



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

THE BETTER WAE FLOORING COLLECTION

studio
wae

GENERAL INFORMATION

MANUFACTURER INFORMATION

| | |
|------------------------|---------------------------------|
| Manufacturer | Studio Wae |
| Address | Gansstraat 170, 3582 EP Utrecht |
| Contact details | tynke@studiowae.nl |
| Website | www.studiowae.nl |

PRODUCT IDENTIFICATION

| | |
|-----------------------------------|------------------------------------|
| Product name | The Better Wae Flooring Collection |
| Additional label(s) | |
| Product number / reference | The Better Wae Flooring Collection |
| Place(s) of production | |
| CPC code | |

Self declared

EPDs within the same product category but from different programmes may not be comparable.

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

| | |
|-------------------------------|---|
| EPD program operator | Self declared |
| EPD standards | This EPD is in accordance with EN 15804+A2 and ISO 14025 standards. |
| Product category rules | The CEN standard EN 15804 serves as the core PCR. In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021) is used. |
| EPD author | A.J.N. van der Brugge - Circle Line |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification |
| Verification date | 12-10-2022 |
| EPD verifier | Ing. E.F.L.M.. Verspeek - Agrodome |
| EPD number | |
| ECO Platform nr. | - |
| Publishing date | |
| EPD valid until | |

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Studio Waes The Better Wae Flooring Collection is used for flooring. These modular flooring tiles are easy to lay in a number of beautiful patterns. Due to this patterns it is easy to swap dirty or damaged tiles after a period of time to extend the total lifetime. This Environmental Product Declaration covers all styles and patterns of Studio Waes The Better Wae Flooring Collection and is based on the high quality waste streams of Interface (production plant Scherpenzeel - Netherlands) and Desso BV (production plant Waalwijk - Netherlands).

The production of The Better Wae Flooring Collection takes place in Utrecht and is carried out by people with limited employment. It is Studio Waes mission to create employment for as many status holders as possible, to give them a solid foundation to build up a future in the Netherlands.

PRODUCT APPLICATION

Flooring, acoustic, energy saving material, custom made aesthetics

TECHNICAL SPECIFICATIONS

Studio Waes The Better Wae Flooring Collection are products of high quality as it's based on waste of market leaders, such as Interface and Desso BV. Studio Wae gives a guarantee of 2 years on the products and a lifecycle of about 10-15 years. Easy to swap worn out tiles with new ones without losing aesthetics. In comparison with square tiles this is unique.

PRODUCT STANDARDS

The floor finishes meets at least class 33 (heavy duty use in utility function), according to ISO 10874:2009

PHYSICAL PROPERTIES OF THE PRODUCT

Thickness 6 mm

Weight 4 kg/m²

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at www.studiowae.nl.

PRODUCT RAW MATERIAL COMPOSITION

| Product and Packaging Material | Weight, kg | Post-consumer % | Renewable % | Country Region of origin |
|--------------------------------|------------|-----------------|-------------|--------------------------|
| Rejected tiles from | 4,0 | | | Netherlands |
| Cardboard Pallet Box | 0,065 | | | Netherlands |
| Pallet | 0,01 | 100 | | Netherlands |

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Studio Wae's The Better Wae Flooring Collection is made out waste of the carpet industry. These modular flooring tiles have imperfections, irregularities or production flaws and are shipped to Studio Wae in Utrecht. Studio Wae manually selects the carpet tiles she wants to use. Due to the variety of designs and possibilities, only 3% of the tiles are not used and, therefore returned to the original factory. Transport of pallets with waste tiles is executed by 16-32 ton lorries.

Studio Wae's designs are part of their unique selling point. All the designs create upscalability with a great deal of customizing. The customer chooses the desired colours and patterns and Studio Wae will cut the tiles in the design with an energy efficient cutting machine.

An average amount of cutting waste (20%) is send back to the original factory for pre-consumer recycling.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

A4: Transport

Transport of the packed modular flooring carpet tiles from factory to the place of installation.

A5: Installation

Installation of the Better Wae Flooring Collection, proceeding installation and packaging waste. Preparing of the floor is not included in this LCA, since it's not part of Studio Wae's primary process.

Cutting waste of 3% of the flooring is used for incineration.

PRODUCT USE AND MAINTENANCE (B1-B7)

B1: Use

Indoor emissions during the use stage. After the first year, no product related Volatile Organic Compound (VOC) emissions are relevant due to known VOC decay curves of the product.

B2: Maintenance

Vacuum cleaning - electricity supply

Wet cleaning - water consumption, electricity, cleaning consumables

The declared values are based on a period of one year and are

multiplied by the lifespan of the product (10 years).

B3-B7:

These modules are not relevant and therefore not declared.

Air, soil, and water impacts during the use phase have not been studied.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

C1: De-construction

No industrial process needed. The modular flooring tiles will be manually removed from a building.

C2: Transport

Transport of the modular flooring tiles to incineration for the cement industry.

C3: Waste processing

Treatment of the flooring tile waste for recycling

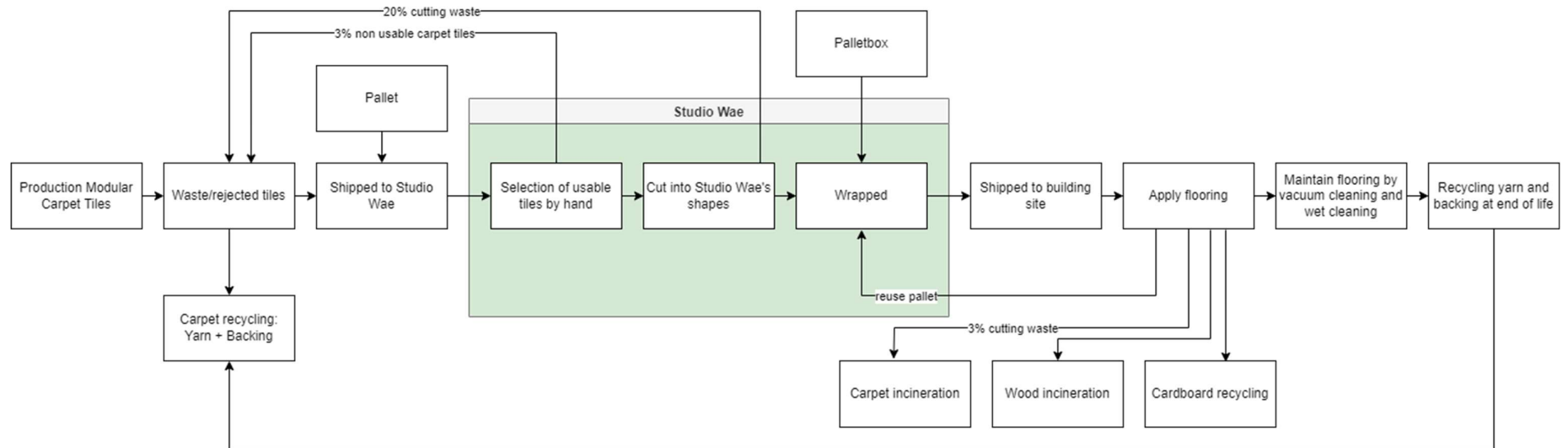
C4: Disposal

100% of the flooring tiles are used for recycling, 100% of the adhesives stay in the building after removal of the flooring tiles.

D: Recycling Potential

Recycling of palletbox, energy recovery from pallet and A5 cutting waste carpet tiles.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data 2021

DECLARED AND FUNCTIONAL UNIT

| | |
|------------------------|--|
| Declared unit | 1 m2 |
| Mass per declared unit | 4 kg |
| Functional unit | Modular carpet flooring tiles in different patterns. |
| Reference service life | 10 |

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

| | |
|--|-------|
| Biogenic carbon content in product, kg C | 0 |
| Biogenic carbon content in packaging, kg C | 0.051 |

SYSTEM BOUNDARY

This EPD covers the cradle to grave modules; A1 – D.

| Product stage | | | Assembly stage | | Use stage | | | | | | | End of life stage | | | | Beyond the system boundaries | | |
|--|-----------|---------------|----------------|----------|-----------|-------------|---------|-------------|---------------|------------------------|-----------------------|-------------------|-----------|------------------|----------|------------------------------|----------|-----------|
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | D | D |
| x | x | x | x | x | MN D | x | MN D | MN D | MN D | MN D | MN D | x | x | x | x | x | x | x |
| Geography, by two-letter ISO country code or regions. The International EPD System only. | | | | | | | | | | | | | | | | | | |
| EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU |
| Raw materials | Transport | Manufacturing | Transport | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstr./demol. | Transport | Waste processing | Disposal | Reuse | Recovery | Recycling |

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The anti-slip coating, which is needed to apply the modular flooring tiles, is included due to mass and impact, but is not part of Studio Waes primary process.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

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.

No allocations were needed for this LCA.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 - standard.

AVERAGES AND VARIABILITY

The declared unit of 4,0 kg is an average of the masses of the main stream waste tiles that are used to create The Better Wae Flooring Collection.

The waste carpet tiles are 50x50 cm and have an area of 0,25m² each. Studio Wae cuts these carpet tiles into a variety of shapes. The average area used is 0,20m², as showed in the table below. Therefore the average cutting waste is 0,05m² per carpet tile, or 20%.

Averaging data to calculate the cutting waste percentage:

| Shape | Area m2 | tiles per m2 |
|---------------------|-------------|--------------|
| Boom | 0,20 | 4,91 |
| Beo | 0,16 | 6,09 |
| Biko | 0,25 | 4,00 |
| Boomerang | 0,20 | 4,91 |
| Angular | 0,16 | 6,09 |
| Average area | 0,20 | 4,33 |

ENVIRONMENTAL IMPACT DATA

Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-----------------------------|------------------------|-----|---------|----------|----------|---------|---------|-----|----------|-----|-----|-----|-----|-----|-----|---------|---------|-----|----------|
| Climate Change – total | kg CO ₂ e | 0E0 | 2,55E-2 | 1,87E-2 | 4,42E-2 | 1,08E-1 | 3,07E-1 | MND | 3,74E-1 | MND | MND | MND | MND | MND | 0E0 | 3,34E-2 | 1,41E0 | 0E0 | -2,1E-2 |
| CC – fossil | kg CO ₂ e | 0E0 | 2,55E-2 | 6,61E-2 | 9,16E-2 | 1,09E-1 | 2,55E-1 | MND | 4,06E-1 | MND | MND | MND | MND | MND | 0E0 | 3,33E-2 | 1,06E0 | 0E0 | -1,37E-1 |
| CC – biogenic | kg CO ₂ e | 0E0 | 1,36E-5 | -4,79E-2 | -4,78E-2 | 5,82E-5 | 5,22E-2 | MND | -4,55E-2 | MND | MND | MND | MND | MND | 0E0 | 1,78E-5 | 3,42E-1 | 0E0 | 1,15E-1 |
| CC – LULUC | kg CO ₂ e | 0E0 | 9,03E-6 | 4E-4 | 4,09E-4 | 3,87E-5 | 7,16E-6 | MND | 1,41E-2 | MND | MND | MND | MND | MND | 0E0 | 1,18E-5 | 8,72E-4 | 0E0 | 6,35E-4 |
| Ozone depletion pot. | kg CFC ₁₁ e | 0E0 | 5,79E-9 | 8,68E-9 | 1,45E-8 | 2,48E-8 | 1,49E-9 | MND | 3,73E-8 | MND | MND | MND | MND | MND | 0E0 | 7,57E-9 | 1,19E-7 | 0E0 | -1,57E-8 |
| Acidification potential | mol H ⁺ e | 0E0 | 1,04E-4 | 3,42E-4 | 4,46E-4 | 4,45E-4 | 8,33E-5 | MND | 1,86E-3 | MND | MND | MND | MND | MND | 0E0 | 1,36E-4 | 4,43E-3 | 0E0 | -2,7E-4 |
| EP-freshwater ³⁾ | kg Pe | 0E0 | 2,13E-7 | 4,64E-6 | 4,86E-6 | 9,12E-7 | 1,85E-7 | MND | 2,55E-5 | MND | MND | MND | MND | MND | 0E0 | 2,79E-7 | 3,17E-5 | 0E0 | -3,28E-6 |
| EP-marine | kg Ne | 0E0 | 3,09E-5 | 1,25E-4 | 1,56E-4 | 1,32E-4 | 3,68E-5 | MND | 5,12E-4 | MND | MND | MND | MND | MND | 0E0 | 4,05E-5 | 1,38E-3 | 0E0 | -5,35E-5 |
| EP-terrestrial | mol Ne | 0E0 | 3,41E-4 | 1,13E-3 | 1,47E-3 | 1,46E-3 | 3,76E-4 | MND | 4,18E-3 | MND | MND | MND | MND | MND | 0E0 | 4,47E-4 | 1,34E-2 | 0E0 | -6,19E-4 |
| POCP (“smog”) | kg NMVOCe | 0E0 | 1,05E-4 | 2,65E-4 | 3,7E-4 | 4,48E-4 | 1E-4 | MND | 1,05E-3 | MND | MND | MND | MND | MND | 0E0 | 1,37E-4 | 4,39E-3 | 0E0 | -1,82E-4 |
| ADP-minerals & metals | kg Sbe | 0E0 | 6,89E-7 | 9,68E-7 | 1,66E-6 | 2,95E-6 | 2,4E-7 | MND | 8,36E-6 | MND | MND | MND | MND | MND | 0E0 | 9,02E-7 | 1,89E-5 | 0E0 | 1,45E-6 |
| ADP-fossil resources | MJ | 0E0 | 3,84E-1 | 9,8E-1 | 1,36E0 | 1,64E0 | 1,24E-1 | MND | 5,81E0 | MND | MND | MND | MND | MND | 0E0 | 5,03E-1 | 1,52E1 | 0E0 | -2,48E0 |
| Water use ²⁾ | m ³ e depr. | 0E0 | 1,24E-3 | 2,4E-2 | 2,52E-2 | 5,29E-3 | 4,14E-4 | MND | 2,98E-1 | MND | MND | MND | MND | MND | 0E0 | 1,62E-3 | 2,93E-1 | 0E0 | -3,71E-2 |

1) CC = Climate C; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e.

USE OF NATURAL RESOURCES

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|--------------------------|------|-----|---------|---------|---------|---------|---------|-----|--------|-----|-----|-----|-----|-----|-----|---------|---------|-----|----------|
| Renew. PER as energy | MJ | 0E0 | 5,42E-3 | 6,87E-1 | 6,93E-1 | 2,32E-2 | 1,04E-2 | MND | 1,09E0 | MND | MND | MND | MND | MND | 0E0 | 7,09E-3 | 7,23E-1 | 0E0 | -6,21E-1 |
| Renew. PER as material | MJ | 0E0 | 0E0 | 4,7E-1 | 4,7E-1 | 0E0 | 4,7E-3 | MND | 0E0 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | -4,87E-1 |
| Total use of renew. PER | MJ | 0E0 | 5,42E-3 | 1,16E0 | 1,16E0 | 2,32E-2 | 1,51E-2 | MND | 1,09E0 | MND | MND | MND | MND | MND | 0E0 | 7,09E-3 | 7,23E-1 | 0E0 | -1,11E0 |
| Non-re. PER as energy | MJ | 0E0 | 3,84E-1 | 9,8E-1 | 1,36E0 | 1,64E0 | 1,24E-1 | MND | 5,81E0 | MND | MND | MND | MND | MND | 0E0 | 5,03E-1 | 1,52E1 | 0E0 | -2,48E0 |
| Non-re. PER as material | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | 0E0 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| Total use of non-re. PER | MJ | 0E0 | 3,84E-1 | 9,8E-1 | 1,36E0 | 1,64E0 | 1,24E-1 | MND | 5,81E0 | MND | MND | MND | MND | MND | 0E0 | 5,03E-1 | 1,52E1 | 0E0 | -2,48E0 |

| | | | | | | | | | | | | | | | | | | | |
|--------------------------|----------------|-----|---------|---------|------|---------|---------|-----|---------|-----|-----|-----|-----|-----|-----|---------|---------|-----|----------|
| Secondary materials | kg | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | 1,7E-3 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 4,78E-2 |
| Renew. secondary fuels | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | 0E0 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| Non-ren. secondary fuels | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | 0E0 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| Use of net fresh water | m ³ | 0E0 | 6,56E-5 | 1,93E-3 | 2E-3 | 2,81E-4 | 9,26E-5 | MND | 1,36E-2 | MND | MND | MND | MND | MND | 0E0 | 8,59E-5 | 3,94E-3 | 0E0 | -4,58E-4 |

6) PER = Primary energy resources

END OF LIFE – WASTE

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---------------------|------|-----|---------|---------|---------|---------|---------|-----|---------|-----|-----|-----|-----|-----|-----|---------|-----|-----|----------|
| Hazardous waste | kg | 0E0 | 3,9E-4 | 2,94E-3 | 3,33E-3 | 1,67E-3 | 1,83E-3 | MND | 2,75E-2 | MND | MND | MND | MND | MND | 0E0 | 5,1E-4 | 0E0 | 0E0 | 3,05E-3 |
| Non-hazardous waste | kg | 0E0 | 2,68E-2 | 1,18E-1 | 1,45E-1 | 1,15E-1 | 1,28E-1 | MND | 7,6E-1 | MND | MND | MND | MND | MND | 0E0 | 3,5E-2 | 0E0 | 0E0 | -1,24E-1 |
| Radioactive waste | kg | 0E0 | 2,63E-6 | 3,2E-6 | 5,83E-6 | 1,13E-5 | 6,35E-7 | MND | 9,97E-6 | MND | MND | MND | MND | MND | 0E0 | 3,45E-6 | 0E0 | 0E0 | -5,25E-6 |

END OF LIFE – OUTPUT FLOWS

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|--------------------------|------|-----|-----|--------|--------|-----|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Components for re-use | kg | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | 0E0 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| Materials for recycling | kg | 0E0 | 0E0 | 9,2E-1 | 9,2E-1 | 0E0 | 9,2E-3 | MND | 0E0 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 4E0 | 0E0 | 0E0 |
| Materials for energy rec | kg | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 3,09E-1 | MND | 0E0 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| Exported energy | MJ | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | MND | 0E0 | MND | MND | MND | MND | MND | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

| Scenario parameter | Value |
|--|--|
| Electricity data source and quality | Market for electricity, low voltage (Reference product: electricity, low voltage) |
| Electricity CO ₂ e / kWh | 0,19 |
| District heating data source and quality | n/a |
| District heating CO ₂ e / kWh | 0 |

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.6 (2019) and One Click LCA database.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021)

ABOUT THE MANUFACTURER

Studio Wae creates impact on raw material extraction by converting residual flows into scalable and beautiful products. Studio Wae believes it is important that everyone realizes that waste can have a positive value. By using production waste, we extend the life cycle of these sources.

EPD AUTHOR AND CONTRIBUTORS

| | |
|-----------------------------|--|
| Manufacturer | Studio Wae |
| EPD author | A.J.N. van der Brugge MSc - Circle Line |
| EPD verifier | Ing. E.F.L.M.. Verspeek - Agrodome |
| EPD program operator | Self declared |
| Background data | This EPD is based on Ecoinvent 3.6 (cut-off) and One Click LCA databases. |
| LCA software | The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for |

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with EN 15804, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The background report (project report) for this EPD

Why does verification transparency matter? [Read more online.](#)

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

| EPD verification information | Answer |
|---|--------------------------------------|
| Independent EPD verifier rd-party verifier for EPD | Ing. E.F.L.M. Verspeek - Agrodome |
| EPD verification started on | 1-9-2022 |
| EPD verification completed on | 18-10-2022 |
| Approver of the EPD verifier | Self declared |

| Author & tool verification | Answer |
|--------------------------------|---------------------------|
| EPD author | A.J.N. van der Brugge MSc |
| EPD author training completion | 1-7-2021 |
| Independent software verifier | One Click LCA |
| Software verification date | 17 January 2021 |

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of

- the data collected and used in the LCA calculations,
- the way the LCA-based calculations have been carried out,
- the presentation of environmental data in the EPD, and
- other additional environmental information, as present

with respect to the procedural and methodological requirements in ISO 14025:2010 and EN 15804:2012+A2:2019.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.



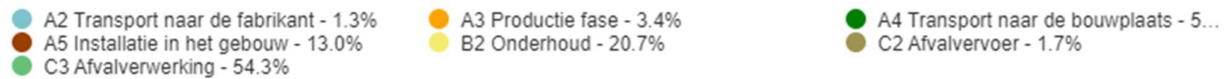
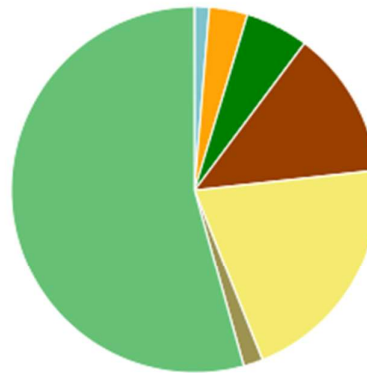
Ing. E.F.L.M. Verspeek - Agrodome

ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

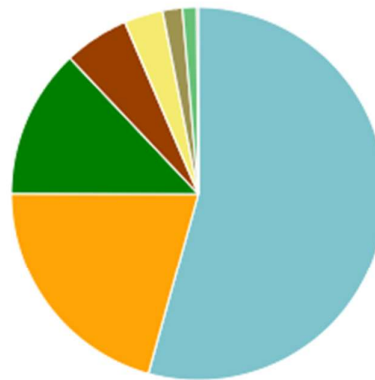
| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|----------------------|------------------------------------|-----|---------|---------|---------|---------|---------|-----|---------|-----|-----|-----|-----|-----|-----|---------|---------|-----|----------|
| Climate Change | kg CO ₂ e | 0E0 | 2,52E-2 | 6,57E-2 | 9,1E-2 | 1,08E-1 | 2,55E-1 | MND | 3,96E-1 | MND | MND | MND | MND | MND | 0E0 | 3,31E-2 | 1,13E0 | 0E0 | -1,33E-1 |
| Ozone depletion Pot. | kg CFC-11e | 0E0 | 4,6E-9 | 7,37E-9 | 1,2E-8 | 1,97E-8 | 1,22E-9 | MND | 4,38E-8 | MND | MND | MND | MND | MND | 0E0 | 6,03E-9 | 9,85E-8 | 0E0 | -1,26E-8 |
| Acidification | kg SO ₂ e | 0E0 | 5,11E-5 | 2,17E-4 | 2,68E-4 | 2,19E-4 | 5,68E-5 | MND | 1,48E-3 | MND | MND | MND | MND | MND | 0E0 | 6,69E-5 | 2,66E-3 | 0E0 | -2,22E-4 |
| Eutrophication | kg PO ₄ ³ e | 0E0 | 1,05E-5 | 1,51E-4 | 1,61E-4 | 4,49E-5 | 3,73E-5 | MND | 7,83E-4 | MND | MND | MND | MND | MND | 0E0 | 1,37E-5 | 2,18E-3 | 0E0 | -1,15E-4 |
| POCP ("smog") | kg C ₂ H ₄ e | 0E0 | 3,36E-6 | 1,44E-5 | 1,78E-5 | 1,44E-5 | 2,09E-6 | MND | 8,49E-5 | MND | MND | MND | MND | MND | 0E0 | 4,4E-6 | 2,78E-4 | 0E0 | -1,08E-5 |
| ADP-elements | kg Sbe | 0E0 | 6,89E-7 | 9,68E-7 | 1,66E-6 | 2,95E-6 | 2,4E-7 | MND | 8,36E-6 | MND | MND | MND | MND | MND | 0E0 | 9,02E-7 | 1,89E-5 | 0E0 | 1,45E-6 |
| ADP-fossil | MJ | 0E0 | 3,84E-1 | 9,8E-1 | 1,36E0 | 1,64E0 | 1,24E-1 | MND | 5,81E0 | MND | MND | MND | MND | MND | 0E0 | 5,03E-1 | 1,52E1 | 0E0 | -2,48E0 |

ANNEX 6 : LIFE-CYCLE ASSESSMENT RESULT VISUALIZATION

Climate Change kg CO2e - Levenscyclusstadia

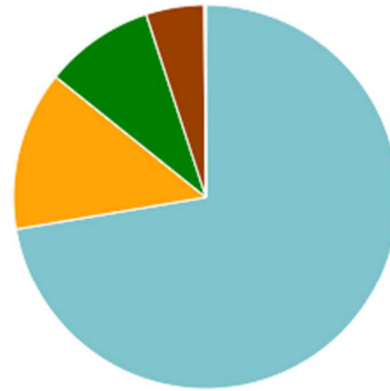


Climate Change kg CO2e - Classificatie



- Module C3 (afvalverwerking) milieue...
- Onderhoud, per aangegeven eenhei...
- Installatieafval, per aangegeven een...
- Invoermassa van een aangegeven e...
- Verpakkingsmaterialen Productgrond...
- Module C2 (transport tijdens het eind...
- Apart transport - A2 - 1.2%
- Gegeneerd afval en afvalwaterzuiv...

Climate Change kg CO2e – Resource types



- ecoinventWaterSewarageWasteMg...
- ecoinventElectricityGasSteamAC - 4...
- ecoinventManufacturing - 13.4%
- Andere soorten bronnen - 0.1%
- transport - 9.2%