

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## Pipe Sewer Hobas, Spigot-Coupling, DN1800, PN1; SN5000



The Norwegian EPD Foundation

**Owner of the declaration:**

Amiblu Technology AS

Pipe Sewer Hobas, Spigot-Coupling, DN1800, PN1;  
SN5000

**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-6003-5262-EN

**Registration number:**

NEPD-6003-5262-EN

**Issue date:** 06.02.2024

**Valid to:** 06.02.2029

ver-200224

**EPD software:**

LCAno EPD generator ID: 210649

## General information

### Product

Pipe Sewer Hobas, Spigot-Coupling, DN1800, PN1; SN5000

### 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-6003-5262-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 Pipe Sewer Hobas, Spigot-Coupling, DN1800, PN1; SN5000

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

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

### Functional unit:

1 meter section of a pipeline constructed using Hobas Sewer (VO)  
Pipe with GRP sleeve (the length of the pipe unit is 3m).

### 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:

Elisabet Amat, GREENIZE projects

(no signature required)

### Owner of the declaration:

Amiblu Technology AS  
Contact person: Frans Sørensen  
Phone: +47 94 14 08 18  
e-mail: [frans.sorensen@amiblu.com](mailto:frans.sorensen@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:

06.02.2024

### Valid to:

06.02.2029

### Year of study:

2020

### 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: Thore Klaveness

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

### Approved:



Håkon Hauan, CEO EPD-Norge

## Product

### Product description:

Filled (VO) Pipe, Hobas Diameter Series, DN1600, PN1, SN5000, Liner: Standard, Length: 3 m, Glass: E, Resin: Ortho, Liner Resin: Ortho, with FWC Coupling

### Product specification

Glass: E, Resin: Ortho, Liner Resin: Ortho

Specifications and product details are presented here: <https://www.amiblu.com/>

Materials	Value	Unit
Silica sand	45 - 55	%
Unsaturated polyester resin	20 - 25	%
Calcium carbonate	18 - 23	%
Glass	8 - 12	%
Rubber	1.5 - 2.0	%
Peroxide	0.5 - 1.0	%

### Technical data:

Pressure rating (PN): 1 bar

### Market:

Europe

### Reference service life, product

Up to 100 years

### Reference service life, building

## LCA: Calculation rules

### Declared unit:

1 m Pipe Sewer Hobas, Spigot-Coupling, DN1800, PN1; SN5000

### 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.

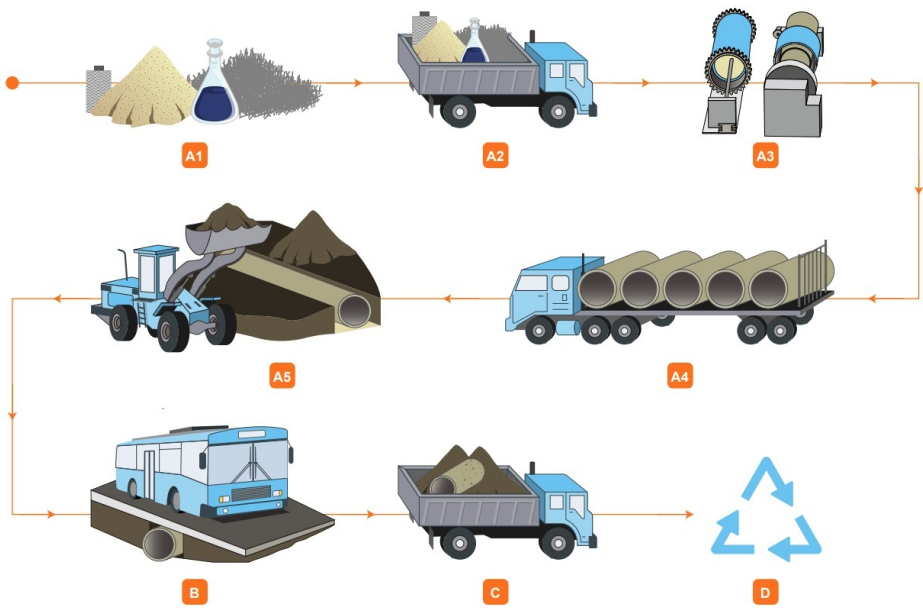
Materials	Source	Data quality	Year
Additives	ecoinvent 3.6	Database	2019
Chemical	ecoinvent 3.6	Database	2019
Filler	ecoinvent 3.6	Database	2019
Glass fibre	ecoinvent 3.6	Database	2019
Polyester resin	Modified ecoinvent 3.6	Database	2019
Rubber, synthetic	ecoinvent 3.6	Database	2019

**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	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

**System boundary:**

**Production Flow**



- A1 - Raw materials**  
Typically including glass fibers, resin, sand, filler, rubber
- A2 - Transport of raw materials**  
Tanker, container transport, sea-transport
- A3- Manufacturing**  
Continuous Filament Winding, Centrifugal Casting, Filament Winding, Hand Lay-up Lamination
- A4 - Transport to site**  
Road transport, sea transport
- A5 - Installation**  
Operation of excavators and earth moving equipment, bedding material, transport
- B - Use**  
Use, maintenance, repair, replacement, refurbishment, operational energy use, operational water use
- C - End of life**  
Excavation, transport, waste processing, disposal
- D - Beyond construction works Life Cycle**  
Reuse, recovery, recycling potential

**Additional technical information:**

<https://www.amiblu.com/>

## LCA: Scenarios and additional technical information

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

For A4 stage, a specific transport distance of 500 km from the pipe production plant to the installation site is assumed.

For A5 module, a trench geometry is calculated automatically based on the diameter of the pipe. The trench depth is assumed to be 2.8 meter. The diesel consumption of 0,36 liter per 1 cubic meter of excavated soil is used. In addition, the consumption of 1.6 liter of diesel per 1m of the trench length is used to account for material compaction and trench filling operations. It is assumed that 50% of excavated soil is replaced with gravel. Transport distance for disposal site of unused soil and gravel from quarry is assumed to be 100 km on average.

Use stage has not been included 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 ground or re-lined. Potential relining is considered to be a second life stage, thus, all environmental burdens associated with re-lining are omitted in this declaration.

LCA study was performed for the 3 m Hobas Pipe DN1600 PN1 SN5000 with the corresponding FWC coupling, produced in Germany.

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 5 (kgkm)	36,7 %	500	0,044	l/tkm	22,00
Assembly (A5)		Unit	Value		
Diesel, burned (MJ)	MJ/DU	377,67			
Gravel (kg)	kg/DU	5017,78			
Local mass (kg)	kg/DU	5575,31			
Truck, 16-32 tonnes, EURO 6 (kgkm)	kgkm/DU	313649,38			

## 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	4,75E+02	3,33E+01	9,76E+01	0	0	0	0	0	
GWP-fossil	kg CO <sub>2</sub> -eq	4,66E+02	3,33E+01	9,73E+01	0	0	0	0	0	
GWP-biogenic	kg CO <sub>2</sub> -eq	8,04E+00	1,36E-02	2,57E-01	0	0	0	0	0	
GWP-luluc	kg CO <sub>2</sub> -eq	3,13E-01	1,16E-02	2,87E-02	0	0	0	0	0	
ODP	kg CFC11 -eq	6,40E-05	7,58E-06	2,12E-05	0	0	0	0	0	
AP	mol H+ -eq	2,46E+00	1,36E-01	6,12E-01	0	0	0	0	0	
EP-FreshWater	kg P -eq	1,81E-02	2,61E-04	8,41E-04	0	0	0	0	0	
EP-Marine	kg N -eq	4,50E-01	4,03E-02	2,25E-01	0	0	0	0	0	
EP-Terrestrial	mol N -eq	4,92E+00	4,46E-01	2,50E+00	0	0	0	0	0	
POCP	kg NMVOC -eq	2,69E+00	1,37E-01	7,18E-01	0	0	0	0	0	
ADP-minerals&metals <sup>1</sup>	kg Sb-eq	1,93E-02	9,01E-04	2,49E-03	0	0	0	0	0	
ADP-fossil <sup>1</sup>	MJ	9,89E+03	5,02E+02	1,44E+03	0	0	0	0	0	
WDP <sup>1</sup>	m <sup>3</sup>	2,02E+04	4,78E+02	9,96E+03	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	A5	C1	C2	C3	C4	D	
 PM	Disease incidence	2,21E-05	2,39E-06	1,49E-05	0	0	0	0	0	
 IRP <sup>2</sup>	kgBq U235 -eq	2,12E+01	2,19E+00	7,21E+00	0	0	0	0	0	
 ETP-fw <sup>1</sup>	CTUe	1,20E+04	3,69E+02	1,03E+03	0	0	0	0	0	
 HTP-c <sup>1</sup>	CTUh	7,05E-07	0,00E+00	2,02E-08	0	0	0	0	0	
 HTP-nc <sup>1</sup>	CTUh	1,05E-05	3,99E-07	1,11E-06	0	0	0	0	0	
 SQP <sup>1</sup>	dimensionless	1,87E+03	3,46E+02	1,61E+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	A5	C1	C2	C3	C4	D	
 PERE	MJ	4,29E+02	7,08E+00	5,92E+01	0	0	0	0	0	
 PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	
 PERT	MJ	4,29E+02	7,08E+00	5,92E+01	0	0	0	0	0	
 PENRE	MJ	9,76E+03	5,02E+02	1,46E+03	0	0	0	0	0	
 PENRM	MJ	1,79E+02	0,00E+00	0,00E+00	0	0	0	0	0	
 PENRT	MJ	9,94E+03	5,02E+02	1,46E+03	0	0	0	0	0	
 SM	kg	1,35E+00	0,00E+00	5,58E+03	0	0	0	0	0	
 RSF	MJ	3,27E+01	2,53E-01	1,39E+00	0	0	0	0	0	
 NRSF	MJ	1,91E-01	9,04E-01	3,31E+00	0	0	0	0	0	
 FW	m <sup>3</sup>	5,64E+00	5,28E-02	7,25E+00	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	A5	C1	C2	C3	C4	D	
HWD	kg	3,77E+00	2,56E-02	1,01E-01	0	0	0	0	0	
NHWD	kg	7,18E+01	2,40E+01	3,97E+01	0	0	0	0	0	
RWD	kg	2,33E-02	3,42E-03	1,01E-02	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	A5	C1	C2	C3	C4	D	
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	
MFR	kg	7,16E-01	0,00E+00	0,00E+00	0	0	0	0	0	
MER	kg	1,34E+01	0,00E+00	0,00E+00	0	0	0	0	0	
EEE	MJ	8,19E+00	0,00E+00	0,00E+00	0	0	0	0	0	
EET	MJ	1,24E+02	0,00E+00	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	Data 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	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO <sub>2</sub> -eq	4,76E+02	3,33E+01	9,78E+01	0	0	0	0	0

GWPI-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.

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EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.

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NPCR 019:2022 Part B for Piping systems use in sewage and storm water systems (under gravity). Ver. 2.0 May 2022, EPD-Norge.

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	ECO Platform ECO Portal	web: <a href="http://www.eco-platform.org">www.eco-platform.org</a> web: ECO Portal