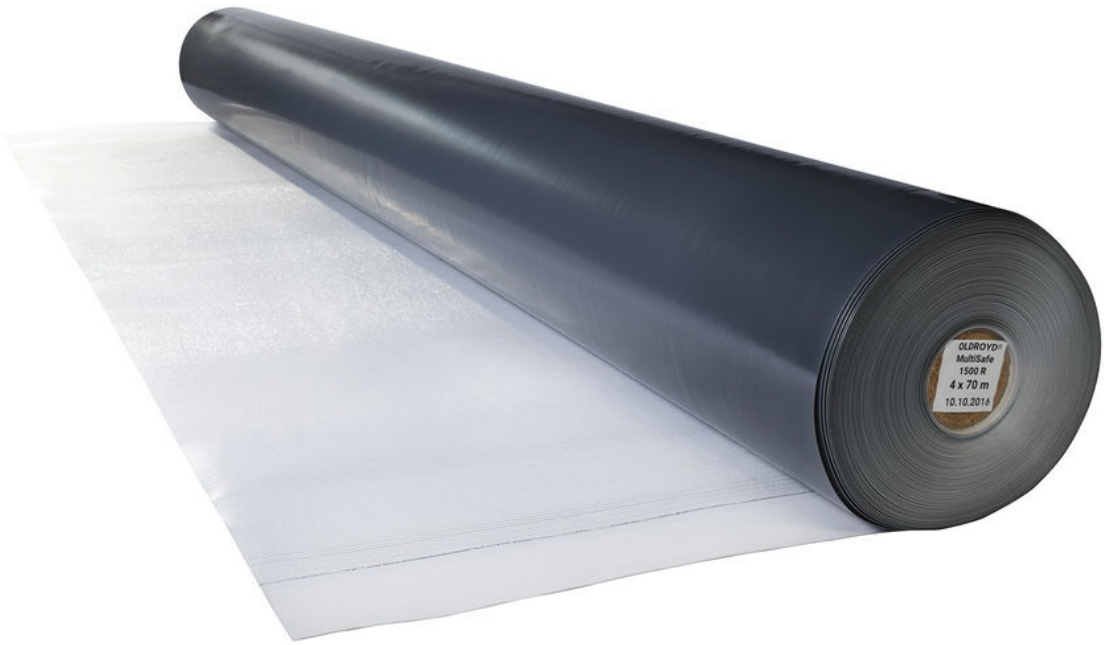
epd-norge
Global program operatør

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## OLDROYD® Multisafe 1500




The Norwegian EPD Foundation

**Owner of the declaration:**
Oldroyd AS

**Produkt:**
OLDROYD® Multisafe 1500

**Declared unit:**
1 m2

**This declaration is based on Product Category Rules:**
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 022:2022 Part B for Roof waterproofing

**Program operator:**
The Norwegian EPD Foundation

**Declaration number:**

**Registration number:**

**Issue date:**

**Valid to:**

**EPD Software:**
LCA.no EPD generator ID: 57253

## General information

**Product:**

OLDROYD® Multisafe 1500

**Owner of the declaration:**

Oldroyd AS
Contact person: Linda Amanda Celin
Phone: +47 35 98 75 50
e-mail: mail@oldroyd.no

**Program operator:**

Post Box 5250 Majorstuen, 0303 Oslo, Norway
The Norwegian EPD Foundation
Phone: +47 23 08 80 00
web: post@epd-norge.no

**Manufacturer:**

Oldroyd AS

**Declaration number:**

**Place of production:**

Oldroyd AS
Isdammen 25
3960 Stathelle, Norway

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

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 022:2022 Part B for Roof waterproofing

**Management system:**

ISO 9001 and ISO 14001 Certificate No.: 213

**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.

**Organisation no:**

870 890 192

**Declared unit:**

1 m2 OLDROYD® Multisafe 1500

**Issue date:**

**Declared unit (cradle to gate) with option:**

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

**Valid to:**

**Year of study:**

2021

**Functional unit:**

**Comparability:**

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

**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

**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.

Developer of EPD: Nina Carlsen

Reviewer of company-specific input data and EPD: Jan Zielinski

**Verification of EPD tool:**

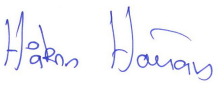
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

**Approved:**



Håkon Hauan, CEO EPD-Norge

## Product:

### Product description:

OLDROYD® MultiSafe 1500 is a 1.5 mm membrane of flexible and strong polyethylene (LLDPE). It is specifically designed for waterproofing tunnels cavities.
It has a 150mm wide weld bead on each side, marked with indication lines to ensure correct overlap.
OLDROYD® MultiSafe 1500 contains up to 10 % internally recycled material.

### Product specification

OLDROYD® MultiSafe 1500 is based on OLDROYD Multi-Layer Technology™ and consists of three layers. It is white on the front towards the tunnel room and grey on the back. It has a black signal layer to disclose damagesand breakages.
OLDROYD® MultiSafe 1500 is suitable for hot air welding of all joints and comes on a roll in widths up to 4,2 m and lengths up to 60 m.
Documentation is provided on request.

| Materials | kg | % |
|---|---|---|
| Pigments and Fillers | 0,07 | 4,55 |
| Plastic - Polyethylene | 1,37 | 95,45 |
| Total | 1,44 | |

| Packaging | kg | % |
|---|---|---|
| Packaging - Cardboard | 0,02 | 100,00 |
| Total incl. packaging | 1,46 | |

### Technical data:

TDS 0402-CPR-SC0113-18

### Market:

Scandinavia

### Reference service life, product

120 years

### Reference service life, building

60 years

## LCA: Calculation rules

### Declared unit:

1 m2 OLDROYD® Multisafe 1500

### 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:

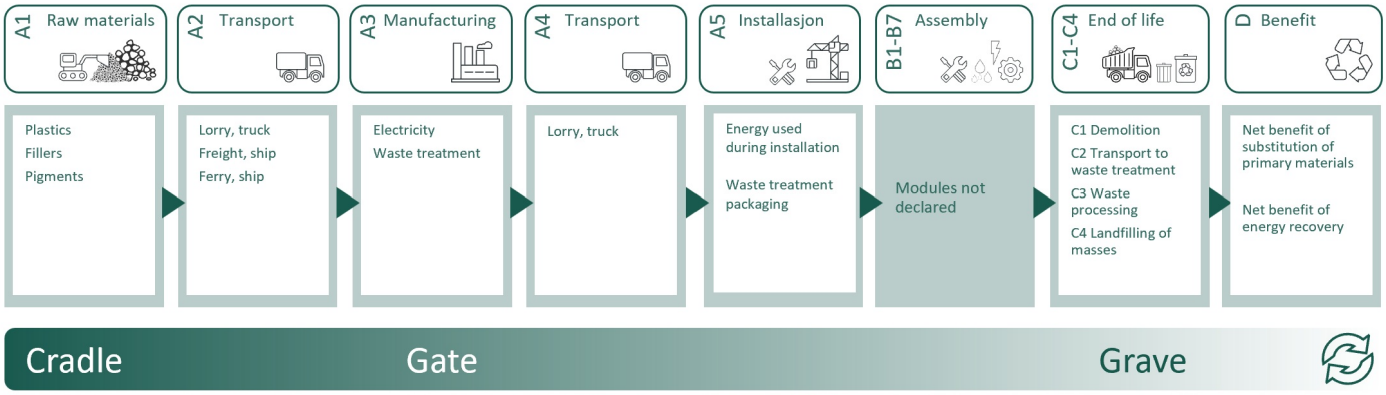
Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other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

| Materials | Source | Data quality | Year |
|---|---|---|---|
| Packaging - Cardboard | ecoinvent 3.6 | Database | 2019 |
| Packaging - Plastic | ecoinvent 3.6 | Database | 2019 |
| Pigments and Fillers | ecoinvent 3.6 | Database | 2019 |
| Plastic - Polyethylene | ecoinvent 3.6 | Database | 2019 |

## 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:




### Additional technical information:

www.oldroyd.no

## LCA: Scenarios and additional technical information

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

Material loss set as 5 % of product weight.

| 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 % | 300 | 0,043 | l/tkm | 12,90 |

| Assembly (A5) | Unit | Value | | | |
|---|---|---|---|---|---|
| Electricity, Norway (kWh) | kWh/DU | 0,07 | | | |
| Material loss from installation (psc) | Units/DU | 0,05 | | | |
| Waste treatment of material loss (psc) | Units | 0,05 | | | |
| Waste, packaging, core board, to average treatment (kg) | kg | 0,02 | | | |
| Waste, packaging, plastic tape, to average treatment (kg) | kg | 0,00 | | | |

| 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 % | 85 | 0,043 | l/tkm | 3,66 |

| Waste processing (C3) | Unit | Value | | | |
|---|---|---|---|---|---|
| Waste treatment per kg Sealing sheet, Polyethylene (PE), incineration with energy recovery (kg) | kg/DU | 1,44 | | | |

| Disposal (C4) | Unit | Value | | | |
|---|---|---|---|---|---|
| Landfilling of ashes from incineration per kg Sealing sheet, polyethylene (PE), process per kg ashes and residues (kg) | kg | 0,23 | | | |

| Benefits and loads beyond the system boundaries (D) | Unit | Value | | | |
|---|---|---|---|---|---|
| Substitution of electricity, in Norway (MJ) | MJ | 1,91 | | | |
| Substitution of thermal energy, district heating, in Norway (MJ) | MJ | 28,87 | | | |

## 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-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
| | GWP-total | kg $CO_2$ -eq | 3,19E+00 | 7,16E-02 | 1,99E-01 | 0 | 2,03E-02 | 3,68E+00 | 4,82E-03 | -1,73E-01 |
| | GWP-fossil | kg $CO_2$ -eq | 3,21E+00 | 7,15E-02 | 1,66E-01 | 0 | 2,03E-02 | 3,68E+00 | 4,82E-03 | -1,67E-01 |
| | GWP-biogenic | kg $CO_2$ -eq | -2,31E-02 | 2,96E-05 | 3,28E-02 | 0 | 8,39E-06 | 4,09E-05 | 2,99E-06 | -3,46E-04 |
| | GWP-luluc | kg $CO_2$ -eq | 1,46E-03 | 2,55E-05 | 8,11E-05 | 0 | 7,21E-06 | 5,10E-06 | 1,04E-06 | -5,76E-03 |
| | ODP | kg CFC11 -eq | 1,64E-07 | 1,62E-08 | 9,18E-09 | 0 | 4,59E-09 | 2,98E-09 | 9,20E-10 | -1,22E-02 |
| | AP | mol H+ -eq | 1,76E-02 | 2,06E-04 | 9,04E-04 | 0 | 5,83E-05 | 4,55E-04 | 2,40E-05 | -1,38E-03 |
| | EP-FreshWater | kg P -eq | 5,68E-05 | 5,72E-07 | 2,99E-06 | 0 | 1,62E-07 | 3,31E-07 | 5,81E-08 | -1,49E-05 |
| | EP-Marine | kg N -eq | 3,19E-03 | 4,07E-05 | 1,64E-04 | 0 | 1,15E-05 | 2,17E-04 | 8,13E-06 | -4,51E-04 |
| | EP-Terrestial | mol N -eq | 3,57E-02 | 4,55E-04 | 1,83E-03 | 0 | 1,29E-04 | 2,35E-03 | 9,08E-05 | -4,87E-03 |
| | POCP | kg NMVOC -eq | 1,34E-02 | 1,74E-04 | 6,85E-04 | 0 | 4,94E-05 | 5,65E-04 | 2,58E-05 | -1,34E-03 |
| | ADP-minerals&metals[1] | kg Sb -eq | 3,35E-05 | 1,98E-06 | 1,91E-06 | 0 | 5,60E-07 | 1,47E-07 | 5,03E-08 | -1,66E-06 |
| | ADP-fossil[1] | MJ | 1,02E+02 | 1,08E+00 | 5,20E+00 | 0 | 3,06E-01 | 2,52E-01 | 7,13E-02 | -2,39E+00 |
| | WDP[1] | $m^3$ | 1,65E+02 | 1,05E+00 | 1,22E+01 | 0 | 2,96E-01 | 5,97E-01 | 3,57E-01 | -2,98E+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*10-3 = 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-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| | PM | Disease incidence | 1,06E-07 | 4,38E-09 | 5,64E-09 | 0 | 1,24E-09 | 2,21E-09 | 3,81E-10 | -8,35E-08 |
| | IRP[2] | kgBq U235 -eq | 9,29E-02 | 4,73E-03 | 5,31E-03 | 0 | 1,34E-03 | 4,56E-04 | 3,05E-04 | -1,53E-02 |
| | ETP-fw[1] | CTUe | 2,25E+01 | 8,02E-01 | 1,27E+00 | 0 | 2,27E-01 | 7,58E-01 | 7,42E-02 | -1,30E+01 |
| | HTP-c[1] | CTUh | 1,26E-09 | 0,00E+00 | 6,80E-11 | 0 | 0,00E+00 | 8,60E-11 | 3,00E-12 | -2,38E-10 |
| | HTP-nc[1] | CTUh | 2,29E-08 | 8,76E-10 | 1,31E-09 | 0 | 2,48E-10 | 3,44E-09 | 1,13E-10 | -1,25E-08 |
| | SQP[1] | dimensionless | 6,57E+00 | 7,57E-01 | 3,81E-01 | 0 | 2,14E-01 | 3,24E-02 | 1,66E-01 | -1,60E+01 |

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 = Soil Quality (dimensionless)

"Reading example: 9,0 E-03 = 9,0*10-3 = 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-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
| | PERE | MJ | 5,74E+00 | 1,55E-02 | 5,80E-01 | 0 | 4,39E-03 | 8,11E-03 | 2,34E-03 | -1,48E+01 |
| | PERM | MJ | 2,69E-01 | 0,00E+00 | -2,75E-01 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| | PERT | MJ | 6,01E+00 | 1,55E-02 | 3,05E-01 | 0 | 4,39E-03 | 8,11E-03 | 2,34E-03 | -1,48E+01 |
| | PENRE | MJ | 4,57E+01 | 1,08E+00 | 2,37E+00 | 0 | 3,07E-01 | 2,52E-01 | 7,13E-02 | -2,39E+00 |
| | PENRM | MJ | 5,84E+01 | 0,00E+00 | 2,92E+00 | 0 | 0,00E+00 | -5,84E+01 | 0,00E+00 | 0,00E+00 |
| | PENRT | MJ | 1,04E+02 | 1,08E+00 | 5,28E+00 | 0 | 3,07E-01 | -5,81E+01 | 7,13E-02 | -1,27E+01 |
| | SM | kg | 2,14E-02 | 0,00E+00 | 1,07E-03 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| | RSF | MJ | 9,92E-02 | 5,54E-04 | 5,22E-03 | 0 | 1,57E-04 | 2,42E-04 | 5,97E-05 | -2,59E-03 |
| | NRSF | MJ | 2,17E-02 | 1,98E-03 | 1,76E-03 | 0 | 5,61E-04 | 0,00E+00 | 4,20E-03 | -8,76E-01 |
| | FW | $m^3$ | 8,58E-02 | 1,16E-04 | 6,48E-03 | 0 | 3,28E-05 | 7,33E-04 | 6,47E-05 | -1,78E-02 |

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*10-3 = 0,009"
*INA Indicator Not Assessed

## End of life - Waste

| Indicator | | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| | HWD | kg | 3,55E-03 | 5,58E-05 | 1,95E-04 | 0 | 1,58E-05 | 0,00E+00 | 2,25E-01 | -1,12E-04 |
| | NHWD | kg | 2,48E-01 | 5,26E-02 | 3,68E-02 | 0 | 1,49E-02 | 0,00E+00 | 2,50E-02 | -5,65E-02 |
| | RWD | kg | 9,65E-05 | 7,37E-06 | 5,40E-06 | 0 | 2,09E-06 | 0,00E+00 | 4,36E-07 | -1,25E-05 |

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

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

## End of life - Output flow

| Indicator | | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| | CRU | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| | MFR | kg | 9,43E-03 | 0,00E+00 | 1,91E-02 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| | MER | kg | 3,99E-08 | 0,00E+00 | 1,40E-03 | 0 | 0,00E+00 | 1,44E+00 | 0,00E+00 | 0,00E+00 |
| | EEE | MJ | 5,53E-03 | 0,00E+00 | 1,42E-03 | 0 | 0,00E+00 | 2,37E+00 | 0,00E+00 | 0,00E+00 |
| | EET | MJ | 8,37E-02 | 0,00E+00 | 2,15E-02 | 0 | 0,00E+00 | 3,58E+01 | 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*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 | 9,26E-03 |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2

## 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 | Data source | Amount | Unit |
|---|---|---|---|
| Electricity, Norway (kWh) | ecoinvent 3.6 | 24,33 | g CO2-eq/kWh |

### Dangerous substances

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

### Indoor environment

No impact

## Additional Environmental Information

| Additional environmental impact indicators required in NPCR Part A for construction products | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
| GWPIOBC | kg $CO_2$ -eq | 3,16E+00 | 7,16E-02 | 1,64E-01 | 0 | 2,03E-02 | 0,00E+00 | 0,00E+00 | -1,71E-01 |

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.

## Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.
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NPCR Part A: Construction products and services. Ver. 2.0. March 2021, EPD-Norge.
NPCR 022 Part B for Roof waterproofing. Ver. 2.0 March 2022, EPD-Norge.

TDS 0402-CPR-SC0113-18
www.oldroyd.no


| | | |
|---|---|---|
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