

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

EPS S80

FINJA BETONG AB



Programme: The
International EPD[®]
System,
www.environdec.com

Programme
operator:
**EPD International
AB**

EPD
registration
number:
S-P-06977

Publication date:
2022-09-20

Valid until:
2027-09-13

Geographical scope:
Nordic countries

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.

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Finja Betong AB
Address	Betongvägen 1, 28193 Finja
Contact details	info@finja.se
Website	www.finja.se

PRODUCT IDENTIFICATION

Product name	EPS S80
Place(s) of production	Finja, Sweden
CPC code	369- Other plastics products

The International EPD System

EPDs within the same product category but from different programmes may not be comparable.

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	The International EPD System
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021) is used. cpcr05
EPD author	Finja Betong AB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
Verification date	2022-09-14
EPD verifier	Hetal Parekh Udas, One Click LCA Ltd
EPD number	S-P-06977
ECO Platform nr.	-
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EPD valid until	2027-09-13

PRODUCT INFORMATION

PRODUCT DESCRIPTION

EPS Insulation is expanded polystyrene insulation, which is light weight and effective. EPS Insulation is mostly used for as floor, wall, roof and ground frost insulation in buildings. The cell structure consists of 98% air. insulation boards can be supplied with different edge treatments. This EPD is applicable to homogeneous EPS products without material combinations.

PRODUCT APPLICATION

EPS thermal insulation boards are used for insulating floors, walls, ceilings and as ground frost insulation.

TECHNICAL SPECIFICATIONS

EPS S80 insulation boards have a thermal conductivity of 0,038 W/(mK). The boards are available in nominal densities of 15 kg/m³, and thicknesses ranging from 10 and 300 mm.

PRODUCT STANDARDS

EN 13163:2015 Thermal insulation products for buildings. Factory made expanded polystyrene (EPS) products.

PHYSICAL PROPERTIES OF THE PRODUCT

Detailed physical information can be found from the manufacturer's webpage www.finja.se

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at www.finja.se.

PRODUCT RAW MATERIAL COMPOSITION

Product and Packaging Material	Weight, kg	Post-consumer %	Renewable %	Country Region of origin
Polystyrene	15	-	-	EU
PE packaging	0,15	-	-	EU

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The raw material expandable polystyrene already includes expanding agent pentane. This raw material is expanded with heat/steam and after that the expanded EPS beads are stored. The EPS beads are put in to block molds and then “glued” together with steam. The blocks are stored before they are cut to desired dimensions.

The EPS product is produced in one plant and grid mix electricity is used. During the production, the generated product-based waste is sent back to the melting process, therefore there is no waste from the product itself. The only generated waste derives from the packaging of the raw materials.

A polyethylene plastic film is used for the final packaging of the product. No pallets are used.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

During the installation phase, at the construction site it is estimated that 5 % waste of the product occurs. Tools and consumables during installation have not been studied.

The transportation distance to the customer is assumed to be a median value in of the deliveries made in 2021 and is assumed to be representative for the distance to the construction site. Empty returns are not taken into account as it is assumed that return trip is used by transportation companies to serve the needs of other clients.

PRODUCT USE AND MAINTENANCE (B1-B7)

Modules B1-B7 are not declared in this EPD. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

(C1) Consumption of energy and natural resources in demolition process assumed to be negligible.

(C2) The distance for transportation to disposal is assumed as 50 km and the transportation method is assumed to be lorry.

(C3) EPS recycling is currently already taking place, therefore it is

assumed that this will be mandatory by the time the product reaches its end-of life and demolition

(C4) The product is assumed to be 100% recycled. Since the product is assumed to be recycled, this stage is not considered.

(D) Since the product is assumed to be recycled, there are benefits deriving from the recycling of the product after its end-of-life stage. The benefits of the recycled PE packaging are also considered.

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	Calendar 2021
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DECLARED AND FUNCTIONAL UNIT

Declared unit	1 m3
Mass per declared unit	15 kg
Reference service life	50 years

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	-

SYSTEM BOUNDARY

This EPD covers the cradle to gate with options scope with the following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport), A5 (Assembly) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

Product stage		Assembly stage		Use stage								End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Geography, by two-letter ISO country code or regions. The International EPD System only.																		
EU	EU	EU	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The masses specified below are cut-off since they are less than %1.
 - Packaging of the raw materials during transportation (<5 grams per declared unit)

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 cubic meter of the produced product which is used within this study are calculated by considering the total product volume per annual production. The product output is fixed to 1 cubic meter and the corresponding amount of product is used in the calculations.

In the production plants, several kinds of products are produced; since the production processes of these products are similar, the annual production percentages, with consideration to density, are taken into account for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total energy consumption, packaging materials and the generated waste per the declared product are allocated. Subsequently, the produced product output fixed to 1

cubic meter and the corresponding amount of product is used in the calculations.

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 - standard.

AVERAGES AND VARIABILITY

Since the EPD is valid only for one specific product, there is no average result.

The International EPD System additional data requirements

Data specificity and GWP-GHG variability for GWP-GHG for A1-A3.

Supply-chain specific data for GWP-GHG	>90 %
Variation in GWP-GHG between products	N/A
Variation in GWP-GHG between sites	N/A

ENVIRONMENTAL IMPACT DATA

Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	5,31E1	2,51E0	5,4E0	6,1E1	2,3E-1	3,77E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,57E-2	5,52E0	0E0	-4,24E1
GWP – fossil	kg CO ₂ e	5,26E1	2,51E0	5,4E0	6,05E1	2,32E-1	3,74E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,56E-2	5,54E0	0E0	-4,2E1
GWP – biogenic	kg CO ₂ e	4,61E-1	1,34E-3	-7,08E-3	4,55E-1	1,76E-4	2,61E-2	MND	MND	MND	MND	MND	MND	MND	0E0	5,85E-5	-2,31E-2	0E0	-4E-1
GWP – LULUC	kg CO ₂ e	1,07E-4	8,89E-4	8,01E-4	1,8E-3	7,29E-5	7,06E-4	MND	MND	MND	MND	MND	MND	MND	0E0	3,37E-5	3,22E-3	0E0	7,79E-3
Ozone depletion pot.	kg CFC _{11e}	5,77E-7	5,69E-7	9,32E-7	2,08E-6	5,7E-8	1,13E-7	MND	MND	MND	MND	MND	MND	MND	0E0	2,19E-8	4,03E-7	0E0	3,58E-7
Acidification potential	mol H ⁺ e	1,81E-1	1,02E-2	1,32E-2	2,04E-1	7,47E-4	1,26E-2	MND	MND	MND	MND	MND	MND	MND	0E0	3,94E-4	1,59E-2	0E0	-1,45E-1
EP-freshwater ³⁾	kg Pe	9,22E-4	2,1E-5	3,98E-5	9,83E-4	1,97E-6	6,37E-5	MND	MND	MND	MND	MND	MND	MND	0E0	8,26E-7	9,21E-5	0E0	-6,96E-4
EP-marine	kg Ne	2,73E-2	3,04E-3	2,51E-3	3,28E-2	1,64E-4	2,07E-3	MND	MND	MND	MND	MND	MND	MND	0E0	1,17E-4	4,4E-3	0E0	-1,97E-2
EP-terrestrial	mol Ne	2,93E-1	3,36E-2	2,63E-2	3,53E-1	1,83E-3	2,23E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,29E-3	4,8E-2	0E0	-2,09E-1
POCP (“smog”)	kg NMVOCe	1,57E-1	1,03E-2	5,59E-1	7,27E-1	7,17E-4	4,49E-2	MND	MND	MND	MND	MND	MND	MND	0E0	4,04E-4	1,55E-2	0E0	-1,3E-1
ADP-minerals & metals	kg Sbe	7,27E-6	6,78E-5	1,04E-5	8,55E-5	4,14E-6	7,27E-6	MND	MND	MND	MND	MND	MND	MND	0E0	2,39E-6	6,79E-5	0E0	2,63E-5
ADP-fossil resources	MJ	1,16E3	3,78E1	1,1E2	1,31E3	3,77E0	7,8E1	MND	MND	MND	MND	MND	MND	MND	0E0	1,46E0	5,44E1	0E0	-1E3
Water use ²⁾	m ³ e depr.	3,32E1	1,22E-1	5E0	3,84E1	1,4E-2	2,16E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,18E-3	1,17E0	0E0	-3,14E1

1) GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,66E-6	1,75E-7	8,69E-8	1,92E-6	2,04E-8	1,28E-7	MND	MND	MND	MND	MND	MND	MND	0E0	7,38E-9	2,74E-7	0E0	-1,38E-6
Ionizing radiation ⁵⁾	kBq U235e	7,1E-3	1,65E-1	2,2E0	2,37E0	1,65E-2	7,15E-2	MND	MND	MND	MND	MND	MND	MND	0E0	6,37E-3	1,64E-1	0E0	2,5E-1
Ecotoxicity (freshwater)	CTUe	5,29E1	2,92E1	5,02E1	1,32E2	2,88E0	9,66E0	MND	MND	MND	MND	MND	MND	MND	0E0	1,14E0	5,73E1	0E0	3,26E1
Human toxicity, cancer	CTUh	9,12E-9	8,47E-10	1,03E-9	1,1E-8	7,26E-11	9,66E-10	MND	MND	MND	MND	MND	MND	MND	0E0	3,23E-11	5,84E-9	0E0	-6,77E-9
Human tox. non-cancer	CTUh	1,09E-7	3,3E-8	1,67E-8	1,58E-7	3,29E-9	1,37E-8	MND	MND	MND	MND	MND	MND	MND	0E0	1,31E-9	8,15E-8	0E0	-4,81E-8
SQP	-	1,21E0	3,15E1	2,64E0	3,53E1	5,69E0	4,65E0	MND	MND	MND	MND	MND	MND	MND	0E0	1,62E0	3,31E1	0E0	1,6E1

4) SQP = Land use related impacts/soil quality. 5) EN 15804+A2 disclaimer for ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	6,04E0	5,33E-1	1,6E0	8,18E0	4,75E-2	9,68E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,07E-2	2,68E0	0E0	-7,16E-1
Renew. PER as material	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	6,04E0	5,33E-1	1,6E0	8,18E0	4,75E-2	9,68E-1	MND	MND	MND	MND	MND	MND	MND	0E0	2,07E-2	2,68E0	0E0	-7,16E-1
Non-re. PER as energy	MJ	4,98E2	3,78E1	1,03E2	6,39E2	3,77E0	3,78E1	MND	MND	MND	MND	MND	MND	MND	0E0	1,46E0	5,44E1	0E0	-3,54E2
Non-re. PER as material	MJ	6,66E2	0E0	7,17E0	6,73E2	0E0	4,02E1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	-6,47E2
Total use of non-re. PER	MJ	1,16E3	3,78E1	1,1E2	1,31E3	3,77E0	7,8E1	MND	MND	MND	MND	MND	MND	MND	0E0	1,46E0	5,44E1	0E0	-1E3
Secondary materials	kg	1,52E0	0E0	2,34E-3	1,52E0	0E0	6,99E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,76E-1
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	7,79E-2	6,46E-3	8,07E-2	1,65E-1	7,85E-4	8,57E-3	MND	MND	MND	MND	MND	MND	MND	0E0	2,76E-4	1,63E-2	0E0	-4,95E-2

6) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	8,03E-1	3,84E-2	5,76E-2	8,99E-1	3,66E-3	7,04E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,52E-3	0E0	0E0	-4,78E-1
Non-hazardous waste	kg	1,44E0	2,64E0	1,41E0	5,49E0	4,05E-1	7,89E-1	MND	MND	MND	MND	MND	MND	MND	0E0	1,26E-1	0E0	0E0	7,63E0
Radioactive waste	kg	7,62E-6	2,59E-4	1,15E-3	1,42E-3	2,59E-5	5,41E-5	MND	MND	MND	MND	MND	MND	MND	0E0	9,97E-6	0E0	0E0	2,25E-4

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	1,66E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	1,5E1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ e	5,26E1	2,51E0	5,4E0	6,05E1	2,32E-1	3,74E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,56E-2	5,54E0	0E0	-4,2E1

8) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, Sweden, residual mix - One Click LCA profile from IEA
Electricity kg CO ₂ e / kWh	0.18

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.6 (2019) and One Click LCA database.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021)

EPD. General Programme Instructions of the international EPD® system. Version 4.0

EPS S80 LCA background report 14.09.2022

ABOUT THE MANUFACTURER

Finja is a Swedish family business whose journey began with a gravel pit acquired in 1957. Since then, and with a large amount of knowledge, dedication and courage, you now have today's company – one of the country's largest companies in the concrete industry.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	Finja Betong AB
EPD author	Finja Betong AB
EPD verifier	Hetal Parekh Udas, One Click LCA Ltd
EPD program operator	The International EPD System
Background data	This EPD is based on Ecoinvent 3.6 (cut-off) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for Construction products

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with EN 15804, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The background report (project report) for this EPD

Why does verification transparency matter? [Read more online.](#)

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Hetal Parekh Udas, One Click LCA
EPD verification started on	2022-08-14
EPD verification completed on	2022-09-14
Supply-chain specific data %	>90%
Approver of the EPD verifier	The International EPD System

Author & tool verification	Answer
EPD author	Finja Betong AB
EPD author training completion	2022-07-15
EPD Generator module	Construction products
Independent software verifier	Ugo Pretato, Studio Fieschi & soci
Software verification date	2021-05-11

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of

- the data collected and used in the LCA calculations,
- the way the LCA-based calculations have been carried out,
- the presentation of environmental data in the EPD, and
- other additional environmental information, as present

with respect to the procedural and methodological requirements in ISO 14025:2010 and EN 15804:2012+A2:2019.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.



VERIFICATION AND REGISTRATION (ENVIRONDEC)

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
PCR	PCR 2019:14 Construction products, version 1.11
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact .
Independent third-party verification of the declaration and data, according to ISO 14025:2006:	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
Third party verifier	Hetal Parekh Udas, One Click LCA Ltd
	Approved by: The International EPD® System Technical Committee, supported by the Secretariat
Procedure for follow-up during EPD validity involves third party verifier	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no



THE INTERNATIONAL EPD® SYSTEM

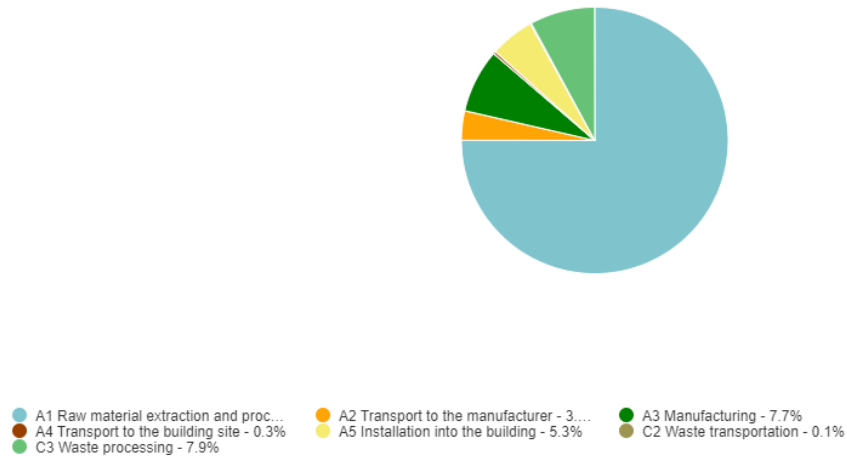
EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com

ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

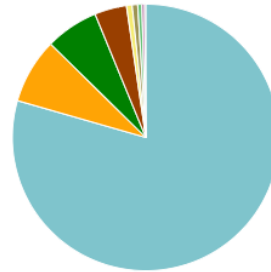
Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	4,67E1	2,48E0	5,34E0	5,45E1	2,3E-1	3,37E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,47E-2	5,42E0	0E0	-3,66E1
Ozone depletion Pot.	kg CFC ₁₁ e	5,91E-7	4,53E-7	7,4E-7	1,78E-6	4,53E-8	1,01E-7	MND	MND	MND	MND	MND	MND	MND	0E0	1,74E-8	3,35E-7	0E0	1,56E-7
Acidification	kg SO ₂ e	1,54E-1	5,03E-3	1,08E-2	1,7E-1	4,93E-4	1,04E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,95E-4	1E-2	0E0	-1,25E-1
Eutrophication	kg PO ₄ ³ e	1,61E-2	1,03E-3	2,11E-3	1,93E-2	9,96E-5	1,79E-3	MND	MND	MND	MND	MND	MND	MND	0E0	4,05E-5	1,15E-2	0E0	-7,92E-3
POCP ("smog")	kg C ₂ H ₄ e	9,45E-3	3,31E-4	7,16E-4	1,05E-2	2,84E-5	6,61E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,26E-5	9,45E-4	0E0	-8,08E-3
ADP-elements	kg Sbe	7,27E-6	6,78E-5	1,04E-5	8,55E-5	4,14E-6	7,27E-6	MND	MND	MND	MND	MND	MND	MND	0E0	2,39E-6	6,79E-5	0E0	2,63E-5
ADP-fossil	MJ	1,16E3	3,78E1	1,1E2	1,31E3	3,77E0	7,8E1	MND	MND	MND	MND	MND	MND	MND	0E0	1,46E0	5,44E1	0E0	-1E3

ANNEX 2 : LIFE-CYCLE ASSESSMENT RESULT VISUALIZATION

Global Warming Potential fossil kg CO2e - Life-cycle stages

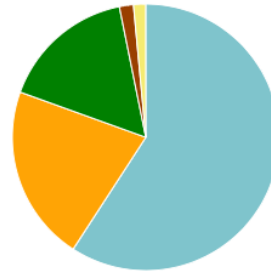


Global Warming Potential fossil kg CO2e - Classifications



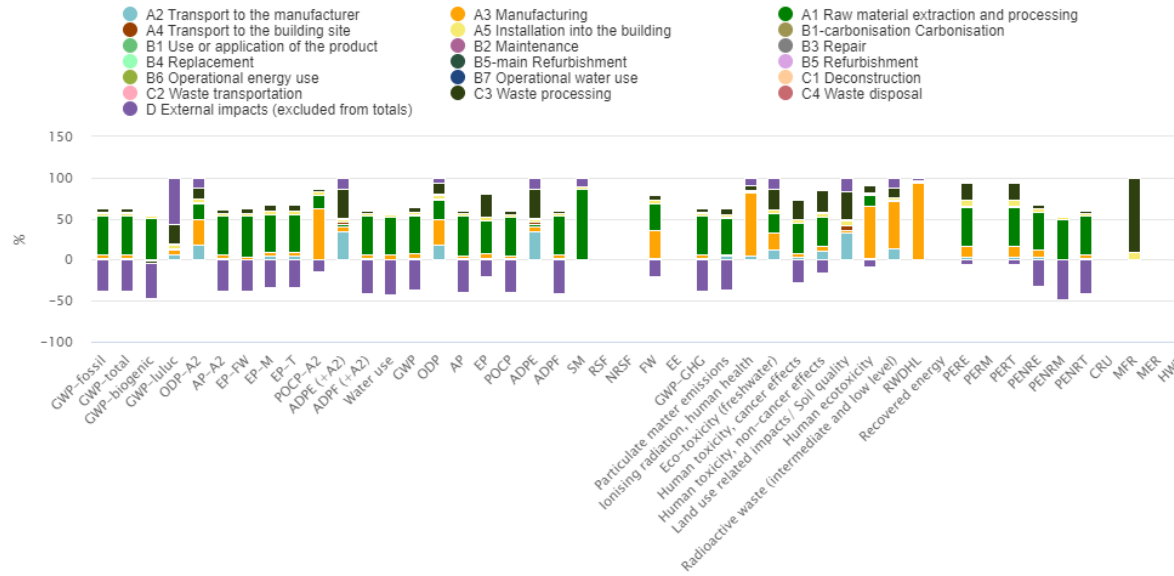
- Product raw materials (Ecoinvent data)
- Module C3 (waste processing) environment
- Energy use (Ecoinvent data) - 6.4%
- Installation resources and outputs, per declared unit of product
- Packaging materials - 0.7%
- Energy use (LCA profiles from One Click LCA)
- Installation waste, per declared unit of product
- Input mass of a declared unit of transport
- Module C2 (Transport during end of life)

Global Warming Potential fossil kg CO2e - Resource types



ecoinventManufacturing - 59.2%
ecoinventWaterSewarageWasteMg... - 17.7%
ecoinventElectricityGasSteamAC - 15.1%
Other resource types - 8.0%

Life-cycle impacts by stage as stacked columns



Life-cycle impacts by material as stacked columns

