epd-norge
The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Amiblu Technology AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-3370-1994-EN
Registration number:	NEPD-3370-1994-EN
ECO Platform reference number:	-
Issue date:	03.03.2022
Valid to:	03.03.2027

Hobas Jacking (VO) Pipe with Steel Sleeve DN500-1200, PN1, SN32000-80000

Amiblu Technology AS

Amiblu®

www.epd-norge.no

General information

Product:

Hobas Jacking (VO) Pipe with Steel Sleeve DN500-1200, PN1, SN32000-80000

Owner of the declaration:

Amiblu Technology AS
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Program operator:

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Manufacturer:

Averaged CC data from 3 production sites, see Technical data on page 3 for more details

Declaration number:

NEPD-3370-1994-EN

Place of production:

Averaged CC data from 3 production sites, see Technical data on page 3 for more details

Europe

ECO Platform reference number:

Management system:

ISO 14001

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR Part A: Construction products and services. Ver. 1.0. April 2017

Organisation no:

916 041 195

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.

Issue date: 03.03.2022

Valid to: 03.03.2027

Declared unit:

1 kg Hobas Jacking (VO) Pipe with Steel Sleeve DN500-1200, PN1, SN32000-80000

Year of study:

2020

Declared unit with option:

A1,A2,A3,A4

Comparability:

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

Functional unit:

Development and verification of EPD:

The declaration has been developed and verified using EPD tool lca.tools ver EPD2020.11, developed by LCA.no AS. The EPD tool is integrated into the company's environmental management system, and has been approved by EPD-Norway

Developer of EPD:

Marcin Pazdro

Reviewer of company-specific input data and EPD:

Petter Åsrud

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 proccess is reviewed annualy. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

Verification of EPD tool:

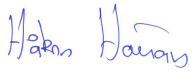
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Michael M. Jenssen, Asplan Viak AS

(no signature required)

Approved:

Sign



Håkon Hauan, CEO EPD-Norge

Product

Product description:

Hobas Jacking (VO) Pipe with Steel Sleeve
DN500-1200, PN1, SN34000-80000
Liner: Standard, Length: 3 m, Glass: E, Resin: Ortho, Liner Resin: Ortho, with Steel Sleeve Non-Pressure
Covered diameters classes and stiffness classes are described in Technical Data section.

Product specification

Glass: E, Resin: Ortho, Liner Resin: Ortho, with Steel Sleeve Non-Pressure

Specifications and product details are presented here:
https://www.amiblu.com/jacking-pipes/

A typical composition of the pipes covered by this EPD is as follows:

Materials	%
Polyester Resin	23-27
Sand	35-40
Glass fibers	10-12
Filler	30-35
Rubber gasket	0-1
Peroxide	0-1
Stainless steel	0-1

Technical data:

The list below provides a mass of a functional unite (1m pipe section with the coupling assembled on a 3m pipe unit). This information is used to calculate the A1-A3 and A4 outputs for 1m section of pipeline by multiplying the values presented in tables on page 6-7 with the mass of of the pipe.

DN500 PN1 SN64000 - 69.7 kg
DN550 PN1 SN40000 - 71.5 kg
DN550 PN1 SN64000 - 78.4 kg
DN600 PN1 SN40000 - 84.2 kg
DN600 PN1 SN64000 - 99.6 kg
DN650 PN1 SN32000 - 89 kg
DN650 PN1 SN50000 - 105.2 kg
DN650 PN1 SN80000 - 117.3 kg
DN700 PN1 SN40000 - 117.3 kg
DN700 PN1 SN64000 - 130.8 kg
DN750 PN1 SN32000 - 118.4 kg
DN750 PN1 SN50000 - 137.3 kg
DN750 PN1 SN80000 - 160.6 kg
DN800 PN1 SN40000 - 144.9 kg
DN800 PN1 SN64000 - 175.7 kg
DN860 PN1 SN32000 - 152.2 kg
DN860 PN1 SN50000 - 173.8 kg
DN860 PN1 SN80000 - 205.8 kg
DN900 PN1 SN40000 - 194.5 kg
DN900 PN1 SN64000 - 223.3 kg
DN960 PN1 SN32000 - 196.1 kg
DN960 PN1 SN50000 - 226.2 kg
DN960 PN1 SN80000 - 262 kg
DN1000 PN1 SN40000 - 242.3 kg
DN1000 PN1 SN64000 - 274.3 kg
DN1100 PN1 SN32000 - 252.7 kg
DN1100 PN1 SN50000 - 294.1 kg
DN1100 PN1 SN80000 - 341.8 kg
DN1200 PN1 SN40000 - 345.5 kg
DN1200 PN1 SN64000 - 391.5 kg
DN500 PN1 SN80000 - 78.8 kg
DN550 PN1 SN50000 - 75 kg
DN550 PN1 SN80000 - 85.2 kg
DN600 PN1 SN50000 - 91.9 kg
DN600 PN1 SN80000 - 107.2 kg
DN650 PN1 SN40000 - 101.1 kg
DN650 PN1 SN64000 - 109.3 kg
DN700 PN1 SN32000 - 108.1 kg
DN700 PN1 SN50000 - 126.3 kg
DN700 PN1 SN80000 - 139.7 kg
DN750 PN1 SN40000 - 127.8 kg
DN750 PN1 SN64000 - 146.6 kg
DN800 PN1 SN32000 - 134.7 kg
DN800 PN1 SN50000 - 155.2 kg
DN800 PN1 SN80000 - 185.8 kg
DN860 PN1 SN40000 - 163 kg
DN860 PN1 SN64000 - 195.2 kg
DN900 PN1 SN32000 - 177 kg
DN900 PN1 SN50000 - 206 kg
DN900 PN1 SN80000 - 240.4 kg
DN960 PN1 SN40000 - 214.2 kg
DN960 PN1 SN64000 - 244.3 kg
DN1000 PN1 SN32000 - 229.4 kg
DN1000 PN1 SN50000 - 255.1 kg
DN1000 PN1 SN80000 - 293.5 kg
DN1100 PN1 SN40000 - 273.5 kg
DN1100 PN1 SN64000 - 314.6 kg
DN1200 PN1 SN32000 - 322.3 kg
DN1200 PN1 SN50000 - 368.6 kg
DN1200 PN1 SN80000 - 421.9 kg

Market:

Europe

Reference service life, product

Up to 150 years

Reference service life, construcion

LCA: Calculation rules

Declared unit:

1 kg Hobas Jacking (VO) Pipe with Steel Sleeve DN500-1200, PN1, SN32000-80000

Cut-off criteria:

All raw materials which are present in the final product at a concentration greater than 0.1 % are included. Some of the raw materials used at lower content are modeled using datasets representing the closest match according to the best knowledge of Amiblu. The contribution of capital goods is estimated to be lower than the general cut-off criteria of 1%. Transport of personnel is outside the scope of the LCA

Allocation:

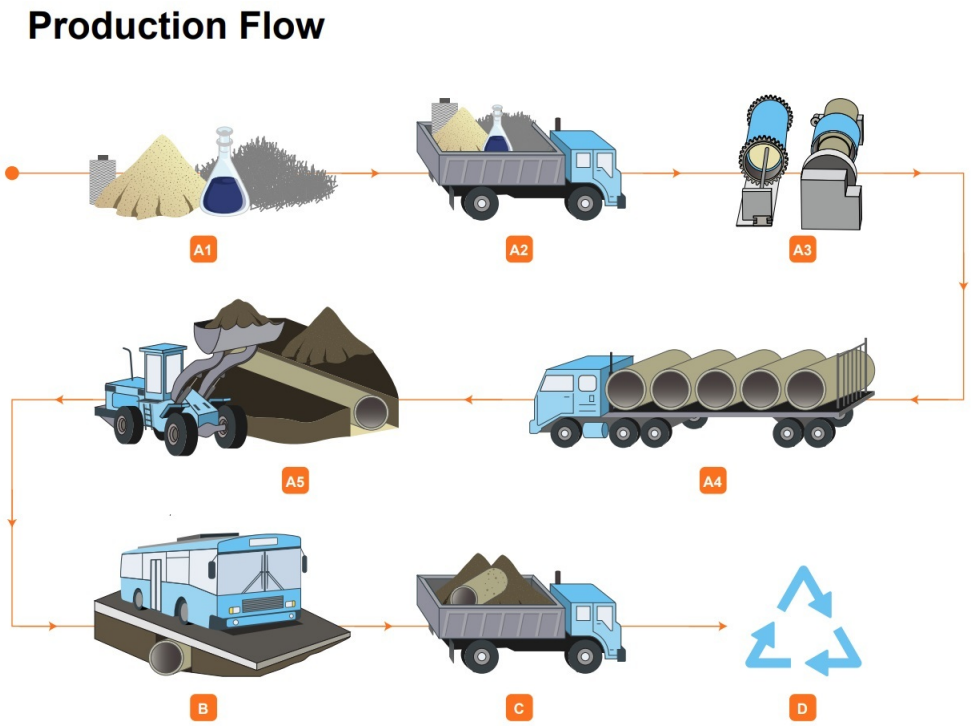
Allocation was carried out in accordance with EN 15804. There are no-allocations between co-products in the EPD since there are no co-products created during the manufacturing. Environmental burdens related to A1 and A2 stages are allocated to pipes based on the specific pipe composition, transport modes and distances of raw materials to a plant in which the product has been produced. All manufacturing inputs (energy and auxiliary materials) are allocated equally to products through mass allocation. Equal allocation also applies to waste, although for certain waste flows, a specific allocation was performed based on the production process and product formulation. 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 compositions are used. In case of some raw materials, data from ecoinvent 3.6 were modified to better reflect the composition of specific materials used by Amiblu. Transportation modes and distances are collected for all raw materials, specific for each production site. Energy inputs are also specific for each site. Production site data were collected in the year of study defined on page 2. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Steel	ecoinvent 3.6	Database	2019
Chemicals	ecoinvent3.6	Database	2019
Glass fibre	ecoinvent3.6	Database	2019
Pigments and Fillers	ecoinvent3.6	Database	2019
Rubber, synthetic	ecoinvent3.6	Database	2019
Sand	ecoinvent3.6	Database	2019

System boundary:



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 typical transport distance of 500 km from the pipe production plant to the installation site is assumed. A project specific EPD can be provided on request. The impact of trenchless installation are not included in this EPD. 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 Jacking pipe VO DN1000 PN1 SN32000 with the corresponding steel sleeve. The environmental impacts for 1kg of other piping systems covered by this EPD stays within the +/- 10% range compared to values presented on pages 6 and 7. The A2 and A3 scenario represents an weight average calculated for 2020 for following manufacturing plants: - Amiblu Germany GmbH (DE10), Gewerbepark 1, 17039 Trollenhagen, GERMANY; - Amiblu Poland Sp. z o.o. (PL20), Ul. Koksownicza 11, 41-300 Dabrowa Gòrnicza, POLAND; - Amiblu Romania SRL (RO20), Drumul Mare nr. 2, 77060 Comuna Clinceni, ROMANIA;

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck	38,8 %	Amiblu - Truck, lorry 16-32 tonnes, EURO 5	500	0,044606	l/tkm	22,30
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Assembly (A5)

.	Unit	Value
Auxiliary	kg	
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
Output materials fr ste treatment	kg	
Dust in the air	kg	
VOC emissions	kg	

Use (B1)

.	Unit	Value

Maintenance (B2)/Repair (B3)

.	Unit	Value
Maintenance cycle*		
Auxiliary		
Other resources		
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
VOC emissions	kg	

Replacement (B4)/Refurbishment (B5)

.	Unit	Value
Replacement cycle*		
Electricity consumption	kWh	
Replacement of worn parts		

* Described above if relevant

Operational energy (B6) and water consumption (B7)

.	Unit	Value
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Power output of equipment	kW	

End of Life (C1, C

.	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction wa	kg	
Reuse	kg	
Recycling		
Energy recovery		
To landfill	kg	

Scenarios after A1-A4 are not included

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck					l/tkm	
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage				Construction installation stage	User stage							End of life stage				.	Beyond the system bondaries
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													.	

Environmental impact

Parameter	Unit	A1-A3	A4
GWP	kg CO_2 -eq	1,40E+00	8,13E-02
ODP	kg CFC11 -eq	1,68E-07	1,50E-08
POCP	kg C_2H_4-eq	4,79E-04	1,33E-05
AP	kg SO_2 -eq	6,15E-03	2,59E-04
EP	kg PO_4^{3-} -eq	8,61E-04	4,30E-05
ADPM	kg Sb -eq	3,17E-05	2,48E-07
ADPE	MJ	2,82E+01	1,23E+00

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

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

Resource use

Parameter	Unit	A1-A3	A4
RPEE	MJ	1,49E+00	1,79E-02
RPEM	MJ	1,51E-04	0,00E+00
TPE	MJ	1,49E+00	1,79E-02
NRPE	MJ	3,21E+01	1,25E+00
NRPM	MJ	1,22E-02	0,00E+00
TRPE	MJ	3,21E+01	1,25E+00
SM	kg	6,34E-03	0,00E+00
RSF	MJ	8,47E-02	0,00E+00
NRSF	MJ	1,47E-02	0,00E+00
W	m^3	1,89E-02	2,35E-04

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE 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; W Use of net fresh water

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

End of life - Waste

Parameter	Unit	A1-A3	A4
HW	kg	2,43E-03	7,33E-07
NHW	kg	3,10E-01	6,60E-02
RW	kg	6,64E-05	8,61E-06

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

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

End of life - Output flow

Parameter	Unit	A1-A3	A4
CR	kg	0,00E+00	0,00E+00
MR	kg	1,00E-03	0,00E+00
MER	kg	1,80E-02	0,00E+00
EEE	MJ	1,04E-02	0,00E+00
ETE	MJ	1,20E-01	0,00E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

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

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
Amiblu - Electricity, Poland (kWh)	ecoinvent 3.6	1099,70	g CO2-ekv/kWh
Amiblu - Electricity, Romania (kWh)	ecoinvent 3.6	468,43	g CO2-ekv/kWh
Amiblu - Electricity, Germany (kWh)	ecoinvent 3.6	629,86	g CO2-ekv/kWh

Dangerous substances

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

Indoor environment

Not relevant

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+A1:2013 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Core rules for environmental product declarations of construction products.
ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.
Iversen et al., (2018) eEPD v3.0 - Background information for EPD generator system. LCA.no report 04.18.
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. 1.0. April 2017, EPD-Norge.
NPCR 019 Part B for Piping systems for use in sewage and storm water systems (under gravity), Ver 2.0.

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