multi Tile Mortar – Grey and White, LIP Multi Tile Mortar Light, LIP Flow Mortar Light, LIP Tropic Tile Mortar – Grey and White, LIP Tile Mortar XXL, LIP 527 Tile Mortar, LIP 460 Sheet adhesive coarse flex, LIP Natural Stone Grout and LIP Rapid-Setting Tile Adhesive.



Figure 1: Pictures of the LIP products covered in this project report.

Product description

These products are manufactured by LIP Bygningsartikler A/S in the production plants located in Nørre Aaby, Denmark. These products are used for fixing and laying wall and floor tiles, marble, facing bricks, glass wool batts, Rockwool batts, polystyrene veneers, etc.

The manufacturing process starts from raw materials purchased from suppliers and stored in the plant. Bulk raw materials are stored in specific silos and added mostly automatically in the production mixer, according to the formula of the product. Other raw materials, supplied in bags or big bags, are stored in their warehouse and added automatically or manually in the mixer. The production is a discontinuous process, in which all the components are mechanically mixed in batches.

The semi-finished product is then packaged in bags, put on wooden pallets, covered by stretched hoods and stored in the Finished Products' warehouse. The quality of final products is controlled before the sale.

The product is supplied from production in dry form, premixed in respect of all contents but water. Water is added at the building site in the construction/ installation stage, in a defined amount and technique, in order to produce a deformable cementitious adhesive of high performance. The product is under UN CPC 3733 - Refractory cements, mortars, concretes and similar compositions n.e.c.

Table 1: Product information for the twelve products covered by this EPD.

Product name		Article no.	Description
Danish	English		
LIP Fliseklæb	LIP Tile Mortar	2004349, 200003	5 and 20 kg bags 1.6 kg/mm/m ² 0.22L water per kg
LIP Multi Fliseklæb - Grå	LIP Multi Tile Mortar - Grey	2797215, 200010	5 and 20 kg bags Grey cement based 1.4 kg/mm/m ² 0.3L water per kg
LIP Multi Fliseklæb - Hvid	LIP Multi Tile Mortar - White	2950087, 200027	5 and 20 kg bags White cement based 1.5 kg/mm/m ² 0.28L water per kg
LIP Multi Fliseklæb Let	LIP Multi Tile Mortar Light	24005	15 kg bags 0.7 kg/mm/m ² 0.54L water per kg
LIP Flydeklæb Let	LIP Flow Mortar Light	200041	20 kg bags 1 kg/mm/m ² 0.35L water per kg
LIP Trope Fliseklæb - Grå	LIP Tropic Tile Mortar - Grey	22001, 200065	5 and 20 kg bags Grey cement based 1.5 kg/mm/m ² 0.32L water per kg
LIP Trope Fliseklæb - Hvid	LIP Tropic Tile Mortar - White	200072	20 kg bags White cement based 1.4 kg/mm/m ² 0.28L water per kg
LIP Fliseklæb XXL	LIP Tile Mortar XXL	102475	20 kg bags White cement based 1.6 kg/mm/m ² 0.32L water per kg
LIP 527 Fliseklæb	LIP 527 Tile Mortar	102628	20 kg bags Grey cement based 1.5 kg/mm/m ² 0.33L water per kg
LIP 460 Pladelim Grov Flex	LIP 460 Sheet adhesive coarse flex	290011	20 kg bags Grey cement based 1.9 kg/mm/m ² 0.2L water per kg
LIP Naturstensklæb	LIP Natural Stone Grout	200058	20 kg bags White cement based 0.24L water per kg
LIP Hurtighærdende Fliseklæb	LIP Rapid-Setting Tile Adhesive	200034	5 and 20 kg bags Grey cement based 0.24L water per kg

Declared Unit

The declared unit (DU) is 1 kg of dry-packed finished product. This EPD describes the environmental impact of 1 kg of dry-packed mortar. The product consumption, of course, depends on the size of the tile, unevenness, grout size and the size of the toothpick.

Reference service life

According to LIP Bygningsartikler A/S experience, the Reference Service Life (RSL) of premade mortars is not applicable, as B1-B7 modules are not declared and not assessed. The product does not need maintenance or replacement during its service life, if professionally used and properly installed.

Technical data

The products are designed, produced and CE marked according to EN 12004 (Adhesives for tiles. Requirements, evaluation of conformity, classification and designation).

They are classified as seen in table 2 according to EN 12004:2007+A1:2012 for interior and exterior bonding of ceramic tiles, porcelain, natural stone and mosaics on floors and walls.

Table 2: Performance information for the twelve products according to EN 12004:2007+A1:2012.

	LIP Tile Mortar	LIP Multi Tile Mortar - Grey	LIP Multi Tile Mortar - White	LIP Multi Tile Mortar Light	LIP Flow Mortar Light	LIP Tropic Tile Mortar - Grey	LIP Tropic Tile Mortar - White	LIP Tile Mortar XXL	LIP 527 Tile Mortar	LIP Natural Stone Grout	LIP Rapid-setting Tile Adhesive	LIP 460 Sheet adhesive coarse flex
	C1-E	C2-TE-S1	C2-TE-S1	C2-TE-S1	C2-E-S1	C2-TE	C2-TE	C2-FE-S2	C2-TE	C2-FE-S1	C2-FE-S1	C2-FE-S1
Initial tensile adhesion strength	≥ 0.5 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²
Early tensile adhesion strength after 6 hours	N/A	N/A	N/A	N/A	N/A	N/A	N/A	≥ 0.5 N/mm ²	N/A	≥ 0.5 N/mm ²	≥ 0.5 N/mm ²	≥ 0.5 N/mm ²
Tensile adhesion strength after heat aging	≥ 0.5 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²
Tensile adhesion strength after water immersion	≥ 0.5 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²
Tensile adhesion strength after freeze-thaw cycles	≥ 0.5 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²	≥ 1 N/mm ²

Air emission

All the twelve Mortars covered in this EPD has low dust technology and very low emission of volatile organic compounds and documented with GEV-EMICODE EC 1^{PLUS}. Documentation for GEV-EMICODE can be found on lip.dk and can be also provided upon request.



Content declaration

Content declaration including packaging covering the twelve LIP Mortars in this EPD.

Table 3: Content declaration, which covers the twelve LIP products.

LIP Tile Mortars			
Product components		Weight%	Post-consumer material, weight-%
Silica sand		10-60	0%
Portland cement, CAS. 65997-15-1		20-60	0%
Additives		1-20	0%
Packaging materials		Weight, kg	Weight-% (versus the product)
Bags	Paper	0.012 kg (for 5 and 20kg bag) 0.0145 kg for 20kg bag 0.0122 for 15 kg bag 0.003312 for 5 kg bag	12 % (for 5 and 20kg bag) 14.5 % for 20kg bag 12.2 % for 15 kg bag 3.3% for 5 kg bag
	PE-film	0.5g/kg product	0.05 %
Transport packaging	PE-film	0.6g/kg product	0.06 %
Total:			<15%

During the life cycle of the product no hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has been used in a percentage higher than 0.1% of the weight of the product.

LCA information

Product category rules (PCR)

PCR 2019:14 Construction products (EN 15804:A2) Version 1.11.

Time representativeness

Data from factory (primary data) is from 2021.

Database(s) and LCA software used

LCA Software: Simapro 9.4

Database: Most processes in the LCA Software have been modelled using the EcoInvent database 3.8. The database was available in SimaPro as local LCI process libraries, allowing for background data integration. Instead of using generic data for the main components including cement, calcium carbonate and polymer

powder, the suppliers of those raw materials were contacted and specific EPD for their raw materials were used.

EPDs used as input data along with their EPD related information i.e. EPD program, validity dates, owner, etc. are presented 'Database section' of the LCA project report, in order to preserve confidentiality of the supplier.

The impact models used are the ones included in the Simapro method named EN 15804 +A2 Method V1.00 / EF 3.0 normalization and weighting set.

Cut-off criteria for initial inclusion of inputs and outputs

The general rules for cut-off of inputs and outputs follow the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes. Recycling processes and benefits for recycled plastic packaging is regarded as below cut-off criterion of 1%.

Allocation principles and procedures

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per EN 15804, allocation is conducted in the following order.

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

The "Allocation, cut-off by classification" system model that has been chosen subdivides multi-product activities by allocation, based on physical, economic, mass or other properties. By-products of waste treatment processes are cut-off, as are all by-products classified as recyclable. Markets in this model include all activities in proportion to their current production volume.

The production energy used in this LCA study, is derived by the total energy consumption at the location of LIP Bygningsartikler A/S divided by the total production volume of all their products. However, there are no co-products, and therefore no allocation between products beside the energy.

Description of system boundaries

This study covers a cradle-to-gate with options (A1-A5, C1-C4 and D) EPD.

Table 4: Life cycle stages covered by this LCA study.

	Product stage	Installation processes	Use stage	End of life stage	

	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1-A3			A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Production of commodities, raw materials	Product manufacture															
Modules declared	X			X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	Europe		Denmark	Europe													
Process type	Upstream		Processes the manufacture has influence over	Downstream													
Data type	>58 % share of specific data in % GWP-GHG		Specific	-													
Variation – products	Not relevant			-													
Variation – sites	Manufactured in one site			-													

Product stage (A1-A3):

- A1-A2: extraction, supply and transport of raw materials and packaging to LIP Bygningsartikler A/S. Raw materials are purchased from European suppliers.
- A3: manufacturing process of product and its packaging and waste management from the same process. LIP Bygningsartikler A/S get all their electricity from wind energy produced at Lindø Port with >3MW onshore wind turbines. Approximately 0.88MJ is used for the production of 1 kg product. A3 covers dosage and mixing of selected and measured raw materials and additives to ensure that the product meets desired properties and packaging material consumption. Packaging product materials consist of the bag material, wooden pallet and LDPE used as wrapping material. The wooden pallet is part of a return system, and therefore not a part of this study. A calculation has been already made that the wooden pallet can hold at least 48 bags of product and it was used to calculate how much wrapping foil is needed.

Therefore, presuming 25 use cycles is reasonable for one pallet, in average 1/25 of the manufacturing and waste handling of one pallet should be allocated to at least the 48 bags of product(s) transported in one pallet use cycle or 1/48 for 1 bag of product. Therefore, the waste from the same process is assessed to be negligible, as raw material waste, if any, will be used in subsequent process or directed to incineration.

Figure 2 (system figure) includes the generic processes retrieved from the Ecoinvent database 3.8 and describe the ingredients in the LIP products in absence of specific data. Instead of using generic data for the main components including cement, calcium carbonate and polymer powder, the suppliers of those raw materials were contacted and specific EPD for their raw materials were used.

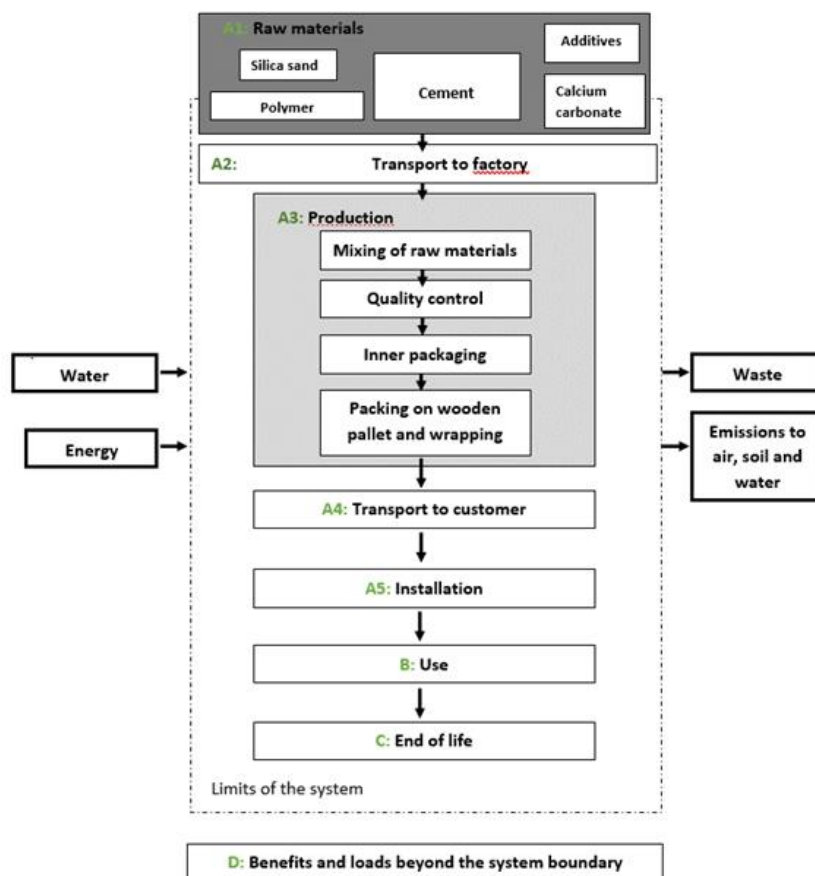


Figure 2: Limits of the system in this study.

Construction process stage (A4-A5):

- A4: distribution to typical Customer by transport of packaged product from production gate to end user (building site). The customers of LIP Byggningsartikler A/S are primarily from Denmark. About 92 percent of the products produced by LIP at the production site in Nørre Aaby in Denmark, are sold in Denmark, 4 percent in Sweden, 2 percent in Norway and 1 percent in both Germany and the Netherlands. The distance has in the present LCA study been estimated to be 500km via road transport by a Euro 6 lorry of 32 metric ton.
- A5: installation of product into building, including required water and its blending energy. For installation, water consumption can be found in table 1. Mixing electricity consumption is assumed to be 0.216MJ. This is equivalent to the use of a 1200 Watt handheld mixer for 3 minutes. It is estimated that if the technician has experience and uses the same bucket of tile mortar product to reduce residue, 2-4 % could be expected. This estimate is expressed in the model by 5% loss instead, as a conservative approach. 5% loss has been advised to LIPs customers and LIP offers calculator with losses on LIPs website as a guide when buying products. No industry standard exists and PCR does not provide further guidance for any losses or spillage. The product can be used in 12 months or 18 months. The electricity mix is modelled with European mix and it is considered as an adequate choice, but since more than 90% of the market is in Denmark, Danish residual mix would be a better choice to consider in this study's validity period of 5 years.

Use stage (B1-B7):

- B1 to B7 are not declared (ND) as they are not applicable: the product does not need maintenance or replacement during its RSL, if professionally used and properly installed.

End of life stage (C1-C4):

- C1: deconstruction and demolition of the product into the building. Mortars for surface use are typically not considered as part of the structure of the building. However, during the building destruction, the quantity of extra energy required to break this application can be neglected compared to the energy required to demolish the structure of the building and are therefore not included in this LCA study.
- C2: transport of waste product from demolition to recycling/disposal facility that is waste collection. The distance covered is 50 km via road transport by a Euro 6 lorry of 32 metric ton.
- C3: The product is expected to be disposed in landfill after end of life, so waste processing is negligible.
- C4: Waste disposal including physical pre-treatment.

D Reuse-Recovery-Recycling potential

Module D calculates the potential environmental benefits of the recycling or reuse of materials. This product has not considerable benefits due to recycling or/and reuse.

Environmental performance

All the environmental impacts have been calculated in SimaPro and with the EN 15804 + A2 Method, which takes all the methods defined by the European Standard EN 15804 + A2 into account.

All the LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

The disclaimers can be found on 'Programme-related information and verification' section on page 37 of this EPD report.

LIP Tile Mortar

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 5: Core environmental impact results for the product LIP Tile Mortar.

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	4,24E-01	4,35E-02	6,11E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	4,36E-01	4,35E-02	3,56E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,21E-02	3,62E-05	2,53E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	5,37E-04	1,64E-05	5,93E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	2,61E-08	1,08E-08	1,53E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	1,55E-03	1,39E-04	1,56E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	4,69E-05	2,84E-06	1,64E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	2,86E-04	3,11E-05	3,49E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,12E-03	3,39E-04	2,69E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,06E-03	1,34E-04	8,56E-05	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	2,09E-06	1,04E-07	2,27E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,97E+00	7,08E-01	5,25E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	9,16E-02	2,44E-03	8,20E-03	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 6: Additional environmental impact results for the product LIP Tile Mortar.

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	4,32E-01	4,32E-02	4,47E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,12E-08	5,05E-09	1,22E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	1,63E-02	3,58E-03	9,13E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	5,48E+00	5,53E-01	4,78E-01	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	6,77E-10	1,51E-11	4,25E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	6,67E-09	5,83E-10	5,52E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	5,44E+00	8,12E-01	1,73E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 7: Resource use - LIP Tile Mortar.

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5,80E-01	9,43E-03	7,87E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,60E-01	0	0	0	0	0	0	0
PERT	MJ	8,40E-01	9,43E-03	7,87E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	4,00E+00	7,52E-01	5,53E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,26E+00	0	0	0	0	0	0	0
PENRT	MJ	5,26E+00	7,52E-01	5,53E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	8,11E-02	2,45E-03	7,61E-03	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 8: Waste - LIP Tile Mortar

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	6,92E-03	0	3,46E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	1,48E-01	0	7,42E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,88E-06	0	9,41E-08	0	0	0	0	0

Output flows

Table 9: Output flows - LIP Tile Mortar

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 10: Biogenic Carbon - LIP Tile Mortar

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	6,00E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO ₂ .		

LIP Multi Tile Mortar – Grey

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 11: Core environmental impact results for the product LIP Multi Tile Mortar – Grey.

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	5,53E-01	5,53E-01	6,75E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	5,63E-01	4,35E-02	4,20E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,13E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	5,30E-04	1,64E-05	5,89E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,07E-08	1,08E-08	1,76E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	1,98E-03	1,39E-04	1,78E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	6,18E-05	2,84E-06	1,72E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	3,61E-04	3,11E-05	3,87E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,93E-03	3,39E-04	3,10E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,40E-03	1,34E-04	1,03E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	3,06E-06	1,04E-07	2,76E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	8,18E+00	7,08E-01	6,86E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	1,59E-01	2,44E-03	1,16E-02	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 12: Additional environmental impact results for the product LIP Multi Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	5,56E-01	4,32E-02	5,09E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,51E-08	5,05E-09	1,42E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	2,23E-02	3,58E-03	9,43E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	6,68E+00	5,53E-01	5,38E-01	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	8,36E-10	1,51E-11	5,05E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	9,58E-09	5,83E-10	6,97E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	5,35E+00	8,12E-01	1,68E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 13: Resource use - LIP Multi Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	6,52E-01	9,43E-03	8,17E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,48E-01	0	0	0	0	0	0	0
PERT	MJ	9,00E-01	9,43E-03	8,17E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	6,00E+00	7,52E-01	7,26E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	2,71E+00	0	0	0	0	0	0	0
PENRT	MJ	8,71E+00	7,52E-01	7,26E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	1,45E-01	2,45E-03	1,08E-02	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 14: Waste - LIP Multi Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	7,83E-03	0	3,92E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	1,68E-01	0	8,41E-03	0	0	0	0	0
Radioactive waste disposed	kg	2,13E-06	0	1,07E-07	0	0	0	0	0

Output flows

Table 15: Output flows - LIP Multi Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 16: Biogenic Carbon - LIP Multi Tile Mortar – Grey

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	6,00E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO ₂ .		

LIP Multi Tile Mortar – White

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 17: Core environmental impact results for the product LIP Multi Tile Mortar – White.

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	7,18E-01	4,35E-02	7,35E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	7,30E-01	4,35E-02	4,82E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,33E-02	3,62E-05	2,53E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	5,70E-04	1,64E-05	6,01E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	4,75E-08	1,08E-08	2,06E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	3,36E-03	1,39E-04	2,40E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	2,05E-04	2,84E-06	2,42E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	2,05E-04	3,11E-05	2,93E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	5,66E-03	3,39E-04	3,80E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	2,39E-03	1,34E-04	1,45E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	3,88E-06	1,04E-07	3,11E-07	0	1,04E-08	0	1,20E-08	D
ADP-fossil**	MJ	1,10E+01	7,08E-01	7,91E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	3,53E+00	2,44E-03	1,80E-01	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 18: Additional environmental impact results for the product LIP Multi Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	7,13E-01	4,32E-02	5,65E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,79E-08	5,05E-09	1,30E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	2,69E-02	3,58E-03	9,48E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	4,06E+00	5,53E-01	3,80E-01	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	6,82E-10	1,51E-11	4,20E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	1,29E-08	5,83E-10	8,34E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	6,12E+00	8,12E-01	1,66E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 19: Resource use - LIP Multi Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5,19E-01	9,43E-03	7,46E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,48E-01	0	0	0	0	0	0	0
PERT	MJ	7,67E-01	9,43E-03	7,46E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	6,81E+00	7,52E-01	7,29E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	2,71E+00	0	0	0	0	0	0	0
PENRT	MJ	9,52E+00	7,52E-01	7,29E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	1,48E-01	2,45E-03	1,08E-02	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 20: Waste - LIP Multi Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	5,69E-03	0	2,85E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	1,15E-01	0	5,75E-03	0	0	0	0	0
Radioactive waste disposed	kg	2,02E-06	0	1,01E-07	0	0	0	0	0

Output flows

Table 21: Output flows - LIP Multi Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 22: Biogenic Carbon - LIP Multi Tile Mortar – White

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	6,00E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO ₂ .		

LIP Multi Tile Mortar Light

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 23: Core environmental impact results for the product LIP Multi Tile Mortar Light.

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	7,21E-01	4,35E-02	7,80E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	7,39E-01	4,35E-02	5,29E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,83E-02	3,62E-05	2,50E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	3,73E-04	1,64E-05	5,19E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,67E-08	1,08E-08	2,60E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	2,86E-03	1,39E-04	2,28E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	1,38E-04	2,84E-06	2,11E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	1,27E-04	3,11E-05	2,85E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	6,13E-03	3,39E-04	4,37E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,81E-03	1,34E-04	1,30E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	4,98E-06	1,04E-07	3,76E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	7,68E+00	7,08E-01	6,96E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	1,51E-01	2,44E-03	1,13E-02	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 24: Additional environmental impact results for the product LIP Multi Tile Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	7,33E-01	4,32E-02	6,19E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,72E-08	5,05E-09	1,77E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	3,20E-02	3,58E-03	1,01E-02	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	1,01E+01	5,53E-01	7,39E-01	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	1,25E-09	1,51E-11	7,21E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	1,28E-08	5,83E-10	8,89E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	5,28E+00	8,12E-01	2,05E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 25: Resource use - LIP Multi Tile Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1,04E+00	9,43E-03	1,04E-01	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,97E-01	0	0	0	0	0	0	0
PERT	MJ	1,34E+00	9,43E-03	1,04E-01	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	6,47E+00	7,52E-01	7,36E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,69E+00	0	0	0	0	0	0	0
PENRT	MJ	8,17E+00	7,52E-01	7,36E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	1,33E-01	2,45E-03	1,03E-02	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 26: Waste - LIP Multi Tile Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,18E-02	0	5,92E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	2,54E-01	0	1,27E-02	0	0	0	0	0
Radioactive waste disposed	kg	3,22E-06	0	1,61E-07	0	0	0	0	0

Output flows

Table 27: Output flows - LIP Multi Tile Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 28: Biogenic Carbon - LIP Multi Tile Mortar Light

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	6,00E-03

Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

LIP Flow Mortar Light

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 29: Core environmental impact results for the product LIP Flow Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	5,67E-01	4,35E-02	7,13E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	5,82E-01	4,35E-02	4,08E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,56E-02	3,42E-05	3,05E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	4,80E-04	1,64E-05	5,53E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	4,35E-08	1,08E-08	1,86E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	2,12E-03	1,39E-04	1,78E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	1,07E-04	2,84E-06	1,92E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	1,67E-04	3,11E-05	2,91E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	4,61E-03	3,39E-04	3,28E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,51E-03	1,34E-04	1,02E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	3,03E-06	1,04E-07	2,68E-07	0	1,04E-08	0	1,20E-08	D
ADP-fossil**	MJ	7,16E+00	7,08E-01	6,00E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	1,14E-01	2,44E-03	9,22E-03	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 30: Additional environmental impact results for the product LIP Flow Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	5,77E-01	4,32E-02	5,17E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,92E-08	5,05E-09	1,40E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	2,69E-02	3,58E-03	9,47E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	7,38E+00	5,53E-11	5,53E-11	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	8,46E-10	1,51E-11	5,09E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	9,39E-09	5,83E-10	6,70E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	6,74E+00	8,12E-01	1,73E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 31: Resource use - LIP Flow Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	8,07E-01	9,52E-03	8,69E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,94E-01	0	0	0	0	0	0	0
PERT	MJ	1,10E+00	9,52E-03	8,69E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	5,96E+00	7,52E-01	6,33E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,64E+00	0	0	0	0	0	0	0
PENRT	MJ	7,61E+00	7,52E-01	6,33E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	1,01E-01	2,46E-03	8,52E-03	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 32: Waste - LIP Flow Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	7,92E-03	0	3,96E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	1,70E-01	0	8,50E-03	0	0	0	0	0
Radioactive waste disposed	kg	5,88E-06	0	2,94E-07	0	0	0	0	0

Output flows

Table 33: Output flows - LIP Flow Mortar Light

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 34: Biogenic Carbon - LIP Flow Mortar Light

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	7,25E-03

Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

LIP Tropic Tile Mortar – Grey

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 35: Core environmental impact results for the product LIP Tropic Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	4,49E-01	4,35E-02	6,23E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	4,61E-01	4,35E-02	3,69E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,20E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	5,11E-04	1,64E-05	5,80E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	2,65E-08	1,08E-08	1,55E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	1,63E-03	1,39E-04	1,60E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	4,65E-05	2,84E-06	1,64E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	2,91E-04	3,11E-05	3,52E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,21E-03	3,39E-04	2,74E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,07E-03	1,34E-04	8,61E-05	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	2,24E-06	1,04E-07	2,35E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,60E+00	7,08E-01	5,07E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	8,70E-02	2,44E-03	7,97E-03	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 36: Additional environmental impact results for the product LIP Tropic Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	4,58E-01	4,32E-02	4,59E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,18E-08	5,05E-09	1,25E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	1,58E-02	3,58E-03	9,11E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	5,91E+00	5,53E-11	5,00E-11	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	7,49E-10	1,51E-11	4,61E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	6,80E-09	5,83E-10	5,58E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	5,37E+00	8,12E-01	1,69E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 37: Resource use - LIP Tropic Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5,92E-01	9,43E-03	7,93E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,60E-01	0	0	0	0	0	0	0
PERT	MJ	8,52E-01	9,43E-03	7,93E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,84E+00	7,52E-01	5,33E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,02E+00	0	0	0	0	0	0	0
PENRT	MJ	4,86E+00	7,52E-01	5,33E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	7,57E-02	2,45E-03	7,34E-03	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 38: Waste - LIP Tropic Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	7,92E-03	0	3,96E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	1,70E-01	0	8,50E-03	0	0	0	0	0
Radioactive waste disposed	kg	2,16E-06	0	1,08E-07	0	0	0	0	0

Output flows

Table 39: Output flows - LIP Tropic Tile Mortar – Grey

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 40: Biogenic Carbon - LIP Tropic Tile Mortar – Grey

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	6,00E-03

Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

LIP Tropic Tile Mortar – White

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 41: Core environmental impact results for the product LIP Tropic Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	5,67E-01	4,35E-02	7,35E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	5,83E-01	4,35E-02	4,30E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,58E-02	3,42E-05	3,05E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	5,52E-04	1,64E-05	5,97E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,30E-08	1,08E-08	1,88E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	2,89E-03	1,39E-04	2,23E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	7,70E-05	2,84E-06	1,78E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	4,40E-04	3,11E-05	4,43E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	4,66E-03	3,39E-04	3,48E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,94E-03	1,34E-04	1,30E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	3,14E-06	1,04E-07	2,79E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	6,79E+00	7,08E-01	6,16E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	3,40E+00	2,44E-03	1,73E-01	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 42: Additional environmental impact results for the product LIP Tropic Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	5,69E-01	4,32E-02	5,35E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	1,99E-08	5,05E-09	1,19E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	1,75E-02	3,58E-03	9,18E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	2,95E+00	5,53E-01	3,59E-01	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	5,75E-10	1,51E-11	3,81E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	9,64E-09	5,83E-10	7,12E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	5,84E+00	8,12E-01	1,69E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 43: Resource use - LIP Tropic Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5,01E-01	9,52E-03	7,21E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,94E-01	0	0	0	0	0	0	0
PERT	MJ	7,95E-01	9,52E-03	7,21E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	4,01E+00	7,52E-01	5,44E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,06E+00	0	0	0	0	0	0	0
PENRT	MJ	5,08E+00	7,52E-01	5,44E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	8,38E-02	2,46E-03	7,76E-03	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 44: Waste - LIP Tropic Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	5,58E-03	0	2,79E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	1,13E-01	0	5,64E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,98E-06	0	9,91E-08	0	0	0	0	0

Output flows

Table 45: Output flows - LIP Tropic Tile Mortar – White

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy. electricity	MJ	0	0	0	0	0	0	0	0
Exported energy. thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 46: Biogenic Carbon - LIP Tropic Tile Mortar – White

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	7,25E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO ₂ .		

LIP Tile Mortar XXL

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 47: Core environmental impact results for the product LIP Tile Mortar XXL

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	6,85E-01	4,35E-02	7,94E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	6,98E-01	4,35E-02	4,87E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,29E-02	3,42E-05	3,06E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	5,93E-04	1,64E-05	6,17E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	4,37E-08	1,08E-08	2,42E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	3,22E-03	1,39E-04	2,40E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	1,02E-04	2,84E-06	1,90E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	7,92E-04	3,11E-05	6,19E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	6,92E-03	3,39E-04	4,61E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	2,30E-03	1,34E-04	1,49E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	5,07E-06	1,04E-07	3,76E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	1,18E+01	7,08E-01	8,67E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	1,11E+00	2,44E-03	5,90E-02	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 48: Additional environmental impact results for the product LIP Tile Mortar XXL

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	6,83E-01	4,32E-02	5,92E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,44E-08	5,05E-09	1,41E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	2,98E-02	3,58E-03	9,80E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	5,96E+00	5,53E-01	5,10E-01	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	4,70E-10	1,51E-11	3,29E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	1,18E-08	5,83E-10	8,21E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	5,98E+00	8,12E-01	1,75E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 49: Resource use - LIP Tile Mortar XXL

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	6,88E-01	9,52E-03	8,06E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,77E-01	0	0	0	0	0	0	0
PERT	MJ	9,65E-01	9,52E-03	8,06E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	8,11E+00	7,52E-01	8,94E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	3,96E+00	0	0	0	0	0	0	0
PENRT	MJ	1,21E+01	7,52E-01	8,94E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	2,43E-01	2,46E-03	1,57E-02	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 50: Waste - LIP Tile Mortar XXL

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,08E-03	0	1,04E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	1,06E-01	0	5,32E-03	0	0	0	0	0
Radioactive waste disposed	kg	4,88E-06	0	2,44E-07	0	0	0	0	0

Output flows

Table 51: Output flows - LIP Tile Mortar XXL

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 52: Biogenic Carbon - LIP Tile Mortar XXL

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	7,25E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO ₂ .		

LIP 527 Tile Mortar

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 53: Core environmental impact results for the product LIP 527 Tile Mortar

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	3,92E-01	4,35E-02	6,88E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	4,02E-01	4,35E-02	3,80E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,08E-02	3,42E-05	3,07E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	5,33E-04	1,64E-05	6,04E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,16E-08	1,08E-08	1,98E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	1,49E-03	1,39E-04	1,68E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	7,68E-05	2,84E-06	1,78E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	3,54E-04	3,11E-05	4,28E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,87E-03	3,39E-04	3,38E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,15E-03	1,34E-04	1,04E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	1,98E-06	1,04E-07	2,56E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,84E+00	7,08E-01	6,56E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	9,68E-02	2,44E-03	1,71E-02	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 54: Additional environmental impact results for the product LIP 527 Tile Mortar

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	4,28E-01	4,32E-02	5,03E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	1,74E-08	5,05E-09	1,20E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	2,60E-02	3,58E-03	9,85E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	4,57E+00	5,53E-01	4,72E-01	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	2,60E-10	1,51E-11	2,61E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	9,80E-09	5,83E-10	8,25E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	5,97E+00	8,12E-01	1,81E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 55: Resource use - LIP 527 Tile Mortar

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5,70E-01	9,52E-03	7,60E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	3,00E-01	0	0	0	0	0	0	0
PERT	MJ	8,70E-01	9,52E-03	7,60E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	4,15E+00	7,52E-01	5,50E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,02E+00	0	0	0	0	0	0	0
PENRT	MJ	5,17E+00	7,52E-01	5,50E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	9,43E-02	2,46E-03	1,65E-02	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 56: Waste - LIP 527 Tile Mortar

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0	0	0	0	0	0	0	0
Non-hazardous waste disposed	kg	0	0	0	0	0	0	0	0
Radioactive waste disposed	kg	0	0	0	0	0	0	0	0

Output flows

Table 57: Output flows - LIP 527 Tile Mortar

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 58: Biogenic Carbon - LIP 527 Tile Mortar

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	7,25E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2.		

LIP 460 Sheet adhesive coarse flex

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 59: Core environmental impact results for the product LIP 460 Sheet adhesive coarse flex

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	4,27E-01	4,35E-02	6,43E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	4,39E-01	4,35E-02	3,36E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,27E-02	3,42E-05	3,06E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	7,08E-04	1,64E-05	6,67E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	4,64E-08	1,08E-08	2,01E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	2,33E-03	1,39E-04	1,88E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	8,51E-05	2,84E-06	1,81E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	5,45E-04	3,11E-05	4,80E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	5,08E-03	3,39E-04	3,52E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,47E-03	1,34E-04	1,00E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	4,66E-06	1,04E-07	3,50E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	5,77E+00	7,08E-01	5,30E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	1,63E-01	2,44E-03	1,17E-02	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 60: Additional environmental impact results for the product LIP 460 Sheet adhesive coarse flex

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	4,33E-01	4,32E-02	4,45E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,58E-08	5,05E-09	1,23E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	2,34E-02	3,58E-03	9,30E-03	0	3,58E-04	0	6,53E-04	0
ETP-fw**	CTUe	6,70E+00	5,53E-01	5,19E-01	0	5,53E-02	0	9,29E-02	0
HTP-c**	CTUh	2,93E-10	1,51E-11	2,32E-11	0	1,51E-12	0	2,36E-12	0
HTP-nc**	CTUh	7,49E-09	5,83E-10	5,75E-10	0	5,83E-11	0	6,15E-11	0
SQP**	Dimensionless	7,25E+00	8,12E-01	1,98E-01	0	8,09E-02	0	3,09E-01	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 61: Resource use - LIP 460 Sheet adhesive coarse flex

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	6,11E-01	9,52E-03	7,65E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,77E-01	0	0	0	0	0	0	0
PERT	MJ	8,88E-01	9,52E-03	7,65E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	5,14E+00	7,52E-01	5,60E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,02E+00	0	0	0	0	0	0	0
PENRT	MJ	6,16E+00	7,52E-01	5,60E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	1,57E-01	2,46E-03	1,13E-02	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 62: Waste – LIP 460 Sheet adhesive coarse flex

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	7,95E-04	0	3,98E-05	0	0	0	0	0
Non-hazardous waste disposed	kg	5,67E-02	0	2,84E-03	0	0	0	0	0
Radioactive waste disposed	kg	2,83E-06	0	1,42E-07	0	0	0	0	0

Output flows

Table 63: Output flows - LIP 460 Sheet adhesive coarse flex

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 64: Biogenic Carbon - LIP 460 Sheet adhesive coarse flex

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	7,25E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2.		

LIP Natural Stone Grout

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 65: Core environmental impact results for the product LIP Natural Stone Grout

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	5,60E-01	4,35E-02	7,11E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO ₂ eq.	5,69E-01	4,35E-02	4,02E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO ₂ eq.	-1,00E-02	3,42E-05	3,08E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	6,06E-04	1,64E-05	6,17E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	5,24E-08	1,08E-08	2,31E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	2,98E-03	1,39E-04	2,21E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	9,85E-05	2,84E-06	1,88E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	7,46E-04	3,11E-05	5,81E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	6,62E-03	3,39E-04	4,30E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,89E-03	1,34E-04	1,22E-04	0	1,33E-05	0	5,48E-05	0
ADP- minerals&metals**	kg Sb eq.	5,92E-06	1,04E-07	4,14E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	7,57E+00	7,08E-01	6,21E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	2,14E-01	2,44E-03	2,50E-02	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 66: Additional environmental impact results for the product LIP Natural Stone Grout

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	5,61E-01	4,32E-02	5,10E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,71E-08	5,05E-09	1,30E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	5,24E-08	1,08E-08	2,31E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	6,62E-03	3,39E-04	4,30E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	5,39E-09	4,70E-10	4,41E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	6,06E-04	1,64E-05	6,17E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	7,66E+00	5,53E-01	5,68E-01	0	5,53E-02	0	9,29E-02	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 67: Resource use - LIP Natural Stone Grout

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	6,72E-01	9,52E-03	7,75E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,32E-01	0	0	0	0	0	0	0
PERT	MJ	9,04E-01	9,52E-03	7,75E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	6,46E+00	7,52E-01	6,58E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ.	1,63E+00	0	0	0	0	0	0	0
PENRT	MJ	8,08E+00	7,52E-01	6,58E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	2,05E-01	2,46E-03	2,40E-02	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 68: Waste - LIP Natural Stone Grout

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	6,87E-04	0	3,44E-05	0	0	0	0	0
Non-hazardous waste disposed	kg	8,30E-02	0	4,15E-03	0	0	0	0	0
Radioactive waste disposed	kg	9,88E-06	0	4,94E-07	0	0	0	0	0

Output flows

Table 69: Output flows - LIP Natural Stone Grout

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 70: Biogenic Carbon - LIP Natural Stone Grout

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	7,25E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO ₂ .		

LIP Rapid-Setting Tile Adhesive

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding thresholds values, safety margins or risks.

Core environmental impact indicators

Table 71: Core environmental impact results for the product LIP Rapid-Setting Tile Adhesive

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP- total	kg CO ₂ eq.	5,62E-01	4,35E-02	6,58E-02	0	4,35E-03	0	5,28E-03	0
GWP- fossil	kg CO ₂ eq.	5,73E-01	4,35E-02	4,04E-02	0	4,35E-03	0	5,27E-03	0
GWP- biogenic	kg CO ₂ eq.	-1,14E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO ₂ eq.	6,66E-04	1,64E-05	6,51E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	5,56E-08	1,08E-08	2,47E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H ⁺ eq.	3,05E-03	1,39E-04	2,25E-04	0	1,39E-05	0	4,95E-05	0
EP- freshwater	kg P eq.	1,05E-04	2,84E-06	1,93E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	7,11E-04	3,11E-05	5,47E-05	0	3,10E-06	0	1,72E-05	0
EP- terrestrial	mol N eq.	6,52E-03	3,39E-04	4,23E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,85E-03	1,34E-04	1,18E-04	0	1,33E-05	0	5,48E-05	0
ADP- minerals&metals**	kg Sb eq.	6,50E-06	1,04E-07	4,43E-07	0	1,04E-08	0	1,20E-08	0
ADP- fossil**	MJ	7,32E+00	7,08E-01	6,09E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m ³	2,26E-01	2,44E-03	2,51E-02	0	2,43E-04	0	6,62E-03	0
Acronyms	GWP- fossil = Global Warming Potential fossil fuels; GWP- biogenic = Global Warming Potential biogenic; GWP- luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP- freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP- marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP- terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP- minerals&metals = Abiotic depletion potential for non-fossil resources; ADP- fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

Additional environmental impact indicators

Table 72: Additional environmental impact results for the product LIP Rapid-Setting Tile Adhesive

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	5,64E-01	4,32E-02	4,92E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,91E-08	5,05E-09	1,36E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	5,56E-08	1,08E-08	2,47E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	6,52E-03	3,39E-04	4,23E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	5,87E-09	4,70E-10	4,59E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	6,66E-04	1,64E-05	6,51E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	8,57E+00	5,53E-01	6,07E-01	0	5,53E-02	0	9,29E-02	0
Acronyms	GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013. PM = Particulate Matter emissions; IRP = Ionizing radiation, human health; ETP-fw = Eco-toxicity, freshwater; HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality.								

Use of resources

Table 73: Resource use - LIP Rapid-Setting Tile Adhesive

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	6,50E-01	9,43E-03	8,21E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	2,58E-01	0	0	0	0	0	0	0
PERT	MJ	9,08E-01	9,43E-03	8,21E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	6,42E+00	7,52E-01	6,45E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,40E+00	0	0	0	0	0	0	0
PENRT	MJ	7,82E+00	7,52E-01	6,45E-01	0	7,52E-02	0	1,56E-01	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m3	2,17E-01	2,45E-03	2,42E-02	0	2,45E-04	0	6,63E-03	0
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

Waste production

At end of use, when the hardened product is demolished, the LIP Mortars are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 74: Waste - LIP Rapid-Setting Tile Adhesive

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,18E-03	0	5,92E-05	0	0	0	0	0
Non-hazardous waste disposed	kg	8,40E-02	0	4,20E-03	0	0	0	0	0
Radioactive waste disposed	kg	6,34E-06	0	3,17E-07	0	0	0	0	0

Output flows

Table 75: Output flows - LIP Rapid-Setting Tile Adhesive

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	6,00E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Table 76: Biogenic Carbon - LIP Rapid-Setting Tile Adhesive

	Unit	Quantity
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	6,00E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO ₂ .		

Additional information

Fossil free energy:

LIP Bygningsartikler A/S has used fossil free energy since 2014. Today, the energy is delivered from the wind turbine power plant at LINDØ port of Odense from Energy Fyn. The total energy consumption on the site is equivalent to 1100MWh per year.

**Information related to Sector EPD**

This is an individual EPD.

Differences versus previous versions

25-08-2022 Version 2: The reason for updating the EPD is the addition of LIP XXL product that has similarities with the seven products assessed in the first version of the EPD, as shown in Table 1 and 2 with product and performance information, such as the same amount of water and CE marking as LIP Trope Grey Tile Mortar. In the first declaration, i.e. version 1.0, the PCR 2019:14 version 1.0 valid until 2024-12-20 was used and supplemented by sub-PCR Cement and building lime 2012:01. Since then, a complementary c-PCR Cement and building lime 2019:14 to PCR 2019:14 was published and referred to.

There was a change in results because the processes from Ecoinvent database 3.6 were affected by update of the SimaPro software from 9.1.0.7 in 2021 to SimaPro 9.3 in 2022 in order to match with the Ecoinvent 3.8 version.

There was no change in LIP's production data, as all prescriptions are the same for the seven products already assessed, while a new product LIP 527 Tile Mortar is added in 2022.

19-09-2022 Version 3: The reason for updating the EPD is the addition of a new product, LIP 527 Tile Mortar that has similarities with the eight products assessed in the second EPD declaration i.e. version 1.11. Moreover, more specific verified data from suppliers were obtained and integrated with the processes from the generic LCA software database. The change from FU of 1m² to DU of 1kg results in lower values being reported in this version 3 of the EPD. The PCR 2019:14 version 1.11 was used. There was a change in declared results since EPD version 2, due to changes occurring in the products' recipes, mainly regarding cement types, especially for LIP Tropic Tile Mortar – Grey.

However, the use of Ecoinvent database 3.8 was not affected by update of the SimaPro software from 9.3 in March 2022 to SimaPro 9.4 in July 2022.

03-02-2023 Version 4 (this version): The reason for updating the EPD is the addition of three new products, LIP 460 Sheet adhesive coarse flex, LIP Natural Stone Grout and LIP Rapid-Setting Tile Adhesive that have similarities with the nine products assessed in the third EPD declaration. More specifically, LIP Natural Stone Grout and LIP Rapid-Setting Tile Adhesive were transferred from LIP EPD Grouts (registration number S-P-04249 available from EPD International) because their names, technical characteristics and compositions match better with the products represented in this EPD. In addition, more specific verified data from suppliers were obtained and integrated with the processes from the generic LCA software database, leading in maximum 5% variation compared to version 3 of this EPD.

References

Project Report - LIP Tile Mortars, LIP Bygningsartikler A/S, 29-09-2020 (version 1)

Project Report - LIP Tile Mortars, LIP Bygningsartikler A/S, 08-06-2022 (version 2)

Project Report - LIP Tile Mortars, LIP Bygningsartikler A/S, 30-08-2022 (version 3)

Project Report - LIP Tile Mortars, LIP Byggningsartikler A/S, 08-12-2022 (version 4)

General Programme Instruction of the International EPD® System. Version 3.01.

ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures

ISO 14040:2006 Environmental management-Life Cycle Assessment-Principles and framework

ISO 14044:2006 Environmental management-Life Cycle Assessment-Requirements and guidelines

PCR 2019:14 Construction products (EN 15804:A2) version 1.11

EN 15804:2012+A2:2019 Sustainability of construction works-Environmental Product Declarations-Core rules for the product category of construction products

EN 12004:2007+A1:2012 for interior and exterior bonding of ceramic tiles, porcelain, natural stone and mosaics on floors and walls.

Programme-related information and verification

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
EPD registration number:	S-P-02311
Publication date:	16-11-2020 (version 1)
Revision date:	25-08-2022 (version 2)
	19-09-2022 (version 3)
	03-02-2023 (version 4)
Valid until:	29-09-2025 (version 1, version 2, version 3, version 4)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction products (EN 15804:A2) Version 1.11.

PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Claudia Peña. Contact via info@environdec.com

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

Third party verifiers:

Marcus Wending approved by The International EPD® System and

Bureau Veritas Certification Sverige AB accredited by SWEDAC with accreditation number 1236.

Procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes ☒ No

*Disclaimer: 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: 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 experience with the indicator.

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