



# Environmental Product Declaration

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

***LIP Tile Mortars***

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



|                                 |   |
|---------------------------------|---|
| <b>Programme:</b>               | The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a> |
| <b>Programme operator:</b>      | EPD International AB  |
| <b>EPD registration number:</b> | S-P-02311   |
| <b>Publication date:</b>        | 16-11-2020 (version 1)<br>25-08-2022 (version 2)  |
| <b>Revision date:</b>           | 25-08-2022 (version 2)<br>19-09-2022 (version 3)<br>03-02-2023 (version 4)                |
| <b>Valid until:</b>             | 29-09-2025 (version 1, version 2, version 3, version 4)                                   |

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

## General information

**Owner of the declaration and manufacturer:**

LIP Bygningsartikler A/S · Industrivej 16 · DK-5580 Nørre Aaby · Phone: +45 6442 1330 · Fax: +45 6442 3408

**Declaration issued:** 29-09-2020 (version 1), 25-08-2022 (version 2), 19-09-2022 (version 3) 03-02-2023 (version 4)

**EPD Prepared by:** Bureau Veritas HSE, Denmark

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

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

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

## About LIP Bygningsartikler A/S

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

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

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

LIP - when building on quality!

## Product information

### Products represented

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



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

### Product description

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

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

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

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

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

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

**Declared Unit**

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

**Reference service life**

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

**Technical data**

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

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

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

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

**Air emission**

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



**Content declaration**

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

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

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

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

**LCA information**

**Product category rules (PCR)**

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

**Time representativeness**

Data from factory (primary data) is from 2021.

**Database(s) and LCA software used**

LCA Software: Simapro 9.4

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

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

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

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

***Cut-off criteria for initial inclusion of inputs and outputs***

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

***Allocation principles and procedures***

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

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

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

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

***Description of system boundaries***

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

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

|  | Product stage | Installation processes | Use stage | End of life stage |  |
|--|---------------|------------------------|-----------|-------------------|--|
|  |               |                        |           |                   |  |

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

**Product stage (A1-A3):**

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

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

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



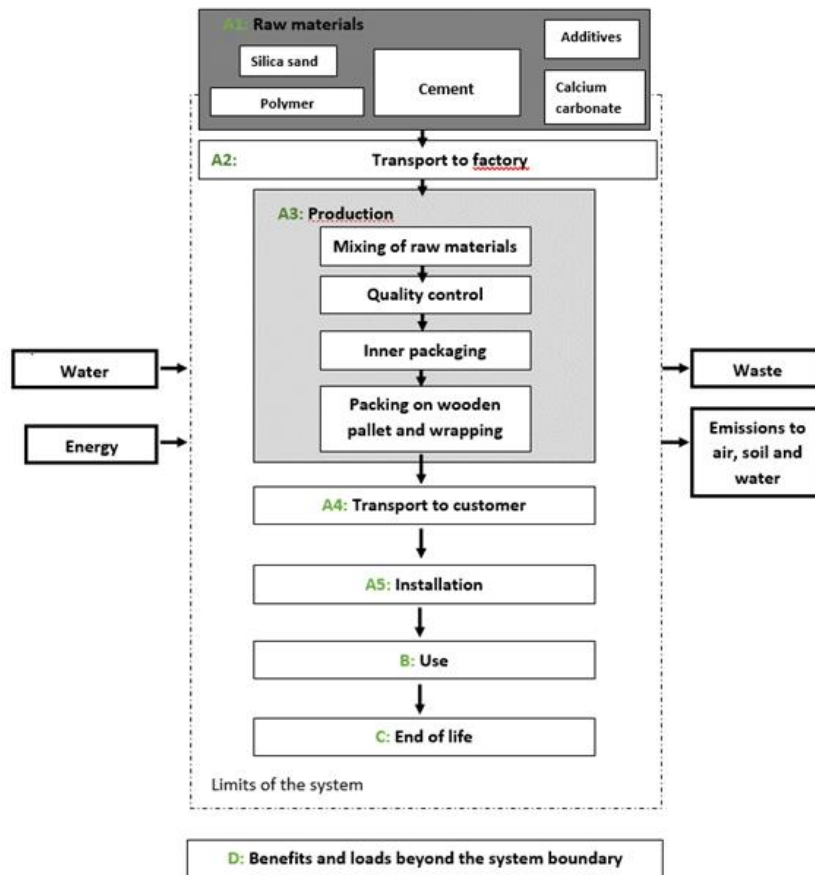


Figure 2: Limits of the system in this study.

**Construction process stage (A4-A5):**

- A4: distribution to typical Customer by transport of packaged product from production gate to end user (building site). The customers of LIP 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 0.216MJ. This is equivalent to the use of a 1200 Watt handheld mixer for 3 minutes. It is estimated that if the technician has experience and uses the same bucket of tile mortar product to reduce residue, 2-4 % could be expected. This estimate is expressed in the model by 5% loss instead, as a conservative approach. 5% loss has been advised to LIPs customers and LIP offers calculator with losses on LIPs website as a guide when buying products. No industry standard exists and PCR does not provide further guidance for any losses or spillage. The product can be used in 12 months or 18 months. The electricity mix is modelled with European mix and it is considered as an adequate choice, but since more than 90% of the market is in Denmark, Danish residual mix would be a better choice to consider in this study's validity period of 5 years.

**Use stage (B1-B7):**

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

**End of life stage (C1-C4):**

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

**D Reuse-Recovery-Recycling potential**

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

**Environmental performance**

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

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

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

---

## LIP Tile Mortar

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

### Core environmental impact indicators

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

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

### Additional environmental impact indicators

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

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

### Use of resources

Table 7: Resource use - LIP Tile Mortar.

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

### Waste production

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

Table 8: Waste - LIP Tile Mortar

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

### Output flows

Table 9: Output flows - LIP Tile Mortar

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

### Information on biogenic carbon content

Table 10: Biogenic Carbon - LIP Tile Mortar

|  | Unit | Quantity |
|--|------|----------|
| Biogenic carbon content in product   | kg C | 0        |
| Biogenic carbon content in packaging   | kg C | 6,00E-03 |
| Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2. |      |          |

### LIP Multi Tile Mortar – Grey

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

#### Core environmental impact indicators

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

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

#### Additional environmental impact indicators

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

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

#### Use of resources

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

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

### Waste production

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

Table 14: Waste - LIP Multi Tile Mortar – Grey

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

### Output flows

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

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

### Information on biogenic carbon content

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

|  | Unit | Quantity |
|--|------|----------|
| Biogenic carbon content in product   | kg C | 0        |
| Biogenic carbon content in packaging   | kg C | 6,00E-03 |
| Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2. |      |          |

### LIP Multi Tile Mortar – White

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

#### Core environmental impact indicators

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

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

#### Additional environmental impact indicators

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

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

## Use of resources

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

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

## Waste production

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

Table 20: Waste - LIP Multi Tile Mortar – White

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

## Output flows

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

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

## Information on biogenic carbon content

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

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



### LIP Multi Tile Mortar Light

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

### Core environmental impact indicators

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

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

### Additional environmental impact indicators

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

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

### Use of resources

Table 25: Resource use - LIP Multi Tile Mortar Light

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

### Waste production

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

Table 26: Waste - LIP Multi Tile Mortar Light

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

### Output flows

Table 27: Output flows - LIP Multi Tile Mortar Light

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

### Information on biogenic carbon content

Table 28: Biogenic Carbon - LIP Multi Tile Mortar Light

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

Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.

### LIP Flow Mortar Light

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

### Core environmental impact indicators

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

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

### Additional environmental impact indicators

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

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

### Use of resources

Table 31: Resource use - LIP Flow Mortar Light

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

### Waste production

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

Table 32: Waste - LIP Flow Mortar Light

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

### Output flows

Table 33: Output flows - LIP Flow Mortar Light

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

### Information on biogenic carbon content

Table 34: Biogenic Carbon - LIP Flow Mortar Light

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

Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.

### LIP Tropic Tile Mortar – Grey

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

#### Core environmental impact indicators

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

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

#### Additional environmental impact indicators

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

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

### Use of resources

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

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

### Waste production

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

Table 38: Waste - LIP Tropic Tile Mortar – Grey

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

### Output flows

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

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

### Information on biogenic carbon content

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

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

Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.

### LIP Tropic Tile Mortar – White

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

#### Core environmental impact indicators

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

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

#### Additional environmental impact indicators

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

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

## Use of resources

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

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

## Waste production

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

Table 44: Waste - LIP Tropic Tile Mortar – White

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

## Output flows

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

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

## Information on biogenic carbon content

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

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



**LIP Tile Mortar XXL**

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

**Core environmental impact indicators**

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

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

**Additional environmental impact indicators**

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

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

### Use of resources

Table 49: Resource use - LIP Tile Mortar XXL

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

### Waste production

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

Table 50: Waste - LIP Tile Mortar XXL

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

### Output flows

Table 51: Output flows - LIP Tile Mortar XXL

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

### Information on biogenic carbon content

Table 52: Biogenic Carbon - LIP Tile Mortar XXL

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

**LIP 527 Tile Mortar**

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

**Core environmental impact indicators**

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

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

**Additional environmental impact indicators**

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

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

### Use of resources

Table 55: Resource use - LIP 527 Tile Mortar

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

### Waste production

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

Table 56: Waste - LIP 527 Tile Mortar

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

### Output flows

Table 57: Output flows - LIP 527 Tile Mortar

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

### Information on biogenic carbon content

Table 58: Biogenic Carbon - LIP 527 Tile Mortar

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

**LIP 460 Sheet adhesive coarse flex**

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

**Core environmental impact indicators**

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

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

**Additional environmental impact indicators**

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

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

## Use of resources

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

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

## Waste production

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

Table 62: Waste – LIP 460 Sheet adhesive coarse flex

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

## Output flows

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

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

## Information on biogenic carbon content

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

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

## LIP Natural Stone Grout

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

### Core environmental impact indicators

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

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

### Additional environmental impact indicators

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

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

### Use of resources

Table 67: Resource use - LIP Natural Stone Grout

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

### Waste production

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

Table 68: Waste - LIP Natural Stone Grout

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

### Output flows

Table 69: Output flows - LIP Natural Stone Grout

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

### Information on biogenic carbon content

Table 70: Biogenic Carbon - LIP Natural Stone Grout

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

### LIP Rapid-Setting Tile Adhesive



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

**Core environmental impact indicators**

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

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

**Additional environmental impact indicators**

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

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

**Use of resources**

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

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

### Waste production

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

Table 74: Waste - LIP Rapid-Setting Tile Adhesive

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

### Output flows

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

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

### Information on biogenic carbon content

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

|  | Unit | Quantity |
|--|------|----------|
| Biogenic carbon content in product   | kg C | 0        |
| Biogenic carbon content in packaging   | kg C | 6,00E-03 |
| Results per functional or declared unit. Note: 1 kg biogenic carbon is equivalent to 44/12 kg 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 1100MWh per year.

**Information related to Sector EPD**

This is an individual EPD.

**Differences versus previous versions**

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

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

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

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

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

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

**References**

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

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

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

Project Report - LIP Tile Mortars, LIP Bygningsartikler A/S, 08-12-2022 (version 4)  
 General Programme Instruction of the International EPD® System. Version 3.01.  
 ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures  
 ISO 14040:2006 Environmental management-Life Cycle Assessment-Principles and framework  
 ISO 14044:2006 Environmental management-Life Cycle Assessment-Requirements and guidelines  
 PCR 2019:14 Construction products (EN 15804:A2) version 1.11  
 EN 15804:2012+A2:2019 Sustainability of construction works-Environmental Product Declarations-Core rules for the product category of construction products  
 EN 12004:2007+A1:2012 for interior and exterior bonding of ceramic tiles, porcelain, natural stone and mosaics on floors and walls.

### Programme-related information and verification

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

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

|   |
|---|
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR)   |
| Product category rules (PCR): PCR 2019:14 Construction products (EN 15804:A2) Version 1.11.   |
| PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Claudia Peña. Contact via <a href="mailto:info@environdec.com">info@environdec.com</a>                          |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006:<br><br><input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification |
| Third party verifiers:<br>Marcus Wending approved by The International EPD® System and Bureau Veritas Certification Sverige AB accredited by SWEDAC with accreditation number 1236.                           |

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

Yes       No

\*Disclaimer: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

\*\*Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

## Contact information

EPD owner

LIP Bygningsartikler A/S  
Industrivej 16  
5580, Nørre Aaby, Danmark  
info@lip.dk  
www.lip.dk

**LIP**  
- when building on quality!

LCA author

Bureau Veritas HSE, Danmark  
Odyssefs Papagiannidis  
Oldenborgsgade 25-31  
7000, Fredericia, Danmark  
www.bvhse.dk  
infohse@dk.bureauveritas.com

  
**BUREAU  
VERITAS**  
Shaping a World of Trust

Programme operator

the International EPD<sup>®</sup> System  
www.environdec.com

 **EPD**<sup>®</sup>  
THE INTERNATIONAL EPD<sup>®</sup> SYSTEM

3rd party verifier

First version:

Miljögiraff AB  
Marcus Wendin  
Södra Larmgatan 6,  
411 16, Göteborg, Sweden  
[www.miljogiraff.se](http://www.miljogiraff.se)



Second and third version:

Bureau Veritas Certification  
Sverige AB  
Camilla Landén  
Fabriksgatan 13,  
412 50, Göteborg, Sweden  
<https://www.bureauveritas.se/>



Fourth version:

Bureau Veritas Certification  
Sverige AB  
Viktor Hakkarainen  
Fabriksgatan 13,  
412 50, Göteborg, Sweden  
<https://www.bureauveritas.se/>

