

# Environmental product declaration

In accordance with 14025 and EN15804+A2

## PE Optimal Cable Protection Pipes



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**PIPELIFE** 

The Norwegian EPD Foundation

**Owner of the declaration:**

Pipelife Sverige AB

**Product:**

PE Optimal Cable Protection Pipes

**Declared unit:**

1 kg

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

CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
NPCR Part A: Construction products and services. Ver. 1.0. March 2021

**Program operator:**

The Norwegian EPD Foundation

**Declaration number:**

NEPD-4485-3741-EN

**Registration number:**

NEPD-4485-3741-EN

**Issue date:**

23.05.2023

**Valid to:**

23.05.2028

**EPD Software:**

LCA.no EPD generator ID: 62038



## General information

### Product

PE Optimal Cable Protection Pipes

### Program operator:

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

### Declaration number:

NEPD-4485-3741-EN

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

CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
NPCR Part A: Construction products and services. Ver. 1.0. March 2021

### 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 PE Optimal Cable Protection Pipes

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

A1-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. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the process is reviewed annually. 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.

Third party verifier:

Michael M. Jenssen, Asplan Viak AS  
(no signature required)

### Owner of the declaration:

Pipelife Sverige AB  
Contact person:  
Phone: +46 513 22114  
e-mail: [yvette.lennartsson@pipelife.com](mailto:yvette.lennartsson@pipelife.com)

### Manufacturer:

Pipelife Sverige AB

### Place of production:

Pipelife Sverige AB  
Box 50  
SE-524 02 Ljung , Sweden

### Management system:

EN ISO 9001:2015 and EN ISO 14001:2015

### Organisation no:

SE556087042901

### Issue date:

23.05.2023

### Valid to:

23.05.2028

### Year of study:

2022

### Comparability:

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

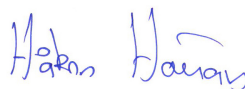
### Development and verification of EPD:

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.

Developer of EPD: Yvette Lennartsson

Reviewer of company-specific input data and EPD: Bjørn Svensson

### Approved:



Håkon Hauan, CEO EPD-Norge

## Product

### Product description:

Smooth PE cable protection pipes in short lengths.  
Products are UV stable.  
Classified as SRS or SRE-P.

### Product specification

70013535, 70013536, 70013537, 70013538, 70013539, 70013540, 70013541, 70013542, 70013543, 70013544, 70013545, 70013546

Product related data to be found at Pipelife Sverige AB product catalogue <https://catalog.pipelife.com/se>.

| Materials           | kg   | %      |
|---------------------|------|--------|
| Polyethylene (HDPE) | 1,00 | 100,00 |
| Total               | 1,00 |        |

### Technical data:

PE material with density 960 kg/m<sup>3</sup>.  
Produced according Verksnorm 5200.

### Market:

Europe, with scenario made for the Swedish market.

### Reference service life, product

Lifetime on product calculated more than 100 years.

### Reference service life, building

## LCA: Calculation rules

### Declared unit:

1 kg PE Optimal Cable Protection Pipes

### 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.

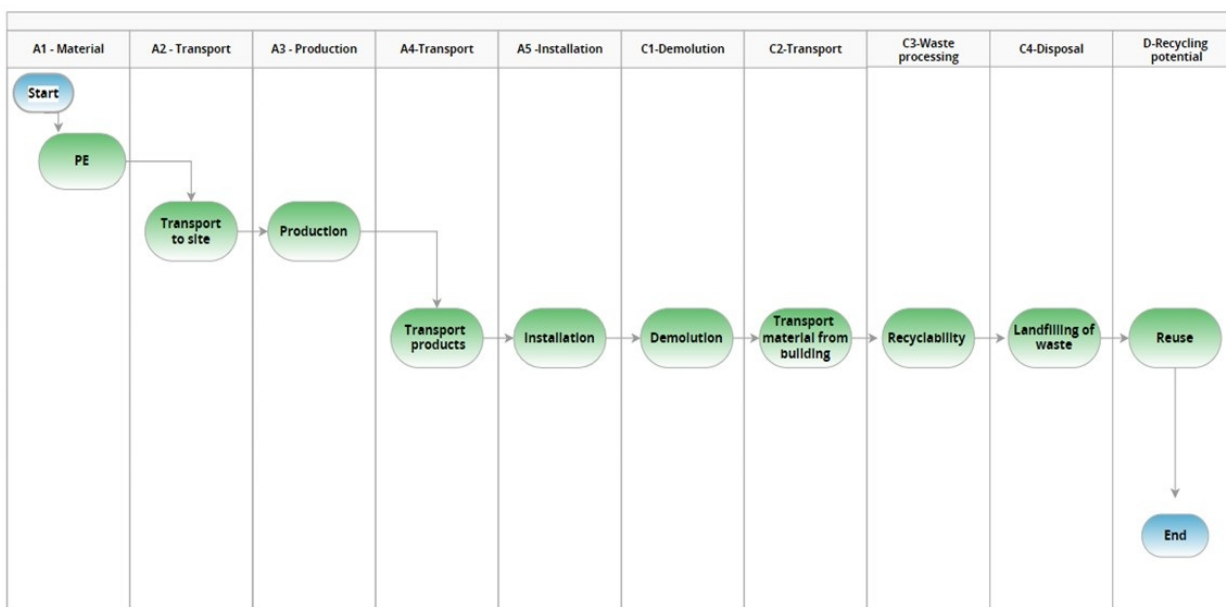
| Materials           | Source        | Data quality | Year |
|---------------------|---------------|--------------|------|
| Polyethylene (HDPE) | ecoinvent 3.6 | Database     | 2019 |

**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:

**EPD process A1-D PE OPTIMAL Cable Protection pipes**



Additional technical information:

## LCA: Scenarios and additional technical information

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

A5 = 5 % product losses during installation are estimated by the company. According to NPCR 028, other activities such as excavating/backfilling trenches and other additional materials are not included, these are expected to be included at construction level assessments.

C1 = According to NPCR 028, other activities such as excavating/backfilling trenches and other additional materials are not included, these are expected to be included at construction level assessments. This module can therefore be included with zero impact.

C3 - C4 = Waste treatment of the product follows the default values provided in EN 50693, Product Category Rules for life cycle assessments of electronic and electrical products and systems, table G.4. This table specified how different types of raw materials used in A1 will likely be treated during the end-of-life of the product. Waste treatments in C3 include material recycling and incineration with and without energy recovery and fly ash extraction. Disposal in C4 consist of landfilling of different waste fractions and of ashes.

D = The recyclability of metals and plastics allows the producers a credit for the net scrap that is produced at the end of a product's life. The benefits from recycling of net scrap are described in formula from EN 15804:2012+A2:2019. Substitution of heat and electricity generated by the incineration with energy recovery of plastics is also calculated in module D.

| Transport from production place to user (A4)  | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
|---|---------------------------------------|---------------|-------------------------|-------|---------------------|
| Truck, over 32 tonnes, EURO 6 (km)  | 53,3 %                                | 100           | 0,023                   | l/tkm | 2,30                |
| Assembly (A5)   |                                       | Unit          | Value                   |       |                     |
| Product loss during installation (percentage of cable pipe)   |                                       | Units/DU      | 0,05                    |       |                     |
| Transport to waste processing (C2)  | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
| Truck, 16-32 tonnes, EURO 6 (km)  | 36,7 %                                | 100           | 0,043                   | l/tkm | 4,30                |
| Waste processing (C3)   |                                       | Unit          | Value                   |       |                     |
| Waste treatment of polyethylene (PE), incineration with energy recovery and fly ash extraction (kg) |                                       | kg            | 0,50                    |       |                     |
| Disposal (C4)   |                                       | Unit          | Value                   |       |                     |
| Landfilling of plastic mixture (kg)   |                                       | kg            | 0,50                    |       |                     |

## 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 <sub>2</sub> -eq | 2,31E+00 | 8,72E-03 | 1,95E-01 | 0  | 1,63E-02 | 1,51E+00 |    | 0 |  |
| GWP-fossil                       | kg CO <sub>2</sub> -eq | 2,30E+00 | 8,71E-03 | 1,94E-01 | 0  | 1,63E-02 | 1,51E+00 |    | 0 |  |
| GWP-biogenic                     | kg CO <sub>2</sub> -eq | 1,17E-02 | 3,73E-06 | 5,87E-04 | 0  | 6,76E-06 | 1,22E-05 |    | 0 |  |
| GWP-luluc                        | kg CO <sub>2</sub> -eq | 3,30E-03 | 2,65E-06 | 1,66E-04 | 0  | 5,81E-06 | 1,79E-06 |    | 0 |  |
| ODP                              | kg CFC11 -eq           | 1,24E-07 | 2,10E-09 | 6,63E-09 | 0  | 3,70E-09 | 1,16E-09 |    | 0 |  |
| AP                               | mol H+ -eq             | 8,59E-03 | 2,80E-05 | 4,45E-04 | 0  | 4,69E-05 | 1,89E-04 |    | 0 |  |
| EP-FreshWater                    | kg P -eq               | 3,99E-05 | 6,93E-08 | 2,01E-06 | 0  | 1,31E-07 | 1,16E-07 |    | 0 |  |
| EP-Marine                        | kg N -eq               | 1,62E-03 | 6,14E-06 | 9,00E-05 | 0  | 9,29E-06 | 9,07E-05 |    | 0 |  |
| EP-Terrestrial                   | mol N -eq              | 1,81E-02 | 6,85E-05 | 9,71E-04 | 0  | 1,04E-04 | 9,81E-04 |    | 0 |  |
| POCP                             | kg NMVOC -eq           | 7,96E-03 | 2,69E-05 | 4,16E-04 | 0  | 3,98E-05 | 2,35E-04 |    | 0 |  |
| ADP-minerals&metals <sup>1</sup> | kg Sb -eq              | 2,59E-05 | 1,55E-07 | 1,33E-06 | 0  | 4,51E-07 | 5,28E-08 |    | 0 |  |
| ADP-fossil <sup>1</sup>          | MJ                     | 7,92E+01 | 1,41E-01 | 3,99E+00 | 0  | 2,47E-01 | 9,87E-02 |    | 0 |  |
| WDP <sup>1</sup>                 | m <sup>3</sup>         | 5,57E+02 | 1,08E-01 | 2,79E+01 | 0  | 2,39E-01 | 2,23E-01 |    | 0 |  |

GWP total = Global Warming Potential total; GWP fossil = Global Warming Potential fossil fuels ; GWP biogenic = Global Warming Potential biogenic; GWP luluc = Global W Potential land use change; ODP = Ozone Depletion; AP = Acidification; EP freshwater = Eutrophication aquatic freshwater; EP = marine Eutrophication aquatic marine; EP = terrestrial Eutrophication terrestrial ;POCP = Photochemical zone formation; ADPE = Abiotic Depletion Potential minerals and metals; ADPF = Abiotic Depletion Potential fossil fuels;







"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

The products are produced on 100% renewable energy according mass balance principle.

| Additional environmental impact indicators  |                   |          |          |          |    |          |          |    |   |   |
|---|-------------------|----------|----------|----------|----|----------|----------|----|---|---|
| Indicator   | Unit              | A1-A3    | A4       | A5       | C1 | C2       | C3       | C4 | D |   |
|  PM                  | Disease incidence | 8,17E-08 | 8,00E-10 | 4,25E-09 | 0  | 1,00E-09 | 7,40E-10 |    |   | 0 |
|  IRP <sup>2</sup>    | kgBq U235 -eq     | 2,24E-01 | 6,18E-04 | 1,13E-02 | 0  | 1,08E-03 | 1,67E-04 |    |   | 0 |
|  ETP-fw <sup>1</sup> | CTUe              | 1,63E+01 | 1,03E-01 | 8,54E-01 | 0  | 1,83E-01 | 2,95E-01 |    |   | 0 |
|  HTP-c <sup>1</sup>  | CTUh              | 6,68E-10 | 0,00E+00 | 3,50E-11 | 0  | 0,00E+00 | 3,40E-11 |    |   | 0 |
|  HTP-nc <sup>1</sup> | CTUh              | 1,78E-08 | 1,00E-10 | 9,74E-10 | 0  | 2,00E-10 | 1,27E-09 |    |   | 0 |
|  SQP <sup>1</sup>    | dimensionless     | 6,64E+00 | 1,62E-01 | 3,72E-01 | 0  | 1,73E-01 | 1,20E-02 |    |   | 0 |

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<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-A3    | A4       | A5       | C1 | C2       | C3       | C4 | D |  |
|  PERE  | MJ             | 3,52E+00 | 1,78E-03 | 1,77E-01 | 0  | 3,54E-03 | 2,90E-03 |    | 0 |  |
|  PERM  | MJ             | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0  | 0,00E+00 | 0,00E+00 |    | 0 |  |
|  PERT  | MJ             | 3,52E+00 | 1,78E-03 | 1,77E-01 | 0  | 3,54E-03 | 2,90E-03 |    | 0 |  |
|  PENRE | MJ             | 3,99E+01 | 1,41E-01 | 2,02E+00 | 0  | 2,47E-01 | 9,87E-02 |    | 0 |  |
|  PENRM | MJ             | 4,25E+01 | 0,00E+00 | 2,12E+00 | 0  | 0,00E+00 | 0,00E+00 |    | 0 |  |
|  PENRT | MJ             | 8,24E+01 | 1,41E-01 | 4,15E+00 | 0  | 2,47E-01 | 9,87E-02 |    | 0 |  |
|  SM    | kg             | 5,71E-03 | 0,00E+00 | 2,88E-04 | 0  | 0,00E+00 | 0,00E+00 |    | 0 |  |
|  RSF   | MJ             | 8,44E-02 | 6,23E-05 | 4,24E-03 | 0  | 1,26E-04 | 8,17E-05 |    | 0 |  |
|  NRSF  | MJ             | 4,60E-02 | 2,09E-04 | 2,43E-03 | 0  | 4,52E-04 | 0,00E+00 |    | 0 |  |
|  FW    | m <sup>3</sup> | 8,37E-02 | 1,61E-05 | 4,21E-03 | 0  | 2,64E-05 | 2,79E-04 |    | 0 |  |

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 Use of net 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-A3    | A4       | A5       | C1 | C2       | C3       | C4 | D |  |
| HWD                 | kg   | 4,60E-03 | 7,74E-06 | 9,77E-04 | 0  | 1,27E-05 | 0,00E+00 |    | 0 |  |
| NHWD                | kg   | 2,38E-01 | 1,23E-02 | 3,85E-02 | 0  | 1,20E-02 | 0,00E+00 |    | 0 |  |
| RWD                 | kg   | 1,38E-04 | 9,66E-07 | 7,05E-06 | 0  | 1,68E-06 | 0,00E+00 |    | 0 |  |

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-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 |  |
| MFR                       | kg   | 8,77E-04 | 0,00E+00 | 4,61E-05 | 0  | 0,00E+00 | 0,00E+00 |    | 0 |  |
| MER                       | kg   | 3,73E-03 | 0,00E+00 | 2,52E-02 | 0  | 0,00E+00 | 5,00E-01 |    | 0 |  |
| EEE                       | MJ   | 1,12E-02 | 0,00E+00 | 4,90E-02 | 0  | 0,00E+00 | 9,70E-01 |    | 0 |  |
| EET                       | MJ   | 1,70E-01 | 0,00E+00 | 7,42E-01 | 0  | 0,00E+00 | 1,47E+01 |    | 0 |  |

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 | 0,00E+00            |

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

## Additional Norwegian 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, Sweden (kWh) | ecoinvent 3.6 | 54,94  | g CO <sub>2</sub> -eq/kWh |

### Dangerous substances

No substances given by the REACH Candidate list or the Norwegian priority list are intentionally added to the product.

### Indoor environment






## Additional Environmental Information

| Environmental impact indicators EN 15804+A2 and NPCR Part A v2.0 |                                      |          |          |          |    |          |          |    |   |
|--|--------------------------------------|----------|----------|----------|----|----------|----------|----|---|
| Indicator  | Unit                                 | A1-A3    | A4       | A5       | C1 | C2       | C3       | C4 | D |
| GWP  | kg CO <sub>2</sub> -eq               | 2,17E+00 | 8,62E-03 | 1,88E-01 | 0  | 1,62E-02 | 1,51E+00 |    | 0 |
| ODP  | kg CFC11 -eq                         | 1,29E-07 | 1,70E-09 | 6,80E-09 | 0  | 3,00E-09 | 1,04E-09 |    | 0 |
| POCP   | kg C <sub>2</sub> H <sub>4</sub> -eq | 6,49E-04 | 1,07E-06 | 3,31E-05 | 0  | 1,97E-06 | 1,94E-06 |    | 0 |
| AP   | kg SO <sub>2</sub> -eq               | 6,57E-03 | 1,82E-05 | 3,38E-04 | 0  | 3,23E-05 | 1,30E-04 |    | 0 |
| EP   | kg PO <sub>4</sub> <sup>3-</sup> -eq | 6,15E-04 | 1,97E-06 | 3,45E-05 | 0  | 3,43E-06 | 4,07E-05 |    | 0 |
| ADPM   | kg Sb -eq                            | 2,53E-05 | 1,55E-07 | 1,30E-06 | 0  | 4,51E-07 | 5,28E-08 |    | 0 |
| ADPE   | MJ                                   | 7,45E+01 | 1,39E-01 | 3,75E+00 | 0  | 2,42E-01 | 9,87E-02 |    | 0 |
| GWPIOBC  | kg CO <sub>2</sub> -eq               | 2,17E+00 | 8,72E-03 | 1,85E-01 | 0  | 1,63E-02 | 1,51E+00 |    | 0 |

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources; GWP-IOBC/GHG Global warming potential calculated according to the principle of instantaneous oxidation (except emissions and uptake of biogenic carbon)

## Bibliography

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 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.  
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 Vold, et al., (2019) EPD generator for Pipelife - Background information for customer application and LCA data. report number 08.19  
 NPCR Part A: Construction products and services. Ver. 2.0. March 2021, EPD-Norge.

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