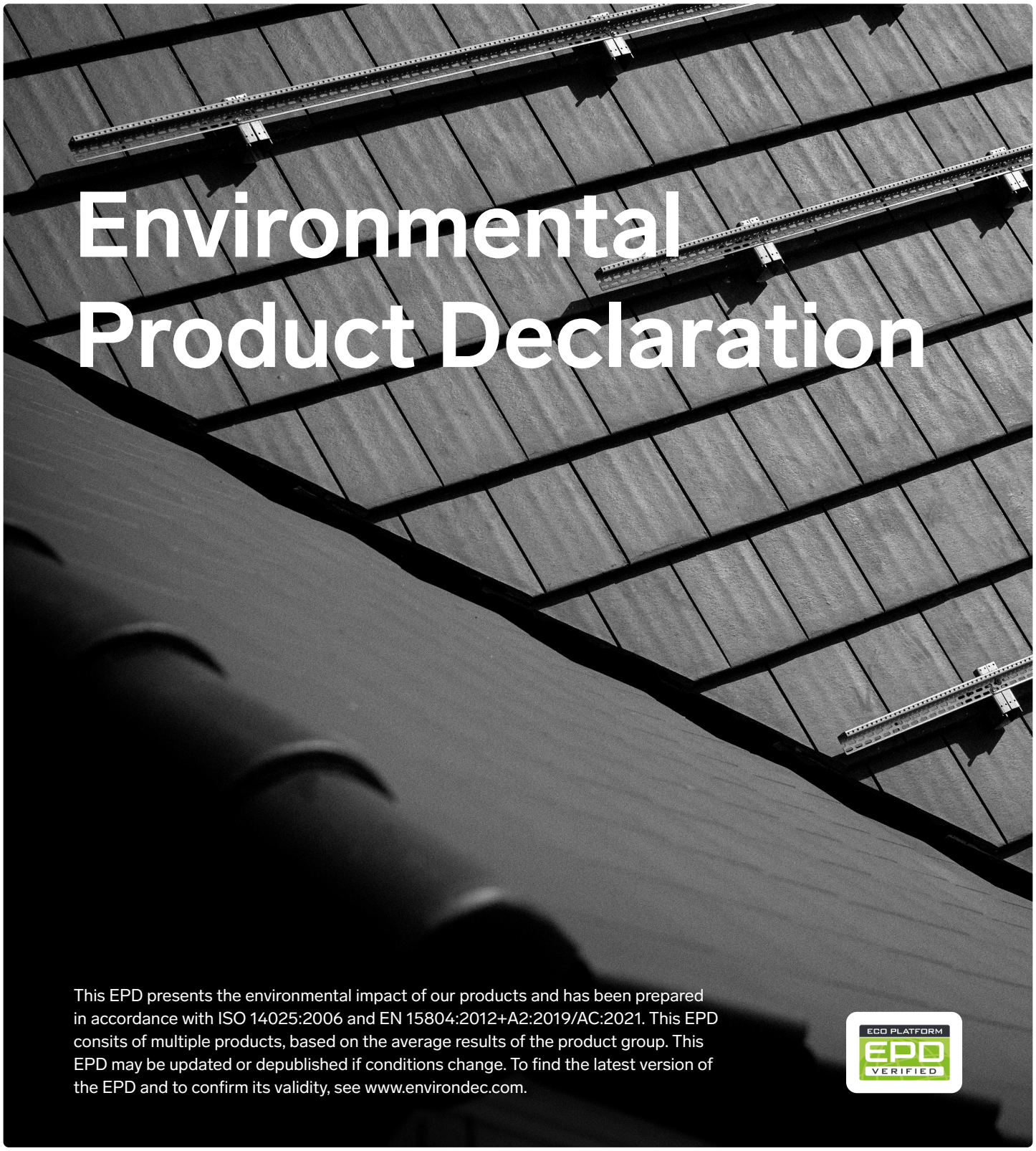
Nordmount



Environmental Product Declaration

This EPD presents the environmental impact of our products and has been prepared in accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021. This EPD consits of multiple products, based on the average results of the product group. This EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com.

ECO PLATFORM EPD VERIFIED

Product Name:	Solar Panel Mounting Brackets
EPD Owner:	Nordmount AB
Programme:	International EPD System (www.environdec.com)
Programme operator:	EPD International AB
EPD Registration Number:	EPD-IES-0024830
Version date:	2025-07-10
Validity date:	2030-07-10

EPD INTERNATIONAL EPD SYSTEM

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): *Construction products, 2019:14, version 2.0.1*
PCR review was conducted by: *The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via support@environdec.com. Chairs of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair)*
Life Cycle Assessment (LCA)
LCA accountability: *Annie Johansson, Sweco (annie.johansson@sweco.se)*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Viktor Hakkarainen, CHM Analytics AB      Approved by: The International EPD® System
OR
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☐ EPD verification by accredited certification body Third-party verification: <*name, organisation*> is an approved certification body accountable for the third-party verification The certification body is accredited by: <*name of accreditation body & accreditation number, where applicable*>
OR

Independent third-party verification of the declaration and data, according to ISO 14025:2006 via: ☐ EPD verification by EPD Process Certification* Internal auditor: <*name, organisation*> Third-party verification: <*name, organisation*> is an approved certification body accountable for third-party verification Third-party verifier is accredited by: <*name of accreditation body & accreditation number, where applicable*> *For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI.
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 registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:
Nordmount AB
Fabriksgatan 10, 331 35, Värnamo, Sweden

Contact:
Emma Ask
emma.ask@nordmount.se

Description of the organisation:
Nordmount is a Swedish company with 16 employees, founded in 2022, specializing in the development and manufacturing of fastening systems for solar panels. The headquarters are located in Värnamo.

Nordmount's product range includes brackets, fasteners, and mounting materials specifically designed to meet the challenges posed by the Nordic climate. By using high-quality steel in our manufacturing process, they ensure robust and durable solutions for all types of roofs.

Innovation is at the core of the business, and Nordmount continuously strive to advance the industry by developing products that combine high quality with user-friendliness. The goal is to be a reliable partner delivering efficient and sustainable fastening systems, ensuring a professional and satisfactory outcome for our customers.

At Nordmount, local manufacturing is prioritized to ensure high quality and durability in our products. The production is strategically located with an average distance of fifty kilometers from the headquarters in Värnamo. This proximity enables efficient communication and collaboration, giving Nordmount increased control over the entire manufacturing chain.

By working with nearby production units, Nordmount reduces transport distances and thereby the environmental impact, while also strengthening the local business community. The production strategy combines traditional craftsmanship with modern technology, resulting in robust and user-friendly mounting systems for solar panels.

Name and location of production site(s):
The Nordmount site is located at Fabriksgatan 10, 33135, Värnamo. Nordmount also collaborates with suppliers that have core production in their facilities. Due to confidentiality, the production sites of component producers are not disclosed in the EPD.

Product information

Product name: Solar panel mounting brackets

Product identification:
Nordmount sells components that are combined into systems to fit the respective roof that the solar panels are to be installed on. In this study several different combinations suiting different roofs have been inventoried. The inventory for the systems is based on components needed for a roof with 10 panels (on the same address, same size and other conditions). The roof types where the systems are installed are:

- Papptak / Paper roof
- Standing seam roof / falsat tak
- Corrugated roof / profilerat tak
- Roof tiles / takpannor bärläkt
- Hanger bolt / stockskruv

Component	Main raw material	Net weight per component (kg)	Quantity in kit (paper roof / papptak)	Quantity in kit (standing seam roof / falsat tak)	Quantity in kit (corrugated roof / profilerat tak)	Quantity in kit (roof tiles / takpannor bärläkt)	Quantity in kit (hanger bolt / stockskruv)
Hyper Meta (1357)	Steel*	0,97	0	0	0	24	0
Hyper Plate (1621)	Steel*	2,46	16	0	0	0	0
Hyper Plate-kit (1621-50)	Steel*	0,039	16	0	0	0	0
Rail (1916)	Steel*	3,38	11	11	11	11	11
Joint rail (1919)	Steel*	0,3	25	9	0	0	10
Hyper Cable Clips (2440)	Plastic, PA6 GF15*	0,01	77	77	77	77	77
Cable Holder (2550)	Plastic, PP filled with tacl 20%*	0,06	10	10	10	10	10
End Cap (2919)	Plastic, PA6 GF15*	0,09	8	8	8	8	8
Hyper Clamp (3132)	Steel*	0,225	20	20	20	20	24
Hyper Hanger Bolt (3550)	Steel*	0,26	0	0	0	0	24
Justable (35700025)	Plastic*	0,21	12	0	0	0	0
Screw (63190300 & 63191000)	Steel*	0,006	60	92	96	96	88
Hyper Seam Roof (6628)	Steel*	0,45	0	28	0	0	0
Total weight (kg)			**94,1**	**59,6**	**44,3**	**67,6**	**54,4**

Product description:
Nordmount offers an extensive range of brackets, fasteners, and mounting materials, specifically developed to meet the challenges posed by the Nordic climate.

Nordmount uses high-quality materials in their production, with the majority of the steel components treated with Zinc/Magnesium ZM310 for superior corrosion protection and extended lifespan. To underscore the confidence in the durability of the products, Nordmount offers a 30-year warranty on their systems.

Visual representation of product:

Geographical scope:
A1-A3: Europe, A4-A5: Sweden, B1-B7: Sweden, C1-C4: Sweden.

UN CPC code: 412

LCA information

Declared unit: 1 kg of solar panel mounting brackets

Time representativeness: Primary data has been collected through relevant documentation from Nordmount AB's own production and supplier production representing the production year 2024.

Database(s) and LCA software used: Modelling of environmental impact has been carried out with the LCA tool SimaPro, version 9.6. Generic datasets and background data have been based on LCI data from Ecoinvent 3.10.

Impact assessment methods: Categories, units and parameters used to describe environmental impacts were selected according to PCR (PCR 2024:06). Characterization factors used to assess material and energy flows were applied according to EN 15804:2012+A2:2019/AC:2021 based on EF 3.1.

Description of system boundaries: Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules)". The additional modules are A4–A5 and B1–B7.

Data quality: Primary data has been collected through relevant documentation from Nordmount AB's own production and supplier production representing the production year 2024. All suppliers have been contacted to obtain specific information about their components and site-specific manufacturing data. Primary data has been gathered for most of the upstream component manufacturing. For the main steel raw material some primary data has been gathered and combined with general data where primary data was not available. Most downstream processes have been modelled based on generic data. The collected data was reviewed according to EN15804 and deemed as of good quality.

The processes constituting over 90% of the impact in A1-A3 are presented below and evaluated with regards to data quality.

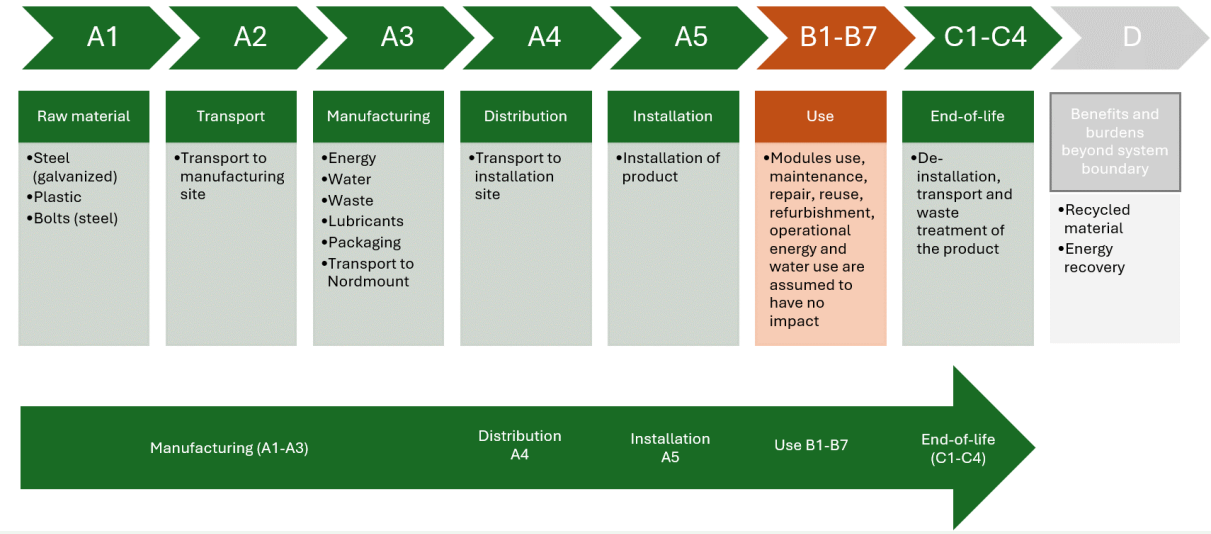
Process	Share	Reference year	Geographical representativeness	Technical representativeness	Temporal representativeness
Steel, low-alloyed, hot rolled {RER}| steel production, low-alloyed, hot rolled | Cut-off, U	>70%	2021	Good	*Good*	Good
Zinc {GLO}| market for zinc | Cut-off, U	>20%	2023	Good	Good	Very good

Allocation: The amount of material in each component is based on specific data. For energy consumption, water use and waste at the production plant, allocation based on mass was used. Total production volumes over a year were used to allocate the environmental impacts from the production processes per unit of studied component respectively.

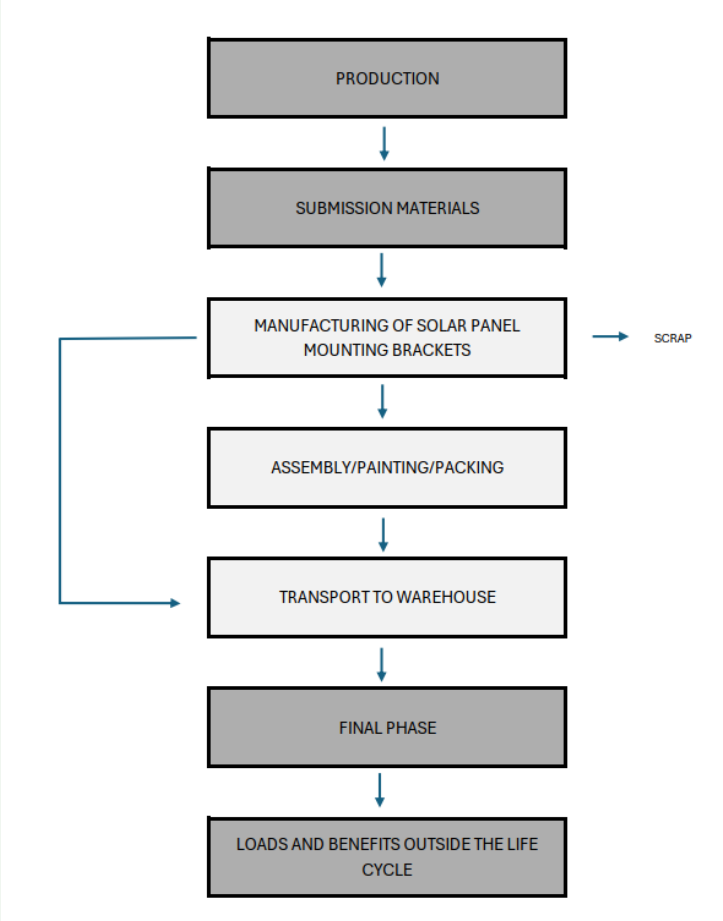
The allocation of waste follows the polluter-pays principle. The system boundary to the subsequent product system is set where the waste (e.g., the discarded product) reaches the end-of-waste state, i.e., when the material has become a usable flow (e.g., for reuse, energy recovery and/or recycling).

Cut-off criteria: The cut-off criteria established by the PCR is 1% of all material and energy flows to a single unit process and 5% of total inflows (mass and energy) per module. No cut-offs exceeding this limit have been made. In this study, the infrastructure and capital goods are included in the LCA.

System diagram: The system diagram is presented below followed by a process overview by Nordmount.



A process overview by Nordmount:



More information:
The scenarios included are currently used and are representative of one of the most likely options. Current market is 99% the Swedish market, hence scenarios for customers located in Sweden has been used through modules A4 to C.

Over 90% of metals in municipal waste is recycled[1] and hence 90% recycling rate is used. For plastics, the 20% recycling rate comes from the EN 50693 (Product category rules for electronic products and systems) (SIS, 2020). The remaining flow for plastic is assumed to go to incineration with energy recovery as that is a common treatment method for plastics in Sweden[2].

Where a scenario beyond the A3 module has been made, a conservative assumption has generally been made.

[1] Statistikblad: Kommunalt avfall 2023 [2025-05-20]
[2] Plastflöden i Sverige – från produktion till återvinning [2025-05-20]

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Geography	EU/ GLO	EU	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Share of primary data	27%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<15%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Content information

The content declaration per 1 kg of solar panel mounting brackets (weighted based on sales volumes for components needed to build a mounting systems on the roofs paper roof, standing seam roof, coorugated roof, roof tiles and hyper bolt).

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/DU
Steel (galvanized)	0,94	0%	0%
Bolt (steel)	0,02	0%	0%
Plastic	0,04	0%	0%
TOTAL	1	0%	0%
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/DU**
Wood	0,44	44%	0,222
Cardboard	0,030	3%	0,015
TOTAL	0,47	47%	0,237

No substances on the SVHC list have been reported.

Results of the environmental performance indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	4,29 E+00	4,65 E-02	2,97 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,90 E-02	6,92 E-02	6,03 E-04	-1,22 E+00
GWP-biogenic	kg CO_2 eq.	-4,03 E-02	3,22 E-05	2,30 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,32 E-05	1,21 E-05	8,31 E-08	2,81 E-02
GWP-luluc	kg CO_2 eq.	6,56 E-03	1,55 E-05	6,31 E-08	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,31 E-06	2,47 E-07	3,10 E-07	-6,26 E-04
GWP-total	kg CO_2 eq.	4,25 E+00	4,66 E-02	2,33 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,90 E-02	6,92 E-02	6,03 E-04	-1,20 E+00
ODP	kg CFC 11 eq.	3,74 E-08	9,25 E-10	4,67 E-12	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,78 E-10	2,19 E-11	1,74 E-11	-6,00 E-09
AP	mol H^+ eq.	1,89 E-02	9,70 E-05	2,60 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,96 E-05	1,47 E-05	4,27 E-06	-4,96 E-03
EP-freshwater	kg P eq.	1,74 E-03	3,15 E-06	8,10 E-08	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,29 E-06	1,65 E-07	5,00 E-08	-5,39 E-04
EP-marine	kg N eq.	4,31 E-03	2,33 E-05	1,36 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,51 E-06	8,75 E-06	1,63 E-06	-1,18 E-03
EP-terrestrial	mol N eq.	4,48 E-02	2,51 E-04	1,31 E-05	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,03 E-04	7,39 E-05	1,78 E-05	-1,29 E-02
POCP	kg NMVOC eq.	1,55 E-02	1,61 E-04	3,46 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,58 E-05	1,85 E-05	6,36 E-06	-4,20 E-03
ADP-minerals&metals*	kg Sb eq.	1,55 E-04	1,51 E-07	6,29 E-10	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,18 E-08	2,77 E-09	9,41 E-10	-6,58 E-05
ADP-fossil*	MJ	2,91 E+01	5,44 E-02	4,62 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,22 E-02	1,82 E-03	9,14 E-04	-1,03 E+01
WDP*	m^3	1,52 E+00	2,72 E-03	3,95 E-05	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,11 E-03	3,07 E-04	6,46 E-04	-2,07 E-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: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*
Note that the minor imbalance in biogenic CO2 is likely due to weighting of results.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[3]	kg CO2 eq.	4,29 E+00	4,66 E-02	2,97 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,90 E-02	6,92 E-02	6,03 E-04	-1,22 E+00
PM	disease inc.	3,56 E-07	3,43 E-09	3,30 E-11	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,40 E-09	6,47 E-11	9,71 E-11	-8,04 E-08
IRP[4]	kBq U-235 eq	3,13 E-01	8,49 E-04	4,88 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,47 E-04	3,77 E-05	9,42 E-06	-3,69 E-02
ETP-fw[5]	CTUe	1,45 E+02	1,78 E-01	3,08 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,27 E-02	1,49 E-01	2,02 E-03	-1,10 E+02
HTP-c[3]	CTUh	3,24 E-07	3,30 E-10	4,60 E-12	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,35 E-10	1,17 E-11	2,72 E-12	-3,48 E-07
HTP-nc[3]	CTUh	9,30 E-08	4,11 E-10	2,59 E-11	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,68 E-10	1,58 E-10	2,52 E-12	-1,70 E-08
SQP[3]	Pt	2,23 E+01	3,96 E-01	1,20 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,61 E-01	2,51 E-03	2,91 E-02	-3,11 E+00
Acronyms	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 = Soil Quality															

Resource use indicators

Results per functional or declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	5,97 E+00	1,12 E-02	8,00 E-05	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,59 E-03	6,44 E-04	1,37 E-04	-6,98 E-01
PERM	MJ	4,87 E+00	0,00 E+00	-4,48 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PERT	MJ	1,08 E+01	1,12 E-02	-4,48 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,59 E-03	6,44 E-04	1,37 E-04	-6,98 E-01
PENRE	MJ	3,04 E+01	5,68 E-02	4,83 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,32 E-02	1,90 E-03	9,58 E-04	-1,07 E+01
PENRM	MJ	1,55 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	-5,70 E-01	0,00 E+00	0,00 E+00
PENRT	MJ	3,19 E+01	5,68 E-02	4,83 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,32 E-02	-5,68 E-01	9,58 E-04	-1,07 E+01
SM	kg	3,27 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
RSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00

[3] *This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.*

[4] *Disclaimer: 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.*

[5] *Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

NRSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
FW	m^3	7,17 E-02	9,85 E-05	3,96 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,02 E-05	1,14 E-04	1,53 E-05	-1,77 E-02
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 re-sources; 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 indicators

Results per functional or declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Non-hazardous waste disposed	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Radioactive waste disposed	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00

Output flow indicators

Results per functional or declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Material for recycling	kg	3,18 E-01	0,00 E+00	2,04 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,71 E-01	0,00 E+00	0,00 E+00
Materials for energy recovery	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Exported energy, electricity	MJ	0,00 E+00	0,00 E+00	4,35 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,12 E-01	0,00 E+00	0,00 E+00
Exported energy, thermal	MJ	0,00 E+00	0,00 E+00	3,93 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,01 E+00	0,00 E+00	0,00 E+00

Difference in results between systems

In an EPD of multiple products, the difference (in %) between the declared GWP-GHG result, and the product with GWP-GHG results furthest away from the declared results, for modules A1-A3, shall be reported in the EPD.

Below, the difference in results between the declared results and the results for each system are presented for the mandatory environmental impact indicators as well as the indicator GWP-GHG.

Environmental impact A1-A3							
Indicator	**Unit**	**Average results**	**Paper roof**	**Corrugated roof**	**Roof tiles**	**Standing seam roof**	**Hanger bolt**
GWP-fossil	kg CO_2 eq.	100%	86%	99%	102%	107%	101%
GWP-biogenic	kg CO_2 eq.	100%	86%	99%	102%	108%	101%
GWP-luluc	kg CO_2 eq.	100%	68%	112%	98%	139%	103%
GWP-total	kg CO_2 eq.	100%	76%	122%	98%	107%	109%
ODP	kg CFC 11 eq.	100%	86%	100%	102%	107%	104%
AP	mol H^+ eq.	100%	85%	99%	102%	108%	102%
EP-freshwater	kg P eq.	100%	86%	97%	103%	108%	100%
EP-marine	kg N eq.	100%	85%	99%	102%	108%	103%
EP-terrestrial	mol N eq.	100%	85%	99%	102%	108%	102%
POCP	kg NMVOC eq.	100%	85%	99%	102%	108%	102%
ADP-minerals&metals*	kg Sb eq.	100%	87%	96%	103%	107%	94%
ADP-fossil*	MJ	100%	89%	98%	102%	107%	100%
WDP*	m^3	100%	85%	101%	102%	107%	100%
GWP-GHG	kg CO_2 eq	100%	86%	99%	102%	108%	101%

Scenarios for end-of-life

As per the new version of the PCR, 100% scenarios should be developed. If any of the declared scenarios is a mix of end-of-life alternatives (reuse, recycling, incineration with energy recovery, landfill, etc.), also the corresponding 100% scenarios (100% reuse, 100% recycling, 100% incineration with energy recovery, 100% landfill, etc.) shall be declared. In other words, the 100% scenarios of relevance for the intended market shall be declared. Scenarios have to be relevant for the product and the market. As the product is sold on the Swedish market, the original scenario developed is estimated to be the most accurate one.

Scenarios identified, apart from the most likely one developed in the study for the market, that could be alternatives are 100% incineration of plastics and 100% landfill of steel. On the Swedish market, the scenario with 100% landfill of steel however falls beyond the plausibility for treatment on the market. Hence, an alternative for if plastics are 100% incinerated are developed.

The results for this scenario is identical except for what happens in C4 for mandatory impact indicators, the new results are presented below.

Indicator	Unit	C3	C3 -alternative
GWP-total	kg CO2-eq.	6,92E-02	8,66E-02
GWP-fossil	kg CO2-eq.	6,92E-02	8,66E-02
GWP-biogenic	kg CO2-eq.	1,21E-05	1,51E-05
GWP-luluc	kg CO2-eq.	2,47E-07	3,09E-07
ODP	kg CFC 11 eq.	2,19E-11	2,75E-11
AP	mol H^+ eq.	1,47E-05	1,84E-05
EP-freshwater	kg P eq.	1,65E-07	2,07E-07
EP-marine	kg N eq.	8,75E-06	1,10E-05
EP-terrestrial	mol N eq.	7,39E-05	9,26E-05
POCP	kg NMVOC eq.	1,85E-05	2,31E-05
$ADPm^2$	kg Sb eq.	2,77E-09	3,47E-09
$ADPf^2$	MJ	1,82E-03	2,28E-03
WDP^2	m^3	3,07E-04	3,84E-04

Abbreviations

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
Environmental Impact Indicators (EN 15804)	
GHG	Greenhouse gas
GWP	Global Warming Potential (kg CO_2 eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO_2 eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO_2 eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO_2 eq.)
GWP-total	Total Global Warming Potential (kg CO_2 eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO_2 eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H^+ eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m^3)
Resource Use Indicators	
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m^3)
Waste Indicators	
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
Output Flow Indicators	
CFR	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)

EET	Exported Energy, Thermal (MJ)
Lifecycle Stages / Modules	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
Other Relevant Terms	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

References

General Programme Instructions of the International EPD® System. Version 5.0.1

PCR 2019:14. Construction Products. Version 2.0.1

LCA report Nordmount. Sweco. Johansson, Lindqvist & Mikusinska. 2025-07-03

Version history

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