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Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

VPI - Volcanic Pozzolan Iceland



Heidelberg Materials

Owner of the declaration
Heidelberg Materials Cement Sverige AB

Product
VPI - Volcanic Pozzolan Iceland

Declared unit
1 tonne

This declaration is based on Product Category Rules
EN 15804:2012+A2:2019 serves as core PCR
EN 16908:2017 Cement and building lime

Program operator
EPD-Global

Declaration number
NEPD-19225-24005

Issue date
17.11.2026

Valid to
17.11.2031

EPD software:
LCA.no EPD generator ID: 1844600

EPD-Global

General information

Product

VPI - Volcanic Pozzolan Iceland

Program operator

EPD-Global
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-global.com

Declaration number

NEPD-19225-24005

This declaration is based on Product Category Rules

EN 15804:2012+A2:2019 serves as core PCR
EN 16908:2017 Cement and building lime

Statement of liability

The owner of the declaration shall be liable for the underlying information and evidence. EPD-Global shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit

1 tonne VPI - Volcanic Pozzolan Iceland

Declared unit with option

A1-A3, A4

Functional unit

1 tonne of dried VPI - Vulcanic natural pozzolan from Island.

General information on verification of EPD from EPD tools

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Global's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Global, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Global's General Programme Instructions for further information on EPD tools

Verification of EPD tool

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPD-Global's procedures and guidelines for verification and approval of EPD tools.

Third party verifier

Ellen Soldal, Norsus AS

(no signature required)

Owner of the declaration

Heidelberg Materials Cement Sverige AB
Contact person: Åsa Nilsson
e-mail: asa.nilsson@heidelbergmaterials.com

Manufacturer

Heidelberg Materials Cement Sverige AB
Contact person: Åsa Nilsson
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Phone: +46 (0)708-36 15 58

Place of production

Heidelberg Materials Cement Sverige AB
Marieviksgatan 25, Box 47210
SE-100 74 Stockholm, Sweden

Management system

ISO 9001:2015 and ISO 14001:2015

Organisation no

556013-5864

Issue date

17.11.2026

Valid to

17.11.2031

Year of study

2026

Comparability

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not viewed in a building context.

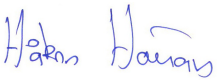
Development and verification of EPD

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD-Global.

Developer of EPD Åsa Nilsson

Reviewer of company-specific input data and EPD Yahya Ghasemi

Approved



Håkon Hauan, CEO EPD-Global

Product

Product description

VPI is a natural pozzolana extracted in Iceland and processed in Degerhamn for use as a Type II addition in concrete in accordance with SS-EN 206 and SS 137003:2021+T2:2025.
VPI is a type-approved product that meets the requirements of SS 137004:2024.

Product specification

Material	Value	Unit
Volcanic pozzolan from Iceland	100	%

Technical data

More information can be found here: https://www.cement.heidelbergmaterials.se/en/vpi-volcanic-pozzolan-iceland

Market

Sweden (Europe)

Reference service life, product

Not relevant

Reference service life, building or construction works

Not relevant

LCA Calculation rules

Declared unit

1 tonne VPI - Volcanic Pozzolan Iceland

Cut-off criteria

All major raw materials and all the essential energy are included. The production processes for raw materials and energy flows with very small amounts (less than 1%) may not be included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. For co-products, an economic allocation is carried out. Furthermore, the processing, when applicable, and transportation of the co-product are included in this analysis.

Data quality

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs in accordance with EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

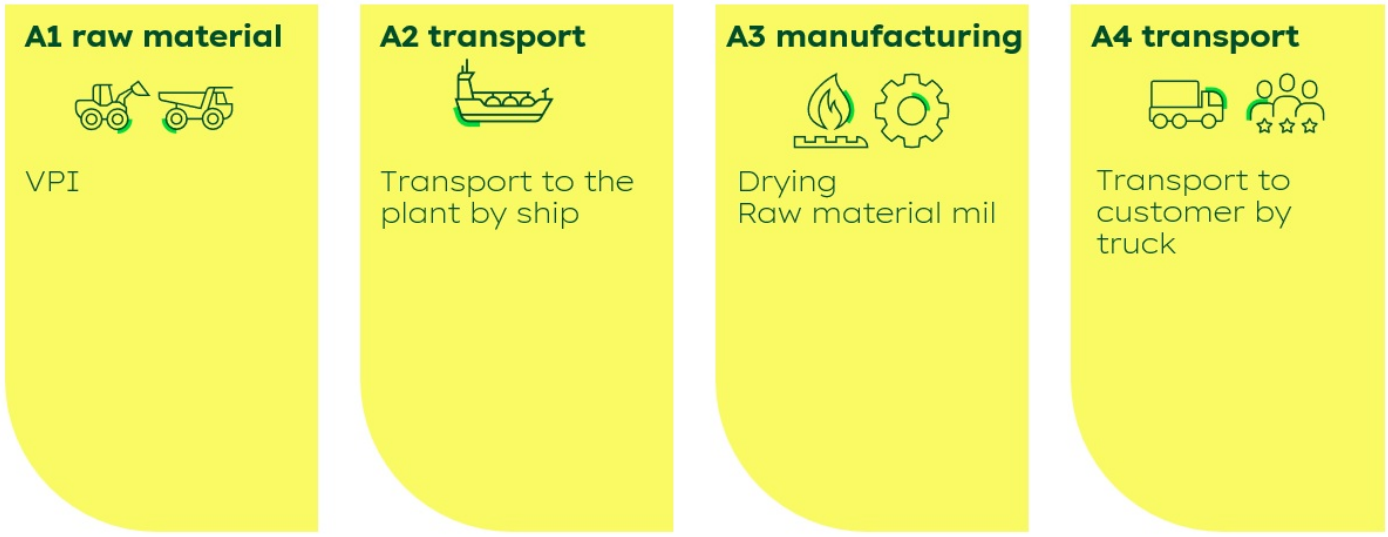
Materials	Source	Data quality	Year
Aggregate	ecoinvent 3.10.1	Database	2023

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

System boundary

From raw material extraction to market.



Additional technical information

LCA Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Module A4 describes the distance to Skövde where VPI will be available for customers.
Otherwise VPI is available in Degerhamn and then A4 is 0 at the gate.

Transport from production place to user (A4)	Capacity utilisation, incl. return (%)	Distance (km)	Fuel/Energy Consumption	Unit	Value (l/t)
Transport|Truck, over 32 tonnes, EURO 6|km|RER|2023	55.0 %	350.00	0.023	l/tkm	8.05

LCA Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact				
Indicator		Unit	A1-A3	A4
	GWP-total	kg CO_2 -eq	7.97E+01	3.62E+01
	GWP-fossil	kg CO_2 -eq	7.94E+01	3.62E+01
	GWP-biogenic	kg CO_2 -eq	2.26E-01	2.35E-02
	GWP-luluc	kg CO_2 -eq	7.72E-02	1.41E-02
	ODP	kg CFC11 -eq	1.13E-05	7.00E-07
	AP	mol H+ -eq	2.04E+00	8.54E-02
	EP-FreshWater	kg P -eq	7.34E-03	2.53E-03
	EP-Marine	kg N -eq	5.31E-01	2.24E-02
	EP-Terrestial	mol N -eq	5.98E+00	2.42E-01
	POCP	kg NMVOC -eq	1.57E+00	1.49E-01
	ADP-minerals&metals[1]	kg Sb-eq	7.42E-04	1.04E-04
	ADP-fossil[1]	MJ	2.12E+03	5.44E+02
	WDP[1]	m^3	1.72E+02	2.78E+00

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil; 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

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

1. 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 experienced with the indicator.

Remarks to environmental impacts

The LCA results in the EPD are calculated using a specific methodological approach for accounting energy resources, see the additional requirements section for more information. In this EPD the following approach was used: Market-based approach.

The core GWP indicators declared do not include the emissions from the combustion of waste fuels (GWP, net). The waste status of the waste-based fuels has been proven. The GWP indicators including the emissions from the combustion of waste fuels (GWP, gross) are reported separately in this EPD under "Additional Environmental Information".

Additional environmental impact indicators				
Indicator		Unit	A1-A3	A4
	PM	Disease incidence	9.92E-06	3.50E-06
	IRP[2]	kgBq U235 -eq	8.55E+01	6.55E-01
	ETP-fw[1]	CTUe	5.25E+02	6.40E+01
	HTP-c[1]	CTUh	1.08E-08	0.00E+00
	HTP-nc[1]	CTUh	5.27E-07	3.50E-07
	SQP[1]	dimensionless	3.97E+03	5.47E+02

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 = Potential Soil Quality Index (dimensionless)

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

1. 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 experienced with the indicator.
2. 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.

Resource use				
Indicator		Unit	A1-A3	A4
	PERE	MJ	1.75E+02	8.85E+00
	PERM	MJ	0.00E+00	0.00E+00
	PERT	MJ	1.75E+02	8.85E+00
	PENRE	MJ	2.12E+03	5.44E+02
	PENRM	MJ	0.00E+00	0.00E+00
	PENRT	MJ	2.12E+03	5.44E+02
	SM	kg	0.00E+00	0.00E+00
	RSF	MJ	1.35E-01	2.97E-03
	NRSF	MJ	9.05E-01	0.00E+00
	FW	m^3	5.44E-01	8.02E-02

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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

End of life - Waste				
Indicator		Unit	A1-A3	A4
	HWD	kg	1.93E+00	7.87E-01
	NHWD	kg	3.78E+01	1.57E+01
	RWD	kg	2.26E-02	1.62E-04

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

End of life - Output flow				
Indicator		Unit	A1-A3	A4
	CRU	kg	0.00E+00	0.00E+00
	MFR	kg	9.00E-01	0.00E+00
	MER	kg	2.00E-01	0.00E+00
	EEE	MJ	7.75E-04	0.00E+00
	EET	MJ	7.51E-04	0.00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in accompanying packaging	kg C	0.00E+00

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

Additional requirements

Transparent reporting of energy

The table below presents GWPtotal values for energy resources used in the manufacturing phase (A3), calculated with both the location-based and market-based approach. This information is provided for transparency, allowing EPD users to understand the impact of these methodological choices. In this EPD, the following methodology was used in the main results: Market-based approach.

Electricity mix	Source	Amount	Unit	GWPtotal [kg CO2/Unit]	SUM [kg CO2]
Location-based approach.					
Electricity, Sweden, low voltage (kWh)	ecoinvent 3.10.1	1.02E+02	kWh	3.77E-02	3.83E+00
Market-based approach.					
Electricity, Sweden, low voltage, residual mix	ecoinvent 3.10.1	1.02E+02	kWh	6.55E-02	6.65E+00

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

Not relevant

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products			
Indicator	**Unit**	A1-A3	A4
GWPIOBC	kg CO_2 -eq	7.95E+01	3.62E+01

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Additional GWP indicators in accordance with cPCR and more transparent reporting related to CCS		
Indicator	**Unit**	**A1-A3**
GWP-total, gross	kg CO_2 -eq	7.97E+01
GWP-fossil, gross	kg CO_2 -eq	7.94E+01
GWP-biogenic, gross	kg CO_2 -eq	2.26E-01
GWP-luluc, gross	kg CO_2 -eq	7.72E-02
GWP-total, net	kg CO_2 -eq	7.97E+01
GWP-fossil, net	kg CO_2 -eq	7.94E+01
GWP-biogenic, net	kg CO_2 -eq	2.26E-01
GWP-luluc, net	kg CO_2 -eq	7.72E-02
CWRS	kg CO_2 -eq	0.00E+00
CWNRS	kg CO_2 -eq	0.00E+00
CC	kg CO_2	0.00E+00
CCS	kg CO_2	0.00E+00

GWP-total, gross = Global Warming Potential total, gross (GWP-fossil, gross + GWP-biogenic, gross + GWP-luluc); GWP-total, net = Global Warming Potential total, net (GWP-fossil, net + GWP-biogenic, net + GWP-luluc); GWP-fossil, gross = Global Warming Potential fossil fuels, gross (includes emissions from combustion of waste fuels from non-renewable sources); GWP-fossil, net = Global Warming Potential fossil fuels, net (excludes emissions from combustion of waste fuels from non-renewable sources); GWP-biogenic, gross = Global Warming Potential biogenic, gross (includes emissions from combustion of waste fuels from renewable sources); GWP-biogenic, net = Global Warming Potential biogenic, net (excludes emissions from combustion of waste fuels from renewable sources); GWP-luluc = Global Warming Potential land use and land use change; CWRS = Emissions from combustion of waste from renewable sources; CWNRS = Emissions from combustion of waste from non-renewable sources; CC = Emissions from decarbonization of limestone in clinkering (process emissions, clinker); CCS = Amount of carbon reductions from carbon capture and storage considered in the main results of the EPD

Transparent reporting of co-product emission intensity		
Material	**GWPtotal kg CO_2 per kg material**	**GWPIOBC kg CO_2 per kg material**

The emission intensity of all co-products used in the product recipe are reported as kg CO2-eq per kg material for the indicators GWP-total and GWP-IOBC . The emission intensity per co-product is the same for GWPtotal gross and net indicators.

Bibliography

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ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
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LCA.no (2024) EPD generator for Heidelberg, Cement, EN 16908 Additional background information, specific for Heidelberg Materials, LCA.no report number: 18.24

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