

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-1869-809-EN
Registration number:	NEPD-1869-809-EN
ECO Platform reference number:	-
Issue date:	10.09.2019
Valid to:	10.09.2024

Ørsta Brurekkverk BR2 cc2m

Vikørsta AS



www.epd-norge.no



Ørsta Brurekkverk, BR2

General information

Product:

Ørsta Brurekkverk BR2 cc2m

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-1869-809-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 Ørsta Brurekkverk BR2 cc2m

Declared unit with option:

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

Functional unit:
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, Forsker

(Independent verifier approved by EPD Norway)

Owner of the declaration:

VikØrsta AS
Contact person: Teknisk sjef - Jan Olav
Hoggen
Phone: 0047 95170854
e-mail: jan.olav.hoggen@vikorsta.no

Manufacturer:

VikØrsta AS

Place of production:

Vik Ørsta AS, Skorgeura

Management system:

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

Organisation no:

985001952

Issue date: 10.09.2019

Valid to: 10.09.2024

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:

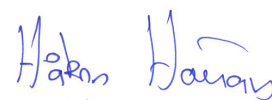
Company specific data are:

Collected/registered by: Anders Kleppe Eidså

Internal verification by: Torbjørn Melle

Approved:

Sign



Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:

Ørsta Brurekkverk
H2 / W2 / B

Product specification

Ørsta bridge parapet is a tube and profile railing for use on bridges and transitions between road and bridge.

Materials	%
Steel	92,75
Powder coating	0,68
Zinc	6,57

Technical data:

Styrkeklasse H2
Arbeidsbredde W2
Inntrengingsklasse VI2
Skadeklasse B
Høyde 1200 mm
Bredde 370 mm
Stolpeavstand 2000 mm
Forankring Base plate
CE Sertifikat Ja

Market:

European Market, mainly Scandinavia.

Reference service life, product

50 years

Reference service life, building

50 years

LCA: Calculation rules

Declared unit:

1 m Ørsta Brurekkverk BR2 cc2m

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-off criteria have been used on transport packaging materials as they are below 1% of total mass being transported. The packaging materials are untreated wood and steel strapping ties.

Data quality:

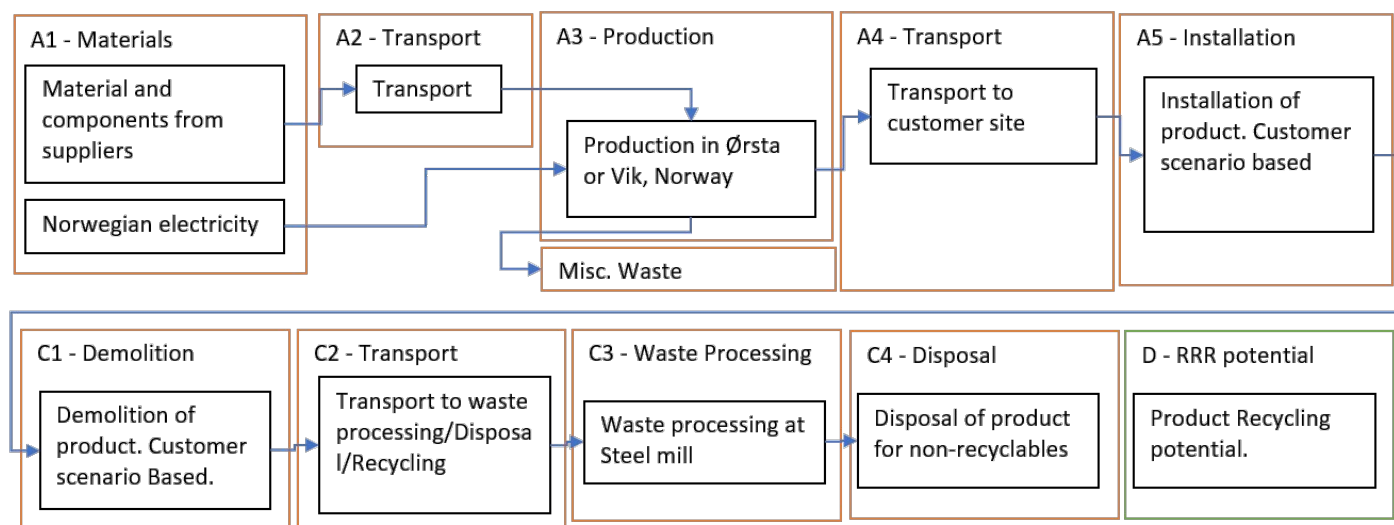
Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other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

Input data is collected by VikØrsta during 2018 and 2019, no changes to the production of this product have occurred since then.

Materials	Source	Data quality	Year
Steel	Owner of product declaration	EPD	2014
Steel	NEPD-475-331-EN	EPD	2016
Powder coating	ecoinvent 3.5	Database	2018
Steel	ecoinvent 3.5	Database	2018
Zinc	ecoinvent 3.5	Database	2018

System boundary:

As described in figure



Additional technical information:

The railing is hot-dip galvanized and coated to make the railing service life the best in the market.

LCA: Scenarios and additional technical information

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

Assembly of railing using truck(s), crane and wrench

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 ³	
Electricity consumption	kWh	
Other energy carriers	MJ	0,9000
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	55,4000
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	

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Benefits and loads beyond the system boundaries (D)

.	Unit	Value
Substitution of construction steel (kg)	kg/DU	55,40

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 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	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 ₂ -eq	1,68E+02	1,38E+00	8,29E-02	8,29E-02	3,67E+00	0,00E+00	0	-1,01E+02
ODP	kg CFC11 -eq	5,72E-06	2,83E-07	1,50E-08	1,50E-08	7,53E-07	0,00E+00	0	-4,04E-07
POCP	kg C ₂ H ₄ -eq	3,19E-02	2,15E-04	1,66E-05	1,66E-05	5,74E-04	0,00E+00	0	-1,56E-02
AP	kg SO ₂ -eq	5,03E-01	3,55E-03	6,29E-04	6,29E-04	9,47E-03	0,00E+00	0	-1,90E-01
EP	kg PO ₄ ³⁻ -eq	6,74E-02	4,90E-04	1,45E-04	1,45E-04	1,31E-03	0,00E+00	0	-2,07E-02
ADPM	kg Sb -eq	2,60E-02	3,27E-06	2,79E-08	2,79E-08	8,73E-06	0,00E+00	0	-5,23E-04
ADPE	MJ	1,80E+03	2,26E+01	1,20E+00	1,20E+00	6,02E+01	0,00E+00	0	-1,00E+03

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	1,79E+02	4,11E-01	6,88E-03	6,88E-03	1,09E+00	0,00E+00	0	-1,82E+01
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	1,79E+02	4,11E-01	6,88E-03	6,88E-03	1,09E+00	0,00E+00	0	-1,82E+01
NRPE	MJ	1,25E+03	2,33E+01	1,21E+00	1,21E+00	6,21E+01	0,00E+00	0	-5,32E+02
NRPM	MJ	6,02E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	-5,01E+02
TRPE	MJ	1,88E+03	2,33E+01	1,21E+00	1,21E+00	6,21E+01	0,00E+00	0	-1,03E+03
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	2,05E-02	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 ³	1,85E+00	5,51E-03	1,27E-04	1,27E-04	1,47E-02	0,00E+00	0	-8,86E-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*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	3,89E+00	1,24E-05	5,39E-07	5,39E-07	3,31E-05	0,00E+00	0	-2,22E+00
NHW	kg	4,12E+01	2,13E+00	5,78E-03	5,78E-03	5,67E+00	0,00E+00	0	-1,71E-02
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*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	8,27E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,54E+01	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*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
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

n/a

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 Sustainability of construction works - 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 and services.

ecoinvent v3, Alloc Rec, Swiss Centre of Life Cycle Inventories.

NPCR 013 2019 Part B for Steel and Aluminium Construction Products.

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