

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 +A1



The Norwegian
EPD Foundation

Owner of the declaration:
Amiblu Technology AS

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-3323-1960-EN

Registration Number:
NEPD-3323-1960-EN

Issue date: 17.01.2022
Valid to: 17.01.2027

Product name:

Flowtite Biaxial Fullglass
DN1000 PN6 SN5000 ISO/ISO
12m pipe with Reka Coupling

Manufacturer:
Amiblu Technology AS

General information

Product:

Flowtite Biaxial Fullglass DN1000 PN6 SN5000 ISO/ISO 12m pipe with Reka Coupling

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-3323-1960-EN

ECO Platform reference number:

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

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 Flowtite Biaxial Fullglass DN1000 PN6 SN5000 ISO/ISO 12m pipe with Reka Coupling

Declared unit with option:

A1,A2,A3,A4

Functional unit:

1m of section of a 12m Biaxial pipe with an associated 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. 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.

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

Owner of the declaration:

Amiblu Technology AS
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Manufacturer:

Amiblu Pipes Spain S.A.

Place of production:

Amiblu Pipes Spain S.A.
Poligono Industrial La Venta Nova, 91 43894 Camarles, Tarragona Spain

Management system:

ISO 14001

Organisation no:

916 041 195

Issue date:

17.01.2022

Valid to:

17.01.2027

Year of study:

2020

Comparability:

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

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

Approved:

Sign



Håkon Hauan, CEO EPD-Norge

Product

Product description:

Flowtite Biaxial Fullglass DN1000 PN6 SN5000 ISO/ISO
EPD refers to 12m pipe with a ReKa Coupling.
Pipes are to be used in a desalination plant.

Product specification

Biaxial filament wound pipe.
Resin liner: Isophthalic polyester;
Diameter: 1000 mm;
Pressure class: 6;
Stiffness class: 5000;

| Materials | % |
|-----------------|-------|
| Polyester Resin | 38-42 |
| Sand | 0-1 |
| Glass fibers | 55-59 |
| Rubber gasket | 0-1 |
| Peroxide | 0-1 |

Technical data:

Flowtite pipe reinforced in the hoop and axial directions to resist pressure end thrust and bending loads.
Common uses: cooling water, desalination, and other industrial above ground applications.
For more details visit: <https://www.amiblu.com/pressure-pipes/>

Market:

Europe

Reference service life, product

Up to 150 years

Reference service life, construction

LCA: Calculation rules

Declared unit:

1 m Flowtite Biaxial Fullglass DN1000 PN6 SN5000 ISO/ISO 12m pipe with ReKa Coupling

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.

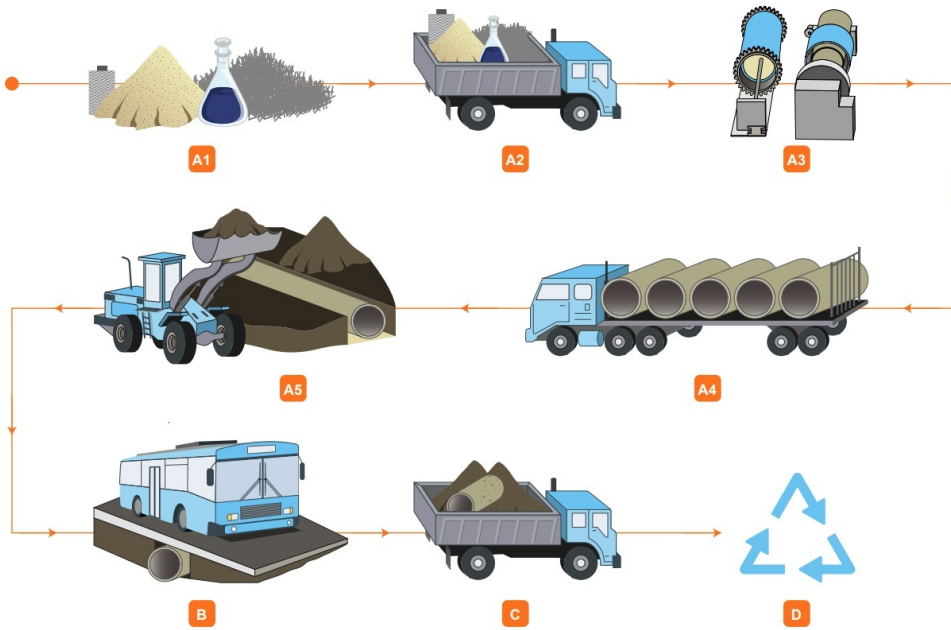
Data quality:

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 |
|-------------------|-----------------------|--------------|------|
| Chemicals | ecoinvent3.6 | Database | 2019 |
| Glass fibre | ecoinvent3.6 | Database | 2019 |
| Rubber, synthetic | ecoinvent3.6 | Database | 2019 |
| Sand | ecoinvent3.6 | Database | 2019 |
| Polyester resin | Modified ecoinvent3.6 | Database | 2019 |

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:

LCA: Scenarios and additional technical information

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

For A4 scenario a transport distance of 150 km from the production plant to the prospective installation place is assumed. A5 scenario is not covered by this declaration. Evaluation of A4 shall be conducted by the constructor. Specific product formulation is used for calculation of A1 and A2 impacts.

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 | 150 | 0,044606 | l/tkm | 6,69 |
| 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 for waste 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, C2)

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

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 | |

Scenarios after A1-A4 are not included

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 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 | | | | | | | | | | | | | |

Environmental impact

| Parameter | Unit | A1-A3 | A4 |
|-----------|--------------------------------------|----------|----------|
| GWP | kg CO ₂ -eq | 2,61E+02 | 2,19E+00 |
| ODP | kg CFC11 -eq | 2,97E-05 | 4,03E-07 |
| POCP | kg C ₂ H ₄ -eq | 8,41E-02 | 3,56E-04 |
| AP | kg SO ₂ -eq | 1,32E+00 | 6,97E-03 |
| EP | kg PO ₄ ³⁻ -eq | 1,63E-01 | 1,16E-03 |
| ADPM | kg Sb -eq | 1,00E-02 | 6,67E-06 |
| ADPE | MJ | 5,10E+03 | 3,29E+01 |

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 | 2,62E+02 | 4,80E-01 |
| RPEM | MJ | 1,14E-02 | 0,00E+00 |
| TPE | MJ | 2,62E+02 | 4,80E-01 |
| NRPE | MJ | 5,79E+03 | 3,37E+01 |
| NRPM | MJ | 2,52E+00 | 0,00E+00 |
| TRPE | MJ | 5,79E+03 | 3,37E+01 |
| SM | kg | 1,02E+00 | 0,00E+00 |
| RSF | MJ | 1,30E+01 | 0,00E+00 |
| NRSF | MJ | 8,84E-01 | 0,00E+00 |
| W | m ³ | 2,93E+00 | 6,32E-03 |

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 | 4,87E-01 | 1,97E-05 |
| NHW | kg | 3,60E+01 | 1,77E+00 |
| RW | kg | 1,20E-02 | 2,32E-04 |

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 | 1,31E-01 | 0,00E+00 |
| MER | kg | 5,75E-01 | 0,00E+00 |
| EEE | MJ | 2,68E-01 | 0,00E+00 |
| ETE | MJ | 4,06E+00 | 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, Spain (kWh) | ecoinvent 3.6 | 349,18 | g CO2-ekv/kWh |

Dangerous substances

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

Indoor environment

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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