Environmental Product Declaration

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

Merit by Swecem AB

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

Programme information

Programme:	EPD International AB
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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, version 1.3.4 • c-PCR-001 (EN 16908), Cement and building lime, version 2024-04-30 UN CPC code: 3744 - Portland cement, aluminous cement, slag cement and similar hydraulic cements, except in the form of clinkers.
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com 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
Life Cycle Assessment (LCA)
LCA accountability: Axel Cullberg, CHM Analytics
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: Pär Lindman, Miljögiraff AB 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.

Contact information

Owner of the EPD

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Contact

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Description of the organisation

Swecem AB is a Swedish company specializing in producing binders with a lower climate impact for the concrete industry. We work with the products of the future, which currently include Merit. Swecem AB is a subsidiary of Swerock within the Peab Group.

Name and location of production site

Swecem AB, Skeppargatan 80, 613 31 Oxelösund, Sweden

Product information

Product name and identification

Merit

UN CPC code: 3744 – slag cement -ground granulated blast furnace slag (GGBS).

Product description

Merit is a latent hydraulic binder used as a replacement for cement in concrete, mortar, or grout. It is classified as a mineral admixture type II in concrete production and is certified according to SS-EN 15167-1. Merit is also suitable for mass stabilization, especially in the presence of heavy metals in the soil or sludge, or other hazardous chemicals.

Merit is produced from granulated blast furnace slag, a by-product of the iron manufacturing process. The molten slag is rapidly quenched in water to create reactive granular slag particles with a specific glass content.

The declared lifecycle stages are according to a type d) EPD in PCR 2019:14 v. 1.3.4 (Cradle-to-gate A1-A3).

Geographical scope

Sweden

LCA information

Declared unit

The declared unit is 1000 kg ground granulated blast furnace slag.

Reference service life

RSL is not applicable as the system boundary is cradle-to-gate (A1-A3)

Time representativeness

Production data reflects the calendar year 2024. Generic data used come from Sphera MLC 2025.1 and ecoinvent 3.10. All generic data are still valid and have less than 5 years difference from the last update of the dataset to the publication of this EPD.

Database(s) and LCA software used

The LCA was modelled in Sphera LCA FE version 10.9.1.10, using databases MLC version 2025.1 and ecoinvent 3.10 (Cut-off system library, as implemented in LCA FE).

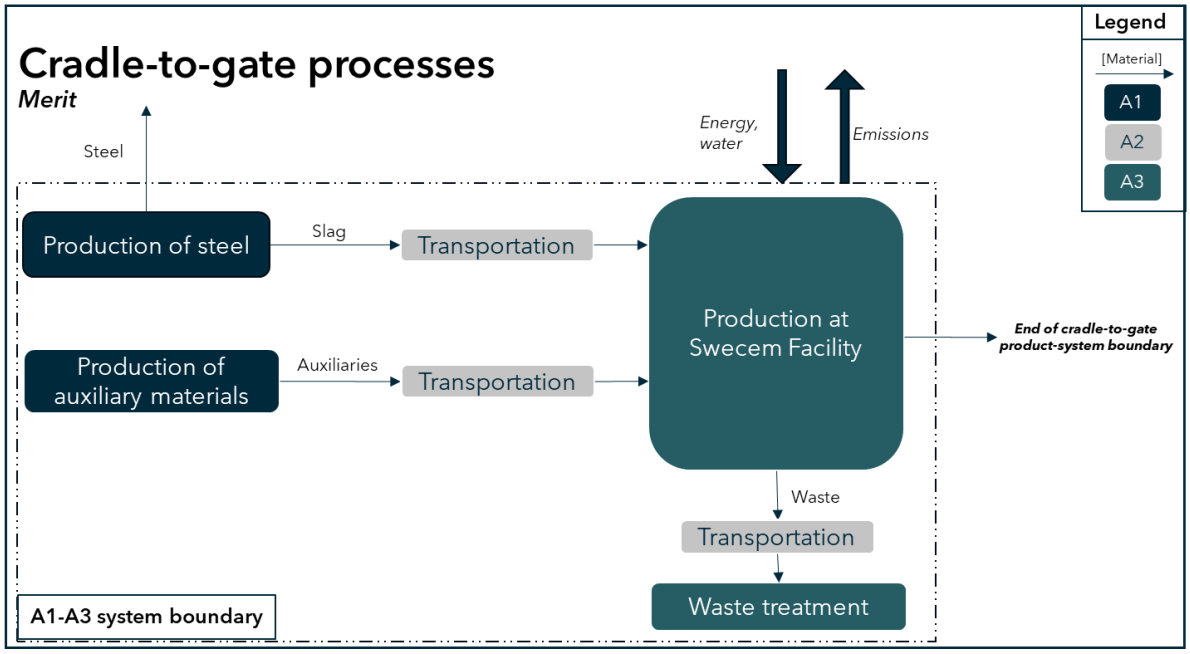
Description of system boundaries

The studied system is a type d) EPD, cradle-to-gate (A1-A3), as Merit is an intermediate product.

Process description

Modules A1-A3 cover the extraction, production and acquisition of raw materials, as well as energy generation, transport of raw materials considered in module A1 to factory gate, and production of the final products, including waste management.

Granulated blast furnace slag is delivered from suppliers to the production site in Oxelösund. The slag is screened and mixed before being milled to a powder of defined fineness. The process is monitored by measuring fineness and moisture. The powder is continuously fed into silos.
A3 electricity is modelled using the Swedish residual mix, GWP-GHG intensity of 51g CO_2eq./kWh



Cut-off rules

The cut-off criteria are in accordance with the EN 15804 standard, meaning that max 1% of the renewable and non-renewable primary energy use and max 1% of the total mass input of a specific unit process are allowed to be cut-off (excluded). Additionally, at least 95% of the environmental impact per module shall be included as well. Particular care should be taken to include material and energy flows known to have the potential to cause significant emissions into air and water or soil related to the environmental indicators of EN 15804+A2. For a full module, the summarized cut-off of all unit processes is max 5% of the entire module.

In this study, no activities are cut off.

Capital goods and infrastructure

Infrastructure and capital goods are excluded in all declared modules, to the extent they are known.

Allocation

As granulated blast furnace slag is a co-product, economic allocation is preformed of the upstream processes generating the slag.

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

	Product stage			Construction process stage		Use Stage							End of life stage				Resource recovery stage
	Raw Material Supply	Transport to manufacturing	Manufacturing	Transport to customer	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction / Demolition	Transport to waste management	Waste processing	Final 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	ND	ND	ND	ND	ND
Geography	GLO	GLO	SE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Specific data used (GWP-GHG):	75%																
Variation – Products:	0%																
Variation – Sites:	0%																

X = Module declared
ND = Module not declared

Content declaration

Product components	Weight [kg]	Post-consumer recycled material [wt%]	Biogenic material [wt%]	Biogenic material [kg C/t Merit]
Ground granulated blast furnace slag	1000	0%	0%	0

The product is sold in bulk and thus no packaging is considered in the study.

No Substances of Very High Concern (SVHC) in accordance with the Candidate List of SVHC from the European Chemicals Agency that constitutes more than 0.1% of the weight of the product is included Merit.

Environmental performance

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 result below is per declared unit (1000 kg) and is calculated using the reference package for EN 15804 based on EF 3.1.

Potential environmental impact – mandatory indicators according to EN 15804

Mandatory impact category results per declared unit.

Environmental impact indicator	Unit	A1-A3
GWP - Fossil	kg CO_2 eq.	5,06E+01
GWP- Biogenic	kg CO_2 eq.	4,72E+00
GWP- Land use and land use change	kg CO_2 eq.	3,26E-02
GWP - Total	kg CO_2 eq.	5,54E+01
Ozone depletion	kg CFC11 eq.	1,78E-07
Acidification	mol H+ eq.	6,50E-01
Eutrophication, freshwater	kg P eq.	5,91E-03
Eutrophication, marine	kg N eq.	3,02E-01
Eutrophication, terrestrial	mol N eq.	3,02E-01
Photochemical ozone formation	kg NMVOC eq.	3,30E+00
Resource use, minerals, and metals*	kg Sb eq.	8,28E-01
Resource use, fossils*	MJ	1,24E+03
Water use*	m3 depriv.	1,79E+01

** The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator*

Potential environmental impact – additional voluntary indicators

Additional impact category indicator results, per declared unit.

Environmental impact indicator	Unit	A1-A3
Particulate matter	disease inc.	1,83E-05
Ionising radiation**	kBq U-235 eq.	4,42E+01
Ecotoxicity, freshwater*	CTUe	1,02E+03
Human toxicity, cancer*	CTUh	2,86E-06
Human toxicity, non-cancer*	CTUh	3,97E-07
Land use*	Pt	3,30E+02

** The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator*

*** 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.*

Potential environmental impact – additional mandatory indicators, GWP-GHG

GWP-GHG results per declared unit.

Environmental impact indicator	Unit	A1-A3
GWP - GHG	kg CO_2 eq.	5,07E+01

Use of resources

Use of resources, per declared unit.

Resource use		Unit	A1-A3
Primary Energy Resources - Renewable	Use as energy carrier	MJ	1,06E+02
	Used as raw materials	MJ	0
	Total	**MJ**	**1,06E+02**
Primary Energy Resources -Non-Renewable	Use as energy carrier	MJ	1,24E+03
	Used as raw materials	MJ	0
	Total	**MJ**	**1,24E+03**
Other categories	Secondary Material	kg	1,00E+03
	Renewable Secondary Fuels	MJ	2,60E+02
	Non-Renewable Secondary Fuels	MJ	0
	Net Use of Fresh Water	m^3	4,54E-01

Waste production

Generated waste exiting the system boundary, per declared unit.

Waste production	Unit	A1-A3
Hazardous Waste Disposed	kg	2,20E+00
Non-Hazardous Waste Disposed	kg	9,74E-02
Radioactive Waste Disposed	kg	2,06E-04

Output flows

Other flows exiting the system boundary, per declared unit.

Output flows	Unit	A1-A3
Components for reuse	kg	2,20E+00
Material for recycling	kg	9,74E-02
Materials for energy recovery	kg	2,06E-04
Exported energy, electricity	MJ	0
Exported energy, thermal	MJ	1,08E+01

Biogenic carbon content

The product does not have any associated packaging or biogenic carbon content.

Presence of biogenic carbon content in the product and packaging, per declared unit.

Biogenic carbon content	kg C
Biogenic carbon content in product	0
Biogenic carbon content in accompanying packaging	0

Version history

Compared to previous version of the EPD (EPD-IES-0005377:002, published 2022-05-13) this version contains more recent data on production, upstream co-product allocation of slag generation, extended validity and various other updates to conform to PCR 2019:14 v.1.3.4

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