Environmental Product Declaration

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

LIP Grouts

***from* LIP Bygningsartikler A/S**

Programme: The International EPD® System, www.environdec.com
Programme operator: EPD International AB
EPD registration number: S-P-04249 available from EPD International
Publication date: 2021-11-02 (version 1)
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General information

Owner of the declaration and manufacturer:
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Declaration issued: 2021-11-02

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 a cradle to grave with module D EPD covering the following grouts 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 Multi Grout Manhattan, LIP Multi Grout Grey, LIP Multi Grout Antracite, LIP Multi Grout Jasmin, LIP Multi Grout Pearl, LIP Multi Grout Sand, LIP Multi Grout White, LIP Multi Grout Black.

Figure 1: Picture of the eight 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 the 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 eight products covered by this EPD.

Product name		Article no.	Description
Danish	**English**		
LIP Multifuge Manhattan	LIP Multi Grout Manhattan	230000	5 and 20 kg bags cement based 0.2L water per kg
LIP Multifuge Grå	LIP Multi Grout Grey	230017	5 and 20 kg bags Grey cement based 0.2L water per kg
LIP Multifuge Koksgrå	LIP Multi Grout Antracite	230024	5 and 20 kg bags Antracite cement based 0.2L water per kg
LIP Multifuge Jasmin	LIP Multi Grout Jasmin	51063	5 kg bags

			Cement based 0.2L water per kg
LIP Multifuge Perlehvid	LIP Multi Grout Pearl	230048	5 and 20 kg bags White cement based 0.2L water per kg
LIP Multifuge Sand	LIP Multi Grout Sand	230031	5 and 20 kg bags Cement based 0.2L water per kg
LIP Multifuge Hvid	LIP Multi Grout White	51124	5 kg bags White cement based 0.2L water per kg
LIP Multifuge Sort	LIP Multi Grout Black	51117	5 kg bags Black cement based 0.2L 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 grout. 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 DS/EN 13888 (grouts for ceramic tiles - Requirements, conformity assessment, classification and designations). They are classified as seen in table 2 according to DS/EN 13888 (grouts for ceramic tiles - Requirements, conformity assessment, classification and designations).

Table 2: Performance information for the eight products according to DS/EN 13888.

	LIP Multi Grout Manhattan	**LIP Multi Grout Grey**	**LIP Multi Grout Antracite**	**LIP Multi Grout Jasmin**	**LIP Multi Grout Pearl**	**LIP Multi Grout Sand**	**LIP Multi Grout white**	**LIP Multi Grout black**
Standard	DS/EN 13888	DS/EN 13888	DS/EN 13888	DS/EN 13888	DS/EN 13888	DS/EN 13888	DS/EN 13888	DS/EN 13888
	CG2WA	CG2WA	CG2WA	CG2WA	CG2WA	CG2WA	CG2WA	CG2WA
Bend's tearing strength	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2
Bend's tearing strength after freeze-thaw cycles	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2	≥ 3.5 N/mm2
Crushing strength	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2
Crushing strength after freeze-thaw cycles	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2	≥ 15 N/mm2

Air emission

All the eight Grouts 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 attached for GEV-EMICODE.

Content declaration

Content declaration including packaging covering the eight LIP Grouts in this EPD.

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

LIP Grouts			
Product components	**Weight%**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Silica sand	35 - 60	0%	0%
Cement	25 - 30	0%	0%
Dolomite	0 - 30	0%	0%
Additives	1 - 10	0%	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	
Bags / PE-film	0.5 g/kg product	0.05 %	
Transport packaging / PE-film	0.6 g/kg product	0.06 %	
Total:			

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. All the electricity comes 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. 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.

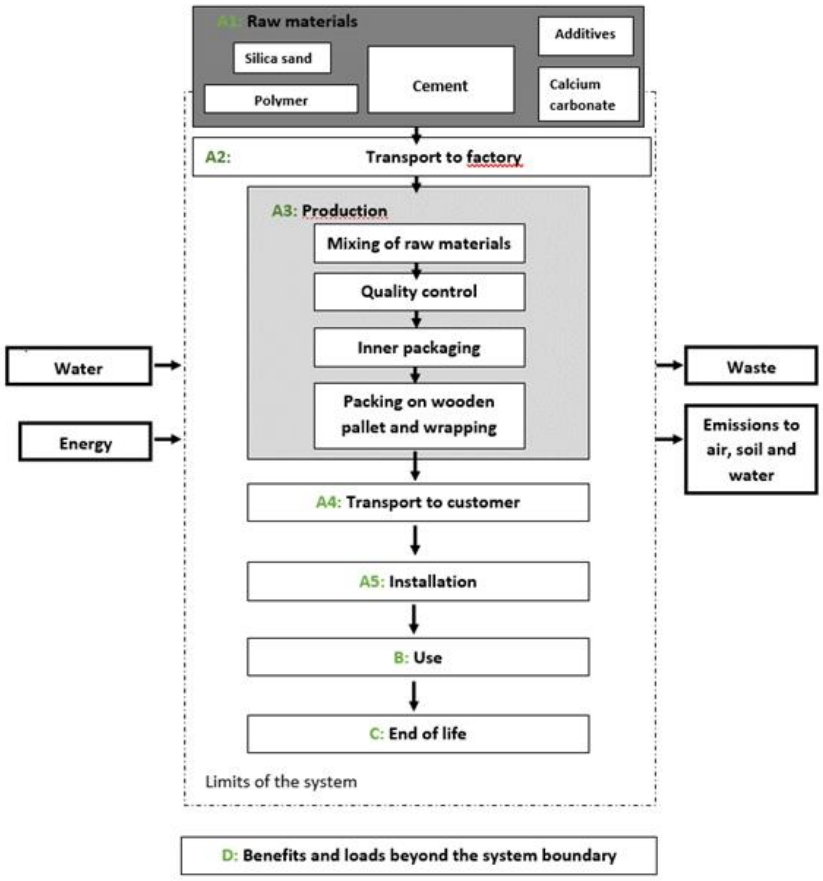

Figure 2: Limits of the system in this study.

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 Bygningsartikler 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 0.216 MJ/kg. 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 service life, if professionally used and properly installed.

End of life stage (C1-C4):

- C1: deconstruction and demolition of the product into the building. Grouts 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 these applications 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 as landfill after end of life, so waste processing is negligible.
- C4: Waste disposal in landfill 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 26 of this EPD report.

LIP Multi Grout Manhattan

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 Multi Grout Manhattan

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2 eq.	4,38E-01	4,35E-02	5,96E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO_2 eq.	4,48E-01	4,35E-02	3,41E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO_2 eq.	-1,05E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO_2 eq.	3,97E-04	1,64E-05	5,16E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,39E-08	1,08E-08	1,38E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H^+ eq.	2,15E-03	1,39E-04	1,79E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	4,98E-05	2,84E-06	1,65E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	3,44E-04	3,11E-05	3,63E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,65E-03	3,39E-04	2,80E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,51E-03	1,34E-04	1,01E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	1,82E-06	1,04E-07	2,09E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,59E+00	7,08E-01	4,72E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m^3	2,57E+00	2,44E-03	1,40E-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 6: Additional environmental impact results for the product Multi Grout Manhattan

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	4,39E-01	4,32E-02	4,29E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	1,87E-08	5,05E-09	8,47E-10	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	3,39E-08	1,08E-08	1,38E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	3,65E-03	3,39E-04	2,80E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	3,14E-09	4,70E-10	3,22E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	3,97E-04	1,64E-05	5,16E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	2,09E+00	5,53E-01	2,83E-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 7: Resource use - LIP Multi Grout Manhattan

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,26E-01	9,43E-03	6,76E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	1,95E-01	0	0	0	0	0	0	0
PERT	MJ	6,21E-01	9,43E-03	6,76E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,08E+00	7,52E-01	4,14E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ.	1,26E-01	0	0	0	0	0	0	0
PENRT	MJ	3,21E+00	7,52E-01	4,14E-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	2,70E-02	2,45E-03	1,30E-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 id demolished, the LIP Grouts are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 8: Waste - LIP Multi Grout Manhattan

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,28E-03	0	2,14E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	8,65E-02	0	4,33E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,69E-05	0	8,43E-07	0	0	0	0	0

Output flows

Table 9: Output flows - LIP Multi Grout Manhattan

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 Multi Grout Manhattan

	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 Multi Grout 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 Grout Grey

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2 eq.	4,41E-01	4,35E-02	5,98E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO_2 eq.	4,51E-01	4,35E-02	3,43E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO_2 eq.	-1,05E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO_2 eq.	4,03E-04	1,64E-05	5,19E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,49E-08	1,08E-08	1,43E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H^+ eq.	2,17E-03	1,39E-04	1,80E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	5,12E-05	2,84E-06	1,66E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	3,48E-04	3,11E-05	3,65E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,69E-03	3,39E-04	2,82E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,52E-03	1,34E-04	1,02E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	1,90E-06	1,04E-07	2,13E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,63E+00	7,08E-01	4,74E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m^3	2,57E+00	2,44E-03	1,41E-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 12: Additional environmental impact results for the product LIP Multi Grout Grey

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	4,42E-01	4,32E-02	4,31E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	1,89E-08	5,05E-09	8,55E-10	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	3,49E-08	1,08E-08	1,43E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	3,69E-03	3,39E-04	2,82E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	3,20E-09	4,70E-10	3,25E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	4,03E-04	1,64E-05	5,19E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	2,16E+00	5,53E-01	2,86E-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 13: Resource use - LIP Multi Grout Grey

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,29E-01	9,43E-03	6,78E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	1,95E-01	0	0	0	0	0	0	0
PERT	MJ	6,24E-01	9,43E-03	6,78E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,12E+00	7,52E-01	4,16E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ.	1,26E-01	0	0	0	0	0	0	0
PENRT	MJ	3,25E+00	7,52E-01	4,16E-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	2,87E-02	2,45E-03	1,31E-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 Grouts are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 14: Waste - LIP Multi Grout Grey

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,29E-03	0	2,14E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	8,67E-02	0	4,33E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,67E-05	0	8,33E-07	0	0	0	0	0

Output flows

Table 15: Output flows - LIP Multi Grout 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 Grout 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 Multi Grout Antracite

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 Grout Antracite

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2 eq.	4,64E-01	4,35E-02	6,09E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO_2 eq.	4,74E-01	4,35E-02	3,54E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO_2 eq.	-1,05E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO_2 eq.	4,33E-04	1,64E-05	5,34E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,96E-08	1,08E-08	1,66E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H^+ eq.	2,30E-03	1,39E-04	1,87E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	5,77E-05	2,84E-06	1,69E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	3,69E-04	3,11E-05	3,76E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,90E-03	3,39E-04	2,93E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,59E-03	1,34E-04	1,06E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	2,24E-06	1,04E-07	2,30E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,87E+00	7,08E-01	4,86E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m^3	2,66E+00	2,44E-03	1,45E-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 Grout Antracite

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	4,64E-01	4,32E-02	4,42E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	1,98E-08	5,05E-09	9,00E-10	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	3,96E-08	1,08E-08	1,66E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	3,90E-03	3,39E-04	2,93E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	3,51E-09	4,70E-10	3,40E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	4,33E-04	1,64E-05	5,34E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	2,50E+00	5,53E-01	3,03E-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 19: Resource use - LIP Multi Grout Antracite

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,42E-01	9,43E-03	6,85E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	1,95E-01	0	0	0	0	0	0	0
PERT	MJ	6,37E-01	9,43E-03	6,85E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,32E+00	7,52E-01	4,26E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ.	1,26E-01	0	0	0	0	0	0	0
PENRT	MJ	3,45E+00	7,52E-01	4,26E-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	3,62E-02	2,45E-03	1,35E-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 Grouts are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 20: Waste - LIP Multi Grout Antracite

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,43E-03	0	2,21E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	8,95E-02	0	4,48E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,50E-05	0	7,50E-07	0	0	0	0	0

Output flows

Table 21: Output flows - LIP Multi Grout Antracite

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 Grout Antracite

	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 Multi Grout Jasmin

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 Grout Jasmin

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2 eq.	4,37E-01	4,35E-02	5,96E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO_2 eq.	4,47E-01	4,35E-02	3,41E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO_2 eq.	-1,05E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO_2 eq.	3,96E-04	1,64E-05	5,15E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,37E-08	1,08E-08	1,37E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H^+ eq.	2,15E-03	1,39E-04	1,79E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	4,95E-05	2,84E-06	1,65E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	3,43E-04	3,11E-05	3,63E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,64E-03	3,39E-04	2,79E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,51E-03	1,34E-04	1,01E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	1,81E-06	1,04E-07	2,08E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,58E+00	7,08E-01	4,72E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m^3	2,57E+00	2,44E-03	1,40E-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 24: Additional environmental impact results for the product LIP Multi Grout Jasmin

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	4,38E-01	4,32E-02	4,29E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	1,87E-08	5,05E-09	8,46E-10	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	3,37E-08	1,08E-08	1,37E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	3,64E-03	3,39E-04	2,79E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	3,13E-09	4,70E-10	3,21E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	3,96E-04	1,64E-05	5,15E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	2,08E+00	5,53E-01	2,82E-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 25: Resource use - LIP Multi Grout Jasmin

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,25E-01	9,43E-03	6,76E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	1,95E-01	0	0	0	0	0	0	0
PERT	MJ	6,20E-01	9,43E-03	6,76E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,08E+00	7,52E-01	4,14E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,26E-01	0	0	0	0	0	0	0
PENRT	MJ	3,20E+00	7,52E-01	4,14E-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	2,66E-02	2,45E-03	1,30E-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 Grouts are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 26: Waste - LIP Multi Grout Jasmin

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,28E-03	0	2,14E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	8,66E-02	0	4,33E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,69E-05	0	8,44E-07	0	0	0	0	0

Output flows

Table 27: Output flows - LIP Multi Grout Jasmin

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 Grout Jasmin

	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 Multi Grout Pearl

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 Multi Grout Pearl

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2 eq.	4,37E-01	4,35E-02	5,96E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO_2 eq.	4,47E-01	4,35E-02	3,41E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO_2 eq.	-1,05E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO_2 eq.	3,96E-04	1,64E-05	5,15E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,37E-08	1,08E-08	1,37E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H^+ eq.	2,15E-03	1,39E-04	1,79E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	4,96E-05	2,84E-06	1,65E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	3,43E-04	3,11E-05	3,63E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,64E-03	3,39E-04	2,79E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,51E-03	1,34E-04	1,01E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	1,81E-06	1,04E-07	2,08E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,58E+00	7,08E-01	4,72E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m^3	2,57E+00	2,44E-03	1,40E-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 30: Additional environmental impact results for the product LIP Multi Grout Pearl

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	4,38E-01	4,32E-02	4,29E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	1,87E-08	5,05E-09	8,46E-10	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	3,37E-08	1,08E-08	1,37E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	3,64E-03	3,39E-04	2,79E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	3,13E-09	4,70E-10	3,21E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	3,96E-04	1,64E-05	5,15E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	2,08E+00	5,53E-01	2,82E-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 31: Resource use - LIP Multi Grout Pearl

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,25E-01	9,43E-03	6,76E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	1,95E-01	0	0	0	0	0	0	0
PERT	MJ	6,20E-01	9,43E-03	6,76E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,08E+00	7,52E-01	4,14E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,26E-01	0	0	0	0	0	0	0
PENRT	MJ	3,20E+00	7,52E-01	4,14E-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	2,67E-02	2,45E-03	1,30E-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 Grouts are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 32: Waste - LIP Multi Grout Pearl

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,28E-03	0	2,14E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	8,65E-02	0	4,33E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,69E-05	0	8,44E-07	0	0	0	0	0

Output flows

Table 33: Output flows - LIP Multi Grout Pearl

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 Multi Grout Pearl

	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 Multi Grout Sand

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 Multi Grout Sand

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2 eq.	4,37E-01	4,35E-02	5,96E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO_2 eq.	4,48E-01	4,35E-02	3,41E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO_2 eq.	-1,05E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO_2 eq.	3,96E-04	1,64E-05	5,16E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,38E-08	1,08E-08	1,38E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H^+ eq.	2,15E-03	1,39E-04	1,79E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	4,96E-05	2,84E-06	1,65E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	3,44E-04	3,11E-05	3,63E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	3,64E-03	3,39E-04	2,80E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,51E-03	1,34E-04	1,01E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	1,81E-06	1,04E-07	2,09E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	4,58E+00	7,08E-01	4,72E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m^3	2,57E+00	2,44E-03	1,40E-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 36: Additional environmental impact results for the product LIP Multi Grout Sand

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	4,38E-01	4,32E-02	4,29E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	1,87E-08	5,05E-09	8,46E-10	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	3,38E-08	1,08E-08	1,38E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	3,64E-03	3,39E-04	2,80E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	3,14E-09	4,70E-10	3,21E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	3,96E-04	1,64E-05	5,16E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	2,08E+00	5,53E-01	2,82E-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 37: Resource use - LIP Multi Grout Sand

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,25E-01	9,43E-03	6,76E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	1,95E-01	0	0	0	0	0	0	0
PERT	MJ	6,20E-01	9,43E-03	6,76E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,08E+00	7,52E-01	4,14E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,26E-01	0	0	0	0	0	0	0
PENRT	MJ	3,20E+00	7,52E-01	4,14E-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	2,68E-02	2,45E-03	1,30E-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 Grouts are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 38: Waste - LIP Multi Grout Sand

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,28E-03	0	2,14E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	8,66E-02	0	4,33E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,69E-05	0	8,44E-07	0	0	0	0	0

Output flows

Table 39: Output flows - LIP Multi Grout Sand

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 Multi Grout Sand

	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 Multi Grout 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 Multi Grout White

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2 eq.	4,92E-01	4,35E-02	6,23E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO_2 eq.	5,02E-01	4,35E-02	3,68E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO_2 eq.	-1,00E-02	3,62E-05	2,55E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO_2 eq.	4,32E-04	1,64E-05	5,33E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	3,93E-08	1,08E-08	1,65E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H^+ eq.	3,29E-03	1,39E-04	2,37E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	6,74E-05	2,84E-06	1,74E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	4,05E-04	3,11E-05	3,94E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	4,18E-03	3,39E-04	3,06E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,74E-03	1,34E-04	1,13E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	2,20E-06	1,04E-07	2,28E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	5,24E+00	7,08E-01	5,05E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m^3	2,69E+00	2,44E-03	1,47E-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 Multi Grout White

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	4,92E-01	4,32E-02	4,56E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,32E-08	5,05E-09	1,07E-09	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	3,93E-08	1,08E-08	1,65E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	4,18E-03	3,39E-04	3,06E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	3,76E-09	4,70E-10	3,52E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	4,32E-04	1,64E-05	5,33E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	3,60E+00	5,53E-01	3,58E-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 43: Resource use - LIP Multi Grout White

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,82E-01	9,43E-03	7,05E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	1,95E-01	0	0	0	0	0	0	0
PERT	MJ	6,77E-01	9,43E-03	7,05E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,74E+00	7,52E-01	4,47E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,26E-01	0	0	0	0	0	0	0
PENRT	MJ	3,87E+00	7,52E-01	4,47E-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	9,29E-02	2,45E-03	1,63E-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 Grouts are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 44: Waste - LIP Multi Grout White

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,37E-03	0	2,19E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	8,85E-02	0	4,42E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,58E-05	0	7,88E-07	0	0	0	0	0

Output flows

Table 45: Output flows - LIP Multi Grout 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 Multi Grout 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 CO2.		

LIP Multi Grout Black

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 47: Core environmental impact results for the product LIP Multi Grout Black

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2 eq.	4,88E-01	4,35E-02	6,21E-02	0	4,35E-03	0	5,28E-03	0
GWP-fossil	kg CO_2 eq.	4,98E-01	4,35E-02	3,66E-02	0	4,35E-03	0	5,27E-03	0
GWP-biogenic	kg CO_2 eq.	-1,03E-02	3,62E-05	2,54E-02	0	4,62E-06	0	5,72E-06	0
GWP- luluc	kg CO_2 eq.	4,98E-04	1,64E-05	5,67E-05	0	1,63E-06	0	4,97E-06	0
ODP	kg CFC 11 eq.	5,31E-08	1,08E-08	2,34E-09	0	1,08E-09	0	2,13E-09	0
AP	mol H^+ eq.	2,46E-03	1,39E-04	1,95E-04	0	1,39E-05	0	4,95E-05	0
EP-freshwater	kg P eq.	7,52E-05	2,84E-06	1,78E-05	0	2,83E-07	0	4,82E-07	0
EP- marine	kg N eq.	4,07E-04	3,11E-05	3,95E-05	0	3,10E-06	0	1,72E-05	0
EP-terrestrial	mol N eq.	4,30E-03	3,39E-04	3,12E-04	0	3,39E-05	0	1,88E-04	0
POCP	kg NMVOC eq.	1,68E-03	1,34E-04	1,10E-04	0	1,33E-05	0	5,48E-05	0
ADP-minerals&metals**	kg Sb eq.	3,18E-06	1,04E-07	2,77E-07	0	1,04E-08	0	1,20E-08	0
ADP-fossil**	MJ	5,28E+00	7,08E-01	5,07E-01	0	7,08E-02	0	1,47E-01	0
WDP **	m^3	2,57E+00	2,44E-03	1,40E-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 48: Additional environmental impact results for the product LIP Multi Grout Black

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	4,88E-01	4,32E-02	4,54E-02	0	4,32E-03	0	5,18E-03	0
PM	disease inc.	2,15E-08	5,05E-09	9,87E-10	0	5,05E-10	0	9,97E-10	0
IRP*	kBq U235 eq	5,31E-08	1,08E-08	2,34E-09	0	1,08E-09	0	2,13E-09	0
ETP-fw**	CTUe	4,30E-03	3,39E-04	3,12E-04	0	3,39E-05	0	1,88E-04	0
HTP-c**	CTUh	4,23E-09	4,70E-10	3,76E-10	0	4,69E-11	0	2,55E-11	0
HTP-nc**	CTUh	4,98E-04	1,64E-05	5,67E-05	0	1,63E-06	0	4,97E-06	0
SQP**	Dimensionless	3,49E+00	5,53E-01	3,53E-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 49: Resource use - LIP Multi Grout Black

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,97E-01	9,43E-03	7,12E-02	0	9,00E-04	0	1,25E-03	0
PERM	MJ	1,95E-01	0	0	0	0	0	0	0
PERT	MJ	6,92E-01	9,43E-03	7,12E-02	0	9,00E-04	0	1,25E-03	0
PENRE	MJ	3,84E+00	7,52E-01	4,52E-01	0	7,52E-02	0	1,56E-01	0
PENRM	MJ	1,26E-01	0	0	0	0	0	0	0
PENRT	MJ	3,97E+00	7,52E-01	4,52E-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	5,92E-02	2,45E-03	1,46E-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 Grouts are non-hazardous building waste. The waste from packing material is also assumed to be non-hazardous waste.

Table 50: Waste - LIP Multi Grout Black

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,22E-03	0	2,11E-04	0	0	0	0	0
Non-hazardous waste disposed	kg	8,54E-02	0	4,27E-03	0	0	0	0	0
Radioactive waste disposed	kg	1,43E-05	0	7,16E-07	0	0	0	0	0

Output flows

Table 51: Output flows - LIP Multi Grout Black

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 Multi Grout Black

	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.		

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 1100 MWh per year.

Information related to Sector EPD

This is an individual EPD.

Differences versus previous versions

03-02-2023 (version 2, this version): The reason for updating the EPD is that based on yearly EPD surveillance plan LIP procured more specific EPD verified data from suppliers and integrated with the processes from the generic LCA software database, leading in more than 10% variation compared to the original version of this EPD.

References

Project Report - LIP Grouts, LIP Bygningsartikler A/S, 2023
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.
DS/EN 13888 (Grout wall plasters for ceramic tiles - Requirements, conformity assessment, classification and designations).

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-04249
Published:	2021-11-02 (version 1)
Revised:	2023-02-03 (version 2)
Valid until:	2026-10-28 (version 1, 2)

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. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Camilla Landén, Bureau Veritas Certification Sverige AB Accredited by: SWEDAC
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 experienced with the indicator.

Contact information

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- when building on quality!

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3rd party verifiers	First version: Bureau Veritas Certification Sverige AB Camilla Landen Fabriksgatan 13, 412 50, Göteborg,Sweden https://www.bureauveritas.se/
	Second version: Bureau Veritas Certification Sverige AB Viktor Hakkarainen Fabriksgatan 13, 412 50, Göteborg,Sweden https://www.bureauveritas.se/