

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## Hobas Sewer Pipe VO with coupling DN700, PN1, SN16000



The Norwegian EPD Foundation

**Owner of the declaration:**

Amiblu Technology AS

**Product:**

Hobas Sewer Pipe VO with coupling DN700, PN1, SN16000

**Declared unit:**

1 m

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

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

NPCR 019:2018 Part B for Piping systems use in sewage and storm water systems (under gravity)

**Program operator:**

The Norwegian EPD Foundation

**Declaration number:**

NEPD-7355-6748-EN

**Registration number:**

NEPD-7355-6748-EN

**Issue date:** 26.08.2024

**Valid to:** 26.08.2029

**EPD software:**

LCAno EPD generator ID: 512565

## General information

### Product

Hobas Sewer Pipe VO with coupling DN700, PN1, SN16000

### 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-7355-6748-EN

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

CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
NPCR 019:2018 Part B for Piping systems use in sewage and storm  
water systems (under gravity)

### 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 m Hobas Sewer Pipe VO with coupling DN700, PN1, SN16000

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

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

### Functional unit:

6 m pipe segment with coupling

### 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.

Third party verifier:

Michael M. Jenssen, Asplan Viak AS

(no signature required)

### Owner of the declaration:

Amiblu Technology AS  
Contact person: Thore M. Klaveness  
Phone: +47 928 40 677  
e-mail: [thore.klaveness@amiblu.com](mailto:thore.klaveness@amiblu.com)

### Manufacturer:

Amiblu Germany GmbH

### Place of production:

Amiblu Germany GmbH  
Gewerbepark 1,  
17039 Trollenhagen, Germany

### Management system:

ISO 14001

### Organisation no:

916 041 195

### Issue date:

26.08.2024

### Valid to:

26.08.2029

### Year of study:

2020

### Comparability:

EPD of construction products may not be comparable if they not  
comply with EN 15804+A2 and seen in a construction context.

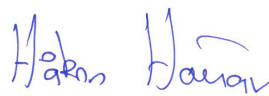
### Development and verification of EPD:

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.  
NEPDT22

Developer of EPD: Thore Klaveness

Reviewer of company-specific input data and EPD: Petter Åsrud

### Approved:



Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

Hobas sewer pipes with couplings made from glass fiber reinforced unsaturated polyester (GRP). Declaration for pipes as specified in other sections of this document. Other pipe qualities in the Amiblu range may be covered by different EPDs.

### Product specification

| Materials       | Value | Unit |
|-----------------|-------|------|
| Polyester Resin | 15-25 | %    |
| Sand            | 30-50 | %    |
| Glass fibers    | 5-10  | %    |
| Filler          | 15-25 | %    |
| Rubber gasket   | < 1   | %    |

### Technical data:

Available at [www.amiblu.com](http://www.amiblu.com)

### Market:

Europe

### Reference service life, product

> 100 years

### Reference service life, building

-

## LCA: Calculation rules

### Declared unit:

1 m Hobas Sewer Pipe VO with coupling DN700, PN1, SN16000

### 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.

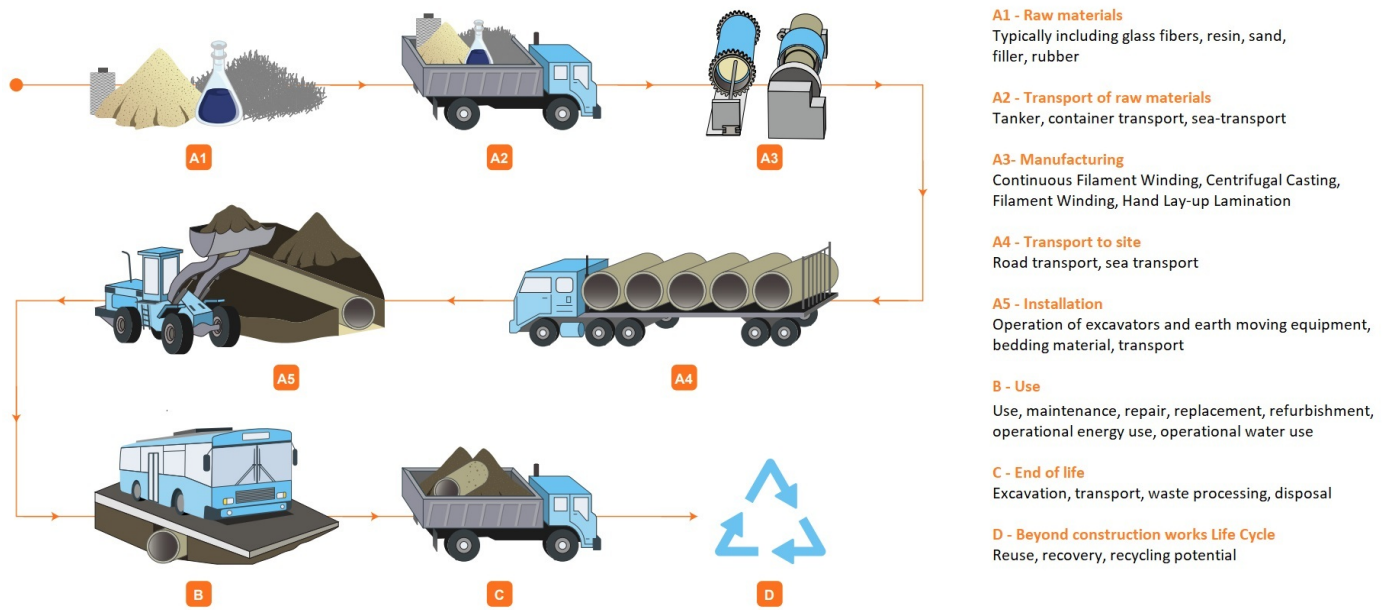
| Materials         | Source                 | Data quality | Year |
|-------------------|------------------------|--------------|------|
| Additives         | ecoinvent 3.6          | Database     | 2019 |
| Chemical          | ecoinvent 3.6          | Database     | 2019 |
| Filler            | ecoinvent 3.6          | Database     | 2019 |
| Glass fibre       | ecoinvent 3.6          | Database     | 2019 |
| Polyester resin   | Modified ecoinvent 3.6 | Database     | 2019 |
| Rubber, synthetic | 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                               | MND       | MND | MND         | MND    | MND         | MND           | MND                    | MND                   | X                          | X         | X                | X        | X                                  |

**System boundary:**

**Production Flow**



**Additional technical information:**

[www.amiblu.com](http://www.amiblu.com)

## LCA: Scenarios and additional technical information

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

This EPD is based on a life cycle assessment that has been performed on specified pipe product with coupling and 6 meters pipe length.

For A4 stage, a transport distance of 778 km from the pipe production plant to the installation site is used. Transport on EURO6 trucks and HVO diesel is calculated in the table below.

Installation, A5 module has not been declared.

Use stage (B) has not been declared since glass reinforced plastic piping, once installed, does not require maintenance.



It has been assumed that at the end of the functional life of the piping, the installation is either left in the ground or relined. Potential relining is considered a second life stage, thus, all environmental burdens associated with relining are omitted in this declaration.

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| Transport from production place to user (A4)  | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
|---|---------------------------------------|---------------|-------------------------|-------|---------------------|
| Truck, 16-32 tonnes, HVO, EURO 6 (kgkm) - RER | 36,7 %                                | 778           | 0,043                   | l/tkm | 33,45               |

## 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       | C1 | C2 | C3 | C4 | D |   |
|  GWP-total                        | kg CO <sub>2</sub> -eq | 1,12E+02 | 2,59E+00 | 0  | 0  | 0  | 0  | 0 | 0 |
|  GWP-fossil                       | kg CO <sub>2</sub> -eq | 1,10E+02 | 2,58E+00 | 0  | 0  | 0  | 0  | 0 | 0 |
|  GWP-biogenic                     | kg CO <sub>2</sub> -eq | 2,22E+00 | 4,37E-03 | 0  | 0  | 0  | 0  | 0 | 0 |
|  GWP-luluc                        | kg CO <sub>2</sub> -eq | 7,35E-02 | 4,02E-03 | 0  | 0  | 0  | 0  | 0 | 0 |
|  ODP                              | kg CFC11 -eq           | 1,47E-05 | 5,32E-07 | 0  | 0  | 0  | 0  | 0 | 0 |
|  AP                               | mol H <sup>+</sup> -eq | 5,71E-01 | 1,81E-02 | 0  | 0  | 0  | 0  | 0 | 0 |
|  EP-FreshWater                    | kg P -eq               | 4,39E-03 | 9,47E-05 | 0  | 0  | 0  | 0  | 0 | 0 |
|  EP-Marine                        | kg N -eq               | 1,05E-01 | 4,79E-03 | 0  | 0  | 0  | 0  | 0 | 0 |
|  EP-Terrestrial                   | mol N -eq              | 1,14E+00 | 5,35E-02 | 0  | 0  | 0  | 0  | 0 | 0 |
|  POCP                             | kg NMVOC -eq           | 6,36E-01 | 1,96E-02 | 0  | 0  | 0  | 0  | 0 | 0 |
|  ADP-minerals&metals <sup>1</sup> | kg Sb-eq               | 3,59E-03 | 3,14E-04 | 0  | 0  | 0  | 0  | 0 | 0 |
|  ADP-fossil <sup>1</sup>          | MJ                     | 2,32E+03 | 5,46E+01 | 0  | 0  | 0  | 0  | 0 | 0 |
|  WDP <sup>1</sup>                 | m <sup>3</sup>         | 4,82E+03 | 1,62E+02 | 0  | 0  | 0  | 0  | 0 | 0 |







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-A3    | A4       | C1 | C2 | C3 | C4 | D |  |
|  PM                  | Disease incidence | 5,06E-06 | 5,99E-07 | 0  | 0  | 0  | 0  | 0 |  |
|  IRP <sup>2</sup>    | kgBq U235 -eq     | 4,82E+00 | 1,78E-01 | 0  | 0  | 0  | 0  | 0 |  |
|  ETP-fw <sup>1</sup> | CTUe              | 2,85E+03 | 7,97E+01 | 0  | 0  | 0  | 0  | 0 |  |
|  HTP-c <sup>1</sup>  | CTUh              | 1,70E-07 | 0,00E+00 | 0  | 0  | 0  | 0  | 0 |  |
|  HTP-nc <sup>1</sup> | CTUh              | 2,43E-06 | 1,33E-07 | 0  | 0  | 0  | 0  | 0 |  |
|  SQP <sup>1</sup>    | dimensionless     | 4,19E+02 | 1,02E+02 | 0  | 0  | 0  | 0  | 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       | C1 | C2 | C3 | C4 | D |   |
|  PERE  | MJ             | 1,01E+02 | 2,47E+00 | 0  | 0  | 0  | 0  | 0 | 0 |
|  PERM  | MJ             | 0,00E+00 | 0,00E+00 | 0  | 0  | 0  | 0  | 0 | 0 |
|  PERT  | MJ             | 1,01E+02 | 2,47E+00 | 0  | 0  | 0  | 0  | 0 | 0 |
|  PENRE | MJ             | 2,31E+03 | 5,46E+01 | 0  | 0  | 0  | 0  | 0 | 0 |
|  PENRM | MJ             | 1,84E+01 | 0,00E+00 | 0  | 0  | 0  | 0  | 0 | 0 |
|  PENRT | MJ             | 2,33E+03 | 5,46E+01 | 0  | 0  | 0  | 0  | 0 | 0 |
|  SM    | kg             | 3,28E-01 | 0,00E+00 | 0  | 0  | 0  | 0  | 0 | 0 |
|  RSF   | MJ             | 8,36E+00 | 8,04E-02 | 0  | 0  | 0  | 0  | 0 | 0 |
|  NRSF  | MJ             | 4,14E-01 | 2,77E-01 | 0  | 0  | 0  | 0  | 0 | 0 |
|  FW    | m <sup>3</sup> | 1,31E+00 | 2,23E-02 | 0  | 0  | 0  | 0  | 0 | 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 = 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-A3 | A4       | C1       | C2 | C3 | C4 | D |   |
|                     | HWD  | kg    | 1,03E+00 | 7,66E-03 | 0  | 0  | 0  | 0 | 0 |
|                     | NHWD | kg    | 1,68E+01 | 8,12E+00 | 0  | 0  | 0  | 0 | 0 |
|                     | RWD  | kg    | 5,24E-03 | 2,19E-04 | 0  | 0  | 0  | 0 | 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       | C1       | C2 | C3 | C4 | D |   |
|                           | CRU  | kg    | 0,00E+00 | 0,00E+00 | 0  | 0  | 0  | 0 | 0 |
|                           | MFR  | kg    | 0,00E+00 | 0,00E+00 | 0  | 0  | 0  | 0 | 0 |
|                           | MER  | kg    | 3,74E+00 | 0,00E+00 | 0  | 0  | 0  | 0 | 0 |
|                           | EEE  | MJ    | 2,22E+00 | 0,00E+00 | 0  | 0  | 0  | 0 | 0 |
|                           | EET  | MJ    | 3,36E+01 | 0,00E+00 | 0  | 0  | 0  | 0 | 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 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, Germany (kWh) | ecoinvent 3.6 | 585,93 | g CO <sub>2</sub> -eq/kWh |

### Dangerous substances

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

### Indoor environment

## Additional Environmental Information

| Additional environmental impact indicators required in NPCR Part A for construction products |                        |          |          |    |    |    |    |   |
|--|------------------------|----------|----------|----|----|----|----|---|
| Indicator  | Unit                   | A1-A3    | A4       | C1 | C2 | C3 | C4 | D |
| GWPIOBC  | kg CO <sub>2</sub> -eq | 1,12E+02 | 2,59E+00 | 0  | 0  | 0  | 0  | 0 |

GWPIOBC: 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.






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ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.

Iversen et al., (2021) eEPD v2021.09 Background information for EPD generator tool system verification, LCA.no rapportnummer: : 07.21.

Ruttenborg et al., (2021) EPD generator for Amiblu Technology AS Background information for customer application and LCA data, LCA.no report number 01.21

NPCR Part A: Construction products and services. Ver. 2.0. March 2021, EPD-Norge.

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