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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: | Lindab Profil AB |
| Program operator: | The Norwegian EPD Foundation |
| Publisher: | The Norwegian EPD Foundation |
| Declaration number: | NEPD-2770-1479-EN |
| Registration number: | NEPD-2770-1479-EN |
| ECO Platform reference number: | - |
| Issue date: | 12.04.2021 |
| Valid to: | 12.04.2026 |

# Precoated studs, runners, battens

## Lindab Profil AB

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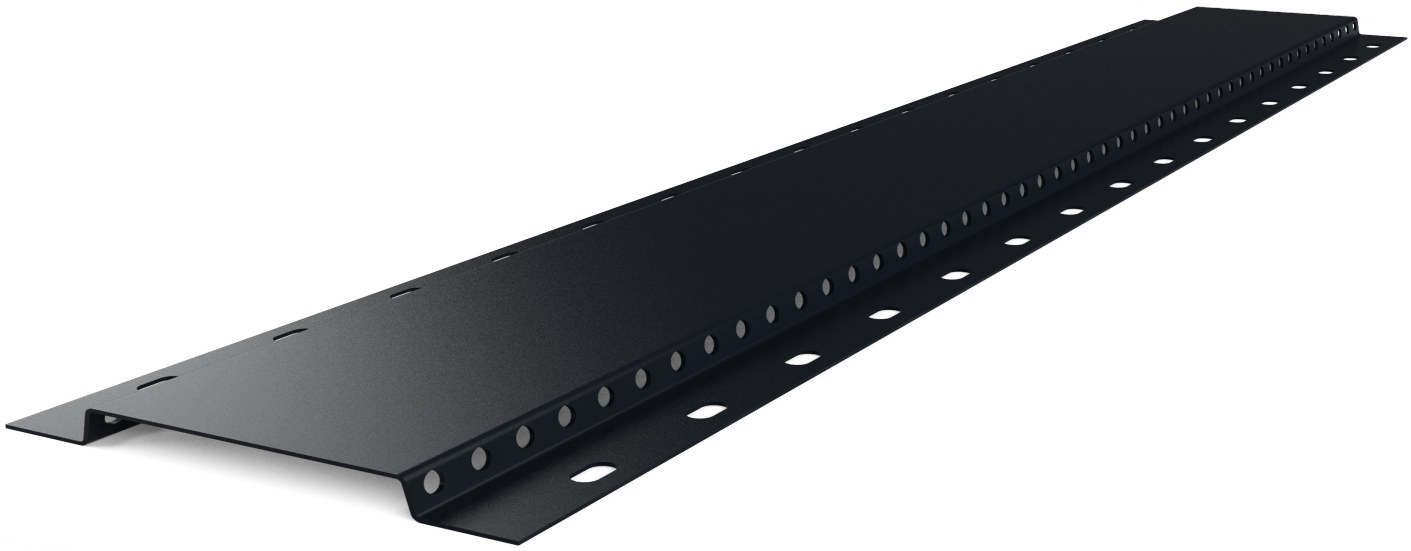

# General information

**Product:**

Precoated studs, runners, battens

**Owner of the declaration:**

Lindab Profil AB
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**Program operator:**

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**Manufacturer:**

Lindab Profil AB
Vistorpsvägen 56 , 269 71 Förslöv
Sweden

**Declaration number:**

NEPD-2770-1479-EN

**Place of production:**

Lindab Profil AB
Vistorpsvägen 56 , 269 71 Förslöv
Sweden

**ECO Platform reference number:**

**Management system:**

SE006902-1 ISO 9001:2015 SE006898-1 ISO 14001:2015

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

CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR 013:2019 Part B for Steel and aluminium construction products

**Organisation no:**

556247-2273

**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:**

12.04.2021

**Valid to:**

12.04.2026

**Declared unit:**

1 kg Precoated studs, runners, battens

**Year of study:**

2019

**Declared unit with option:**

A1,A2,A3,A4,A5,C1,C2,C3,C4,D

**Comparability:**

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building 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:

Lina Hedvall

Reviewer of company-specific input data and EPD:

Carina Petersson

**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.

Fredrik Moltu Johnsen, Norsus AS

(no signature required)

**Approved:**

Sign

Håkon Hauan, CEO EPD-Norge

# Product

**Product description:**

Lindabs beams, battens, studs and runners are manufactured from hot dip galvanized steel with a coated surface treatment in order to obtain requested corrosion protection properties. The products connected to these systems are primarily used as a base or framework in the construction of interior walls, exterior walls and ceilings. This EPD covers the polyestercoated products.

**Product specification**

The steel grade used for this product is S350GD Z275, S250GD Z275 and FA Z100 with a coated surface of PE25. The nominal thickness varies from 0,52 to 3,0mm depending on product and area of use.

| Materials | kg | % |
|---|---|---|
| Steel | 1,00 | 100,00 |
| Total: | 1,00 | |

| Packaging | kg | |
|---|---|---|
| Packaging | 0,03 | |
| Total including packaging | 1,03 | |

**Technical data:**

Declaration of Performance C-profiles:
https://itsolution.lindab.com/lindabwebproductsdoc/pdf/documentation/build
Declaration of Performance exterior and interior studs and runners:
https://itsolution.lindab.com/lindabwebproductsdoc/pdf/documentation/build
Declaration of Performance U-profiles:
https://itsolution.lindab.com/lindabwebproductsdoc/pdf/documentation/build
Declaration of Performance Z-profiles:
https://itsolution.lindab.com/lindabwebproductsdoc/pdf/documentation/build

**Market:**

The beams, battens, studs and runners are mainly sold in Scandinavia.

**Reference service life, product**

60 years

**Reference service life, building**

60 years

# LCA: Calculation rules

**Declared unit:**

1 kg Precoated studs, runners, battens

**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:**

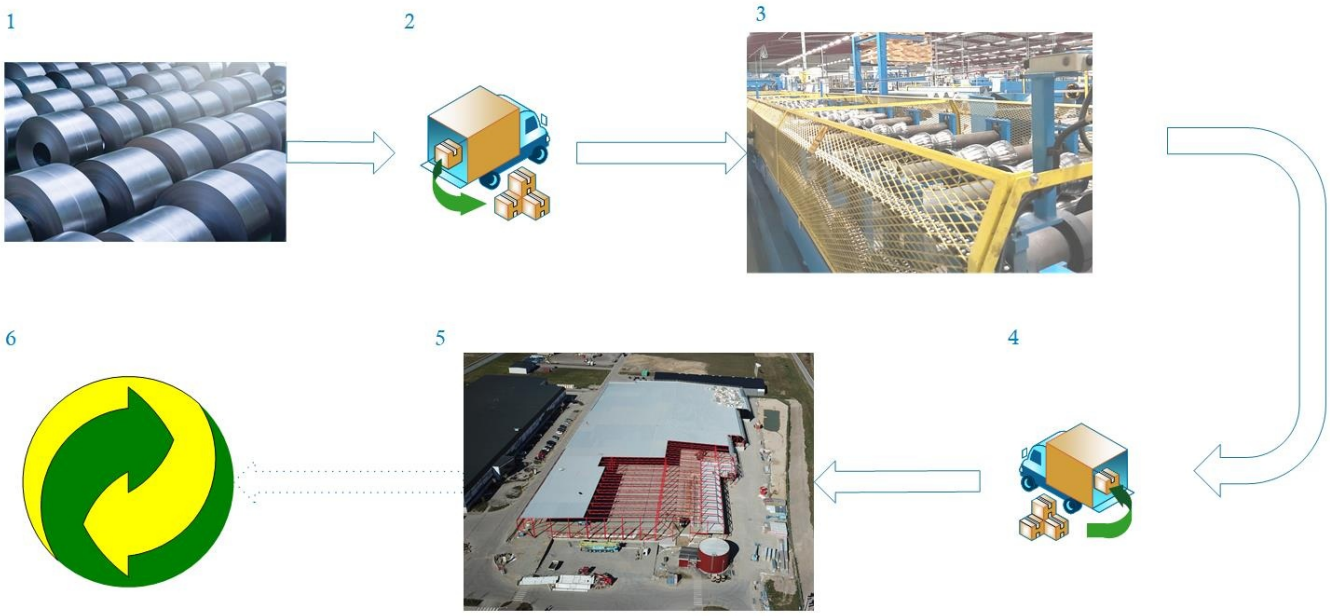
Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other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

For A1-A4 the data is actual data or suggestions from the c-CPR. For the other modules conservative assumptions have been made. For Assembly(A5) and Deconstruction (C1) Bucht & Korhonen's report regarding Energy Consumption during Construction phase has been used.

| Materials | Source | Data quality | Year |
|---|---|---|---|
| Packaging | ecoinvent 3.5 | Database | 2018 |
| Steel | EPD-TS-2019-004 | EPD | 2019 |
| Steel | S-P-01921 | EPD | 2020 |

**System boundary:**

Module A1-A5, C1-C4 and D is included in the analysis. That means everything except the usage stage. That is excluded since the product has very limited effect on the environment during this phase of its lifetime.




The steel coils (1) are produced at the steel manufacturer and transported to Lindab in Grevie by truck or ship (2). Thereafter the coils are slitted into the right dimensions and then transported to Lindab Profil in Förslöv. The ConstruLine products are produced in roll forming machines or press-brakes (3). Transport to customers are done by truck (4) to the building site where the customer assembles the product (5). The usage phase is excluded in this EPD, thus the next step is demolition and recycling (6).

**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 | 38,8 % | Truck, lorry 16-32 tonnes, EURO 5 | 300 | 0,044606 | l/tkm | 13,38 |
| Railway | | | | | l/tkm | |
| Boat | | | | | l/tkm | |
| Other Transportation | | | | | l/tkm | |

**Assembly (A5)**

| . | Unit | Value |
|---|---|---|
| Auxiliary | kg | |
| Water consumption | $m^3$ | |
| Electricity consumption | kWh | 0,0147 |
| Other energy carriers | MJ | |
| Material loss | kg | |
| Output materials from waste treatment | kg | 0,0300 |
| Dust in the air | kg | |
| VOC emissions | kg | |

**End of Life (C1, C3, C4)**

| . | Unit | Value |
|---|---|---|
| Hazardous waste disposed | kg | |
| Collected as mixed construction waste | kg | |
| Reuse | kg | |
| Recycling | kg | 0,9900 |
| Energy recovery | kg | |
| To landfill | kg | 0,0100 |

**Transport to waste processing (C2)**

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|---|---|---|---|---|---|---|
| Truck | 38,8 % | Truck, lorry 16-32 tonnes, EURO 5 | 100 | 0,044606 | l/tkm | 4,46 |
| Railway | | | | | l/tkm | |
| Boat | | | | | l/tkm | |
| Other Transportation | | | | | l/tkm | |

..

**Benefits and loads beyond the system boundaries (D)**

| . | Unit | Value |
|---|---|---|
| Substitution of primary reinforcing steel, with net scrap steel (kg) | kg | 0,93 |

## 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 | X | MNR | MNR | MNR | MNR | MNR | MNR | MNR | X | X | X | X | . | X |

### Environmental impact

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP | kg $CO_2$ -eq | 2,83E+00 | 4,88E-02 | 1,61E-03 | 6,27E-04 | 1,63E-02 | 1,98E-04 | 5,18E-05 | -1,56E+00 |
| ODP | kg CFC11 -eq | 3,04E-08 | 9,00E-09 | 8,01E-10 | 6,89E-10 | 3,00E-09 | 2,20E-11 | 1,80E-11 | -6,43E-08 |
| POCP | kg $C_2H_4$-eq | 7,43E-04 | 7,95E-06 | 3,65E-07 | 1,65E-07 | 2,65E-06 | 5,43E-08 | 1,58E-08 | -1,09E-03 |
| AP | kg $SO_2$ -eq | 6,28E-03 | 1,56E-04 | 8,53E-06 | 3,40E-06 | 5,19E-05 | 1,23E-06 | 3,78E-07 | -6,96E-03 |
| EP | kg $PO_4^{3-}$ -eq | 7,26E-04 | 2,58E-05 | 2,14E-06 | 8,21E-07 | 8,61E-06 | 1,90E-07 | 6,67E-08 | -2,32E-03 |
| ADPM | kg Sb -eq | 1,66E-04 | 1,49E-07 | 9,87E-09 | 8,15E-09 | 4,96E-08 | 1,40E-11 | 2,00E-12 | -3,01E-05 |
| ADPE | MJ | 3,10E+01 | 7,35E-01 | 1,67E-02 | 5,01E-03 | 2,45E-01 | 1,84E-03 | 1,46E-03 | -1,47E+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 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| RPEE | MJ | 2,80E+00 | 1,07E-02 | 3,10E-01 | 4,05E-02 | 3,57E-03 | 1,53E-02 | 1,19E-05 | -1,32E+00 |
| RPEM | MJ | 4,32E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TPE | MJ | 3,24E+00 | 1,07E-02 | 3,10E-01 | 4,05E-02 | 3,57E-03 | 1,53E-02 | 1,19E-05 | -1,32E+00 |
| NRPE | MJ | 3,43E+01 | 7,53E-01 | 1,04E-01 | 9,17E-02 | 2,51E-01 | 2,48E-03 | 1,48E-03 | -1,39E+01 |
| NRPM | MJ | 3,83E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TRPE | MJ | 3,48E+01 | 7,53E-01 | 1,04E-01 | 9,17E-02 | 2,51E-01 | 2,48E-03 | 1,48E-03 | -1,39E+01 |
| SM | kg | 6,04E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 4,56E-04 | 0,00E+00 | 3,92E-05 | 3,92E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | MJ | 1,95E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| W | $m^3$ | 2,41E-03 | 1,41E-04 | 3,02E-05 | 2,30E-05 | 4,70E-05 | 1,02E-06 | 1,60E-06 | -9,52E-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 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| HW | kg | 3,63E-02 | 4,40E-07 | 4,86E-08 | 3,35E-08 | 1,47E-07 | 6,12E-09 | 2,20E-09 | -1,35E-04 |
| NHW | kg | 1,50E-01 | 3,96E-02 | 1,57E-03 | 6,51E-04 | 1,32E-02 | 1,88E-04 | 1,00E-02 | -2,67E+00 |
| RW | kg | INA* | INA* | INA* | INA* | 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-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| CR | 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 |
| MR | kg | 7,48E-02 | 0,00E+00 | 1,08E-02 | 0,00E+00 | 0,00E+00 | 9,90E-01 | 0,00E+00 | 0,00E+00 |
| MER | kg | 8,08E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EEE | MJ | INA* | INA* | INA* | INA* | INA* | INA* | INA* | INA* |
| ETE | MJ | INA* | INA* | INA* | INA* | 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, Sweden (kWh) | ecoinvent 3.4 Alloc Rec | 42,67 | g CO2-ekv/kWh |
| Energy, district heating, Norwegian average (kWh) | Østfoldforskning | 19,71 | 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.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
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Vold et al., (2019) EPD generator for Norsk Stålforbund - Background information and LCA data, LCA.no report number 09.19.
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NPCR 013 Part B for steel and aluminium construction products. Ver. 3.0 April 2019, EPD-Norge.



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|---|---|---|---|
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