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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:	Steni AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2581-1309-EN
Registration number:	NEPD-2581-1309-EN
ECO Platform reference number:	-
Issue date:	08.01.2021
Valid to:	08.01.2026

Steni Colour

Steni AS

www.epd-norge.no

General information

Product:
Steni Colour

Program operator:
The Norwegian EPD Foundation
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Phone: +47 23 08 80 00
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Declaration number:
NEPD-2581-1309-EN

ECO Platform reference number:

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A1:2013 serves as core PCR and NPCR010:2019 Part B for Building boards

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 m2 Steni Colour

Declared unit with option:
A1,A2,A3,A4,A5,B2,C1,C2,C3,C4,D

Functional unit:
1 m2 covering surface of installed building board with a specific function, from cradle-to-grave, with activities needed for a study period of 60 years for the building

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 EPD-Norway, and iii) the process is reviewed annual. 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 EPD-Norway's procedures and guidelines for verification and approval of EPD tools.

Michael M. Jenssen
(no signature required)

Owner of the declaration:
Steni AS
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Manufacturer:
Steni AS

Place of production:
STENI AS
Lågendalsveien 2633
3277 Steinsholt
Norway

Management system:
ISO 9001:2015, sert. no.: 0102916

Organisation no.:
918 150 145

Issue date: 08.01.2021

Valid to: 08.01.2026

Year of study:
2020

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

Development and verification of EPD:
The declaration has been developed and verified using EPD tool lca.tools ver EPD2020 20, 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 the EPD:
Halgurd Shaker Sofi

Reviewer of company-specific input data and EPD:
Jan Marius Kruse

Approved:

Sign

Håkon Hauan, CEO EPD-Norge

Product

Product description:

STENI Colour is a robust stone-composite panel with a smooth surface designed for use as exterior ventilated cladding on all types of buildings. The panels consist of several layers of materials that are hardened and cured to give durability and a long-lasting surface.
Steni Colour 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 Colour comes in various widths and lengths, with standard panel size on stock that are 1195x2995mm. The panels can also be delivered from 850mm to 3495mm in length and 295-1195mm in width. The panels can also be delivered according to customers specifictions.

Materials	%
Packaging	3,68
Reinforcement	4,19
Additives	0,44
Binder	18,59
Filler, core stone aggregate	72,28
Lacquer, solvent free	0,81

Technical data:

STENI Colour is 6mm thick fiberglass-rainforced stone composite panel with a core of crushed stone, with an avrage wight of 12kg/m2. The panel comes in various colors, 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 Colour

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.

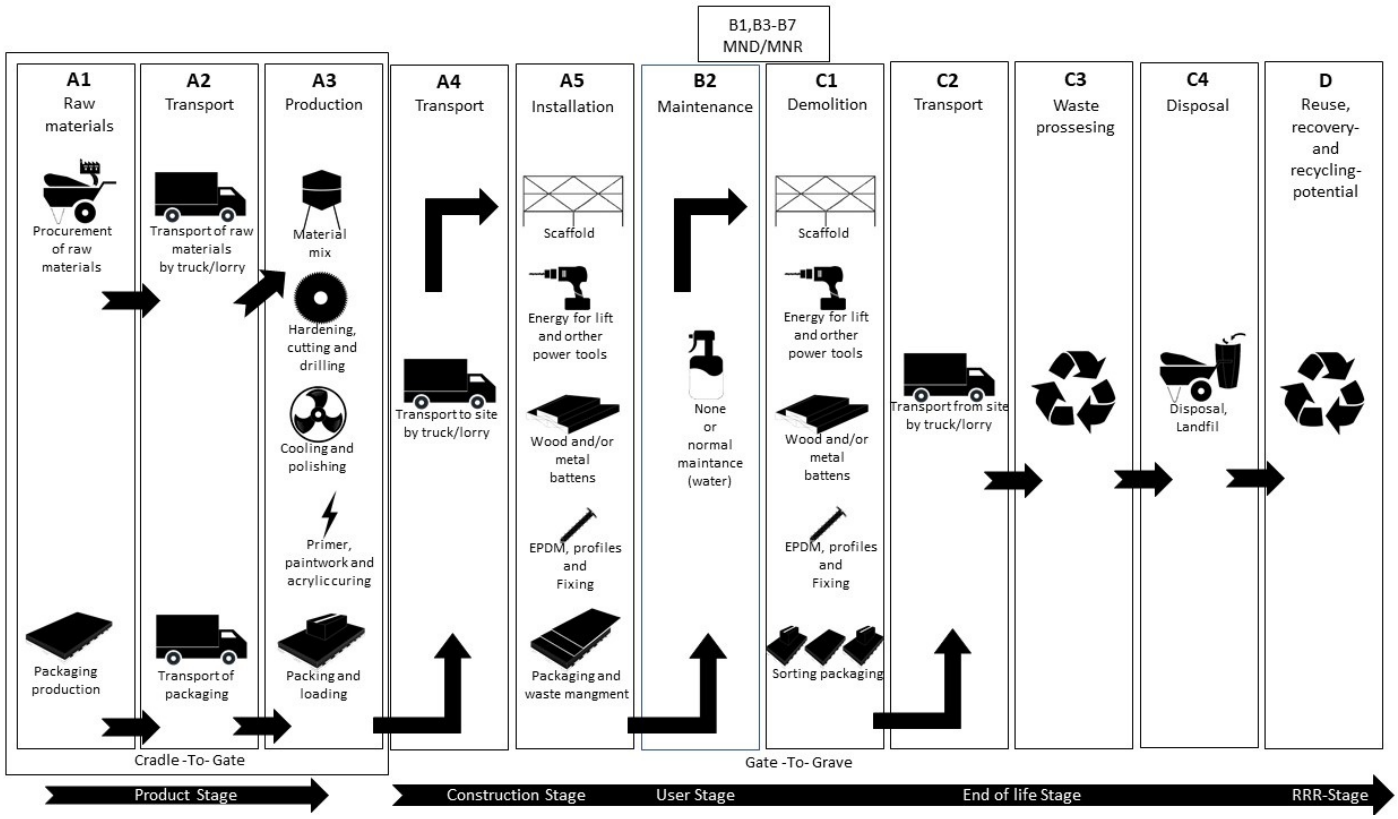
Data quality:

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	ecoinvent 3.4	Database	2017
Lacquer, solvent free	ecoinvent 3.5	Database	2018
Packaging	NorEnviro	Database	2018
Binder	ecoinvent 3.6	Database	2019
Filler, core stone aggregate	ecoinvent 3.6	Database	2019
Lacquer, solvent free	ecoinvent 3.6	Database	2019
Reinforcement	ecoinvent 3.6	Database	2019
Packaging	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	12,0000
Reuse	kg	
Recycling	kg	
Energy recovery	kg	
To landfill	kg	12,0000

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	

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Benefits and loads beyond the system boundaries (D)

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

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	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	1,78E+01	5,74E-01	6,17E-02	1,09E-02	1,55E-04	9,56E-02	6,64E-03	5,12E-02	-4,88E-02
ODP	kg CFC11 -eq	2,46E-06	1,08E-07	2,32E-09	1,05E-09	1,50E-11	1,80E-08	1,32E-09	1,99E-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	1,22E-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	3,36E-05	3,72E-04	-2,39E-04
EP	kg PO_4^{3-} -eq	6,71E-03	1,77E-04	3,30E-05	7,16E-06	1,75E-07	2,95E-05	5,95E-06	7,25E-05	-6,16E-05
ADPM	kg Sb -eq	2,45E-05	1,78E-06	3,71E-08	3,99E-08	2,54E-09	2,97E-07	4,05E-10	7,92E-10	-4,03E-07
ADPE	MJ	3,16E+02	8,66E+00	2,59E-01	1,20E-01	1,57E-03	1,44E+00	6,45E-02	1,63E+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	4,88E+01	1,28E-01	7,16E+00	2,28E-02	2,04E-02	2,13E-02	8,66E-02	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	6,72E+01	1,28E-01	7,16E+00	2,28E-02	2,04E-02	2,13E-02	8,66E-02	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	1,69E-01	1,66E+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	1,69E-01	1,66E+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	4,24E-05	1,92E-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	1,56E-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	1,91E-03	1,20E+01	-2,78E-02
RW	kg	6,96E-04	6,09E-05	1,33E-06	1,05E-06	1,75E-08	1,01E-05	1,78E-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	3,59E-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.
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