

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## Steni Protego Sand



EPD-Global

**Owner of the declaration:**

Steni AS

**Product:**

Steni Protego Sand

**Declared unit:**

1 m<sup>2</sup>

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

CEN Standard EN 15804:2012+A2:2019 serves as core

PCR

NPCR 010:2022 Part B for building boards

**Program operator:**

EPD-Global

**Declaration number:**

NEPD-14590-15189

**Issue date:**

05.01.2026

**Valid to:**

05.01.2031

**EPD software:**

LCAno EPD generator ID: 1319616

## General information

### Product

Steni Protego Sand

### Program operator:

EPD-Global  
Post Box 5250 Majorstuen, 0303 Oslo, Norway  
Phone: +47 977 22 020  
web: [www.epd-global.com](http://www.epd-global.com)

### Declaration number:

NEPD-14590-15189

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

CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
NPCR 010:2022 Part B for building boards

### Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD-Global shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

### Declared unit:

1 m2 Steni Protego Sand

### Declared unit with option:

A1-A3, A4, A5, B2, C1, C2, C3, C4, D

### Functional unit:

1 m2 of roofing 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. Verification of each EPD is made according to EPD-Global's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Global, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Global'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-Global's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

### Owner of the declaration:

Steni AS  
Contact person: Jan Marius Kruse  
Phone: + 47 926 35 625  
e-mail: [jan.marius.kruse@steni.no](mailto:jan.marius.kruse@steni.no)

### Manufacturer:

Steni AS

### Place of production:

Steni AS  
Lågendsveien 2633  
3277 STEINSHOLT, Norway

### Management system:

ISO 9001:2015, sert. no.: 0102916, ISO 14001:2015  
sert.no.:EN16757 eller NPCR020

### Organisation no:

918 150 145

### Issue date:

05.01.2026

### Valid to:

05.01.2031

### Year of study:

2025

### 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 is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD-Global.

Developer of EPD: Jan Marius Kruse

Reviewer of company-specific input data and EPD: Simen Hannevold

### Approved:

A handwritten signature in blue ink that reads "Håkon Hauan".

Håkon Hauan, CEO EPD-Global

## Product

### Product description:

Steni Protego Sand is a robust stone-composite panel with a smooth surface designed for use as exterior ventilated roof-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.

### Product specification

Steni Protego Sand comes in standard formats 1195x1195mm and 595x595mm. In addition panels for right/left and top/bottom of the roof is available.

Materials	kg	%
Additives	0.0481	0.3078
Binder	0.7862	5.03
Filler/aggregate	8.37	53.56
Glass fibre	0.388	2.48
Pigments	0.0084	0.05376
Polyester resin	1.33	8.48
Stone Aggregates	4.70	30.08
Total	15.62	100.00

Packaging	kg	%
Packaging - Plastic	0.01	1.90
Packaging - Wood	0.72	98.10
Total incl. packaging	16.36	100.00

### Technical data:

Steni Protego Sand is 6mm thick fiberglass-reinforced stone composite panel with a core of crushed stone, with an average weight of 11kg/m<sup>2</sup>. The panel has a top surface of finely crushed stone (0,5-1,2mm).

### Market:

Main markets; Europe

### Reference service life, product

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

### Reference service life, building or construction works

60 years

## LCA: Calculation rules

### Declared unit:

1 m<sup>2</sup> Steni Protego Sand

### 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 when specific information are missing. 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. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

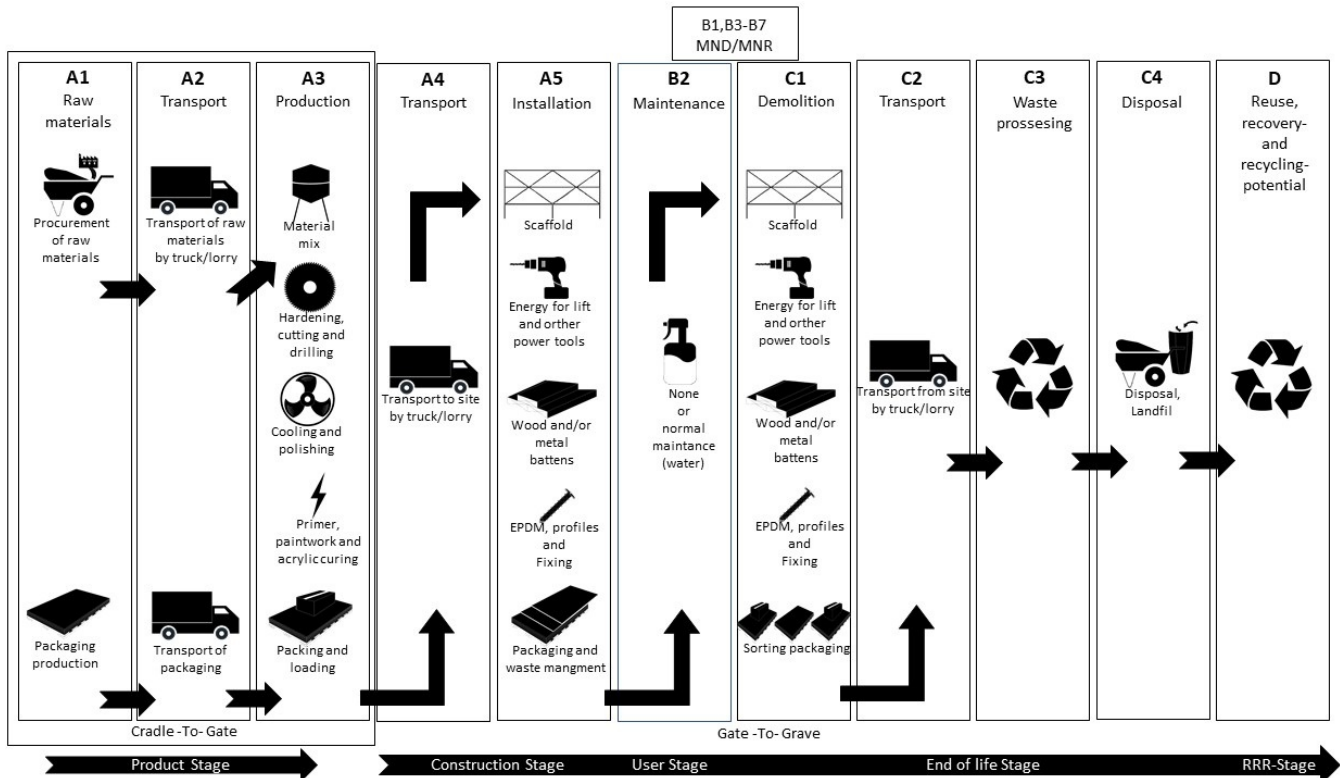
Materials	Source	Data quality	Year
Additives	ecoinvent 3.6	Database	2019
Additives	EPD-EFC-20210196-IBG1-EN	EPD	2021
Binder	ecoinvent 3.6	Database	2019
Binder	ecoinvent 3.6	Database	2020
Filler/aggregate	ecoinvent 3.6	Database	2019
Glass fibre	Supplier	Specific	2020
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Wood	ecoinvent 3.6	Database	2019
Pigments	ecoinvent 3.6	Database	2019
Polyester resin	Supplier	Specific	2023
Stone Aggregates	ecoinvent 3.6	Database	2019

### 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	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

### 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:

Fire class: B(ROOF) t2 according to EN 13501-5.  
TDS is available from [www.steni.com](http://www.steni.com)

## LCA: Scenarios and additional technical information

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














The only maintenance needed is cleaning with water approximately every 10th year.

After end of life, the panels will be taken down and reused. Panels that cannot be reused is sent to disposal

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 6 (km)	53.3 %	300.00	0.023	l/tkm	6.90
Assembly (A5)					
Waste, packaging wood (kg)	kg	0.544			
Waste, mixed plastic, to average treatment (kg)	kg	0.014			
Electricity mix, Norway (kWh)	kWh/DU	0.005			
Maintenance (B2)					
Water (l)	kg/DU	0.03			
De-construction demolition (C1)					
Electricity mix, Norway (kWh)	kWh/DU	0.005			
Transport to waste processing (C2)					
Truck, 16-32 tonnes, EURO 6 (km)	36.7 %	50.00	0.043	l/tkm	2.15
Waste processing (C3)					
Components to reuse in C3	kg	11.00			
Disposal (C4)					
Waste, inert waste, to landfill (kg)	kg	0.55			
Benefits and loads beyond the system boundaries (D)					
Substitution of Steni Reuse (D)	kg	10.45			

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact											
Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	
 GWP-total	kg CO <sub>2</sub> -eq	1.41E+01	2.88E-01	2.11E-02	1.04E-05	1.06E-04	8.99E-02	0.00E+00	5.51E-03	-1.66E+01	
 GWP-fossil	kg CO <sub>2</sub> -eq	1.51E+01	2.87E-01	2.10E-02	1.03E-05	1.02E-04	8.98E-02	0.00E+00	5.50E-03	-1.65E+01	
 GWP-biogenic	kg CO <sub>2</sub> -eq	-1.05E+00	1.23E-04	7.44E-05	6.48E-08	3.04E-06	3.72E-05	0.00E+00	8.67E-06	-8.87E-02	
 GWP-luluc	kg CO <sub>2</sub> -eq	8.14E-03	8.76E-05	4.30E-06	1.67E-08	4.50E-07	3.20E-05	0.00E+00	1.52E-06	-1.15E-02	
 ODP	kg CFC11 -eq	1.24E-06	6.93E-08	2.40E-09	1.00E-12	7.00E-12	2.04E-08	0.00E+00	1.73E-10	-5.73E-07	
 AP	mol H+ -eq	8.58E-02	9.25E-04	1.20E-04	6.00E-08	4.11E-07	2.58E-04	0.00E+00	6.07E-05	-9.12E-02	
 EP-FreshWater	kg P -eq	1.49E-03	2.29E-06	1.83E-07	8.22E-10	4.37E-09	7.18E-07	0.00E+00	9.24E-06	-4.88E-03	
 EP-Marine	kg N -eq	1.47E-02	2.03E-04	5.15E-05	9.51E-09	7.16E-08	5.11E-05	0.00E+00	1.51E-05	-1.65E-02	
 EP-Terrestrial	mol N -eq	1.63E-01	2.26E-03	5.51E-04	1.11E-07	8.96E-07	5.71E-04	0.00E+00	1.63E-04	-1.70E-01	
 POCP	kg NMVOC -eq	8.88E-02	8.88E-04	1.42E-04	3.48E-08	2.35E-07	2.19E-04	0.00E+00	5.95E-05	-8.13E-02	
 ADP-minerals&metals <sup>1</sup>	kg Sb-eq	1.49E-04	5.12E-06	2.46E-07	2.88E-10	2.57E-09	2.48E-06	0.00E+00	1.08E-08	-8.57E-05	
 ADP-fossil <sup>1</sup>	MJ	2.75E+02	4.67E+00	1.77E-01	1.76E-04	1.42E-03	1.36E+00	0.00E+00	1.28E-01	-3.04E+02	
 WDP <sup>1</sup>	m <sup>3</sup>	1.72E+02	3.58E+00	5.38E-01	3.15E-03	2.64E-01	1.31E+00	0.00E+00	7.75E-04	-1.16E+01	







GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9.0 E-03 = 9.0\*10<sup>-3</sup> = 0.009"

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

## Remarks to environmental impacts











### Additional environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
 PM	Disease incidence	9.88E-07	2.64E-08	1.46E-09	1.00E-12	4.00E-12	5.50E-09	0.00E+00	9.23E-10	-1.19E-06
 IRP <sup>2</sup>	kgBq U235 -eq	8.19E-01	2.04E-02	6.66E-04	1.22E-06	2.72E-05	5.94E-03	0.00E+00	1.71E-04	-1.30E+00
 ETP-fw <sup>1</sup>	CTUe	5.74E+02	3.41E+00	2.13E-01	1.90E-04	2.49E-03	1.01E+00	0.00E+00	8.56E-02	-2.97E+02
 HTP-c <sup>1</sup>	CTUh	9.30E-08	0.00E+00	2.20E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E-12	-7.00E-08
 HTP-nc <sup>1</sup>	CTUh	5.24E-07	3.30E-09	1.07E-09	1.00E-12	3.00E-12	1.10E-09	0.00E+00	1.53E-10	-2.56E-07
 SQP <sup>1</sup>	dimensionless	1.69E+02	5.35E+00	9.95E-02	4.91E-05	6.70E-04	9.50E-01	0.00E+00	3.14E-01	-1.22E+02

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)




"Reading example: 9.0 E-03 = 9.0\*10<sup>-3</sup> = 0.009"

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Resource use											
Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	
 PERE	MJ	4.90E+01	5.87E-02	2.32E-02	2.39E-05	1.96E-02	1.94E-02	0.00E+00	2.69E-03	-4.33E+01	
 PERM	MJ	1.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.35E+00	
 PERT	MJ	5.91E+01	5.87E-02	2.32E-02	2.39E-05	1.96E-02	1.94E-02	0.00E+00	2.69E-03	-4.96E+01	
 PENRE	MJ	2.65E+02	4.67E+00	1.77E-01	1.76E-04	1.43E-03	1.36E+00	0.00E+00	1.28E-01	-2.71E+02	
 PENRM	MJ	3.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.67E+01	
 PENRT	MJ	2.97E+02	4.67E+00	1.77E-01	1.76E-04	1.43E-03	1.36E+00	0.00E+00	1.28E-01	-3.18E+02	
 SM	kg	2.58E-02	0.00E+00	1.95E-06	6.45E-07	1.95E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
 RSF	MJ	1.66E-01	2.05E-03	1.21E-04	1.91E-06	1.53E-05	6.96E-04	0.00E+00	7.70E-07	-2.15E-01	
 NRSF	MJ	1.55E-01	6.89E-03	1.22E-03	1.89E-06	4.03E-05	2.49E-03	0.00E+00	0.00E+00	0.00E+00	
 FW	m <sup>3</sup>	3.54E-01	5.31E-04	2.79E-04	3.02E-05	1.46E-04	1.45E-04	0.00E+00	0.00E+00	-2.80E-01	






PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = 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; FW = Net use of fresh water

"Reading example: 9.0 E-03 = 9.0\*10<sup>-3</sup> = 0.009"

End of life - Waste											
Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	
	HWD	kg	3.82E-01	2.55E-04	6.83E-05	3.33E-08	2.69E-07	7.01E-05	0.00E+00	0.00E+00	-5.13E+00
	NHWD	kg	1.48E+01	4.06E-01	5.44E-01	2.13E-06	1.12E-04	6.61E-02	0.00E+00	5.50E-01	-2.93E+01
	RWD	kg	5.60E-04	3.19E-05	3.65E-08	1.03E-09	1.33E-08	9.25E-06	0.00E+00	0.00E+00	-3.57E-04

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9.0 E-03 = 9.0\*10<sup>-3</sup> = 0.009"

End of life - Output flow											
Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	
	CRU	kg	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
	MFR	kg	6.82E-02	0.00E+00	1.15E-02	6.09E-07	1.54E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MER	kg	1.88E-01	0.00E+00	5.46E-01	1.89E-08	1.56E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EEE	MJ	2.47E-01	0.00E+00	3.82E-01	3.72E-08	1.57E-07	0.00E+00	0.00E+00	5.32E-05	0.00E+00
	EET	MJ	1.89E+00	0.00E+00	5.78E+00	5.64E-07	2.37E-06	0.00E+00	0.00E+00	1.19E-04	0.00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9.0 E-03 = 9.0\*10<sup>-3</sup> = 0.009"

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	2.55E-03
Biogenic carbon content in accompanying packaging	kg C	2.99E-01

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## Additional 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	Source	Amount	Unit
Electricity mix, Norway	ecoinvent 3.6	21.18	g CO <sub>2</sub> -eq/kWh

### Dangerous substances

The product contains no substances given by the REACH Candidate list.

### Indoor environment

Not relevant






## Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products										
Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWPIOBC	kg CO <sub>2</sub> -eq	1.50E+01	2.88E-01	2.10E-02	1.04E-05	1.19E-04	8.99E-02	0.00E+00	5.52E-03	-1.67E+01

GWPIOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

## 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+A2:2019 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.  
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 Iversen et al., (2021) eEPD v2021.09 Background information for EPD generator tool system verification, LCA.no Report number: 07.21  
 Vold, M. et al. (2022) EPD generator for Building boards  
 Background information for EPD generator application and LCA data, LCA.no report number 05.22  
 NPCR Part A: Construction products and services. Ver. 2.0. April 2021, EPD-Norge.  
 NPCR 010 Part B for Building Boards. Ver. 4.0, March 2022, EPD-Norge.

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