Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Hot-dipped pre-galvanized accessories (Z4)

from

MP bolagen Industri AB

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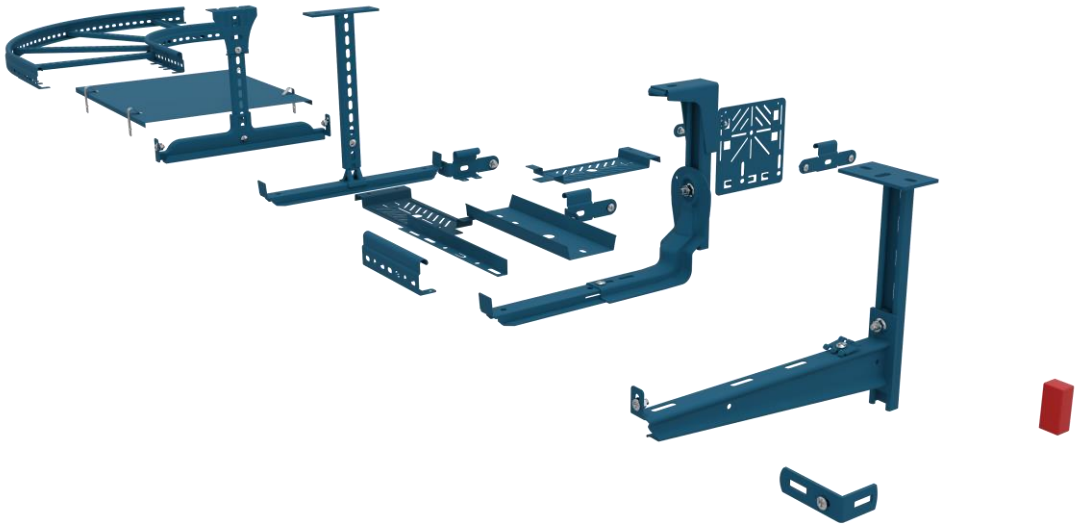

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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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): PCR 2019:14 Construction products (EN 15804:A2), version 1.3.3
PCR review was conducted by: *The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile. A full list of members available on www.environdec.com. The review panel may be contacted via info@environdec.com.*
Life Cycle Assessment (LCA)
LCA accountability: *Thomas Eknor Morrell, Katarzyna Dziubanii, Niclas Silfverstrand, Ramboll Sweden AB.*
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: *Håkan Stripple, IVL Swedish Environmental Research Institute* *P.O. Box 53021, SE-400 14 Gothenburg, Sweden* *Hakan.Stripple@IVL.se, www.IVL.se* Approved by: The International EPD® System
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:
MP bolagen Industri AB

Contact:
Markus Wanke, markus.wanke@mpbolagen.se

Description of the organisation:
MP bolagen Industri AB develop, manufacture and market a wide range of products for cable management systems for the electrical industry. The production takes place in Ekenässjön outside Vetlanda, Sweden. MP bolagen's goal is to be one of the electricity industry's best suppliers when it comes to quality, delivery, reliability, and customer service. The company is certified according to ISO standard, ISO 9001 and 14001.

Product-related or management system-related certifications:
MP bolagen is certified according to ISO 9001 and 14001.

Name and location of production site(s):
Name: Ekenässjön
Location: Barkvägen 7, 574 91 Ekenässjön, Sweden

Product information

Product name:
Hot-dipped pre-galvanized accessories (Z4)

Product identification:
Swedish name: Varmförzinkade tillbehör (Z4)

Product description:
This EPD covers all accessories made from hot-dipped pre galvanized steel. Pre galvanized steel has been subjected to a process covering sheet steel with a thin layer of zinc-aluminium-magnesium alloy, which gives a bright surface. This zinc layer of 25 µm thickness is in accordance with ISO EN 10346, offers protection due to its low electrode potential and slow corrosion rate. Products in pre galvanized steel are suited for installation in environments with high corrosion rate.

Geographical scope:
The study represents the Nordic market, i.e. the Nordic countries: Denmark, Finland, Iceland, Norway and Sweden.

LCA information

Declared unit:
1 metric tonne of product.

Reference service life:
N/A

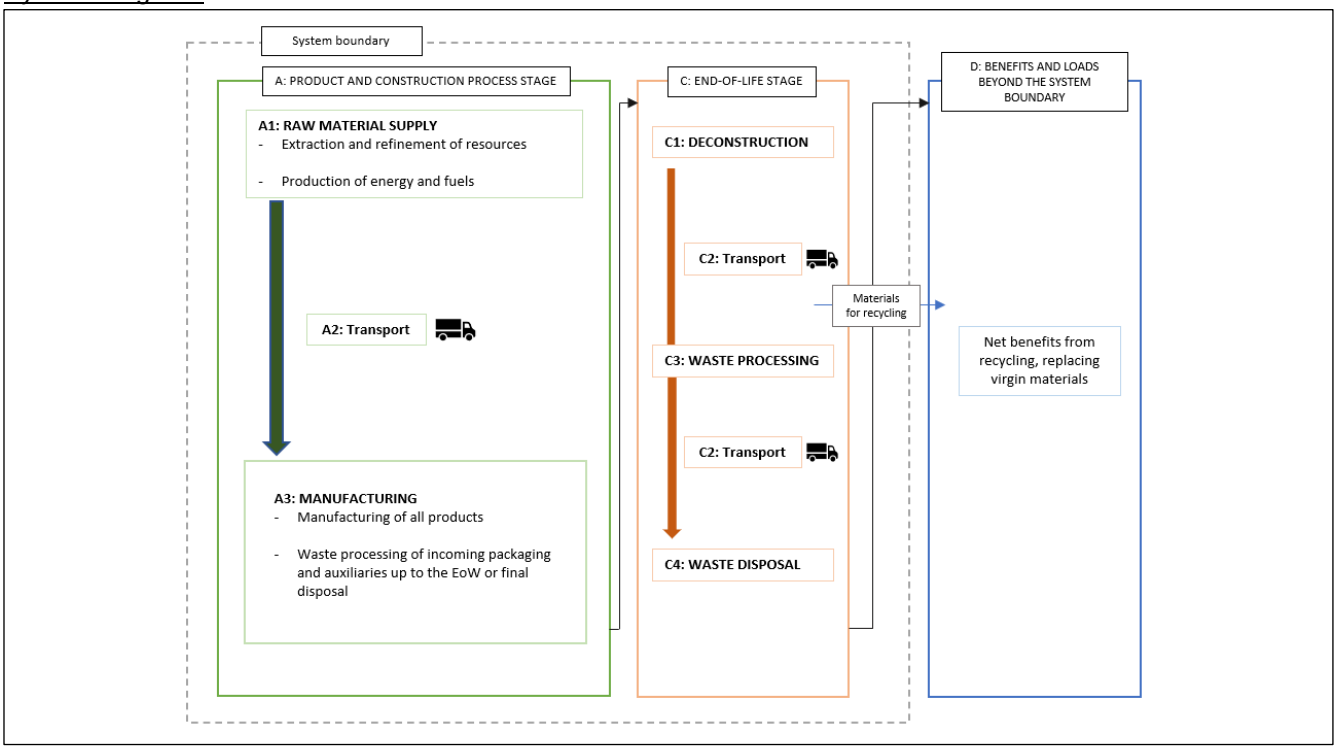
Time representativeness:
Reference year: 2022

Database(s) and LCA software used:

LCA calculations were performed with the LCA software LCA for Experts (version 10.7.0.183), using life cycle inventory (LCI) data from Professional database Version CUP 2023.01 and Ecoinvent 3.8. The EN15804 reference package based on EF 3.1 has been used.

Description of system boundaries:
Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)

System diagram:



The thousand separator and decimal mark in this EPD follow French version of SI style: 1 234,56 (number with six significant figures is shown for illustrative purpose only).

Product stage, A1-A3:
The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, production processes, packaging, and waste processing up to the end-of-waste state or final disposal for non-product wastes.

More specifically, this module includes the upstream processes of extraction and processing of raw materials and the transportation of the input materials to the production site included in the study. Furthermore, it includes the core processes of producing the final product – hot-dipped pre-galvanized accessories (Z4), including the impacts from extraction and processing of fuels and auxiliary materials and their transportation to the production site. The module also includes the production of purchased electricity used at the production site.

End-of-life, C1-C4:
Hot-dipped pre-galvanized accessories (Z4) are sold in the Nordic countries, with Sweden contributing to the largest share. Statistics for Swedish waste management is therefore used as proxy for the Nordic market. 95% of the materials are assumed to go to recycling and the remaining 5% to landfill.

Module C1 comprises the deconstruction of the product. It has been assumed that the deconstruction of the product is a part of the demolition or renovation of a building, which also can include manual work. Therefore, the environmental impacts of the deconstruction process of the product have been viewed as negligible and set equal to zero.

Module C2 includes the transport between the deconstruction site and either recycling facility or landfill. A distance of 100 km has been assumed for both transport to recycling and to a landfill, since no specific information is available.

Module C3 comprises recycling of the materials, within which the processes connected to recycling are included.

Module C4 comprises the disposal of materials, within which the processes connected to landfill are included.

Re-use, recovery and recycling potential, D:
Module D includes reuse, recovery and/or recycling potentials, expressed as net impact and benefits. In this case, it is assumed that module D includes the potential benefits from avoided production of steel through recycling of the net (virgin) share of materials in the product lifecycle. Furthermore, 10% losses associated with the remelting of the metal are assumed to occur outside of the system boundaries.

Additional LCA information

Cut-off rules

General cut-off criteria as defined in EN15804 are followed. Life cycle inventory data shall according to EN 15804 include a minimum of 95% of total inflows (mass and energy) per module. No known inflows were left out.

Data quality

All processes with a significant impact have high quality datasets.

Allocation

The manufacturing process produces pre-consumer scrap as a co-product. Economic allocation is used, which allocates part of the pre-consumer scrap's impact to the product.

End-of-life Scenario

End-of-life processes expressed per declared unit		
Process	**Unit**	**Amount**
Assumptions for transportation	km to recycling and landfill	100
Recycling process	kg to recycling	950
Disposal process	kg to landfill	50

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	SE, BE, DK, NO	SE, BE, DK, NO	SE	ND	ND	ND	ND	ND	ND	ND	ND	ND	SE, DK, NO, FI, IS				SE, DK, NO, FI, IS
Specific data used	5%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = modules declared, ND = Not Declared

Content information

Product components	Weight, kg	Post-consumer recycled material, weight-% per DU	Biogenic material, weight-% per DU	Biogenic material, kg C per DU
Pre-galvanized steel	1000	Unknown	0	0
TOTAL	1000	Unknown	0	0
Packaging materials	**Weight, kg**	**Post-consumer recycled material, weight-% per DU**	**Biogenic material, weight-% per DU**	**Biogenic material, kg C per DU**
LDPE	1,97	0	0	0
TOTAL	1,97	0	0	0

The products do not contain any of the substances listed on the "Candidate List of Substances of Very High Concern (SVHC) for authorisation" (http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp).

Packaging

Consumer packaging: Accessories are packed in plastic bags – 10 pieces per one bag.

Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product:
Hot dip galvanized steel used to produce Z4 accessories contains an unknown share of post-consumer scrap.

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.

Mandatory disclaimer: It is not advised to use the results of modules A1-A3 without considering the results of module C.

Mandatory impact category indicators according to EN 15804

Results per 1 metric tonne of hot-dipped pre-galvanised accessories (Z4)							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	2,68E+03	0,00E+00	9,47E+00	5,41E+01	2,58E-01	-1,03E+03
GWP-biogenic	kg CO_2 eq.	1,14E+00	0,00E+00	2,85E-02	7,77E-03	1,29E-04	-4,54E+00
GWP-luluc	kg CO_2 eq.	1,52E+00	0,00E+00	8,91E-02	5,41E-03	2,43E-04	-3,06E-01
GWP-total	kg CO_2 eq.	2,68E+03	0,00E+00	9,58E+00	5,41E+01	2,59E-01	-1,03E+03
ODP	kg CFC 11 eq.	2,11E-07	0,00E+00	1,25E-12	1,17E-05	1,07E-07	-7,95E-09
AP	mol H^+ eq.	6,15E+00	0,00E+00	5,04E-02	5,68E-01	2,48E-03	-2,53E+00
EP-freshwater	kg P eq.	1,95E-03	0,00E+00	3,52E-05	1,69E-03	2,41E-05	-2,17E-03
EP-marine	kg N eq.	1,43E+00	0,00E+00	2,42E-02	2,52E-01	8,62E-04	-6,38E-01
EP-terrestrial	mol N eq.	1,53E+01	0,00E+00	2,69E-01	2,76E+00	9,42E-03	-6,84E+00
POCP	kg NMVOC eq.	4,88E+00	0,00E+00	4,76E-02	7,58E-01	2,74E-03	-2,29E+00
ADP-minerals&metals**	kg Sb eq.	1,58E-02	0,00E+00	6,38E-07	2,81E-05	6,01E-07	-9,91E-05
ADP-fossil**	MJ	2,96E+04	0,00E+00	1,31E+02	7,47E+02	7,38E+00	-1,06E+04
WDP**	m^3	7,65E+02	0,00E+00	1,16E-01	1,84E+00	3,39E-01	-1,13E+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.*

Additional mandatory and voluntary impact category indicators

Results per 1 metric tonne of hot-dipped pre-galvanised accessories (Z4)							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	2,68E+03	0,00E+00	9,55E+00	5,41E+01	2,59E-01	-1,03E+03

[1] 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 CO_2 is set to zero.

Resource use indicators

Results per 1 metric tonne of hot-dipped pre-galvanised accessories (Z4)							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,04E+03	0,00E+00	9,53E+00	4,23E+00	6,40E-02	-3,99E+03
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,04E+03	0,00E+00	9,53E+00	4,23E+00	6,40E-02	-3,99E+03
PENRE	MJ	2,96E+04	0,00E+00	1,31E+02	7,47E+02	7,38E+00	-1,06E+04
PENRM	MJ	8,52E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,97E+04	0,00E+00	1,31E+02	7,47E+02	7,38E+00	-1,06E+04
SM	kg	1,04E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	3,20E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	8,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,90E+01	0,00E+00	1,04E-02	4,28E-02	7,88E-03	-2,59E+00
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 1 metric tonne of hot-dipped pre-galvanised accessories (Z4)							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,10E-02	0,00E+00	4,07E-10	0,00E+00	0,00E+00	7,89E-07
Non-hazardous waste disposed	kg	1,17E+02	0,00E+00	2,00E-02	0,00E+00	5,00E+01	-8,30E+00
Radioactive waste disposed	kg	4,56E-01	0,00E+00	2,46E-04	0,00E+00	0,00E+00	-4,15E-01

Output flow indicators

Results per 1 metric tonne of hot-dipped pre-galvanised accessories (Z4)							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	4,27E-01	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	4,06E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	7,29E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional electricity information

Type of information	Description
Location	Residual mix (nuclear power, power from hard coal, power from HFO, power from natural gas) + power from photovoltaic
Geographical representativeness	Sweden
Reference year	2019
Source	Professional database 2023
GWP-GHG (kg CO2e/kWh)	0,09

References

- EN 15804+A2/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
- General Programme Instructions of the International EPD® System. Version 4.0.
- ISO 14025:2010 - Environmental labels and declarations – Type III environmental declarations – Principles and procedures.
- ISO 14040:2006 - Environmental management – Life cycle assessment – Principles and framework.
- ISO 14044:2006 - Environmental management – Life cycle assessment – Requirements and guideline – on Life Cycle Assessments (LCA).
- PCR 2019:14 Construction products and construction services, version 1.3.3
- Silfverstrand, N., Eknor Morrell, T., Dziubanii, K., Jelse, K. Underlying LCA for Environmental Product Declaration EPD® - MP bolagen Industri AB. Ramboll, 2023.

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