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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  
Program operator  
Publisher  
Declaration number  
ECO EPD Ref.No.  
Issue date  
Valid to

Steni AS  
The Norwegian EPD Foundation  
The Norwegian EPD Foundation  
NEPD00097E Rev 1  
00000084  
01.02.2014  
01.02.2019 (validity extended to 15.01.2021)

## Steni Colour facade panel 6 mm thickness

Steni AS



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



## General information

### Steni Colour facade panel 6 mm thickness

Product

#### Program holder

The Norwegian EPD Foundation  
Post Box 5250 Majorstuen, 0303 Oslo  
Phone: +47 23 08 80 00  
e-mail: [post@epd-norge.no](mailto:post@epd-norge.no)

#### Declaration number:

NEPD 0097E rev1

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

CEN Standard EN 15804 serve as core PCR  
Product category rules (PCR) of Building boards.  
NPCR 010

#### Declared unit:

1 m<sup>2</sup> of Steni Colour facade panel, 6 mm thickness.

#### Declared unit with option:

1 m<sup>2</sup> Steni Colour facade panel with a service life of 60 years.

#### Functional unit:

#### The environmental product declaration has been

##### worked out by:

Torhildur Kristjansdottir  
SINTEF Building and infrastructure



#### Verification:

Independent verification of data and other environmental information has been carried out in accordance with ISO14025, 8.1.3.

externally ☒

internally ☐

*Kari Sørnes*

Kari Sørnes, SINTEF Building and infrastructure  
(Independent verifier approved by EPD Norway)

### Steni AS

Manufacturer

#### Owner of the declaration:

Steni AS  
Contact person: Tor Unneberg  
Phone: +47 33 15 56 00  
e-mail: [tor@steni.no](mailto:tor@steni.no)

#### Place of production:

Lågendalsveien 2633, 3277 Stensholt, Norway

#### Management system:

ISO 9001:2008, Approval No00022

#### Org. No:

NO 944012044

#### Issue date

01.02.2014

#### Valid to

01.02.2019 (validity extended to 15.01.2021)

#### Comparability:

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

#### Year of study:

2013

Approved according to ISO14025, 8.1.4

*Sverre Fossdal*

Dr. ing. Sverre Fossdal  
(Chairman of the Verification Group of EPD-Norway)

#### Declared unit:

1 m<sup>2</sup> of Steni colour facade panel 6 mm thickness.

Key environmental indicators	Unit	Cradle to gate A1 - A3
Global warming	kg CO <sub>2</sub> -eqv	17
Energy use	MJ	179
Dangerous substances	*	
Renewable energy	MJ	30
Non renewable energy	MJ	149

Transport A4 <sub>1</sub>
-
-

\* The product contains no substances from the REACH Candidate list or the Norwegian priority list

A4<sub>1</sub> Central warehous is the production site

## Product

### Product description:

Steni colour facade panel is an exterior wall cladding system. The panel comes with different colours, shapes and thickness. This EPD is based on 6 mm thickness.

### Technical data:

The panel is 6 mm thick with an average weight of 12 kg /m<sup>2</sup>. The panel comes in different sizes and shapes.

The panel has SINTEF Technical approval TG 2165.

### Market:

Europe

### Reference service life:

60 years

### Product specification

Materials	kg	%
Polyester	2,12	17 %
Filler	4,93	39 %
Chemical additives	0,06	0,5 %
Crushed stone	4,80	38 %
Fiber glass	0,50	4 %
Top colour - acrylic	0,11	1 %

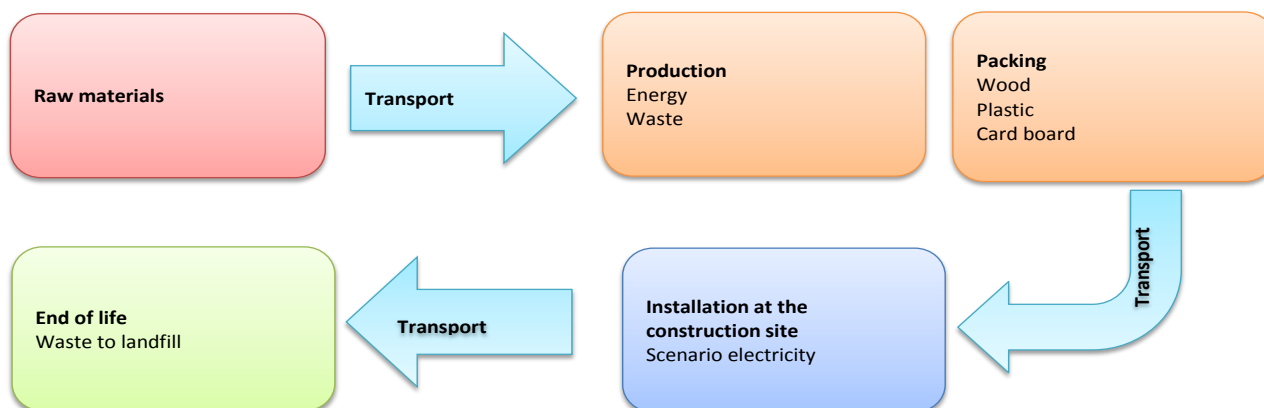
## LCA: Calculation rules

### Declared unit with option:

1 m<sup>2</sup> Steni colour facade panel with a service life of 60 years.

### System boundary:

The analysis includes steps A1-A3, scenario for A4, A5, B2, C2 and C4 as shown in flow chart.



### Data quality:

The data for the production is gathered from Steni and is of good quality. For background data the Ecoinvent database v.2.2 is used, and is considered to be representative.

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) are not included. This cut-off rule does 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 production is allocated equally among all products through mass allocation. Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

## 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	Value (l/t)
Truck 16-32 tonne	50	Lorry (Euro 4)	300	l/tkm	

**Additional information:** Transport to central warehouse in Norway is set to 0 km since the central warehouse is at the production location.

### Installation in the building (A5)

	Unit	Value
Auxiliary	kg	
Water consumption	m <sup>3</sup>	
Electricity consumption	kWh	0,05
Other energy carriers	MJ	
Material loss	kg	
Output materials from waste treatment	kg	
Dust in the air	kg	

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

	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	
Reuse	kg	
Recycling	kg	
Energy recovery	kg	
To landfill	kg	12

### Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck 16-32 tonne	50	Lorry (Euro 4)	50	l/tkm	

## LCA: Results

The results from the EPD show that the largest contribution of the environmental impact is the production of raw materials, A1. Transport, A2, is a significant share of the environmental load.

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

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction installation stage	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	MND	X	MND	X	MND

## Environmental impact

Parameter	A1	A2	A3	A1-A3	A4	A5	C2	C4	
GWP	13,77	2,10	0,96	16,84	0,60	3,00E-03	0,10	0,64	
ODP	6,69E-07	3,29E-07	4,35E-07	1,43E-06	9,42E-08	9,89E-11	1,57E-08	3,21E-08	
POCP	1,77E-03	3,01E-04	4,16E-03	6,23E-03	7,26E-05	2,85E-07	1,21E-05	1,25E-04	
AP	3,77E-02	9,48E-03	4,00E-03	5,12E-02	2,29E-03	4,74E-06	3,81E-04	2,05E-03	
EP	1,46E-02	2,24E-03	2,55E-03	1,94E-02	6,02E-04	1,81E-06	1,00E-04	3,21E-02	
ADPM	3,38E-05	3,92E-06	1,63E-06	3,94E-05	1,15E-06	6,39E-10	1,91E-07	1,55E-07	
ADPE	45,66	2,91E-02	12,37	58,06	8,17E-03	2,34E-04	1,36E-03	0,91	

**GWP** Global warming potential (kg CO<sub>2</sub>-eqv.); **ODP** Depletion potential of the stratospheric ozone layer (kg CFC11-eqv.); **POCP** Formation potential of tropospheric photochemical oxidants (kg C<sub>2</sub>H<sub>4</sub>-eqv.); **AP** Acidification potential of land and water (kg SO<sub>2</sub>-eqv.); **EP** Eutrophication potential (kg PO<sub>4</sub><sup>3-</sup>-eqv.); **ADPM** Abiotic depletion potential for non fossil resources (kg Sb -eqv.); **ADPE** Abiotic depletion potential for fossil resources (MJ)

## Resource use

Parameter	A1	A2	A3	A1-A3	A4	A5	C2	C4	
RPEE	12,31	0,45	17,49	30,25	0,13	0,18	0,02	0,05	
RPEM									
TPE	12,31	0,45	17,49	30,25	0,13	0,18	0,02	0,05	
NRPE	47,79	0,03	19,03	66,86	8,20E-03	2,34E-04	1,37E-03	0,95	
NRPM	82,10			82,10					
TRPE	129,89	0,03	19,03	148,96	8,20E-03	2,34E-04	1,37E-03	0,95	
SM									
RSF									
NRSF									
W	0,27	1,55E-02	3,83E-02	0,33	4,36E-03	4,32E-05	7,27E-04	3,50E-03	

**RPEE** Renewable primary energy resources used as energy carrier (MJ); **RPEM** Renewable primary energy resources used as raw materials (MJ); **TPE** Total use of renewable primary energy resources (MJ); **NRPE** Non renewable primary energy resources used as energy carrier (MJ); **NRPM** Non renewable primary energy resources used as materials (MJ); **TRPE** Total use of non renewable primary energy resources (MJ); **SM** Use of secondary materials (kg); **RSF** Use of renewable secondary fuels (MJ); **NRSF** Use of non renewable secondary fuels (MJ); **W** Use of net fresh water (m<sup>3</sup>)

## End of life - Waste

Parameter	A1	A2	A3	A1-A3	A4	A5	C2	C4	
HW	0,15			0,15					
NHW	0,88			0,88				12,00	
RW	0,01			0,01					

**HW** Hazardous waste disposed (kg); **NHW** Non hazardous waste disposed (kg); **RW** Radioactive waste disposed (kg)

## End of life - Output flow

Parameter	A1	A2	A3	A1-A3	A4	A5	C2	C4	
CR									
MR	0,10			0,10					
MER									
EEE									
ETE									

**CR** Components for reuse (kg); **MR** Materials for recycling (kg); **MER** Materials for energy recovery (kg); **EEE** Exported electric energy (MJ); **ETE** Exported thermal energy ( MJ)

Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009

## Specific Norwegian requirements

### Electricity

The electricity used in the Production phase (A3) at Stensholt, near Larvik in Norway is based on a factor of 39,2 grams CO<sub>2</sub> eq /kWh (Electricity, medium voltage, supply mix, Norway 2007-2011)




Greenhouse gas emissions: 11 kg CO<sub>2</sub> - eqv/MJ

### Dangerous substances

None of the following substances have been added to the product: Substances on the REACH Candidate list of substances of very high concern (of 01.02.2014) substances on the Norwegian Priority list (of 01.02.2014) and substances that lead to the product being classified as hazardous waste. The chemical content of the product complies with regulatory levels as given in the Norwegian Product Regulations.

## Bibliography

ISO 14025:2006	<i>Environmental labels and declarations - Type III environmental declarations - Principles and procedures</i>
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012	<i>Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products</i>
ISO 21930:2007	<i>Sustainability in building construction - Environmental declaration of building products</i>
PCR:2007	<i>Product category rules for preparing an environmental declaration for building boards, NPCR 010.</i>
LCA -Report	<i>LCA- Report for environmental product declarations for Steni façade panels – both Colour and Nature. Torhildur Kristjansdottir, Sintef Building and Infrastructure, November 2013.</i>

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