

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 +A2

Stepisol



Owner of the declaration:
Svensk Emballageteknik AB

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-3471-2074-EN

Registration Number:
NEPD-3471-2074-EN

Issue date: 28.04.2022
Valid to: 28.04.2027

Product name :
Stepisol

Manufacturer
Svensk Emballageteknik AB

General information

Product:

Stepisol

Program Operator:

The Norwegian EPD Foundation
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Declaration Number:

NEPD-3471-2074-EN

This declaration is based on Product Category Rules:

NPCR Part A, ver.1
EN15804:2012+A2:2019 serves as core PCR

Statements:

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

Declared unit:

1 m³ Stepisol

Declared unit with option:

N/A

Functional unit:

N/A

Verification:

Independent verification of the declaration and data, according to ISO14025:2010

internal

external



Guangli Du, Aalborg University
Independent verifier approved by EPD Norway

Owner of the declaration:

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Place of production:

Järfälla, Sweden

Management system:

ISO 14001 and ISO 9001

Organisation no:

556324-8250

Issue date:

28.04.2022

Valid to:

28.04.2027

Year of study:

2021

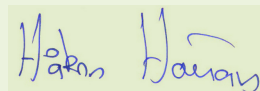
Comparability:

EPDs from other programmes than EPD Norge may not be comparable.

EPD type: Specific EPD

The EPD has been worked out by:

Niclas Silfverstrand,
Yevgeniya Arushnan



Approved (Manager of EPD Norway)

Product

Product description:

Stepisol is soundproofing flooring for floating floors. It comes in dimensions 2000 x 1000 mm with thickness varying between 5 mm and 100 mm. The product comes in two densities – 195 kg/m³ (Stepisol) and 300 kg/m³ (Stepisol silence). Stepisol is made from polyurethane foam (PU), 90% recycled and 10% virgin, that is cut to specific dimensions at the Emballageteknik site in Järfälla, Sweden.

Product specification:

Materials	KG	%
Polyurethane foam	195 or 300*	100

* Depending on the product density

Technical data:

Dimensions: 2000 x 1000 mm with thickness varying between 5 mm and 100 mm

Densities: 195 kg/m³ (Stepisol) and 300 kg/m³ (Stepisol silence)

Full technical data available at www.stepisol.se

Market:

Sweden

Reference service life, product:

50 years

Reference service life, building:

N/A

LCA: Calculation rules

Declared unit:

1 m³ Stepisol

Stepisol comes in two different densities, 195 and 300 kg/m³, and results are calculated for both versions but only presented for the 195 kg/m³ version. A conversion factor is calculated in order to be able to translate the results of the 195 kg/m³ version of Stepisol to the 300 kg/m³ version of the product, see Table 1.

Table 1: Conversion factor from 195 kg/m³ version of Stepisol to the 300kg/m³ version.

Density of Stepisol (kg/m ³)	195	300
Conversion factor	1.00	1.54

The 300 kg/m³ version of Stepisol is approximately 54% heavier than the 195 kg/m³ version and result categories scale with this factor.

Data quality:

The data quality requirements are set in accordance with EN15804:2012+A2:2019. Specific data for Svensk Emballageteknik AB's production site was collected from Svensk Emballageteknik AB. Generic background data has been collected from the GaBi Professional database 2021, no dataset is more than 10 years old. Specific data is collected for the year 2021.

Allocation:

No significant allocations have been identified. Material consumption represents actual production data and amounts. Energy use in the production process is measured for the specific products. The waste Stepisol is assumed to be the same (percentage) amount independent of product dimensions.

System boundary:

The product system and system boundaries are displayed in Figure 1. Waste is processed in the module it occurs.

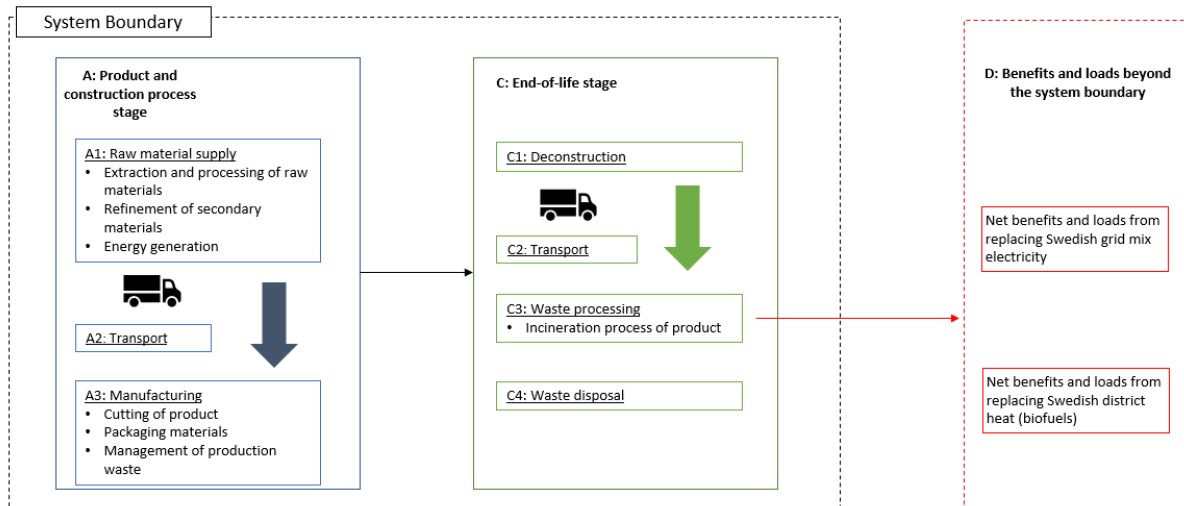


Figure 1: Technical flowchart of the product system.

Cut-off criteria:

All major raw materials and all the essential energy is included in the assessment. Production processes for raw materials and energy flows that are included in small amounts (<1%) may not be included. The cut-off rule does not apply for hazardous materials and substances.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD, numbers are displayed for the 195 kg/m³ version of Stepisol, per declared unit.

Deconstruction is assumed to be done manually and all product is collected for waste processing. The product is transported by truck to waste processing and incinerated at the end of life. Electricity and heat is generated during incineration.

End of Life (C1, C3, C4)

	Unit	Value
Collected as mixed construction waste	kg	195
Energy recovery	kg	195

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance KM	Fuel/Energy consumption	value (l/t)
Truck	61	EURO 5-class diesel truck	100	0.021 kg diesel/tonkm	2.54

Benefits and loads beyond the system boundaries (D)

	Unit	Value
Replacement of Swedish grid mix electricity	MJ	744
Replacement of Swedish district heat (Biofuels assumed)	MJ	1.33E03

Energy generated from waste processing in module C3 is assumed to replace heat and electricity on the Swedish market where it is assumed to be processed. Swedish grid mix electricity is assumed to be replaced and biofuels are assumed to be replaced for heating. Biofuels are common in Sweden for heating and is conservative relative to other energy sources.

LCA: Results

Results are presented for the 195 kg/m³ version of Stepisol, per declared unit. Use Table 1 to convert LCIA results to the 300 kg/m³ version of Stepisol.

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

Product stage			Assembly stage		Use stage								End of life stage				Benefits & loads beyond system boundary
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	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	x	

Core environmental impact indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	1.58E+02	0.00E+00	1.50E+00	4.31E+02	0.00E+00	-1.70E+01
GWP-fossil	kg CO2 eq.	1.58E+02	0.00E+00	1.47E+00	4.31E+02	0.00E+00	-1.63E+01
GWP-biogenic	kg CO2 eq.	8.51E-01	0.00E+00	1.59E-02	3.27E-02	0.00E+00	-4.79E-01
GWP-LULUC	kg CO2 eq.	1.28E-01	0.00E+00	1.22E-02	3.99E-03	0.00E+00	-2.60E-01
ODP	kg CFC11 eq.	4.39E-07	0.00E+00	2.94E-16	5.46E-14	0.00E+00	-2.65E-13
AP	mol H ⁺ eq.	2.94E-01	0.00E+00	1.62E-03	2.54E-01	0.00E+00	-2.27E-01
EP-freshwater	kg P eq.	1.25E-03	0.00E+00	4.43E-06	8.57E-06	0.00E+00	-2.26E-03
EP-marine	kg N eq.	8.15E-02	0.00E+00	5.23E-04	1.23E-01	0.00E+00	-9.00E-02
EP-terrestrial	mol N eq.	8.65E-01	0.00E+00	6.19E-03	1.42E+00	0.00E+00	-7.02E-01
POCP	kg NMVOC eq.	2.42E-01	0.00E+00	1.41E-03	3.16E-01	0.00E+00	-1.82E-01
ADP-M&M	kg Sb eq.	1.74E-04	0.00E+00	1.32E-07	9.76E-07	0.00E+00	-1.86E-05
ADP-fossil	MJ	2.77E+03	0.00E+00	1.99E+01	1.18E+02	0.00E+00	-9.03E+02
WDP	m ³	2.85E+01	0.00E+00	1.38E-02	4.23E+01	0.00E+00	-1.99E+01

GWP-total: Global Warming Potential; **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; See "additional Norwegian requirements" for indicator given as PO4 eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial:**

*Eutrophication potential, Accumulated Exceedance; **POCP**: Formation potential of tropospheric ozone; **ADP-M&M**: Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil**: Abiotic depletion potential for fossil resources; **WDP**: Water deprivation potential, deprivation weighted water consumption*

Additional environmental impact indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PM	Disease incidence	2.65E-06	0.00E+00	1.09E-08	7.12E-07	0.00E+00	-2.10E-06
IRP	kBq U235 eq.	2.22E+01	0.00E+00	5.29E-03	6.98E-01	0.00E+00	-3.79E+01
ETP-fw	CTUe	2.12E+03	0.00E+00	1.47E+01	3.88E+01	0.00E+00	-5.01E+02
HTP-c	CTUh	2.71E-08	0.00E+00	2.98E-10	2.96E-09	0.00E+00	-3.87E-08
HTP-nc	CTUh	1.55E-06	0.00E+00	1.55E-08	1.14E-07	0.00E+00	-1.90E-06
SQP	Dimensionless	4.82E+02	0.00E+00	6.83E+00	2.26E+01	0.00E+00	-6.94E+03

PM: Particulate matter emissions; **IRP:** Ionising radiation, human health; **ETP-fw:** Ecotoxicity (freshwater); **ETP-c:** Human toxicity, cancer effects; **HTP-nc:** Human toxicity, non-cancer effects; **SQP:** Land use related impacts / soil quality

Classification of disclaimers to the declaration of core and additional environmental impact indicators

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
	Acidification potential, Accumulated Exceedance (AP)	None
ILCD type / level 2	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
ILCD type / level 3	Potential Human exposure efficiency relative to U235 (IRP)	1
	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
Potential Soil quality index (SQP)	2	

Disclaimer 1 – 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.

Disclaimer 2 – 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

Resource use

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
RPEE	MJ	4.69E+02	0.00E+00	1.14E+00	1.69E+01	0.00E+00	-2.16E+03
RPEM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPE	MJ	4.69E+02	0.00E+00	1.14E+00	1.69E+01	0.00E+00	-2.16E+03
NRPE	MJ	2.26E+03	0.00E+00	1.99E+01	1.18E+02	0.00E+00	-9.03E+02
NRPM	MJ	5.07E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TRPE	MJ	7.33E+03	0.00E+00	1.99E+01	1.18E+02	0.00E+00	-9.03E+02
SM	kg	1.79E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	m ³	8.69E-01	0.00E+00	1.31E-03	9.95E-01	0.00E+00	-1.66E+00

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

End of life - Waste

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HW	kg	2.36E-05	0.00E+00	1.05E-09	2.60E-08	0.00E+00	-2.61E-06
NHW	kg	2.42E+01	0.00E+00	3.13E-03	2.17E+00	0.00E+00	-2.69E+00
RW	kg	1.52E-01	0.00E+00	3.62E-05	4.51E-03	0.00E+00	-3.27E-01

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

End of life – output flow

Parameter	Unit	A1-A3	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
MR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	7.44E+02	0.00E+00	0.00E+00
ETE	MJ	0.00E+00	0.00E+00	0.00E+00	1.33E+03	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

Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Unit	Value
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in the accompanying packaging	kg C	2.05E-01

Additional Norwegian requirements

Greenhouse gas emission from the use of electricity in the manufacturing phase

A large part of the electricity used by Svensk Emballageteknik AB in the production is electricity produced from their own solar panels. The remainder of the electricity used is a green electricity mix (Hydro, wind and solar power) purchased from the local energy company. Greenhouse gas emissions from the mix (purchased and own electricity) is presented below.

National electricity grid	Unit	Value
Renewable mix	kg CO2 -eq/kWh	3.42 E-2

Additional environmental impact indicators required in NPCR Part A for construction products

In addition, EP-freshwater shall also be declared as PO4 eq.

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
EP-freshwater*	kg PO4 eq.	3.95E-02	0.00E+00	2.34E-04	4.36E-02	0.00E+00	-5.57E-02

EP-freshwater* Eutrophication potential, fraction of nutrients reaching freshwater end compartment. Declared as PO4 eq.

Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list.
- The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiten, Annex III), see table.

Indoor environment





The product meets the requirements for low emissions.

Carbon footprint

Carbon footprint has not been worked out for the product.

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	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
ISO 21930:2007	Sustainability in building construction - Environmental declaration of building products
GaBi 2021 Professional database	http://www.gabisoftware.com/international/databases/gabidatabases/professional/ , ts 10.0.1.92 incl. databases 2021 Edition
NPCR part A	NPCR Part A: Construction products and services. Ver. 1.0. Apr 2017, EPD-Norge.
Silfverstrand. N; Arushanyan. Y	LCA-report for foam strip and Stepisol

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