

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

Hammerglass Noise barrier system Post Free (Stolfri) from Hammerglass AB

Programme

The International EPD® System, www.environdec.com

Programme operator

EPD International AB

EPD registration number

S-P-05713

Company information/Owner of the EPD

Hammerglass AB
Åkagårdsvägen 9
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Sweden

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

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GENERAL INFORMATION

Programme information

Programme: The International EPD® System
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CEN standard EN 15804:2012+A2:2019 serves as the Core Product Category Rules (PCR)
Product Category Rules: PCR 2019:14 Construction products, version 1.11. No complementary PCR (c-PCR) has been used as no such document was available for the declared products at the time of this study

PCR review was conducted by: The Technical Committee of the International EPD® System. Chair of the PCR review: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via info@environdec.com.

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

- External Internal
 EPD process certification EPD verification

Third party verifier: Martyna Mikusinska, Sweco

Individual verifier approved by the International EPD® System Technical Committee, supported by the Secretariat.
Procedure for follow-up of data during EPD validity involves third party verifier:

- Yes No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

COMPANY INFORMATION/OWNER OF THE EPD

Hammerglass AB
Åkagårdsvägen 9
SE-269 71 Förslöv
Sweden

Contact:

Peter Hultberg, Head of Quality, Purchase and Production
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Website: www.hammerglass.se

Description of the organisation:

Hammerglass AB's product development began in 1993, with the mission to reduce the ongoing costs of replacing broken glass. After producing add-on systems for the external fitting of unbreakable window glass we began to think about developing an insulating glass with the same unbreakable characteristics. The project was successful and Hammerglass AB is today able to provide a 5-year full warranty on Hammerglass Insulate. Today the company consists of three main business areas: Property, Infrastructure and Automotive. With subsidiaries in Norway, Denmark, and Germany, we supply our products to both European countries as well as selected overseas export markets with selected business areas.

Product-related or management system-related certifications:

Hammerglass AB is certified according to ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018, Secured By Design, as well as PPAP for the automotive industry

Manufacturing site:

Förslöv, Sweden

PRODUCT INFORMATION

Product name and identification:

Hammerglass Noise barrier system Post Free

This EPD covers the version of Hammerglass Noise barrier system Post free that is 2,3 meters high.

Product description

A complete CE-marked system without posts for mounting in an edge beam on a bridge, on a wall or with a ground foundation. The screen construction consists of 12 mm Hammerglass mounted in a lid steel angle. The Hammerglass panels are bent in three planes. The construction is supported by a 90 degree vertical bend which in addition, complemented by two smaller 45 degree bends top and bottom for extra stability. Each individual Hammerglass panel is fixed at a strong steel angle and anchored in the next panel with Fixpoints. The steel angle consists of a horizontal base and a vertical part with varying height (400-600 mm) adapted to the height of Hammerglass screen. As the assembly allows, the boards can advantageously be buried in 15-20 cm in macadam / single to prevent sound spread below the screen. Hammerglass boards can be patterned against bird collisions..

UN CPC code:

53290 Other civil engineering works.

GTIN:

Not applicable

LCA INFORMATION

Declared unit:

1 m of Hammerglass Noise barrier system with a height of 2,3 meters. Conversion factor to 1 kg: 73,4 kg per m.

Reference service life:

Not applicable.

Time representativeness:

2021

Databases and LCA software:

Ecoinvent version 3.8, industry data from PlasticsEurope, and SimaPro version 9.3.

Type of EPD:

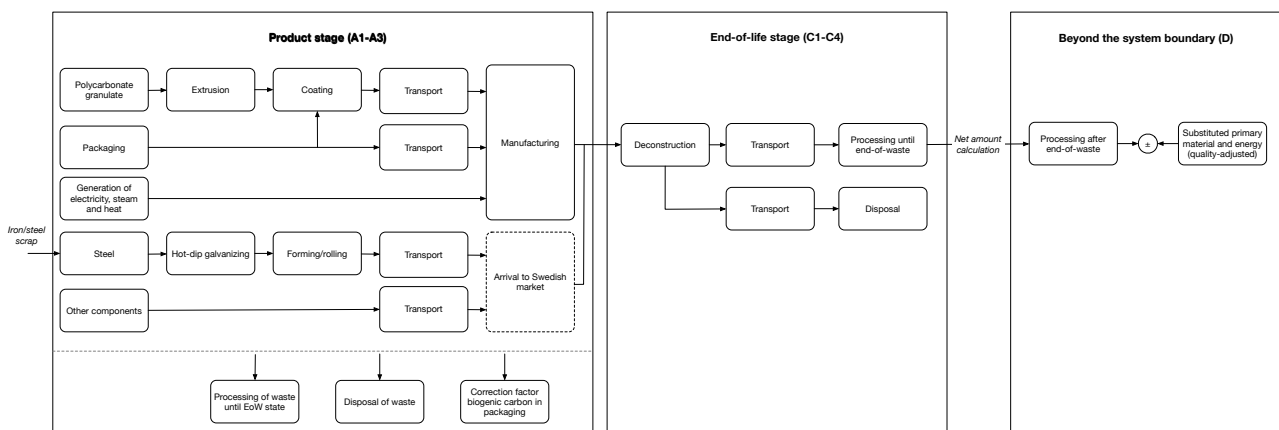
Specific

System boundary and geographical scope:

Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). The construction process stage (modules A4–A5), and use stage (modules B1–B7) are not declared. The geographical scope of the EPD is for production in Sweden and used on the Swedish market.

	Raw material supply	Transport	Manu- facturing	De- construc- tion, demolition	Transport	Waste pro- cessing	Disposal	Reuse, recovery, recycling potential
Module	A1	A2	A3	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X
Geography	GLO	GLO	SE	SE	SE	SE	SE	SE
Specific data used	8%	-	-	-	-	-	-	-
Variation – products	Not relevant	-	-	-	-	-	-	-
Variation – sites	Not relevant	-	-	-	-	-	-	-

Note: "Specific data" here refers to the definition used in the reference PCR. The low numbers reflect the fact that the operations of Hammerglass only contribute to a smaller share of the carbon footprint of the products, where most of the impact comes from the upstream raw material supply, which is based on representative industry-average data.



LCA practitioner:

Greendesk AB, www.greendesk.se

Scenarios and additional technical information:

The carbon footprint of electricity mix used in manufacturing: 6 g CO₂ eq./kWh.

Allocation in Hammerglass manufacturing was done on a mass basis.

After the useful life in an infrastructure application in Sweden, the calculations for the end-of-life stage are made for a scenario assuming recycling for the main components as the most representative scenario.

Scenario information	Unit	Amount
Collected separately	kg	73,3
Collected with mixed waste	kg	1,0
For re-use	kg	0
For recycling	kg	73,3
For energy recovery	kg	0
For final disposal	kg	1,0
Further information about assumptions	-	Assumed recycling scenario for polycarbonate and steel, where other components were collected as mixed waste for disposal. 500 km transport by lorry in Europe. For waste for recycling in Asia, an additional 18000 km by ship and 500 km by lorry was assumed.

Content declaration

Material/component	Amount (kg per m)	Post-consumer recycled material in product components
Product components		
Polycarbonate	40,2	0%
Hot-dip galvanized steel	33,1	N/A*
Rubber	0,9	N/A*
Plastic	0,2	0%
Packaging materials for polycarbonate sheets**		
Protective film	0,3	-
Wooden pallet	4,2	-
Total		
Total, including packaging	78,7	-
Total, excluding packaging	74,3	-

* Data about the share of post-consumer recycled of steel was not available from the supplier.

** Only packaging materials for the polycarbonate sheets are included. In the LCA model, an assumed amount of packaging for other components has also been added.

The product does not contain any dangerous substances from the candidate list of Substances of Very High Concern (SVHC) for Authorisation >0,1% of the weight of the product.

Environmental information

All results are displayed using three significant figures. The comma sign (",") is used to denote the decimal point in the results.

Potential environmental impact – mandatory indicators according to EN 15804

Results per 1 m2

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	3,48E+02	9,56E+00	1,44E+01	5,95E+00	4,78E-01	-1,79E+02
GWP-biogenic	kg CO2 eq.	4,48E+00	3,59E-03	6,05E-03	2,49E-03	5,71E-05	-5,23E-01
GWP-luluc	kg CO2 eq.	2,99E-01	9,54E-04	8,19E-03	3,21E-03	6,95E-06	-4,12E-02
GWP-total	kg CO2 eq.	3,53E+02	9,56E+00	1,44E+01	5,96E+00	4,78E-01	-1,79E+02
ODP	kg CFC 11 eq.	1,16E-05	2,04E-06	3,11E-06	4,62E-07	2,86E-09	-2,60E-06
AP	mol H+ eq.	8,55E-01	9,93E-02	2,51E-01	2,92E-02	1,12E-04	-3,24E-01
EP-freshwater	kg P eq.	9,05E-03	3,17E-05	8,54E-05	1,33E-04	1,40E-07	-7,80E-04
EP-marine	kg N eq.	2,02E-01	4,40E-02	6,27E-02	5,97E-03	4,10E-05	-7,65E-02
EP-terrestrial	mol N eq.	2,18E+00	4,82E-01	6,97E-01	6,72E-02	4,52E-04	-7,89E-01
POCP	kg NMVOC eq.	6,96E-01	1,33E-01	1,86E-01	2,40E-02	1,18E-04	-2,84E-01
ADP-minerals&metals2	kg Sb eq.	8,81E-04	4,92E-06	3,56E-05	3,39E-05	3,68E-08	-1,30E-04
ADP-fossil2	MJ	6,65E+03	1,31E+02	2,04E+02	1,41E+02	1,96E-01	-3,77E+03
WDP	m3	7,35E+01	2,05E-01	5,57E-01	3,12E+00	1,12E-02	-3,50E+01

Acronyms 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

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 experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per 1 m2

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq.	3,42E+02	9,46E+00	1,43E+01	5,74E+00	4,78E-01	-1,75E+02

Note: The voluntary additional environmental indicators from EN 15804 are not declared.

Use of resources

Results per 1 m²

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	3,67E+02	7,37E-01	2,19E+00	3,90E+00	4,37E-03	-1,48E+02
PERM	MJ	1,17E+02	0	0	0	0	0
PERT	MJ	4,85E+02	7,37E-01	2,19E+00	3,90E+00	4,37E-03	-1,48E+02
PENRE	MJ	5,38E+03	1,31E+02	2,04E+02	1,41E+02	1,96E-01	-2,64E+03
PENRM	MJ	1,26E+03	0	0	0	0	-1,12E+03
PENRT	MJ	6,65E+03	1,31E+02	2,04E+02	1,41E+02	1,96E-01	-3,77E+03
SM	kg	8,79E+00	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m ³	2,02E+00	6,61E-03	1,75E-02	7,59E-02	0	-8,22E-01

Acronyms 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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

WASTE PRODUCTION AND OUTPUT FLOWS

Waste production

Results per 1 m²

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,78E-06	0	0	0	0	-1,28E-06
Non-hazardous waste disposed	kg	1,37E+02	0	0	0	1,02E+00	-9,82E+01
Radioactive waste disposed	kg	7,29E-02	0	0	0	0	-5,24E-02

Output flows

Results per 1 m²

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0
Material for recycling	kg	1,03E+01	0	0	7,33E+01	0	0
Materials for energy recovery	kg	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0

Information on biogenic carbon content

Results per 1 m²

Biogenic carbon content	Unit	Quantity at the factory gate
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	4,52E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

References

CEN, 2021. Sustainability of construction works – Environmental Product Declarations – Core rules for the product category of construction products (EN 15804:2012+A2:2019/AC:2021).

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EPD International, 2020. General Programme Instructions of the International EPD® System, version 4.0.

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