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The Norwegian EPD Foundation

# ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

| | |
|---|---|
| Owner of the declaration: | Sateba Norway AS |
| Program operator: | The Norwegian EPD Foundation |
| Publisher: | The Norwegian EPD Foundation |
| Declaration number: | NEPD-1921-842-EN |
| Registration number: | NEPD-1921-842-EN |
| ECO Platform reference number: | - |
| Issue date: | 03.12.2019 |
| Valid to: | 03.12.2024 |

# Cable Troughs for railwaytunnels

## Sateba NorwayAS

www.epd-norge.no

## General information

**Product:**

Cable Troughs for railwaytunnels

**Owner of the declaration:**

Sateba Norway AS
Contact person: Geir-Olav Larsen
Phone: +47 91 34 68 03
e-mail: geir-olav.larsen@sateba.com

**Manufacturer:**

Sateba Norway AS

**Program operator:**

The Norwegian EPD Foundation
Pb. 5250 Majorstuen, 0303 Oslo
Phone: +47 97722020

e-mail: post@epd-norge.no

**Declaration number:**

NEPD-1921-842-EN

**Place of production:**

Hensmoveien 101, Hønefoss, Norway

**ECO Platform reference number:**

**Management system:**

ISO 9001 og ISO 14001

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

CEN Standard EN 15804:2012+A1:2013 serves as core PCR

**Organisation no:**

998 608 511

**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:** 03.12.2019

**Valid to:** 03.12.2024

**Declared unit:**

1 tonne Cable Troughs for railwaytunnels

**Year of study:**

2019

**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 building context.

**Functional unit:**

**Author of the Life Cycle Assessment:**

The declaration is developed using eEPD v3.0 from LCA.no
Approval:
Company specific data are:

| | |
|---|---|
| Collected/registered by: | Geir Olav Larsen |
| Internal verification by: | Hedda Winther |

**Verification:**

Independent verification of data, other environmental information and the declaration according to ISO14025:2010, § 8.1.3 and § 8.1.4

External

Third party verifier:

Sign

Senior Research Scientist, Anne Rønning

(Independent verifier approved by EPD Norway)

**Approved:**

Sign

Håkon Hauan
Managing Director of EPD-Norway

## Product

**Product description:**

Cable Troughs, for use in railwaytunnels. Produced by Spenncon Rail.

**Product specification**

1 complete Cable Troughs (KK, KKF and 10 pcs. KKL)

| Materials | % |
|---|---|
| Cement | 20,88 |
| Aggregate | 69,59 |
| Water | 7,43 |
| Chemicals | 0,35 |
| Reinforcement | 1,76 |

**Technical data:**

Cable Troughs with a weight of 4.958
Concrete class B35 MF40
The concrete are in compliance with NS-EN-206
The elements are in compliance with NS-EN 13369

**Market:**

Folloline, Norway

**Reference service life, product**

50 years

**Reference service life, building**

## LCA: Calculation rules

**Declared unit:**

1 tonne Cable Troughs for railwaytunnels

**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.

All important raw materials and all important energy consumption are included. The production process for the raw materials and energy streams included with very small quantities (<1%) is not included. These cut-off criteria do not apply to 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.

Inbound energy and water, as well as waste production in own production, are allocated equally between all the manufacturer's products through mass allocation. Impact on primary production of recycled materials is allocated to the main product where the material was used. The recycling process and transport of the material is allocated to this analysis.

**Data quality:**

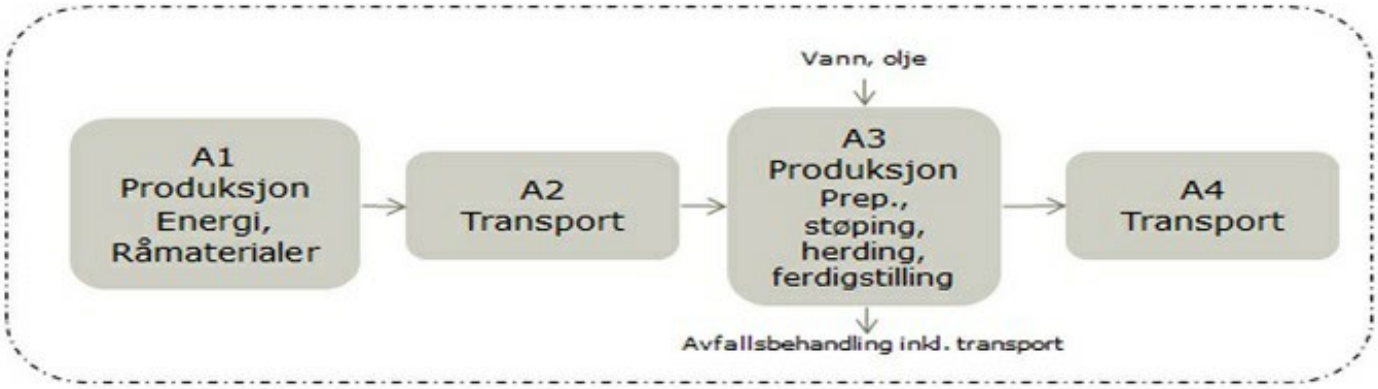
Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other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

Company-specific data is from 2018 and is based on data from production at Spenncon Rail.

| Materials | Source | Data quality | Year |
|---|---|---|---|
| Chemicals | Chemicals below cut-off | No data | 0 |
| Aggregate | Modified EcoInvent | Database | 2012 |
| Reinforcement | Østfoldforskning | Database | 2012 |
| Chemicals | EPD-EFC-20150086-IAG1-EN | EPD | 2015 |
| Chemicals | EPD-EFC-20150091-IAG1-EN | EPD | 2015 |
| Cement | NEPD-1217-383 | EPD | 2015 |
| Cement | NEPD-24-201-NO | EPD | 2015 |
| Reinforcement | NEPD-321-200-EN | EPD | 2015 |
| Aggregate | Østfoldforskning | Database | 2016 |
| Water | ecoinvent 3.4 | Database | 2017 |

**System boundary:**

Production, including emissions in connection with the production and transport of raw materials, water and electricity. Waste treatment of waste and waste from the company is also included. In addition, transport to the customer in Åsland is included.




**Additional technical information:**

## LCA: Scenarios and additional technical information

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

**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 | 55,0 % | Lastebil med henger, EURO 6 | 81 | 0,022606 | l/tkm | 1,83 |
| 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

## 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 | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | . | MND |

## Environmental impact

| Parameter | Unit | A1 | A2 | A3 | A4 |
|---|---|---|---|---|---|
| GWP | kg $CO_2$ -eq | 1,47E+02 | 2,83E+00 | 1,17E+00 | 6,69E+00 |
| ODP | kg CFC11 -eq | 2,66E-06 | 5,63E-07 | 1,40E-07 | 1,37E-06 |
| POCP | kg $C_2H_4$-eq | 3,21E-02 | 4,50E-04 | 5,68E-04 | 1,05E-03 |
| AP | kg $SO_2$ -eq | 3,69E-01 | 8,73E-03 | 8,04E-03 | 1,73E-02 |
| EP | kg $PO_4^{3-}$ -eq | 2,52E-01 | 1,39E-03 | 5,06E-03 | 2,38E-03 |
| ADPM | kg Sb -eq | 1,24E-04 | 6,35E-06 | 1,34E-05 | 1,59E-05 |
| ADPE | MJ | 8,12E+02 | 4,51E+01 | 1,35E+01 | 1,10E+02 |

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 | A2 | A3 | A4 |
|---|---|---|---|---|---|
| RPEE | MJ | 2,73E+02 | 8,25E-01 | 1,09E+02 | 2,00E+00 |
| RPEM | MJ | 5,75E+00 | 0,00E+00 | 3,81E+00 | 0,00E+00 |
| TPE | MJ | 2,79E+02 | 8,25E-01 | 1,13E+02 | 2,00E+00 |
| NRPE | MJ | 8,39E+02 | 4,65E+01 | 2,01E+01 | 1,13E+02 |
| NRPM | MJ | 1,38E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TRPE | MJ | 8,53E+02 | 4,65E+01 | 2,01E+01 | 1,13E+02 |
| SM | kg | 5,74E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 6,40E-05 | 0,00E+00 | 1,78E-02 | 0,00E+00 |
| NRSF | MJ | 2,68E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| W | $m^3$ | 4,08E+02 | 1,10E-02 | 4,76E-02 | 2,68E-02 |

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 | A2 | A3 | A4 |
|---|---|---|---|---|---|
| HW | kg | 1,70E-01 | 2,52E-05 | 1,32E-02 | 6,04E-05 |
| NHW | kg | 2,06E+01 | 4,10E+00 | 2,61E+00 | 1,03E+01 |
| RW | kg | INA* | INA* | INA* | INA* |

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 | A2 | A3 | A4 |
|---|---|---|---|---|---|
| CR | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MR | kg | 2,59E+00 | 0,00E+00 | 8,45E+00 | 0,00E+00 |
| MER | kg | 7,15E-04 | 0,00E+00 | 2,83E-01 | 0,00E+00 |
| EEE | MJ | INA* | INA* | INA* | INA* |
| ETE | MJ | INA* | INA* | INA* | INA* |

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 Norwegian 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 |
|---|---|---|---|
| El-mix, Norway (kWh) | ecoinvent 3.4 | 31,04 | g CO2-ekv/kWh |

**Dangerous substances**

The product contains no substances given by the REACH Candidate list or the Norwegian 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.
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|---|---|---|---|
| epd-norge.no The Norwegian EPD Foundation | **Program operator and publisher**<br>The Norwegian EPD Foundation<br>Post Box 5250 Majorstuen, 0303 Oslo<br>0303 Oslo Norway | Phone:<br><br>e-mail:<br>web: | +47 97722020<br><br>post@epd-norge.no<br>www.epd-norge.no |
| CONSOLIS SPENNCON RAIL | **Owner of the declaration**<br>Spenncon Rail AS<br>Hensmoveien 101<br>3516 Hønefoss | Phone:<br>Fax:<br>e-mail:<br>web: | +47 91 34 68 03<br><br>geir-olav.larsen@consolis.com<br>www.consolis.com |
| Østfoldforskning | **Author of the Life Cycle Assessment**<br>Østfoldforskning AS<br>Stadion 4<br>1671 Kråkerøy | Phone:<br>Fax:<br>e-mail:<br>web: | +47 69 35 11 00<br>+47 69 34 24 94<br><br>www.ostfoldforskning.no |
| LCA.no | **Developer of EPD generator**<br>LCA.no AS<br>Dokka 1C<br>1671 Kråkerøy | Phone:<br><br>e-mail:<br>web: | +47 916 50 916<br><br>post@lca.no<br>www.lca.no |