Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

LIP Tile Mortars – Group 4

from

LIP Bygningsartikler A/S, Industrivej 16 · DK-5580 Nørre Aaby

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products, based on worst-case results
EPD registration number:	**EPD-IES-0009194:003**
Version date:	2026-03-13
Validity date:	2031-03-13
	An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

Products Included In This EPD: • LIP Multi Light 544• LIP XXL Tile Mortar.
Representative Product: LIP XXL Tile Mortar. (Worst-Case Approach per PCR 2019:14 v2.0.1, Section 4.10.1).

GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804:2012+A2:2019 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 v.2.0.1 Construction Products
PCR review was conducted by: The Technical Committee of the International EPD® System. See https://www.environdec.com/about-us/international-epd-system. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat https://www.environdec.com/support.

LCA-practitioner
Odyssefs Papagiannidis, LCA & EPD Consultant, Bureau Veritas Solutions Denmark A/S
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Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: Bureau Veritas Certification Sverige AB, Fabriksgatan 13, 412 50 Göteborg, Sweden Approved by: International EPD System Accredited by: SWEDAC, accreditation number 1236
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

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 15804:2012+A2:2019 and PCR 2019:14 v 2.0.1.

Compliance: This EPD uses EPD's based on EF 3.0 as data sources for calcium aluminate binders and ground calcium carbonate. For GWP-GHG and non-toxicity indicators, these were assessed to yield identical or conservative results compared to fully using EF 3.1. For toxicity indicators, these EPD's are classified as representative secondary data in accordance with PCR 2019:14 v 2.0.1 section 4.6.3 requirements.

Share of Primary Data Disclaimer: The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPD's. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: LIP Bygningsartikler A/S

Address: Industrivej 16 · DK-5580 Nørre Aaby, Denmark

Contact: Dorthe Vogt Johnsen - Product Manager, Wet room & Tiling, Bostik & LIP Nordic

Address and contact information of the LCA practitioner commissioned by the EPD owner:
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Description of the organisation:
LIP Bygningsartikler A/S is a Danish company specializing in the manufacturing of high-quality construction chemicals and building materials. Founded in 1967, the company has established itself as a reliable producer in the Danish construction industry over more than five decades of operation, consistently delivering products at competitive prices while maintaining strict quality standards.

The company's product portfolio has evolved significantly since its inception, starting with tile adhesives and sealants and expanding to encompass a comprehensive range of construction chemicals including flooring putty, waterproofing systems, silicone products, epoxy formulations, and various filler compounds. This diversified product range positions LIP Bygningsartikler A/S as a one-stop solution provider for professional contractors and construction projects requiring specialized chemical building products.

LIP Bygningsartikler A/S operates under the corporate philosophy embodied in their slogan "LIP - when building on quality!" This commitment to quality has been the cornerstone of their business model, ensuring that all products meet rigorous performance standards and customer expectations. The company's Danish manufacturing base allows for close quality control and efficient distribution throughout Denmark and potentially neighbouring markets.

LIP Bygningsartikler A/S maintains a robust quality management system that encompasses both internal and external quality control measures. The company's manufacturing operations in Denmark are subject to continuous monitoring and testing protocols to ensure consistent product performance and compliance with relevant industry standards and regulations.

The company's quality assurance framework includes regular internal quality checks throughout the production process, complemented by external quality control assessments conducted by independent testing organizations. This dual-layer approach to quality management ensures that every product leaving the facility meets the high standards associated with the LIP brand and complies with Danish and European construction product regulations.

PRODUCT INFORMATION

Product names: LIP Multi Light 544, LIP XXL Tile Mortar

Visual representation of the products:

LIP Multi Light 544

LIP XXL Tile Mortar

UN CPC code: 3733 - Refractory cements, mortars, concretes and similar compositions N.E.C.

Product description:
The LIP Tile Mortars Group 4 encompasses two distinct products manufactured by LIP Bygningsartikler A/S in their state-of-the-art production facility located in Nørre Aaby, Denmark. These specialized adhesive systems include the LIP Multi Light 544, and LIP XXL Tile Mortar, representing a comprehensive solution for complex construction applications.

These products are designed to address a wide range of material bonding requirements, including wall and floor tile installations, marble bonding, facing brick applications, insulation material fixing such as glass wool and Rockwool, polystyrene veneer attachments, and various specialized construction material interfaces.

The manufacturing process starts from raw materials purchased from suppliers and stored in the plant. Bulk materials are stored in specialized silos and precisely allocated through automated processes. Additional materials supplied in bags or big bags are stored in dedicated warehouse sections and integrated into the production process through both automated and manual mixing techniques.

LIP employs a discontinuous batch production process characterized by mechanical mixing of components, ensuring strict adherence to product-specific formulations. This methodical approach guarantees consistent performance across the entire Group 4 product range. Each batch undergoes

rigorous quality control, with semi-finished products packaged in specialized bags, placed on wooden pallets protected by stretched hoods, and stored in a dedicated 'Finished Products' warehouse section.

The tile mortars in Group 4 are supplied in a dry, pre-mixed form that requires water addition at the construction site. Each product variant has precisely defined water requirements, designed to create high-performance deformable cementitious adhesives that meet the most demanding construction challenges. This innovative approach allows for flexible on-site application while maintaining exceptional technical performance.

Name and location of production site: LIP Bygningsartikler A/S, Industrivej 16, 5580 Nørre Aaby, Denmark.

Product names		Article no.	Description
Danish	English		
LIP Multi Let 544	LIP Multi Light 544	31075065	15 kg bags 0.9 kg/m^2/mm 0.57L water per kg
LIP XXL Storformat Fliseklæb	LIP XXL Tile Mortar	31075043	20 kg bags 1.4 kg/m2/mm White cement based 0.17L 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 reason for using 1 kg and not 1 m^2 is that the product consumption varies depending on the size of the tile, unevenness, grout size.

Reference Service Life: The Reference Service Life (RSL) of premade mortar 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 LIP tile mortars of group 4 are professionally engineered, manufactured, and CE marked in strict compliance with EN 12004 standard for tile adhesives, encompassing comprehensive requirements for performance evaluation, conformity assessment, classification, and designation.

Each product within this group is meticulously classified according to EN 12004:2007+A1:2012, specifically designed for versatile interior and exterior bonding applications, including: ceramic tiles, porcelain surfaces, natural stone installations, mosaic applications, floor and wall systems:

1. LIP Multi Light 544
   Specific Performance: Lightweight tile mortar with enhanced workability characteristics
   Comprehensive CE marking details and technical specifications are available on LIP's official website: https://lip.dk/da/produkter/klaebning-af-fliser-og-klinker/lip-multi-let-544-fliseklaeb.

2. LIP XXL Tile Mortar
   Specific Performance: High deformability, superior adhesion for large format tiles
   Comprehensive CE marking details and technical specifications are available on LIP's official website: https://lip.dk/produkter/klaebning-af-fliser-og-klinker/lip-xxl-storformat-fliseklaeb

	LIP Multi Light 544	LIP XXL Tile Mortar
	C2-TE-S1	C2-FE-S2
Initial tensile adhesion strength	≥ 1 N/mm2	≥ 1 N/mm2
Early tensile adhesion strength after 6 hours	N/A	≥ 0.5 N/mm2
Tensile adhesion strength after heat aging	≥ 1 N/mm2	≥ 1 N/mm2
Tensile adhesion strength after water immersion	≥ 1 N/mm2	≥ 1 N/mm2
Tensile adhesion strength after freeze -thaw cycles	≥ 1 N/mm2	≥ 1 N/mm2

REPRESENTATIVE PRODUCT INFORMATION FOR GROUP 4

EPD Methodology: Worst-Case Representative Product Approach

This Environmental Product Declaration (EPD) for LIP Tile Mortars Group 4 is developed using a worst-case representative product methodology in accordance with PCR 2019:14 v2.0.1 Section 4.10.1. The EPD presents environmental performance results based on the product within Group 4 that demonstrates the highest environmental impact across all declared indicators.

Representative Product Selection

LIP XXL Tile Mortar has been identified and selected as the representative product for Group 4 based on comprehensive environmental impact analysis. This selection ensures that the EPD results represent the upper boundary of environmental performance for all products within this group.

Environmental Impact Analysis Supporting Selection

The selection of LIP XXL Tile Mortar as the representative product is based on detailed life cycle impact assessment comparing both products across all mandatory EN 15804 indicators. For Environmental Assessment Applications:

- LIP Multi Light 544 will have environmental impacts equal to or lower than the declared values
- LIP XXL Tile Mortar environmental impacts are accurately represented by the declared values

Air emission: LIP tile mortars covered in this EPD has low dust technology and very low emission of volatile organic compounds and documented with GEV-EMICODE EC 1PLUS. Documentation for GEV-EMICODE can be found on https://www.emicode.com/en/produkt/lip-bygningsartikler-a-s-2/ and can be provided upon request.

CONTENT DECLARATION

The content declaration of this Environmental Product Declaration (EPD) covers the LIP Tile Mortars within Group 4, encompassing two distinct products: LIP Multi Light 544, and LIP XXL Tile Mortar.

LIP Tile Mortars Group 4				
Product components		**Weight-%**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Silica sand		19% - 48%	0%	0%
Cement		35% - 64%	0%	0%
Additives		16% - 17%	0%	0%
Packaging materials		**Weight, kg**	**Weight-% (versus the product)**	
Bags	Paper	0.0122 kg/kg product (for 15 kg bag) 0.0145 kg/kg product (for 20 kg bag)	1.22% (for 15 kg bag) 1.45% (for 20 kg bag)	
	PE-film	0.0005 kg/kg product	0.05%	
Transport packaging	PE-film	0.0006 kg/kg product	0.06%	

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.

Hazardous substances from the candidate list of SVHC	EC No.	CAS No.	Mass-% per product or declared unit
No present in the product	ND	ND	0

LCA INFORMATION

Declared unit: 1 kg of dry-packed mortar

Time representativeness: LCA data covers the complete production year of 2024

Geographical scope: The geographical scope is Europe

Database(s) and LCA software used: SimaPro 10.2
Most processes in the LCA software have been modelled using the ecoinvent database 3.11. The database is 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 specific EPD's for their raw materials were used.
EPD's used as input data along with their EPD-related information (i.e., EPD program, validity dates, owner, etc.) are presented in the LCA project report in order to preserve supplier confidentiality. The input EPD's are valid and approved by the EPD International System, www.environdec.com.
The impact models used are the ones included in the SimaPro method named EN 15804+A2 Method V1.03 / EF 3.1 normalization and weighting set. The chosen LCIA categories are the ones used in EN 15804+A2 as implemented in SimaPro 10.2. The connection between impact categories and indicators covered, along with the disclaimers for some indicators, can be found later in this document.

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 are regarded as below the cut-off criterion of 1%.
Particular care should be taken to include material and energy flows known to have the potential to cause significant emissions into air, water, or soil related to the environmental indicators presented in EN 15804.
The LCA study is based on known specific activity data for packaging materials and 100% product prescription. Loss of product during installation is regarded as below cut-off. The energy needed to break the product is less than 0.1% of the total life cycle energy, so it falls under the cut-off rules of this study.

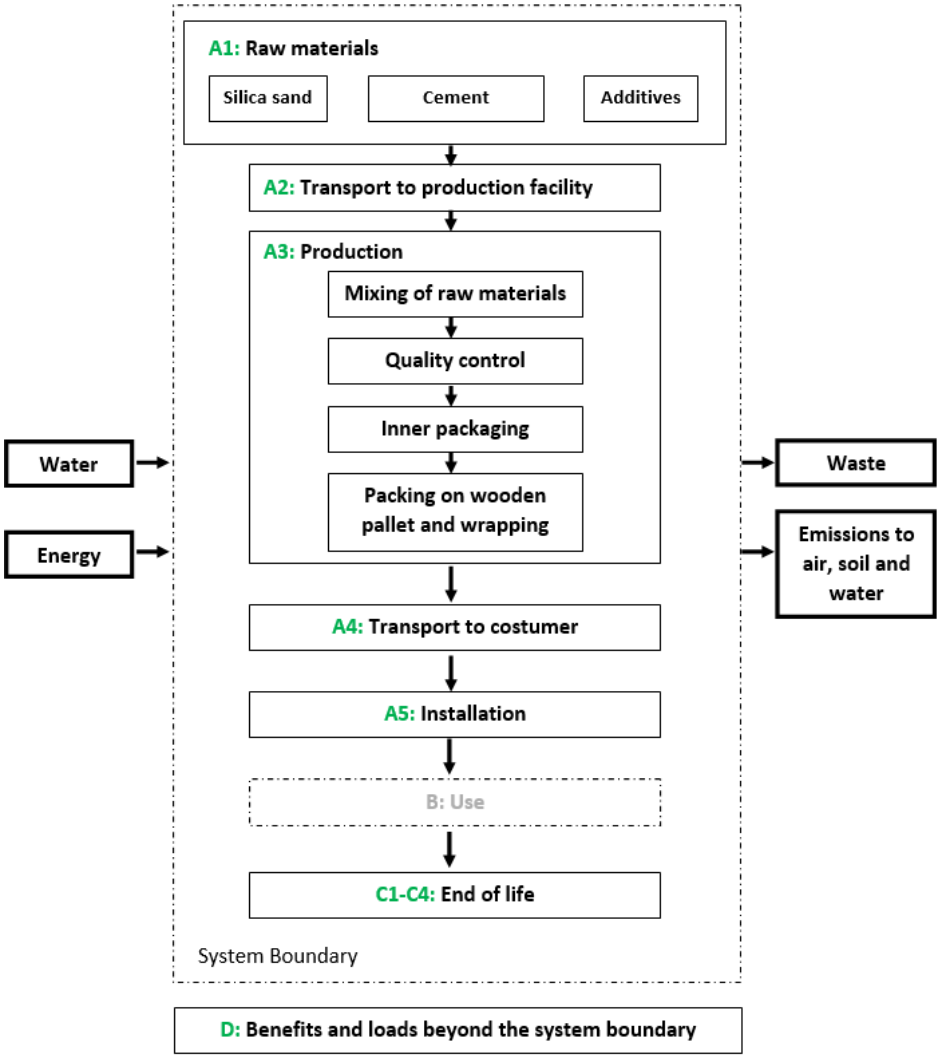
Allocation principles and procedures: Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per EN 15804, allocation is conducted in the following order:

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 all by-products are classified as recyclable. Markets in this model include all activities in proportion to their current production volume.
However, there are no co-products, and therefore no allocation between products besides energy.
The product is not designed for reuse, recycling, or recovery. The product is expected to be disposed of in landfill after end of life or granulated for road fill with other construction waste.
However, the wrapping plastic used during transport to customers is expected to be recycled, as it is a pure plastic material and can easily be sorted for recycling by the recipient.

Description of system boundaries: This declaration is based on Cradle-to-Gate with options, modules C1-C4, module D. Optional modules included are A4-A5.

Process flow diagram:



Product stage (A1-A3):

- (A1-A2) Raw Material Sourcing and Transportation:
  The raw materials for the LIP Tile Mortars Group 4 - including LIP Multi Light 544, and LIP XXL Tile Mortar - are selected and purchased from European suppliers.
- (A3) Manufacturing Process and Allocation:
  The manufacturing process for Group 4 tile mortars involves a sophisticated approach to material allocation and energy management. The mass allocation factor is calculated at 0.109 MJ/kg based on 2024 production data. To ensure transparency and precision, LIP applies an economic allocation methodology that considers total site revenue and electricity consumption. This allocation approach has been consistently implemented across all LIP product lines, including floor screeds, grouts, wall plasters, tile mortars, and primers. By extensively analyzing revenue and production figures, LIP has developed a nuanced allocation method that reflects the true economic and environmental characteristics of each product.

After applying economic allocation by revenue, approximately 0.145 MJ of energy is used to produce 1 kg of tile mortar in the Group 4 range.

Manufacturing Details:
The production process encompasses precise dosage and mixing of selected raw materials and additives. Each product is engineered to meet specific performance properties while optimizing packaging material consumption. The packaging materials include bag material, wooden pallets, and LDPE wrapping.
The wooden pallets, part of a return system, are not directly included in the environmental assessment. A detailed calculation demonstrates that each pallet can accommodate at least 48 product bags, with an estimated 25 use cycles. This approach allows for a minimal allocation of manufacturing and waste handling impacts - approximately 1/25 of pallet impacts per batch or 1/48 per individual bag.

Waste Management:
The waste generated during the manufacturing process is assessed as negligible. Any raw material waste is either reintegrated into subsequent production processes or directed to appropriate incineration, ensuring minimal environmental impact and maximum resource efficiency.

LIP Bygningsartikler A/S sources its electricity exclusively from wind energy generated at Lindø Port, utilizing onshore wind turbines with a capacity exceeding 3 MW. A verified five-year agreement substantiates the renewable energy procurement.

For the Life Cycle Assessment (LCA) study, emissions factors were derived from the ecoinvent 3.11 environmental impact database, specifically utilizing a Danish wind energy production profile representing >3 MW onshore turbine installations. The selected electricity input profile captures the specific technical and environmental parameters of wind energy generation. The Global Warming Potential (GWP) for greenhouse gas (GHG) emissions from this specific data is 0.0059 kgCO_2eq. per 1 MJ of electricity produced or 0.0215 kgCO_2eq. per 1 kWh of electricity produced.

Construction process stage (A4-A5):

- (A4) Distribution Stage:
  The customers of LIP Bygningsartikler A/S are primarily from Denmark. About 92% of the products produced by LIP at the production site in Nørre Aaby in Denmark, are sold in Denmark, 4% in Sweden, 2% in Norway and 1% in both Germany and the Netherlands. The distance is estimated to be 500km via road transport by a Euro 6 lorry of 32 metric ton. From the production site in Nørre Aaby in Denmark to the farthest edges in Denmark there is less than 400km. Due the fact that about 92% of the product are sold in Denmark, estimation of 500km is a realistic average, a conservative approach.
- (A5) Installation Stage:
  The installation of Group 4 tile mortars involves precise water and energy requirements specific to each product. Water consumption varies between 0.17-0.57 L/kg depending on the specific product and ensures optimal performance and workability.
  The mixing process involves a standardized electricity consumption of 0.216 MJ/kg of the product. This is equivalent to the use of a 1200-Watt handheld mixer for 3 minutes. LIP has implemented a conservative approach to installation, incorporating a 5% material loss estimate that reflects real-world professional installation practices. This approach ensures that the technical specifications and performance expectations are maintained across various application scenarios.

The product specification is available at: https://lip.dk/da/produkter/klaebning-af-fliser-og-klinker/lip-multi-let-544-fliseklaeb

The electricity consumption for mixing during installation is modelled using the Danish electricity consumption mix for 2024, derived from the ecoinvent 3.11. This approach is required by PCR 2.0.1 Section 4.8.2, as the EPD owner has no operational control over the electricity sources used by contractors during installation. The Danish consumption mix was selected as the most representative choice since more than 90% of the market is in Denmark, providing better geographical representativeness than the broader European mix.
The Global Warming Potential (GWP) for greenhouse gas emissions from this specific data is 0.0514 $kgCO_2eq.$ per 1 MJ of electricity produced or 0.185 $kgCO_2eq.$ per 1 kWh of electricity produced.

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:
  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. The energy needed to break the product is less than 0,1% of the total life cycle energy, so it is part of the cut-off rules of this study.
- (C2) Waste Transportation:
  Transport of waste product from demolition to recycling/disposal facility is covered by the distance of 50 km via road transport by a Euro 6 lorry of 32 metric tons.
- (C3) Waste Processing:
  The product is expected to be disposed of in landfill after end of life, so waste processing is negligible.
- (C4) Waste Disposal:
  Waste disposal, including physical pre-treatment, follows standard construction waste management protocols.

D Reuse-Recovery-Recycling potential

Module D calculates the potential environmental benefits of the recycling or reuse of materials. This product has no considerable benefits due to recycling or/and reuse.

Description of system boundaries and the Polluter Pays Principle

For all secondary data the system model 'Allocation, cut-off by classification - unit' is used. This model is based on the approach that primary production of materials is always allocated to the primary user of a material. If a material is recycled, the primary producer does not receive any credit for the provision of any recyclable materials. The consequence is that recyclable materials are available burden-free to recycling processes and secondary (recycled) materials bear only the impacts of the recycling processes. Also, producers of wastes do not receive any credit for the recycling or re-use of products resulting out of any waste treatment.
Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Distribution /installation stage		Use stage	End-of-life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction installation		De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	ND	X	X	X	X	X
Geography	EU	EU	DK	DK	DK	ND	DK	DK	DK	DK	DK
Share of primary data	14.1%			-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-

Data and Environmental Sourcing of EPD:

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of product	Collected data	LIP Bygningsartikler A/S	2024	Primary data	0.2%
Generation of electricity used in manufacturing	Database	Ecoinvent v3.11	2024	Primary data	0.2%
Transport of raw materials to manufacturing site	Database	Ecoinvent v3.11	2024	Primary data	0%
Production of Cement	EPD	Confidential	2025	Primary data (EF 3.1)	13.7%
Other processes	Database	Ecoinvent v3.11	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					14.1%

ENVIRONMENTAL PERFORMANCE

LCA results of the environmental performance indicators for the products within LIP Tile Mortars Group 4

Disclaimer:
The environmental performance results presented in this EPD are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks.
They are intended for comparative purposes only and should not be used as a sole basis for risk assessment or regulatory compliance decisions.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

LIP XXL Tile Mortar

Mandatory impact category indicators according to EN 15804:2012+A2:2019

Results per 1 kg of product LIP XXL Tile Mortar									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	6.4E-01	5.1E-02	4.3E-02	0.0E+00	5.1E-03	0.0E+00	6.3E-03	0.0E+00
GWP-fossil	kg CO_2 eq.	6.6E-01	5.1E-02	2.1E-02	0.0E+00	5.1E-03	0.0E+00	6.3E-03	0.0E+00
GWP-biogenic	kg CO_2 eq.	-2.1E-02	3.2E-05	2.1E-02	0.0E+00	3.2E-06	0.0E+00	3.1E-06	0.0E+00
GWP-luluc	kg CO_2 eq.	2.9E-04	1.9E-05	5.9E-05	0.0E+00	1.9E-06	0.0E+00	3.6E-06	0.0E+00
ODP	kg CFC 11 eq.	2.1E-08	1.2E-09	3.8E-10	0.0E+00	1.2E-10	0.0E+00	1.7E-10	0.0E+00
AP	mol H^+ eq.	3.0E-03	1.2E-04	1.2E-04	0.0E+00	1.2E-05	0.0E+00	4.4E-05	0.0E+00
EP-freshwater	kg P eq.	9.4E-05	3.7E-06	1.9E-05	0.0E+00	3.7E-07	0.0E+00	5.5E-07	0.0E+00
EP-marine	kg N eq.	7.2E-04	3.3E-05	2.7E-05	0.0E+00	3.3E-06	0.0E+00	1.7E-05	0.0E+00
EP-terrestrial	mol N eq.	7.0E-03	3.5E-04	1.9E-04	0.0E+00	3.5E-05	0.0E+00	1.8E-04	0.0E+00
POCP	kg NMVOC eq.	2.3E-03	2.1E-04	6.3E-05	0.0E+00	2.1E-05	0.0E+00	6.6E-05	0.0E+00
ADP-minerals&metals*	kg Sb eq.	4.0E-06	1.5E-07	2.7E-07	0.0E+00	1.5E-08	0.0E+00	9.2E-09	0.0E+00
ADP-fossil*	MJ	1.2E+01	7.7E-01	4.6E-01	0.0E+00	7.7E-02	0.0E+00	1.5E-01	0.0E+00
WDP*	m^3	2.8E-01	3.5E-03	2.0E-02	0.0E+00	3.5E-04	0.0E+00	6.7E-03	0.0E+00
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								

** 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.*

Additional mandatory and voluntary impact category indicators

Results per 1 kg of product LIP XXL Tile Mortar									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	6.7E-01	5.1E-02	2.1E-02	0.0E+00	5.1E-03	0.0E+00	6.3E-03	0.0E+00
Acronyms	GWP-GHG*= global warming potential (greenhouse gases) This indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide emissions and uptake and biogenic carbon stored in the product with characterization factors (CFs) based on IPCC (2013)								

Resource use indicators

Results per 1 kg of product LIP XXL Tile Mortar									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1.0E+00	1.2E-02	1.2E-01	0.0E+00	1.2E-03	0.0E+00	1.4E-03	0.0E+00
PERM	MJ	5.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ	1.0E+00	1.2E-02	1.2E-01	0.0E+00	1.2E-03	0.0E+00	1.4E-03	0.0E+00
PENRE	MJ	1.2E+01	8.2E-01	4.8E-01	0.0E+00	8.2E-02	0.0E+00	1.6E-01	0.0E+00
PENRM	MJ	2.8E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ	1.2E+01	8.2E-01	4.8E-01	0.0E+00	8.2E-02	0.0E+00	1.6E-01	0.0E+00
SM	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m^3	2.5E-01	3.5E-03	1.9E-02	0.0E+00	3.5E-04	0.0E+00	6.7E-03	0.0E+00
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 indicators

Results per 1 kg of product LIP XXL Tile Mortar									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	6.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Non-hazardous waste disposed	kg	7.8E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Radioactive waste disposed	kg	6.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Output flow indicators

Results per 1 kg of product LIP XXL Tile Mortar									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Material for recycling	kg	0.0E+00	0.0E+00	4.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Materials for energy recovery	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, electricity	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, thermal	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Information on biogenic carbon content

	Unit	Quantity
Biogenic carbon content in product	kg C	0.0E+00
Biogenic carbon content in packaging	kg C	5.8E-03
Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2.		

ADDITIONAL ENVIRONMENTAL INFORMATION

Results per 1 kg of product LIP XXL Tile Mortar									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incident	2.3E-08	5.0E-09	4.9E-10	0.0E+00	5.0E-10	0.0E+00	1.0E-09	0.0E+00
IR	kBq U325 eq.	3.2E-02	8.6E-04	1.3E-02	0.0E+00	8.6E-05	0.0E+00	9.2E-05	0.0E+00
ETF	CTUe	3.4E+00	9.0E-02	2.7E-01	0.0E+00	9.0E-03	0.0E+00	1.1E-02	0.0E+00
HTP-c	CTUh	8.4E-10	8.4E-12	1.3E-11	0.0E+00	8.4E-13	0.0E+00	1.1E-12	0.0E+00
HTP-nc	CTUh	3.1E-08	4.9E-10	1.0E-09	0.0E+00	4.9E-11	0.0E+00	2.5E-11	0.0E+00
SQP	Pt	4.7E+00	7.8E-01	9.7E-02	0.0E+00	7.8E-02	0.0E+00	3.0E-01	0.0E+00
Acronyms	Caption: PM = Particulate matter emissions; IR = Ionising radiation, human health; ETF = Ecotoxicity (freshwater); HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, noncancer effects; SQP = Soil quality potential/Land use related impact.								

**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. **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.*

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.

ABBREVIATIONS

Abbreviation	Definition
General/Standards	
EPD	Environmental Product Declaration
ISO	International Organization for Standardization
EN	European Norm (Standard)
CEN	European Committee for Standardization
PCR	Product Category Rules
LCA	Life Cycle Assessment
LCIA	Life Cycle Impact Assessment
EPD	Environmental Product Declaration
ISO	International Organization for Standardization
EN	European Norm (Standard)
CEN	European Committee for Standardization
PCR	Product Category Rules
LCA	Life Cycle Assessment
LCIA	Life Cycle Impact Assessment
Organizations/Systems	
EPD-IES	EPD International Environmental System
SWEDAC	Swedish Board for Accreditation and Conformity Assessment
GEV-EMICODE	Association for the Control of Emissions in Products for Flooring Installation, Adhesives and Building Materials
Product Classification	
UN CPC	United Nations Central Product Classification
CE	Conformité Européenne (European Conformity)
SVHC	Substances of Very High Concern
Materials/Components	
PE	Polyethylene
LDPE	Low-Density Polyethylene
Measurement Units/Technical	
DU	Declared Unit
RSL	Reference Service Life
GWP	Global Warming Potential
GHG	Greenhouse Gas
EF	Environmental Footprint
ND	Not Declared
Life Cycle Modules	
A1-A3	Product stage (Raw material supply, Transport, Manufacturing)
A4-A5	Construction process stage (Transport, Installation)
B1-B7	Use stage
C1-C4	End-of-life stage (Deconstruction, Transport, Waste processing, Disposal)
D	Benefits and loads beyond the system boundary
Geographic/Country Codes	
DK	Denmark
EU	European Union
SE	Sweden

REFERENCES

- Project Report – LCA Project Report, LIP Bygningsartikler A/S, 2025
- General Programme Instruction of the International EPD® System. Version 5.
- PCR 2019:14 v.2.0.1 Product Category Rules | Construction Products | The International EPD® System
- ISO 14020:2000 Environmental labels and declarations - General principles
- 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
- 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).

VERSION HISTORY

Original Version of the EPD, 2023-11-30

Revision 1, 2024-08-22,
Differences versus the previously published version: Adding new products, economic allocation, new EPDs used as Data Input.

EPD
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