epd-norge.no
The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Steni AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2657-1361-EN
Registration number:	NEPD-2657-1361-EN
ECO Platform reference number:	-
Issue date:	03.02.2021
Valid to:	03.02.2026

Steni Vision

Steni AS

www.epd-norge.no

General information

Product:

Steni Vision

Owner of the declaration:

Steni AS
Contact person: Herleif Rimstad
Phone: + 47 926 35 625
e-mail: herleif.rimstad@steni.no

Program operator:

The Norwegian EPD Foundation
Pb. 5250 Majorstuen, 0303 Oslo
Phone: +47 23 08 80 00
e-mail: post@epd-norge.no

Manufacturer:

Steni AS
Lågendalsveien 2633 , 3277 STEINSHOLT
Norway

Declaration number:

NEPD-2657-1361-EN

Place of production:

Steni AS
Lågendalsveien 2633 , 3277 STEINSHOLT
Norway

ECO Platform reference number:

Management system:

ISO 9001:2015, sert. no.: 0102916

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A1:2013 serves as core PCR and NPCR - Part B 010 NPCR 010:2019 Part B for Building boards

Organisation no:

918 150 145

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: 03.02.2021

Valid to: 03.02.2026

Declared unit:

1 m2 Steni Vision

Year of study:

2020

Declared unit with option:

A1,A2,A3,A4,A5,B2,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:

1 m2 covering surface of installed building board with a specific function, from cradele-to-grave, with activities needed for a study period of 60

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:

Jan Marius Kruse

Reviewer of company-specific input data and EPD:

Herleif Rimstad

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.

Michael M. Jenssen, Asplan Viak AS

(no signature required)

Approved:

Sign

Håkon Hauan, CEO EPD-Norge

Product

Product description:

STENI Vision is a robust stone composite panel with a smooth printed surface(front) designed for use as exterior ventilated cladding on all types of buildings. The panel consist of several layers of materiales that are hardned and acrylic cured to give long lasting surface and life time. The panel is delivered in a wide range of colours, sizes and three gloss variations. Low maintenance and a 60-year warranty secure low LCC.

Product specification

STENI Vision comes in various widths and lengths, ranging from 850mm to 3190mm in length and 295-1195mm in width. The panel can also be delivered according to costomers specifications.

Materials	kg	%
Reinforcement	0,59	4,32
Additives	0,06	0,46
Binder	2,64	19,30
Filler, core stone aggregate	10,25	75,03
Lacquer, solvent free	0,11	0,81
Ink, solvent based	0,01	0,09
Total	13,66	

Packaging	kg	
Packaging - Pallet	0,51	
Packaging - Plastic	0,01	
Packaging - Plastic strips	0,00	
Total including packaging	14,18	

Technical data:

STENI Vision is 6mm thick a robust stone composite panel with a core of crushed stone, with an avrage wight of 12kg/m2. The panel comes in various printed surfaces, sizes and glosses.

The panel has SINTEF technical approval TG 2165.

Market:

Main markets; Europe, US, Canada, UAE.

Reference service life, product

The panel has 60 years as referance service life under normal conditions, assuming installation, use and maintenance instructions are followed.

Reference service life, building

60 years

LCA: Calculation rules

Declared unit:

1 m2 Steni Vision

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.

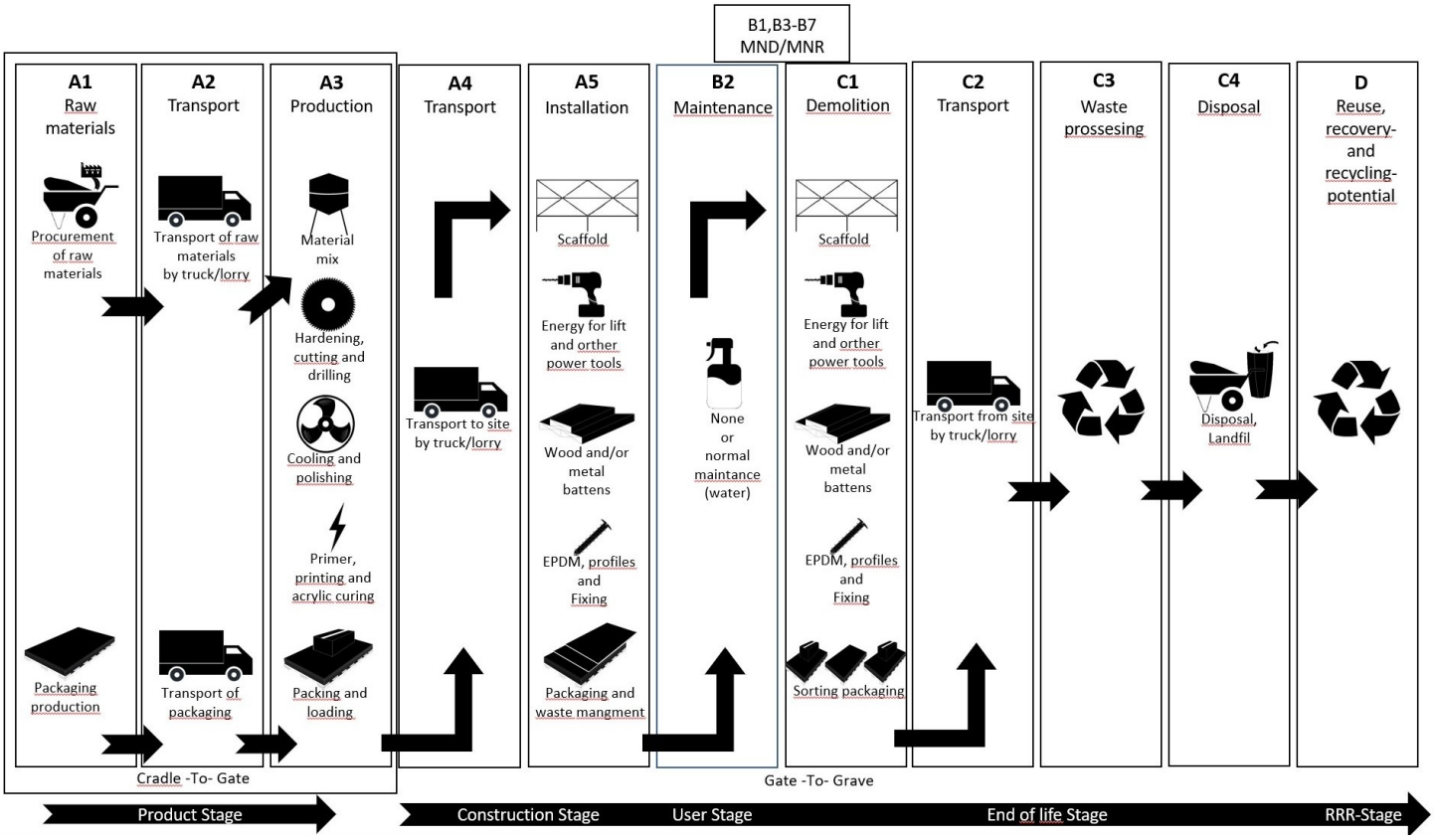
Data quality:

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.

Materials	Source	Data quality	Year
Additives	EcoInvent 3.6	Database	2016
Additives	LCA.no	Database	2016
Packaging - Plastic	ecoinvent 3.4	Database	2017
Lacquer, solvent free	ecoinvent 3.5	Database	2018
Packaging - Pallet	NorEnviro	Database	2018
Binder	ecoinvent 3.6	Database	2019
Filler, core stone aggregate	ecoinvent 3.6	Database	2019
Ink, solvent based	ecoinvent 3.6	Database	2019
Lacquer, solvent free	ecoinvent 3.6	Database	2019
Reinforcement	ecoinvent 3.6	Database	2019
Packaging - Plastic strips	Modified ecoinvent 3.6	Database	2019
Binder	Specific data from supplier 2019	Database	2019

System boundary:

The analysis as shown includes "Cradel To Gate" with the modules A1-A3, and with options A4, A5, B2, C1,C2,C3 and C4.



Additional technical information:

The panel has SINTEF technical approval TG 2165
Fire class: B-S1,d0 according to EN 13501-1.
Dimentional stability: 0,04% according to EN 438-2 part 18.
Thickness: 6mm according to EN 438-2 part 5.

The product is registered in:
Sunda Hus, Byggvarubedömningen, Nordic ECO Label.

LCA: Scenarios and additional technical information

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

The only maintenance neaded is cleaning with water approximately every 10th year. After end of life, the panels will be taken down and sent direktly to disposal.

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 6	300	0,043626	l/tkm	13,09
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Assembly (A5)

.	Unit	Value
Auxiliary	kg	
Water consumption	m^3	
Electricity consumption	kWh	0,0050
Other energy carriers	MJ	
Material loss	kg	
Output materials from waste treatment	kg	0,5220
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	11,9994
Reuse	kg	
Recycling	kg	
Energy recovery	kg	
To landfill	kg	12,0351

Maintenance (B2)/Repair (B3)

.	Unit	Value
Maintenance cycle*	.	
Auxiliary	kg	0,0300
Other resources	kg	
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
VOC emissions	kg	

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 6	50	0,043626	l/tkm	2,18
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

..

Benefits and loads beyond the system boundaries (D)

.	Unit	Value
Substitution of primary aggregates with crushed recycled stone products (kg)		0,07
Substitution of electricity, in Norway (MJ)	MJ/DU	0,73
Substitution of thermal energy, district heating, in Norway (MJ)	MJ/DU	5,04

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	X	MNR	MNR	MNR	MNR	MNR	X	X	X	X	.	X

Environmental impact

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWP	kg CO_2 -eq	1,79E+01	5,74E-01	6,17E-02	1,09E-02	1,55E-04	9,56E-02	1,04E-02	5,14E-02	-4,88E-02
ODP	kg CFC11 -eq	2,72E-06	1,08E-07	2,32E-09	1,05E-09	1,50E-11	1,80E-08	2,08E-09	2,00E-08	-1,05E-08
POCP	kg C_2H_4-eq	1,08E-02	8,69E-05	4,79E-06	3,47E-06	3,48E-08	1,45E-05	1,92E-06	1,29E-05	-4,47E-05
AP	kg SO_2 -eq	6,26E-02	1,35E-03	1,26E-04	5,71E-05	7,25E-07	2,25E-04	5,28E-05	3,73E-04	-2,39E-04
EP	kg PO_4^{3-} -eq	6,76E-03	1,77E-04	3,30E-05	7,16E-06	1,75E-07	2,95E-05	9,36E-06	7,27E-05	-6,16E-05
ADPM	kg Sb -eq	2,54E-05	1,78E-06	3,71E-08	3,99E-08	2,54E-09	2,97E-07	6,37E-10	7,94E-10	-4,03E-07
ADPE	MJ	3,16E+02	8,66E+00	2,59E-01	1,20E-01	1,57E-03	1,44E+00	1,02E-01	1,64E+00	-5,99E-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	B2	C1	C2	C3	C4	D
RPEE	MJ	4,91E+01	1,28E-01	7,16E+00	2,28E-02	2,04E-02	2,13E-02	1,36E-01	2,56E-02	-2,52E+00
RPEM	MJ	9,18E+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
TPE	MJ	6,75E+01	1,28E-01	7,16E+00	2,28E-02	2,04E-02	2,13E-02	1,36E-01	2,56E-02	-2,52E+00
NRPE	MJ	2,69E+02	8,87E+00	8,40E-01	1,84E-01	2,71E-03	1,48E+00	2,66E-01	1,67E+00	-1,36E+00
NRPM	MJ	7,79E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	3,47E+02	8,87E+00	8,40E-01	1,84E-01	2,71E-03	1,48E+00	2,66E-01	1,67E+00	-1,36E+00
SM	kg	2,00E-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
RSF	MJ	4,45E-03	0,00E+00	3,55E-06	0,00E+00	3,55E-06	0,00E+00	0,00E+00	0,00E+00	-1,44E-04
NRSF	MJ	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
W	m^3	8,38E-02	1,68E-03	1,90E-04	3,51E-02	1,13E-06	2,80E-04	6,67E-05	1,93E-03	-4,87E-04

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	B2	C1	C2	C3	C4	D
HW	kg	5,49E-02	5,22E-06	4,10E-07	4,73E-07	3,48E-09	8,71E-07	2,46E-07	1,85E-06	-1,27E-06
NHW	kg	9,03E+00	4,75E-01	2,21E-02	6,90E-03	2,05E-04	7,92E-02	3,00E-03	1,20E+01	-2,78E-02
RW	kg	6,99E-04	6,09E-05	1,33E-06	1,05E-06	1,75E-08	1,01E-05	2,80E-06	1,13E-05	-1,27E-05

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	B2	C1	C2	C3	C4	D
CR	kg	2,87E-01	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	2,27E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	1,25E+00	0,00E+00	5,22E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	8,43E-01	0,00E+00	4,10E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	9,09E+00	0,00E+00	4,51E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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

Not relevant

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, M. et al. (2020) EPD-generator for Steni AS, bakgrunnsinformasjon for verifisering, LCA.no report number 03.20
NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.
NPCR 010 Part B for Building Boards. Ver. 3.0 October 2019, EPD-Norge.

epd-norge.no The Norwegian EPD Foundation	**Program operator and publisher** The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo,Norway	Phone: e-mail: web:	+47 23 08 80 00 post@epd-norge.no www.epd-norge.no
STENI	**Owner of the declaration** Steni AS Lågendalsveien 2633 , 3277 STEINSHOLT	Phone: e-mail: web:	+ 47 926 35 625 herleif.rimstad@steni.no www.steni.com
LCA.no	**Author of the Life Cycle Assessment** LCA.no AS Dokka 1C , 1671 Kråkerøy	Phone: e-mail: web:	+47 916 50 916 post@lca.no www.lca.no
LCA.no	**Developer of EPD generator** LCA.no AS Dokka 1C,1671 Kråkerøy	Phone: e-mail: web:	+47 916 50 916 post@lca.no www.lca.no