epd-norge
Global program operatør

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## Hvalpsund Extreme 500NG

The Norwegian EPD Foundation

**Owner of the declaration:**
Mørenot Aquaculture AS

**Product:**
Hvalpsund Extreme 500NG

**Declared unit:**
1 pcs

**This declaration is based on Product Category Rules:**
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 031:2023 Part B for sea-based aquaculture infrastructure and components

**Program operator:**
The Norwegian EPD Foundation

**Declaration number:**
NEPD-7160-6556-EN

**Registration number:**
NEPD-7160-6556-EN

**Issue date:**
26.07.2024

**Valid to:**
26.07.2029

**EPD software:**
LCAno EPD generator ID: 447431

## General information

**Product**

Hvalpsund Extreme 500NG

**Program operator:**

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-norge.no

**Declaration number:**

NEPD-7160-6556-EN

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

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 031:2023 Part B for sea-based aquaculture infrastructure and components

**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 pcs Hvalpsund Extreme 500NG

**Declared unit with option:**

A1,A2,A3,A4,C1,C2,C3,C4,D

**Functional unit:**

Floating structure that keeps the fish cage in the surface of the sea and the net in place.

**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. Approval number: NEPDT65.

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

**Owner of the declaration:**

Mørenot Aquaculture AS
Contact person: Liv Lund
Phone: +4792032311
e-mail: liv.lund@morenot.com

**Manufacturer:**

Mørenot Aquaculture AS

**Place of production:**

Mørenot Aquaculture AS
Langelandsvegen 35
6010 Ålesund, Norway

**Management system:**

ISO9001 and ISO14001

**Organisation no:**

997749588

**Issue date:**

26.07.2024

**Valid to:**

26.07.2029

**Year of study:**

2023

**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: Ingrid Johanne Høydal

Reviewer of company-specific input data and EPD: Liv Lund

**Approved:**

Håkon Hauan

Håkon Hauan, CEO EPD-Norge

## Product

### Product description:

Highly customisable and corrosion-free floating pens in 100% PE. Our buoyancy pens are designed and engineered to withstand extreme forces of nature. The Hvalpsund ring has a floating pen with extra wide walkways and a non-slip surface without trip edges that helps to make the cage edge a better and safer workplace. Hvalpsundring extreme are built in sizes from 120 to +200 mtr and the pipes comes with a diameter of 500mm.

### Product specification

100% PE.
Double pipes all the way around.
Brackets made from 100% HDPE.

| Materials | kg | % |
|---|---|---|
| Plastic - Polypropylene with filler | 6082,68 | 23,35 |
| Plastic pipe - HDPE | 19972,61 | 76,65 |
| Total | 26055,29 | 100,00 |

| Packaging | kg | % |
|---|---|---|
| Packaging - Wood | 50,00 | 100,00 |
| Total incl. packaging | 26105,29 | 100,00 |

### Technical data:

The Pen is certified according to NS-9415:2021 and NYTEK23 and are metal free.
The Hvalpsund-ring is made of 100% PE plastic and is free of steel components.
Inner floating pipe: HDPE100 Ø500 161 m SDR13,6
Outer floating pipe: HDPE100 Ø500 169 m SDR13,6
Hand rail: HDPE100 Ø140 161 m SDR11

Circumference analysed product: 160 m

Weight: 26 055, 289 kg

### Market:

Norway

### Reference service life, product

20 years

### Reference service life, building or construction works

## LCA: Calculation rules

### Declared unit:

1 pcs Hvalpsund Extreme 500NG

### 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:

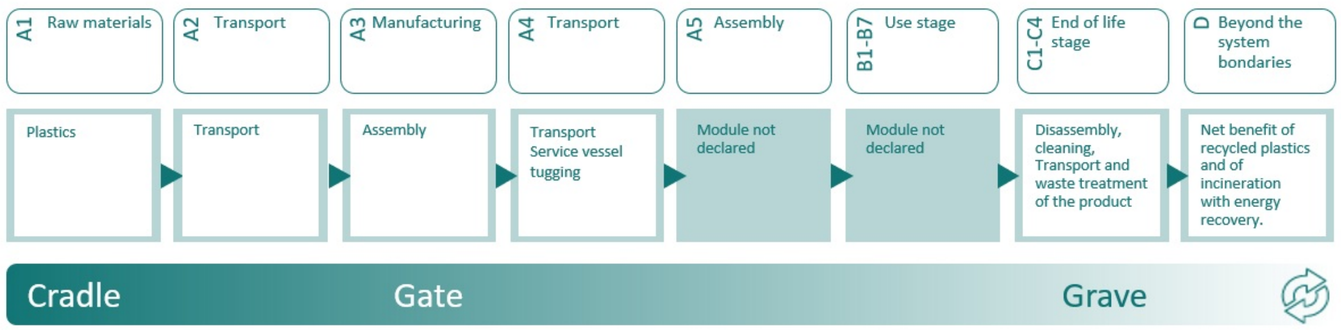
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

| Materials | Source | Data quality | Year |
|---|---|---|---|
| Packaging - Wood | ecoinvent 3.6 | Database | 2019 |
| Plastic - Polypropylene with filler | ecoinvent 3.6 | Database | 2019 |
| Plastic pipe - HDPE | NEPD-6903-6293-EN | EPD | 2023 |

## 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:




### Additional technical information:

https://www.morenot.com/aquaculture/pens/

## LCA: Scenarios and additional technical information

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

Module A4 - follow the default travel distance for work boats from the manufacturing site to the production location at sea is 200 Nm (370.4 km) sea freight as stated in NPCR 031 part B if not specified to a specific customer/order.

Module C1 - Freight from the aquaculture facility to disassembly require a service vessel aquaculture operations. For the travel distance a default sea freight of 1 Nm (1.852 km) is included to account for transport between the production location at sea and the nearest dock and is estimated to two hours.

Module C2 - Use default distance data of 300 km for Norwegian conditions as stated in NPCR 031 part B.

Module C3-C4 - Waste treatment and the processing of waste are based upon the assumption that all material is collected at the end-of-life phase as stated in NPCR 031 part B for aquaculture infrastructure and components. Phase C3, waste treatments include material recycling, incineration with and without energy recovery, and fly ash extraction. In phase C4, disposal methods involve landfilling of different waste fractions and ashes.

| Transport from production place to user (A4) | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit | Value (Liter/tonne) |
|---|---|---|---|---|---|
| Ship, aquaculture transport, service vessel, 24 meters, with tugging (kgkm) - Global | 20,0 % | 370 | 1,080 | l/tkm | 400,03 |
| **De-construction demolition (C1)** | **Unit** | **Value** | | | |
| Aquaculture operation, service vessel, 24 meter, product de-construction (per hour) - Global | h/DU | 2,00 | | | |
| **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) - Europe | 36,7 % | 300 | 0,043 | l/tkm | 12,90 |
| **Waste processing (C3)** | **Unit** | **Value** | | | |
| Plastic compound, PP and filler, to recycling (kg) | kg | 2128,94 | | | |
| Polyethylene to recycling (kg) | kg | 6990,41 | | | |
| Waste treatment of plastic mixture, incineration with energy recovery and fly ash extraction (kg) | kg | 3953,74 | | | |
| Waste treatment of polyethylene (PE), incineration with energy recovery and fly ash extraction (kg) | kg | 12982,20 | | | |
| Waste treatment per kg of non-impregnated aquaculture components, washing process (kg) - Norway | kg | 26055,29 | | | |
| **Disposal (C4)** | **Unit** | **Value** | | | |
| Landfilling of ashes from incineration of Plastic mixture, process per kg ashes and residues (kg) | kg | 138,25 | | | |
| Landfilling of ashes from incineration of Polyethylene (PE), process per kg ashes and residues (kg) | kg | 457,51 | | | |
| **Benefits and loads beyond the system boundaries (D)** | **Unit** | **Value** | | | |
| Substitution of acrylonitrile butadiene styrene, ABS, granulate (kg) | kg | 638,68 | | | |
| Substitution of electricity, in Norway (MJ) | MJ | 31249,21 | | | |
| Substitution of Polyethylene, HDPE granulate (kg) | kg | 2906,82 | | | |
| Substitution of Polypropylene, PP granulate (kg) | kg | 1490,26 | | | |
| Substitution of thermal energy, district heating, in Norway (MJ) | MJ | 472770,30 | | | |

## 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 | A2 | A3 | A4 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| GWP-total | kg $CO_2$ -eq | 6,48E+04 | 9,45E+01 | 5,32E+02 | 3,34E+04 | 6,86E+02 | 1,28E+03 | 5,07E+04 | 2,59E+01 | -1,48E+04 |
| GWP-fossil | kg $CO_2$ -eq | 6,51E+04 | 9,45E+01 | 5,31E+02 | 3,34E+04 | 6,85E+02 | 1,28E+03 | 5,07E+04 | 2,59E+01 | -1,46E+04 |
| GWP-biogenic | kg $CO_2$ -eq | -3,43E+02 | 2,60E-02 | 1,65E-01 | 6,27E+00 | 1,69E-01 | 5,28E-01 | 7,74E+00 | 1,36E-02 | -6,30E+01 |
| GWP-luluc | kg $CO_2$ -eq | 3,75E+01 | 6,53E-02 | 4,21E-02 | 1,21E+01 | 4,15E-01 | 4,54E-01 | 1,46E+00 | 3,89E-03 | -9,70E+01 |
| ODP | kg CFC11 -eq | 2,47E-03 | 2,01E-05 | 1,15E-04 | 7,29E-03 | 1,47E-04 | 2,89E-04 | 3,43E-04 | 2,67E-06 | -2,00E+02 |
| AP | mol H+ -eq | 2,43E+02 | 3,07E+00 | 5,55E+00 | 1,15E+03 | 2,33E+01 | 3,67E+00 | 2,31E+01 | 8,91E-02 | -6,40E+01 |
| EP-FreshWater | kg P -eq | 1,42E+00 | 3,91E-04 | 1,94E-03 | 8,80E-02 | 2,48E-03 | 1,02E-02 | 6,28E-02 | 3,51E-04 | -4,30E-01 |
| EP-Marine | kg N -eq | 4,17E+01 | 7,54E-01 | 2,45E+00 | 2,78E+02 | 5,61E+00 | 7,26E-01 | 7,18E+00 | 2,77E-02 | -1,44E+01 |
| EP-Terrestial | mol N -eq | 4,62E+02 | 8,40E+00 | 2,69E+01 | 3,05E+03 | 6,15E+01 | 8,12E+00 | 8,13E+01 | 3,15E-01 | -1,55E+02 |
| POCP | kg NMVOC -eq | 2,08E+02 | 2,18E+00 | 7,39E+00 | 7,98E+02 | 1,62E+01 | 3,11E+00 | 2,21E+01 | 8,69E-02 | -5,87E+01 |
| ADP-minerals&metals[1] | kg Sb-eq | 5,45E-01 | 7,02E-04 | 8,34E-04 | 1,38E-01 | 4,60E-03 | 3,53E-02 | 1,24E-01 | 1,39E-04 | -1,08E-01 |
| ADP-fossil[1] | MJ | 2,04E+06 | 1,21E+03 | 7,31E+03 | 4,55E+05 | 9,31E+03 | 1,93E+04 | 4,33E+04 | 2,28E+02 | -4,10E+05 |
| WDP[1] | $m^3$ | 5,73E+06 | 2,41E+02 | 1,57E+03 | 7,67E+04 | 1,74E+03 | 1,87E+04 | 1,99E+05 | 2,46E+03 | -7,97E+05 |

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*10-3 = 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 | A2 | A3 | A4 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PM | Disease incidence | 2,07E-03 | 0,00E+00 | 1,47E-04 | 7,97E-03 | 1,62E-04 | 7,82E-05 | 2,63E-04 | 1,09E-06 | -1,75E-03 |
| | IRP[2] | kgBq U235 -eq | 2,68E+03 | 5,18E+00 | 3,13E+01 | 1,98E+03 | 4,02E+01 | 8,44E+01 | 9,61E+01 | 1,09E+00 | -4,44E+02 |
| | ETP-fw[1] | CTUe | 4,55E+05 | 7,02E+02 | 4,00E+03 | 2,39E+05 | 5,27E+03 | 1,43E+04 | 6,95E+04 | 4,34E+02 | -2,92E+05 |
| | HTP-c[1] | CTUh | 1,83E-05 | 0,00E+00 | 1,56E-07 | 2,90E-05 | 5,89E-07 | 0,00E+00 | 4,02E-06 | 2,18E-08 | -6,80E-06 |
| | HTP-nc[1] | CTUh | 4,61E-04 | 0,00E+00 | 3,73E-06 | 2,03E-04 | 4,85E-06 | 1,56E-05 | 8,72E-05 | 8,07E-07 | -2,73E-04 |
| | SQP[1] | dimensionless | 1,63E+05 | 1,62E+02 | 9,35E+02 | 5,86E+04 | 1,24E+03 | 1,35E+04 | 7,03E+03 | 6,26E+02 | -2,72E+05 |

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 = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0*10-3 = 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 | A2 | A3 | A4 | C1 | C2 | C3 | C4 | D |
| | PERE | MJ | 1,30E+05 | 8,14E+00 | 3,97E+01 | 2,00E+03 | 5,47E+01 | 2,76E+02 | 1,31E+04 | 1,38E+01 | -2,47E+05 |
| | PERM | MJ | 3,46E+03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| | PERT | MJ | 1,34E+05 | 8,14E+00 | 3,97E+01 | 2,00E+03 | 5,47E+01 | 2,76E+02 | 1,31E+04 | 1,38E+01 | -2,47E+05 |
| | PENRE | MJ | 1,04E+06 | 1,21E+03 | 7,31E+03 | 4,55E+05 | 9,31E+03 | 1,93E+04 | 4,34E+04 | 2,28E+02 | -2,51E+05 |
| | PENRM | MJ | 1,06E+06 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -1,06E+06 | 0,00E+00 | -1,72E+05 |
| | PENRT | MJ | 2,10E+06 | 1,21E+03 | 7,31E+03 | 4,55E+05 | 9,31E+03 | 1,93E+04 | -1,02E+06 | 2,28E+02 | -4,23E+05 |
| | SM | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -1,27E+01 |
| | RSF | MJ | 3,06E+03 | 2,00E-01 | 9,79E-01 | 0,00E+00 | 0,00E+00 | 9,89E+00 | 3,50E+01 | 3,42E-01 | -3,31E+02 |
| | NRSF | MJ | 6,52E+01 | 2,76E+00 | 1,44E+01 | 0,00E+00 | 0,00E+00 | 3,54E+01 | 0,00E+00 | 4,71E+01 | -1,44E+04 |
| | FW | $m^3$ | 1,32E+03 | 6,28E-02 | 3,83E-01 | 1,82E+01 | 4,95E-01 | 2,06E+00 | 1,38E+02 | 2,10E-01 | -4,30E+02 |

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*10-3 = 0,009"
*INA Indicator Not Assessed

## End of life - Waste

| Indicator | | Unit | A1 | A2 | A3 | A4 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | HWD | kg | 1,39E+02 | 5,14E-02 | 5,37E-01 | 1,32E+01 | 3,36E-01 | 9,96E-01 | 6,41E+00 | 3,91E+02 | -1,06E+01 |
| | NHWD | kg | 3,56E+03 | 2,80E+00 | 1,01E+01 | 5,95E+02 | 1,82E+01 | 9,39E+02 | 2,73E+02 | 2,16E+02 | -1,30E+03 |
| | RWD | kg | 2,12E+00 | 8,40E-03 | 5,08E-02 | 3,23E+00 | 6,53E-02 | 1,32E-01 | 9,96E-02 | 1,37E-03 | -3,77E-01 |

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

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

## End of life - Output flow

| Indicator | | Unit | A1 | A2 | A3 | A4 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | CRU | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| | MFR | kg | 0,00E+00 | 0,00E+00 | 1,81E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,12E+03 | 0,00E+00 | -2,87E+00 |
| | MER | kg | 0,00E+00 | 0,00E+00 | 3,12E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,69E+04 | 0,00E+00 | -1,13E+01 |
| | EEE | MJ | 0,00E+00 | 0,00E+00 | 2,17E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,12E+04 | 0,00E+00 | -1,75E+01 |
| | EET | MJ | 0,00E+00 | 0,00E+00 | 3,28E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,73E+05 | 0,00E+00 | -2,65E+02 |

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*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 | 2,07E+01 |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2

## 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).

### 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 | A2 | A3 | A4 | C1 | C2 | C3 | C4 | D |
| GWPIOBC | kg $CO_2$ -eq | 6,32E+04 | 9,45E+01 | 5,31E+02 | 3,34E+04 | 6,86E+02 | 1,28E+03 | 5,07E+04 | 3,82E+01 | -1,42E+04 |

GWP-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. International Organization for Standardization.
ISO 14044:2006. Environmental management - Life cycle assessment - Requirements and guidelines. International Organization for Standardization.
EN 15804:2012+A2:2019. Environmental product declaration - Core rules for the product category of construction products. European Committee for Standardization.
ISO 21930:2017. Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products. International Organization for Standardization.
Ecoinvent v3, 2019. 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. Report number: 07.21. System verification report.
Gaspard Philis (2023). EPD generator for NPCR 031 part B for aquaculture infrastructure and components, Background information for EPD generator application and LCA data, LCA.no report number: 03.23. PCR verification report.
EPD Norway (2022). NPCR Part A: Construction products and services. The Norwegian EPD foundation. Version 2.0 published 24.03.2021.
EPD Norway (2023). NPCR 031 Part B for aquaculture infrastructure and components. The Norwegian EPD foundation. Version 1.0 published 26.04.2023.



| | | |
|---|---|---|
| epd-norge Global program operatør | **Program operator and publisher**<br>The Norwegian EPD Foundation<br>Post Box 5250 Majorstuen, 0303 Oslo, Norway | Phone: +47 977 22 020<br>e-mail: post@epd-norge.no<br>web: www.epd-norge.no |
| MØRENOT | **Owner of the declaration:**<br>Mørenot Aquaculture AS<br>Langelandsvegen 35, 6010 Ålesund | Phone: +4792032311<br>e-mail: liv.lund@morenot.com<br>web: https://www.morenot.com/ |
| LCA.no | **Author of the Life Cycle Assessment**<br>LCA.no AS<br>Dokka 6A, 1671 | Phone: +47 916 50 916<br>e-mail: post@lca.no<br>web: www.lca.no |
| LCA.no | **Developer of EPD generator**<br>LCA.no AS<br>Dokka 6B,1671 Kråkerøy | Phone: +47 916 50 916<br>e-mail: post@lca.no<br>web: www.lca.no |
| ECO PLATFORM EPD VERIFIED | ECO Platform<br>ECO Portal | web: www.eco-platform.org<br>web: ECO Portal |