

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Sto Systemputs



The Norwegian EPD Foundation

**Owner of the declaration:**

Sto SE & Co. KGaA

**Product:**

Sto Systemputs

**Declared unit:**

1 kg

**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A2:2019 serves as core PCR

NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

**Program operator:**

The Norwegian EPD Foundation

**Declaration number:**

NEPD-8498-8160-EN

**Registration number:**

NEPD-8498-8160-EN

**Issue date:** 13.12.2024

**Valid to:** 13.12.2029

**EPD software:**

LCAno EPD generator ID: 525262

## General information

### Product

Sto Systemputs

### Program operator:

The Norwegian EPD Foundation  
Post Box 5250 Majorstuen, 0303 Oslo, Norway  
Phone: +47 977 22 020  
web: [www.epd-norge.no](http://www.epd-norge.no)

### Declaration number:

NEPD-8498-8160-EN

### This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
NPCR 009:2021 Part B for Technical - Chemical products for building  
and construction industry

### Statement of liability:

The owner of the declaration shall be liable for the underlying  
information and evidence. EPD Norway shall not be liable with respect  
to manufacturer information, life cycle assessment data and  
evidences.

### Declared unit:

1 kg Sto Systemputs

### Declared unit with option:

A1,A2,A3,A4,A5,C1,C2,C3,C4,D

### Functional unit:

### General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information  
and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4.  
Verification of each EPD is made according to EPD-Norway's  
guidelines for verification and approval requiring that tools are i)  
integrated into the company's environmental management system, ii)  
the procedures for use of the EPD tool are approved by EPD-Norway,  
and iii) the process is reviewed annually by an independent third  
party verifier. See Appendix G of EPD-Norway's General Programme  
Instructions for further information on EPD tools

### Verification of EPD tool:

Independent third party verification of the EPD tool, background data  
and test-EPD in accordance with EPDNorway's procedures and  
guidelines for verification and approval of EPD tools. NEPD73

Third party verifier:

Linda Høibye, Life Cycle Assessment Consulting

(no signature required)

### Owner of the declaration:

Sto SE & Co. KGaA  
Contact person: Linus Kaltenbach  
Phone: +49 7744571010  
e-mail: [infoservice@sto.com](mailto:infoservice@sto.com)

### Manufacturer:

Sto Scandinavia AB  
Gesällgatan 6  
SE-582 77 Linköping, Sweden

### Place of production:

Linköping  
Gesällgatan 6  
SE-582 77 Linköping, Sweden

### Management system:

ISO 14001; ISO 50001; ISO 9001

### Organisation no:

DE142834082

### Issue date:

13.12.2024

### Valid to:

13.12.2029

### Year of study:

2023

### Comparability:

EPD of construction products may not be comparable if they not  
comply with EN 15804 and seen in a building context.

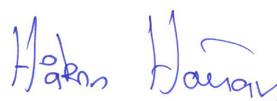
### Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03,  
developed by LCA.no. The EPD tool is integrated in the company's  
management system, and has been approved by EPD Norway.  
NEPD7143

Developer of EPD: Angelica Hultin

Reviewer of company-specific input data and EPD: Karin Bromoe

### Approved:



Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

Sto Systemputs is a cementitious mortar used as an adhesive for insulating boards on mineral surfaces. The product can also be used as a primer on insulating boards before applying render. Sto Systemputs is a dry mineral mortar that is mixed with water at the building site. It can be applied manually by hand or with a mixer pump and plaster gun.

### Product specification

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

| Materials            | Value | Unit |
|----------------------|-------|------|
| Cement               | 3-10  | %    |
| Pigments and Fillers | 50-80 | %    |
| Binders              | 5-10  | %    |
| Packaging            | 1-5   | %    |
| Additives            | <1    | %    |

### Technical data:

Sto Systemputs fulfills technical specifications according to EN 998-1:2016 Specification for mortar for masonry - Part 1: Rendering and plastering mortar.

### Market:

Main market is the Nordic countries.

### Reference service life, product

50

A reference service life (RSL) as per ISO 15686-1, -2, -7, and -8 is not declared. In this LCA an RSL of 50 years has been declared, equal to the useful life of the building (according to standard 15804+A2), since the product is incorporated in the building structure.

### Reference service life, building

50

## LCA: Calculation rules

### Declared unit:

1 kg Sto Systemputs

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

### Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

| Materials            | Source                 | Data quality | Year |
|----------------------|------------------------|--------------|------|
| Additives            | CEPE RM Database v3.0  | Database     | 2016 |
| Additives            | Ecoinvent 3.6          | Database     | 2019 |
| Aggregate            | ecoinvent 3.6          | Database     | 2019 |
| Binders and Resins   | CEPE RM Database v3.0  | Database     | 2016 |
| Cement               | NEPD-5375-4689-EN      | EPD          | 2023 |
| Chemical             | ecoinvent 3.6          | Database     | 2019 |
| Fillers              | ecoinvent 3.6          | Database     | 2019 |
| Packaging - Paper    | ecoinvent 3.6          | Database     | 2019 |
| Packaging - Plastic  | ecoinvent 3.6          | Database     | 2019 |
| Packaging - Wood     | Modified ecoinvent 3.6 | Database     | 2019 |
| Pigments and Fillers | CEPE RM Database v3.0  | Database     | 2016 |

## System boundaries (X=included, MND=module not declared, MNR=module not relevant)

| Product stage |           |               | Construction installation stage |          | Use stage |             |        |             |               |                        |                       |  | End of life stage          |           |                  |          | Beyond the system boundaries       |
|---------------|-----------|---------------|---------------------------------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|--|----------------------------|-----------|------------------|----------|------------------------------------|
| Raw materials | Transport | Manufacturing | Transport                       | Assembly | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use |  | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| A1            | A2        | A3            | A4                              | A5       | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    |  | C1                         | C2        | C3               | C4       | D                                  |
| X             | X         | X             | X                               | X        | MND       | MND         | MND    | MND         | MND           | MND                    | MND                   |  | X                          | X         | X                | X        | X                                  |

### System boundary:

The approach is "cradle-to-grave" but with exclusion of the use stage (B1-B7). Stage B1-B7 is not applicable for this cement based product. Sto Systemputs does not require any actions or maintenance operations during the use stages. The following modules have been considered:

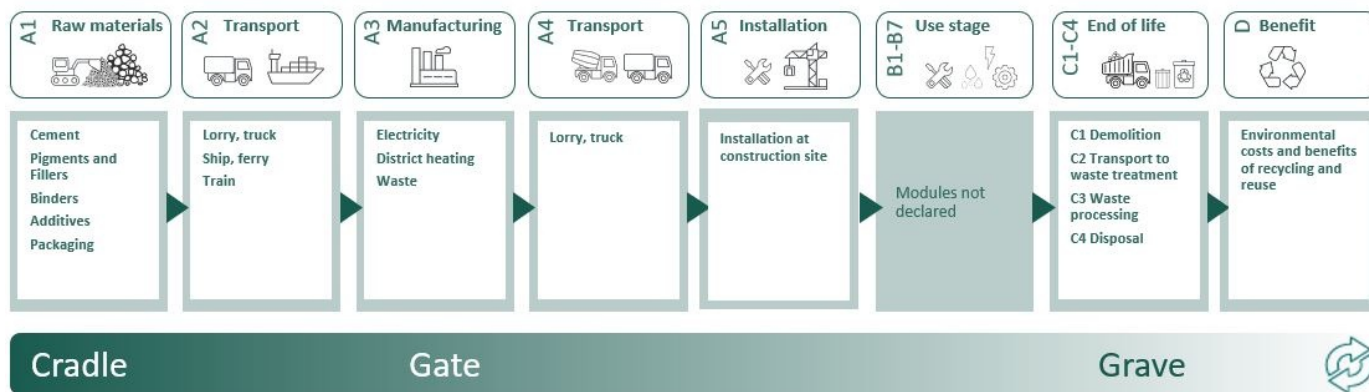
A1, A2, A3 (Product stages): Extraction and transport of raw materials, including packaging, and manufacturing process

A4 (Transport to market): Transportation from manufacturing plant to customer

A5 (Assembly): Installation at construction site

C1, C2, C3, C4 (End of life stages): Deconstruction, demolition, transport to waste processing, waste processing for reuse, recovery and/or recycling and disposal

D (Benefits and loads beyond the system boundaries): Reuse/recovery/recycling potential



### Additional technical information:

The waste code for unused product is 17 09 03\* Other construction and demolition wastes (including mixed waste) containing hazardous substances. See MSDS section 13.

Hardened product is not classified as dangerous waste.

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

A4 (Transport to market/building site): Most of our transports are from the production site in Linköping to customers in Stockholm. We have therefore taken this distance as an average. This gives the value of 200 km. Transport method is Lorries (Trucks) in the tonnage range 16-32 t.

A5 (Installation): The product is used in a wet state, it is mixed with water at the building site according to specifications in the technical data sheet. Application of the mortar is either by hand or with a mixer pump together with a plaster gun. Electricity for application with machine has been taken into account in this LCA. Outputs are small amounts of waste from the product itself (assumed to be less than 5%) and waste from packaging materials.

C1 (De-construction, demolition): The product is demolished together with the insulating materials in the facade. In this LCA we have assumed a scenario where the product is demolished together with the whole building.

C2 (Transport end of life): This stage includes the transportation effects of demolished waste to a waste processing area. The distance between the demolishing area and a waste processing area is assumed to be quite short (less than 100 km). The distance varies depending on the type of waste processing.

C3 (Waste processing): In this LCA we have assumed a typical waste scenario for concrete waste (cement-based products) that estimates that 10% of the product is recycled. The product can be used as filling masses in for instance road construction. The most part is assumed to be put on landfill (90%).

C4 (Final disposal): Mineral construction waste is categorized as non-hazardous waste. The product can therefore be used in landfills. The degree of landfill and possibility to recycle the mineral waste is taken into account when disposing of the product. The degree of landfill is assumed to be 90% and the rest is assumed to be recycled.

D (Environmental costs and benefits of recycling and reuse): It is preferable if mineral construction waste can be recycled, since this would save resources such as raw materials and also save energy during production. 10% of the product is estimated to be recycled.

| Transport from production place to user (A4)                                          | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
|---------------------------------------------------------------------------------------|---------------------------------------|---------------|-------------------------|-------|---------------------|
| Truck, 16-32 tonnes, EURO 6 (kgkm)                                                    | 36,7 %                                | 200           | 0,043                   | l/tkm | 8,60                |
| Assembly (A5)                                                                         |                                       |               |                         |       |                     |
|                                                                                       | Unit                                  | Value         |                         |       |                     |
| Waste, packaging, plastic film (LDPE), to average treatment (kg)                      | kg                                    | 0,00          |                         |       |                     |
| Waste, packaging, pallet, EUR wooden pallet, reusable, average treatment (kg)         | kg                                    | 0,02          |                         |       |                     |
| Tap water (kg)                                                                        | kg/DU                                 | 0,25          |                         |       |                     |
| Material loss, including waste treatment (psc)                                        | Units/DU                              | 0,05          |                         |       |                     |
| Electricity, Nordic (kWh)                                                             | kWh/DU                                | 0,00          |                         |       |                     |
| Waste, packaging, plastic, Big bag, 1000kg, to average treatment (kg)                 | kg                                    | 0,00          |                         |       |                     |
| Waste, bag, 84% paper and 16% LDPE, to average treatment (kg)                         | kg                                    | 0,00          |                         |       |                     |
| De-construction demolition (C1)                                                       |                                       |               |                         |       |                     |
|                                                                                       | Unit                                  | Value         |                         |       |                     |
| Demolition of building per kg of cement-based product, C1 (kg)                        | kg/DU                                 | 1,00          |                         |       |                     |
| Transport to waste processing (C2)                                                    | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
| Truck, 16-32 tonnes, EURO 6 (kgkm)                                                    | 36,7 %                                | 100           | 0,043                   | l/tkm | 4,30                |
| Waste processing (C3)                                                                 |                                       |               |                         |       |                     |
|                                                                                       | Unit                                  | Value         |                         |       |                     |
| Waste treatment of cement-based product after demolition (kg) - C3, 100% to recycling | kg                                    | 0,10          |                         |       |                     |
| Disposal (C4)                                                                         |                                       |               |                         |       |                     |
|                                                                                       | Unit                                  | Value         |                         |       |                     |
| Waste, inert waste, to landfill (kg)                                                  | kg                                    | 0,90          |                         |       |                     |
| Benefits and loads beyond the system boundaries (D)                                   |                                       |               |                         |       |                     |
|                                                                                       | Unit                                  | Value         |                         |       |                     |
| Substitution of electricity (MJ)                                                      | MJ                                    | 0,00          |                         |       |                     |
| Substitution of thermal energy, district heating (MJ)                                 | MJ                                    | 0,01          |                         |       |                     |
| Substitution of primary aggregates with crushed recycled cement-based products (kg)   | kg                                    | 0,10          |                         |       |                     |

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

| Environmental impact                                                              |                                  |                        |           |          |          |          |          |          |          |          |          |           |
|-----------------------------------------------------------------------------------|----------------------------------|------------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                                                                         |                                  | Unit                   | A1        | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D         |
|  | GWP-total                        | kg CO <sub>2</sub> -eq | 3,60E-01  | 3,26E-02 | 3,93E-04 | 3,36E-02 | 5,95E-02 | 0,00E+00 | 1,68E-02 | 7,20E-05 | 7,39E-03 | -3,07E-04 |
|  | GWP-fossil                       | kg CO <sub>2</sub> -eq | 4,00E-01  | 3,26E-02 | 3,62E-04 | 3,35E-02 | 2,54E-02 | 0,00E+00 | 1,68E-02 | 7,10E-05 | 7,38E-03 | -3,00E-04 |
|  | GWP-biogenic                     | kg CO <sub>2</sub> -eq | -3,97E-02 | 1,50E-05 | 2,44E-05 | 1,39E-05 | 3,41E-02 | 0,00E+00 | 6,94E-06 | 6,13E-07 | 8,62E-06 | -4,71E-06 |
|  | GWP-luluc                        | kg CO <sub>2</sub> -eq | 7,79E-05  | 1,26E-05 | 6,13E-06 | 1,19E-05 | 2,59E-05 | 0,00E+00 | 5,97E-06 | 9,83E-08 | 1,81E-06 | -2,59E-06 |
|  | ODP                              | kg CFC 11-eq           | 1,33E-07  | 7,51E-09 | 6,80E-11 | 7,60E-09 | 7,68E-09 | 0,00E+00 | 3,80E-09 | 1,40E-11 | 2,80E-09 | -5,16E-06 |
|  | AP                               | mol H <sup>+</sup> -eq | 9,75E-04  | 2,65E-04 | 2,01E-06 | 9,64E-05 | 7,17E-05 | 0,00E+00 | 4,82E-05 | 5,75E-07 | 6,57E-05 | -2,64E-06 |
|  | EP-FreshWater                    | kg P -eq               | 9,52E-06  | 2,72E-07 | 3,16E-08 | 2,68E-07 | 3,96E-07 | 0,00E+00 | 1,34E-07 | 4,49E-09 | 8,37E-08 | -1,24E-08 |
|  | EP-Marine                        | kg N -eq               | 2,89E-04  | 6,44E-05 | 6,06E-07 | 1,91E-05 | 2,11E-05 | 0,00E+00 | 9,54E-06 | 1,68E-07 | 2,44E-05 | -9,05E-07 |
|  | EP-Terrestrial                   | mol N -eq              | 2,70E-03  | 7,16E-04 | 7,34E-06 | 2,13E-04 | 2,02E-04 | 0,00E+00 | 1,07E-04 | 1,94E-06 | 2,69E-04 | -1,05E-05 |
|  | POCP                             | kg NMVOC-eq            | 7,70E-04  | 2,13E-04 | 1,64E-06 | 8,17E-05 | 5,91E-05 | 0,00E+00 | 4,09E-05 | 5,20E-07 | 7,71E-05 | -2,79E-06 |
|  | ADP-minerals&metals <sup>1</sup> | kg Sb-eq               | 3,15E-06  | 5,35E-07 | 7,51E-09 | 9,26E-07 | 1,50E-07 | 0,00E+00 | 4,63E-07 | 9,01E-10 | 6,65E-08 | -2,10E-08 |
|  | ADP-fossil <sup>1</sup>          | MJ                     | 4,56E+00  | 5,08E-01 | 1,28E-02 | 5,07E-01 | 2,99E-01 | 0,00E+00 | 2,54E-01 | 2,21E-03 | 2,03E-01 | -4,89E-03 |
|  | WDP <sup>1</sup>                 | m <sup>3</sup>         | 2,61E+01  | 4,24E-01 | 1,08E+00 | 4,91E-01 | 2,28E+00 | 0,00E+00 | 2,45E-01 | 2,43E-01 | 1,25E+00 | -1,94E-01 |

GWP-total = Global Warming Potential total; 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

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. 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

## Remarks to environmental impacts

### Additional environmental impact indicators

| Indicator                                                                                             | Unit              | A1       | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D         |
|-------------------------------------------------------------------------------------------------------|-------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|  PM                  | Disease incidence | 1,83E-06 | 2,62E-09 | 1,25E-07 | 2,05E-09 | 9,18E-08 | 0,00E+00 | 1,03E-09 | 9,00E-12 | 1,40E-09 | -7,90E-11 |
|  IRP <sup>2</sup>    | kgBq U235 -eq     | 2,17E+01 | 2,23E-03 | 3,67E-04 | 2,22E-03 | 1,02E+00 | 0,00E+00 | 1,11E-03 | 3,70E-05 | 9,27E-04 | -4,20E-05 |
|  ETP-fw <sup>1</sup> | CTUe              | 1,65E+00 | 3,67E-01 | 5,90E-03 | 3,76E-01 | 1,38E-01 | 0,00E+00 | 1,88E-01 | 1,56E-03 | 1,11E-01 | -9,49E-03 |
|  HTP-c <sup>1</sup>  | CTUh              | 1,91E-10 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,00E-12 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,00E-12 | 0,00E+00  |
|  HTP-nc <sup>1</sup> | CTUh              | 7,63E-09 | 3,73E-10 | 4,00E-12 | 4,11E-10 | 3,58E-10 | 0,00E+00 | 2,05E-10 | 1,00E-12 | 8,00E-11 | -1,00E-11 |
|  SQP <sup>1</sup>    | dimensionless     | 5,49E+00 | 5,01E-01 | 4,93E-03 | 3,55E-01 | 3,76E-01 | 0,00E+00 | 1,77E-01 | 1,25E-03 | 7,82E-01 | 2,02E-03  |

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 = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. 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
2. 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.

| Resource use                                                                      |       |                |          |          |          |          |           |          |          |           |          |           |
|-----------------------------------------------------------------------------------|-------|----------------|----------|----------|----------|----------|-----------|----------|----------|-----------|----------|-----------|
| Indicator                                                                         |       | Unit           | A1       | A2       | A3       | A4       | A5        | C1       | C2       | C3        | C4       | D         |
|  | PERE  | MJ             | 1,21E+00 | 7,08E-03 | 6,58E-03 | 7,26E-03 | 7,20E-02  | 0,00E+00 | 3,63E-03 | 1,14E-03  | 7,27E-03 | -7,16E-03 |
|  | PERM  | MJ             | 3,60E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -3,42E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  |
|  | PERT  | MJ             | 1,57E+00 | 7,08E-03 | 6,58E-03 | 7,26E-03 | -2,70E-01 | 0,00E+00 | 3,63E-03 | 1,14E-03  | 7,27E-03 | -7,16E-03 |
|  | PENRE | MJ             | 4,47E+00 | 5,09E-01 | 1,29E-02 | 5,07E-01 | 2,95E-01  | 0,00E+00 | 2,54E-01 | 2,21E-03  | 2,03E-01 | -5,10E-03 |
|  | PENRM | MJ             | 8,21E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,47E-02  | 0,00E+00 | 0,00E+00 | -1,31E-02 | 0,00E+00 | 0,00E+00  |
|  | PENRT | MJ             | 5,29E+00 | 5,09E-01 | 1,29E-02 | 5,07E-01 | 3,09E-01  | 0,00E+00 | 2,54E-01 | -1,09E-02 | 2,03E-01 | -5,10E-03 |
|  | SM    | kg             | 9,70E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,85E-04  | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  |
|  | RSF   | MJ             | 4,51E-02 | 2,78E-04 | 2,00E-05 | 2,60E-04 | 2,40E-03  | 0,00E+00 | 1,30E-04 | 0,00E+00  | 1,51E-04 | -1,96E-05 |
|  | NRSF  | MJ             | 2,66E-01 | 7,07E-04 | 6,34E-05 | 9,29E-04 | 1,34E-02  | 0,00E+00 | 4,64E-04 | 0,00E+00  | 3,26E-04 | -3,90E-04 |
|  | FW    | m <sup>3</sup> | 4,11E-01 | 5,88E-05 | 1,21E-05 | 5,42E-05 | 2,08E-02  | 0,00E+00 | 2,71E-05 | 3,78E-06  | 2,50E-04 | -1,50E-04 |

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 resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

\*Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

| End of life - Waste                                                               |      |    |          |          |          |          |          |          |          |          |          |           |
|-----------------------------------------------------------------------------------|------|----|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                                                                         | Unit | A1 | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D        |           |
|  | HWD  | kg | 3,53E-04 | 2,81E-05 | 5,32E-05 | 2,62E-05 | 1,70E-05 | 0,00E+00 | 1,31E-05 | 2,20E-07 | 0,00E+00 | -9,81E-07 |
|  | NHWD | kg | 1,33E+00 | 3,69E-02 | 6,14E-05 | 2,47E-02 | 1,19E-01 | 0,00E+00 | 1,23E-02 | 6,96E-06 | 9,00E-01 | -5,22E-05 |
|  | RWD  | kg | 1,07E-05 | 3,47E-06 | 8,39E-07 | 3,45E-06 | 1,05E-06 | 0,00E+00 | 1,73E-06 | 2,33E-08 | 0,00E+00 | -3,60E-08 |

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

| End of life - Output flow                                                         |      |    |          |          |          |          |          |          |          |          |          |          |
|-----------------------------------------------------------------------------------|------|----|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Indicator                                                                         | Unit | A1 | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D        |          |
|  | CRU  | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,22E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
|  | MFR  | kg | 0,00E+00 | 0,00E+00 | 1,60E-02 | 0,00E+00 | 5,88E-03 | 0,00E+00 | 0,00E+00 | 1,00E-01 | 0,00E+00 | 0,00E+00 |
|  | MER  | kg | 0,00E+00 | 0,00E+00 | 1,00E-05 | 0,00E+00 | 3,34E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
|  | EEE  | MJ | 0,00E+00 | 0,00E+00 | 1,47E-05 | 0,00E+00 | 2,10E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
|  | EET  | MJ | 0,00E+00 | 0,00E+00 | 2,23E-04 | 0,00E+00 | 3,18E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

| Biogenic Carbon Content                           |      |                     |
|---------------------------------------------------|------|---------------------|
| Indicator                                         | Unit | At the factory gate |
| Biogenic carbon content in product                | kg C | 0,00E+00            |
| Biogenic carbon content in accompanying packaging | kg C | 1,09E-02            |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## Additional requirements

### Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

| Electricity mix           | Source        | Amount | Unit                      |
|---------------------------|---------------|--------|---------------------------|
| Electricity, Sweden (kWh) | ecoinvent 3.6 | 54,94  | g CO <sub>2</sub> -eq/kWh |

### Dangerous substances

The product contains no substances given by the REACH Candidate list.

### Indoor environment

There are no emissions to indoor air during or after installation. This product is for outdoor use.

## Additional Environmental Information

| Additional environmental impact indicators required in NPCR Part A for construction products |                        |          |          |          |          |          |          |          |          |          |           |
|----------------------------------------------------------------------------------------------|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                                                                                    | Unit                   | A1       | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D         |
| GWPIOBC                                                                                      | kg CO <sub>2</sub> -eq | 3,99E-01 | 3,26E-02 | 3,70E-04 | 3,36E-02 | 2,56E-02 | 0,00E+00 | 1,68E-02 | 7,11E-05 | 7,39E-03 | -3,17E-04 |

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

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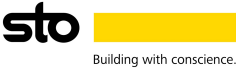
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