

# ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Vikørsta AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-1877-811-EN
Registration number:	NEPD-1877-811-EN
ECO Platform reference number:	-
Issue date:	19.09.2019
Valid to:	19.09.2024

## Vegskinne Vlk CC4-W3 m/Sigma (N2)

Vikørsta AS



[www.epd-norge.no](http://www.epd-norge.no)



## General information

### Product:

Vegskinne Vik CC4-W3 m/Sigma (N2)

### Program operator:

The Norwegian EPD Foundation  
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### Declaration number:

NEPD-1877-811-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 013 2019 Part B for Steel and Aluminium Construction Products

### 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 Vegskinne Vik CC4-W3 m/Sigma (N2)

### Declared unit with option:

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

### Functional unit:

### Owner of the declaration:

Vikørsta AS  
Contact person: Teknisk sjef - Jan Olav  
Hoggen  
Phone: 0047 95170854  
e-mail: [jan.olav.hoggen@vikorsta.no](mailto:jan.olav.hoggen@vikorsta.no)

### Manufacturer:

Vikørsta AS

### Place of production:

VIK ØRSTA AVD VIK

Elvagata 20  
6893 Vik i Sogn

### Management system:

NS-EN ISO 9001:2015 NS-EN ISO 14001:2015

### Organisation no:

985001952

### Issue date:

19.09.2019

### Valid to:

19.09.2024

### Year of study:

2019

### Comparability:

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

### 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: Atle Arseth

Internal verification by: Anders Kleppe Eidså

### Approved:

### 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



Ellen Soldal, Research Scientist

(Independent verifier approved by EPD Norway)

Sign



Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

Vegskinner med sigmastolpe cc4

### Product specification

Vegskinne Vik CC4-W3, Sigma (N2)

Materials	%
Steel	95,72
Zinc	4,28

### Technical data:

Styrkeklasse N2  
Arbeidsbredde W3  
Inntrengingsklasse VI5  
Skadeklasse A  
Høyde 700 mm  
Bredde 183 mm  
Stolpeavstand 4000 mm  
Forankring Rammed  
CE Sertifikat Ja  
Class of Resistance to Snow Removal 3

### Market:

Norwegian

### Reference service life, product

30 years

### Reference service life, building

Varies

## LCA: Calculation rules

### Declared unit:

1 m Vegskinne Vik CC4-W3 m/Sigma (N2)

### 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.

Cut of criteria has been used on transport packaging as the total mass of packaging is well below 1% of the total transported mass. Packaging consists of wood and metal strapping ties.

### Data quality:

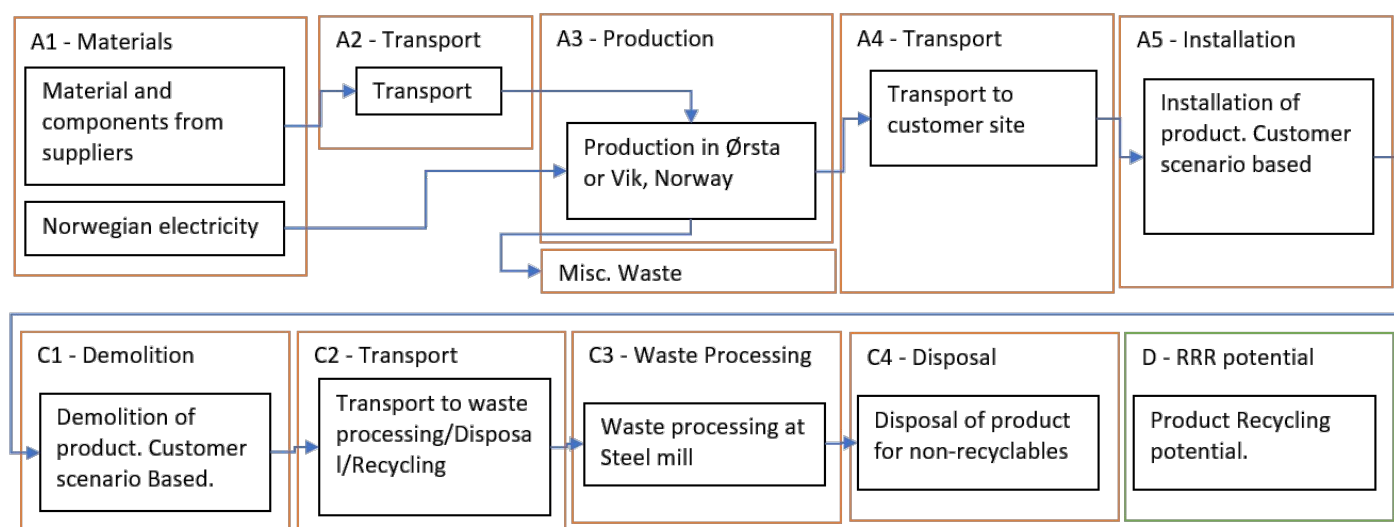
Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other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

Data is Collected By VikØRsta during 2018/2019. No changes within boundaries have occurred since the data was collected.

Materials	Source	Data quality	Year
Steel	Owner of product declaration	EPD	2014
Steel	ecoinvent 3.5	Database	2018
Zinc	ecoinvent 3.5	Database	2018

# System boundary:

System boundary as described in figure



## Additional technical information:

Most common railing system in Scandinavia.

## LCA: Scenarios and additional technical information

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

Assembly of railing using two trucks and Pile driving. Dismantling is using the same resources as Assembly.

### 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 %	Truck, lorry over 32 tonnes, EURO 6	300	0,022606	l/tkm	6,78
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

### Assembly (A5)

.	Unit	Value
Auxiliary	kg	
Water consumption	m <sup>3</sup>	
Electricity consumption	kWh	
Other energy carriers	MJ	10,1400
Material loss	kg	
Output materials from waste treatment	kg	
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	13,9000
Energy recovery	kg	
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	110,0 %	Truck, lorry over 32 tonnes, EURO 6	800	0,045212	l/tkm	18,08
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

..

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

.	Unit	Value
Substitution of construction steel (kg)	kg/DU	13,90

## LCA: Results

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

Product 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	Deconstruction 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	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

### Environmental impact

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP	kg CO <sub>2</sub> -eq	4,84E+01	3,45E-01	9,34E-01	9,34E-01	9,20E-01	0,00E+00	0	-2,54E+01
ODP	kg CFC11 -eq	7,38E-07	7,09E-08	1,69E-07	1,69E-07	1,89E-07	0,00E+00	0	-1,01E-07
POCP	kg C <sub>2</sub> H <sub>4</sub> -eq	9,20E-03	5,40E-05	1,87E-04	1,87E-04	1,44E-04	0,00E+00	0	-3,93E-03
AP	kg SO <sub>2</sub> -eq	1,43E-01	8,91E-04	7,08E-03	7,08E-03	2,38E-03	0,00E+00	0	-4,77E-02
EP	kg PO <sub>4</sub> <sup>3-</sup> -eq	1,90E-02	1,23E-04	1,64E-03	1,64E-03	3,28E-04	0,00E+00	0	-5,19E-03
ADPM	kg Sb -eq	5,95E-03	8,21E-07	3,14E-07	3,14E-07	2,19E-06	0,00E+00	0	-1,31E-04
ADPE	MJ	4,85E+02	5,67E+00	1,35E+01	1,35E+01	1,51E+01	0,00E+00	0	-2,52E+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<sup>-3</sup> = 0,009

\*INA Indicator Not Assessed

## Resource use

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	4,40E+01	1,03E-01	7,75E-02	7,75E-02	2,75E-01	0,00E+00	0	-4,56E+00
RPEM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
TPE	MJ	4,40E+01	1,03E-01	7,75E-02	7,75E-02	2,75E-01	0,00E+00	0	-4,56E+00
NRPE	MJ	2,97E+02	5,84E+00	1,36E+01	1,36E+01	1,56E+01	0,00E+00	0	-1,33E+02
NRPM	MJ	2,07E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	-1,26E+02
TRPE	MJ	5,04E+02	5,84E+00	1,36E+01	1,36E+01	1,56E+01	0,00E+00	0	-2,59E+02
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
RSF	MJ	5,11E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
W	m <sup>3</sup>	4,49E-01	1,38E-03	1,43E-03	1,43E-03	3,69E-03	0,00E+00	0	-2,22E-01

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 =  $9,0 \cdot 10^{-3}$  = 0,009

\*INA Indicator Not Assessed

## End of life - Waste

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HW	kg	9,18E-01	3,11E-06	6,07E-06	6,07E-06	8,31E-06	0,00E+00	0	-5,56E-01
NHW	kg	6,17E+00	5,34E-01	6,52E-02	6,52E-02	1,42E+00	0,00E+00	0	-4,28E-03
RW	kg	INA*	INA*	INA*	INA*	INA*	INA*	0	INA*

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

Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 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	0,00E+00
MR	kg	1,93E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00
EEE	MJ	INA*	INA*	INA*	INA*	INA*	INA*	0	INA*
ETE	MJ	INA*	INA*	INA*	INA*	INA*	INA*	0	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 =  $9,0 \cdot 10^{-3}$  = 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
El-mix, Norway (kWh)	ecoinvent 3.4	31,04	g CO2-ekv/kWh
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.

ISO 21930:2017 Sustainability in buildings and civil engineering works - 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 number 04.18.

Vold et al., (2019) EPD generator for Vikørsta - Background information for customer application and LCA data, LCA.no report number 02.19.

NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.

NPCR 013 2019 Part B for Steel and Aluminium Construction Products

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