Environmental Product Declaration

According to EN15804+A2 (+indicators A1)

This declaration is for:

Portlandvliegascement CEM II/B-V 42,5 N, not according to the NL-PCR cement.

Provided by:

Hollandse Cement Maatschappij B.V.

MRPI® registration:

1.1.01034.2025

Program operator:

Stichting MRPI®

Publisher:

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www.mrpi.nl

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COMPANY INFORMATION

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MRPI® REGISTRATION

1.1.01034.2025

DATE OF THIS ISSUE

19-11-2025

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19-11-2030

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Gert-Jan Vroege, Eco Intelligence. The LCA study has been done by Odile Koenders, SGS Search. The certificate is based on an LCA-dossier according to EN15804+A2 (+indicators A1). It is verified according to the 'Verification protocol for MRPI LCA project report & EPD 21th of May 2025, V. 5.2'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®
Kingsfordweg 151
1043 GR
Amsterdam

PRODUCT

Portlandvliegascement CEM II/B-V 42,5 N, not according to the NL-PCR cement.

DECLARED UNIT / FUNCTIONAL UNIT

1 Mass (t)

DESCRIPTION OF PRODUCT

Portlandvliegascement CEM II/B-V 42.5 N is made in Moerdijk by mixing a combination of Portland cements and pulverised coal fly ash in a purpose-built ‘dry substance mixer’. Portland fly ash cement CEM II/B-V 42.5 N has a normal initial and final strength, which increases considerably even after the standard 28-day hardening. This cement can be used in combination with all other cements based on Portland cement clinker.

VISUAL PRODUCT

MORE INFORMATION

https://www.hcmcement.nl/nl/producten/portlandvliegascement-br-cem-ii-b-v-42-5-n-br-hcm-cement-moerdijk-/

Ing. L. L. Oosterveen MSc. MBA Managing Director MRPI	DEMONSTRATION OF VERIFICATION
	CEN standard EN15804 serves as the core PCR [1]
	Independent verification of the declaration and data according to EN15804+A2 (+indicators A1) Internal: External: X
	Third party verifier: Gert-Jan Vroege, Eco Intelligence
	[1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

Portlandvliegascement CEM II/B-V 42.5 N is made in Moerdijk by mixing a combination of Portland cements and pulverised coal fly ash in a purpose-built 'dry substance mixer'. The fly ashes come from pulverised coal-fired power plants, where they are separated from the flue gases electrically or mechanically. Portlandvliegascement CEM II/B-V 42.5 N has a normal initial and final strength, which increases considerably even after the standard 28-day hardening. This cement can be used in combination with all other cements based on Portland cement clinker.

Component (> 1%)	(kg / %)
Clinker	65-79%
Fly ash	21-35%

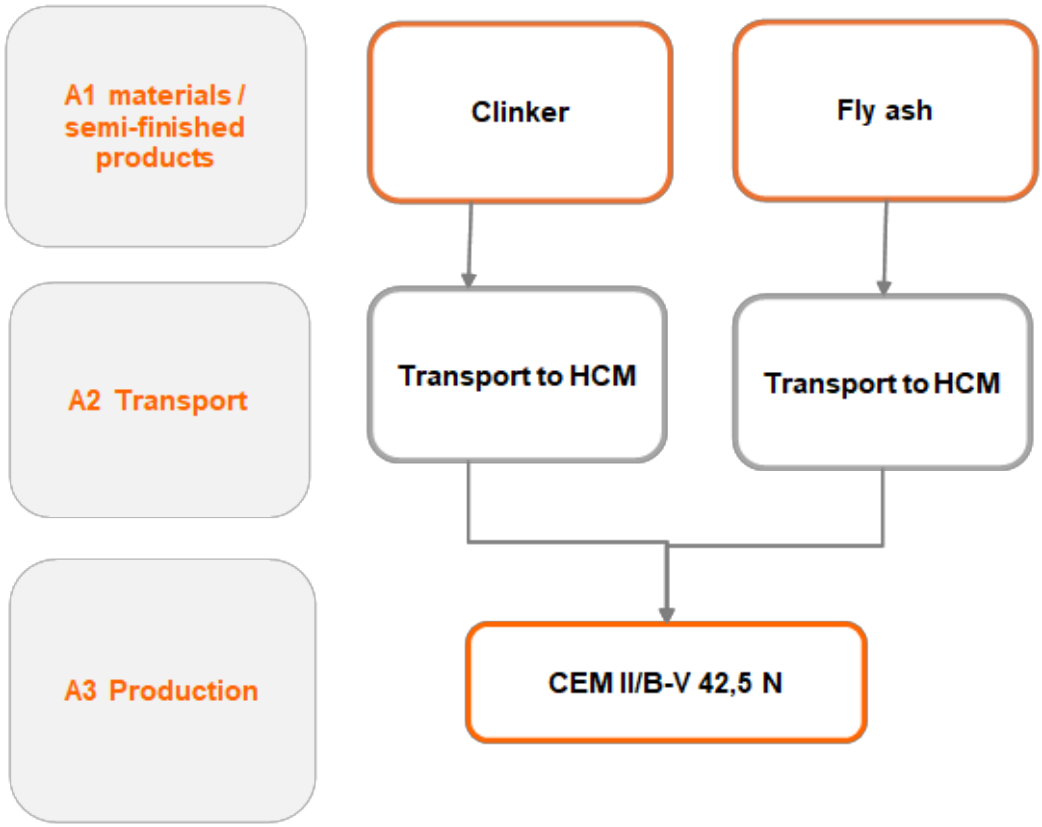
SCOPE AND TYPE

This EPD is a specific EPD made for Portlandvliegascement produced in facility Moerdijk, The Netherlands. The material input are from suppliers across the globe. The data collection is done in production year 2023. The results are calculated with SimaPro 10.2.0.2, using the databases ecoinvent 3.6 and the NMD process database 3.9 (cut-off method system model) for the EN15804+A1 results and ecoinvent 3.9.1 and NMD process database 3.11 (cut-off method system model) for the EN15804+A2 results.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

X = Modules Assessed

ND = Not Declared


A1 materials / semi-finished products
A2 Transport
A3 Production
Clinker
Fly ash
Transport to HCM
Transport to HCM
CEM II/B-V 42,5 N

ENVIRONMENTAL IMPACT per functional unit or declared unit (indicators A1)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	kg Sb eq.	1,39E-03	2,21E-04	2,57E-05	1,63E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADPF	MJ	2,76E+03	2,93E+02	2,21E+00	3,05E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GWP	kg CO2 eq.	6,91E+02	2,14E+01	1,85E-01	7,13E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ODP	kg CFC11 eq.	1,95E-05	3,65E-06	1,30E-08	2,32E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
POCP	kg ethene eq.	8,96E-02	2,46E-02	1,33E-04	1,14E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AP	kg SO2 eq.	1,28E+00	4,24E-01	1,60E-03	1,71E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EP	kg (PO4) 3 eq.	1,85E-01	4,73E-02	1,45E-04	2,33E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Toxicity indicators and ECI (Dutch market)

HTP	kg DCB eq.	4,51E+01	1,17E+01	5,34E-01	5,73E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FAETP	kg DCB eq.	9,85E-01	2,21E-01	9,62E-03	1,22E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAETP	kg DCB eq.	4,73E+03	9,84E+02	2,24E+01	5,73E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETP	kg DCB eq.	8,91E-01	3,49E-02	2,90E-02	9,55E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ECI	euro	4,63E+01	4,42E+00	6,97E-02	5,08E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADPF	kg Sb eq.	1,33E+00	1,41E-01	1,06E-03	1,47E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ADPE = Abiotic Depletion Potential for non-fossil resources
ADPF = Abiotic Depletion Potential for fossil resources
GWP = Global Warming Potential
ODP = Depletion potential of the stratospheric ozone layer
POCP = Formation potential of tropospheric ozone photochemical oxidants
AP = Acidification Potential of land and water
EP = Eutrophication Potential
HTP = Human Toxicity Potential
FAETP = Fresh water aquatic ecotoxicity potential
MAETP = Marine aquatic ecotoxicity potential
TETP = Terrestrial ecotoxicity potential
ECI = Environmental Cost Indicator
ADPF = Abiotic Depletion Potential for fossil resources

ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	7,08E+02	2,37E+01	1,93E-01	7,32E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GWP-fossil	kg CO2 eq.	6,97E+02	2,37E+01	1,91E-01	7,21E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GWP-biogenic	kg CO2 eq.	1,16E+01	1,88E-03	6,74E-04	1,16E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GWP-luluc	kg CO2 eq.	8,54E-02	1,64E-02	2,01E-04	1,02E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ODP	kg CFC11 eq.	2,70E-06	4,10E-07	1,48E-08	3,12E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AP	mol H+ eq.	1,43E+00	5,22E-01	1,89E-03	1,95E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EP-fresh water	kg P eq.	7,87E-03	1,24E-04	1,51E-05	8,01E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EP-marine	kg N eq.	4,09E-01	1,31E-01	2,30E-04	5,40E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EP-terrestrial	mol N eq.	4,77E+00	1,44E+00	2,56E-03	6,22E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
POCP	kg NMVOC eq.	1,32E+00	4,05E-01	7,75E-04	1,73E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADP-minerals & metals	kg Sb eq.	5,97E-04	3,53E-05	2,57E-05	6,58E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADP-fossil	MJ, net calorific value	2,77E+03	3,10E+02	2,08E+00	3,09E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WDP	m3 world eq. Deprived	4,86E+01	1,13E+00	5,83E-02	4,98E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenictotal

GWP-luluc = Global Warming Potential land use and land use change

ODP = Depletion potential of the stratospheric ozone layer

AP = Acidification Potential, Accumulated Exceedence

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 Exceedence

POCP = Formation potential of tropospheric ozone photochemical oxidants

ADP-minerals & metals = Abiotic Depletion Potential for non-fossil resources [1]

ADP-fossil = Abiotic Depletion for fossil resources potential [1]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [1]

Disclaimer [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 experience with the indicator.

ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease inci-dence	7,73E-06	1,16E-06	1,48E-08	8,90E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IRP	kBq U235 eq.	8,47E+00	9,26E-02	7,48E-03	8,57E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	8,24E+02	1,52E+02	1,41E+01	9,90E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	9,98E-08	1,03E-08	1,21E-09	1,11E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	4,42E-06	1,33E-07	2,96E-08	4,58E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SQP	-	4,85E+02	1,19E+02	4,10E+00	6,09E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

PM = Potential incidence of disease due to PM emissions

IRP = Potential Human exposure efficiency relative to U235 [1]

ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]

HTP-c = Potential Comparative Toxic Unit for humans, cancer [2]

HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]

SQP = Potential soil quality index [2]

Disclaimer [1]:

- 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.

Disclaimer [2]:

- 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 experience with the indicator.

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 en A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	7,73E-03	1,67E-03	1,36E-05	9,41E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NHWD	kg	1,08E+01	9,51E+00	2,13E-01	2,05E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RWD	kg	6,14E-03	5,40E-05	7,48E-06	6,21E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MFR	kg	0,00E+00	0,00E+00	4,32E-02	4,32E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MER	kg	0,00E+00	0,00E+00	4,47E-03	4,47E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EEE	MJ	0,00E+00	0,00E+00	4,24E-02	4,24E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETE	MJ	0,00E+00	0,00E+00	7,29E-02	7,29E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

HWD = Hazardous Waste Disposed
NHWD = Non Hazardous Waste Disposed
RWD = Radioactive Waste Disposed
CRU = Components for reuse
MFR = Materials for recycling
MER = Materials for energy recovery
EEE = Exported Electrical Energy
ETE = Exported Thermal Energy

RESOURCE USE per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,36E+02	2,97E+00	4,87E+01	1,88E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PERT	MJ	1,36E+02	2,97E+00	4,87E+01	1,88E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PENRE	MJ	2,77E+03	3,10E+02	2,23E+00	3,09E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PENRT	MJ	2,77E+03	3,10E+02	2,23E+00	3,09E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SM	kg	0,00E+00	0,00E+00	7,91E-03	7,91E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSRF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FW	m3	1,49E+00	3,69E-02	1,81E-03	1,53E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

PERE = Use of renewable primary energy excluding renewable primary energy 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 resources excluding non-renewable 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
NSRF = Use of non-renewable secondary fuels
FW = Use of net fresh water

BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BCCpa	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

BCCpr = Biogenic carbon content in product
BCCpa = Biogenic carbon content in packaging

CALCULATION RULES

Declared unit
The declared unit for the life cycle assessment is 1000 kg of Portlandvliegascement.

Data collection
Input- and output data has been provided by HCM of the production year 2023 for the following inventory categories:
•Materials (raw materials and auxiliary materials);
•Energy (electricity and heat);
•Emissions to air, water and soil;
•Treatment and disposal of production wastes.

Data quality
Data was validated by SGS at the process level. This means that not only the mass balance was verified, but that in the case of major deviations from the average (for all type of in- and output) the suppliers were asked for further explanation.

Allocations
Allocation of environmental interventions can apply to multi-input, multi-output, recycling and reuse processes. No allocation of multi output processes is applied in this study. For other allocations, the provisions from the EN 15804 are followed.

Cut-off criteria
This LCA contains all relevant data. The following processes are not included in this LCA:
•Assumed is that the maintenance and use of auxiliary equipment have a negligible contribution to the total (<1%). Because of this, these processes are not taken in account in this LCA, except such processes that are included in the Ecoinvent background data.
•Assumed is that the capital goods and infrastructure processes have a negligible contribution. These processes are not taken in account in this LCA, except such processes that are included in the Ecoinvent background data.
There is no reason to believe that relevant in- or outputs are excluded from this study.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

Product stage (A1-A3)
This stage consists of the extraction of raw materials, energy which occurs upstream to the manufacturing process, transportation of raw materials, processing of the raw materials into the final product with all processes and energy required for production as well as packaging materials.

Data collection was performed by HCM in cooperation with their suppliers. The manufacturer compiled mass and energy balances based on average production in year 2023. The production facility in Moerdrecht uses renewable electricity in their production process.

DECLARATION OF SVHC

No substances of very high concern are present in concentrations greater than 0,1% by weight in the product.

REFERENCES

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