Environmental
Product
Declaration

According to ISO14025+EN15804 A2 (+indicators A1)

This declaration is for:
Cement: CEM II / A-LL 42,5 R (bw)

Provided by:
Thomas zement GmbH & Co. KG

MRPI® registration
1.1.00778.2025

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Stichting MRPI®
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COMPANY INFORMATION

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PRODUCT

Cement: CEM II / A-LL 42,5 R (bw)

DECLARED UNIT / FUNCTIONAL UNIT

1 Mass (t)

DESCRIPTION OF PRODUCT

Portland limestone cement: CEM II / A-LL 42,5 R (bw)

MRPI® REGISTRATION

1.1.00778.2025

DATE OF THIS ISSUE

25-2-2025

VISUAL PRODUCT

EXPIRY DATE

25-2-2030

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Gert-Jan Vroege, Eco Intelligence. The LCA study has been done by Bob Roijen, SGS INTRON. The certificate is based on an LCA-dossier according to ISO14025+EN15804 A2 (+indicators A1). It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. 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®
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Amsterdam

MORE INFORMATION

https://www.thomas-gruppe.de

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 an data according to ISO14025+EN15804 A2 (+indicators A1) internal: external: X
	Third party verifier: Gert-Jan Vroege, Eco Intelligence
	[1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION (PART 1)

Cement is produced by intergrinding Portland cement clinker and other constituents. The main constituents of this cement are mentioned in the table below. Slag is dried with the excess heat of the clinker kiln. Therefore, no fuel is used for slag drying.

In this EPD only the production of bulk products is considered. Packaging materials are not included.

Material	amount	Unit
Portland cement clinker	80-94	wt%
Limestone	6-20	wt%

SCOPE AND TYPE

The cement in this EPD is produced at the production location of Thomas zement in Erwitte.

Cement is a hydraulic binder, mainly used for concrete, mortar and cement screed. Since cement is a semi-finished product, only the production of the cement is included in the LCA.

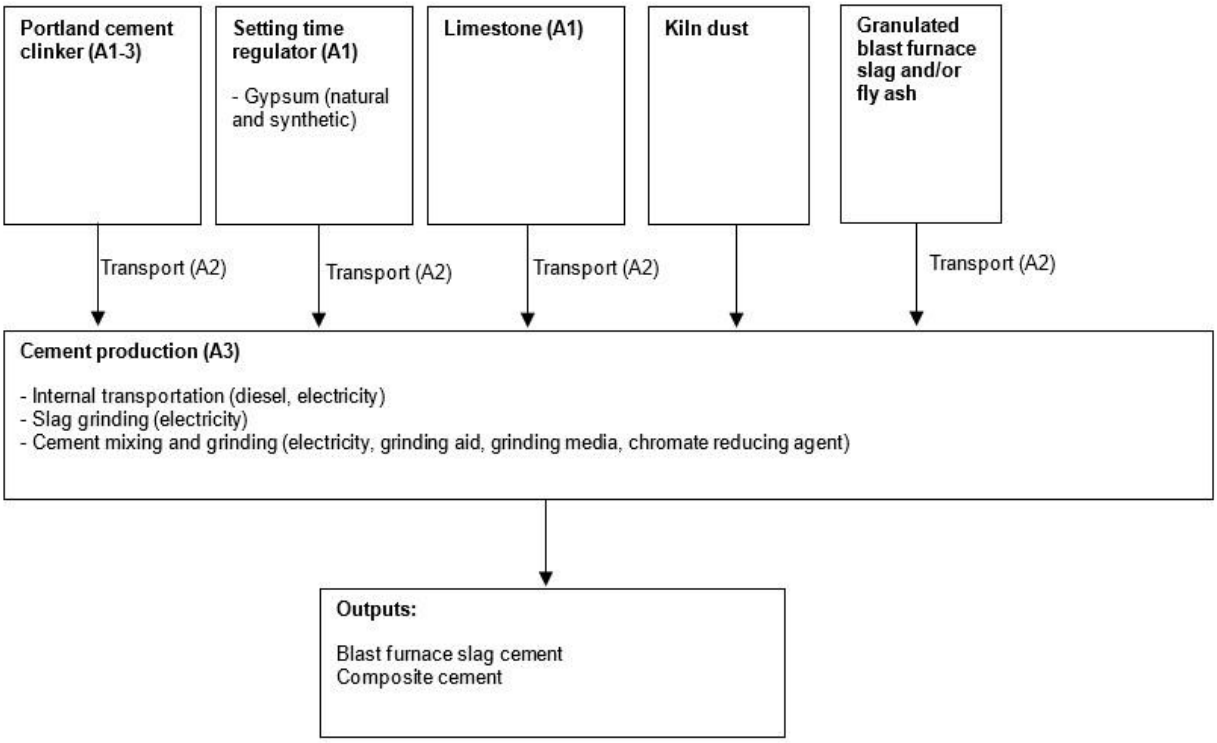
The LCA is compiled using the “Bepalingsmethode milieuprestaties bouwwerken werken v1.1”, and the NL-PCR cement.

The LCA is made using SimaPro LCA software using Ecoinvent v3.6 for background processes. The main impact categories have been calculated with the characterization factors in “Bepalingsmethode 'set 1', 'set2' & param (NMD 3.4) V1.00”

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USER 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



REPRESENTATIVENESS

Not applicable, in this study a specific product is considered produced at a specific production site.

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

	Eenheid	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	kg Sb eq.	1,01E-04	1,04E-04	2,40E-04	4,46E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADPF	MJ	1,67E+03	6,33E+01	8,56E+02	2,59E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GWP	kg CO2 eq.	2,84E+01	4,09E+00	6,39E+02	6,72E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ODP	kg CFC11 eq.	2,26E-06	7,58E-07	3,28E-06	6,30E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
POCP	kg ethene eq.	5,81E-03	2,46E-03	1,23E-01	1,32E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AP	kg SO2 eq.	6,84E-02	1,74E-02	1,82E-01	2,68E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EP	kg (PO4) 3- eq.	1,23E-01	3,45E-03	8,27E-02	2,10E-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.	3,91E+00	1,76E+00	4,69E+01	5,26E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FAETP	kg DCB eq.	4,17E-01	5,13E-02	6,97E-01	1,17E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAETP	kg DCB eq.	1,10E+03	1,84E+02	7,04E+03	8,32E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETP	kg DCB eq.	2,60E-02	6,20E-03	3,12E-01	3,45E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ECI	euro	3,48E+00	4,93E-01	3,87E+01	4,27E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADPF	kg Sn eq.	1,17E+00	3,00E-02	4,48E-01	1,65E+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	2,91E+01	4,13E+00	6,49E+02	6,82E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GWP-fossil	kg CO2 eq	2,86E+01	4,12E+00	6,48E+02	6,80E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GWP-biogenic	kg CO2 eq	5,22E-01	2,57E-03	1,01E+00	1,53E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GWP-luluc	kg CO2 eq	3,20E-02	1,46E-03	7,13E-02	1,05E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ODP	kg CFC11 eq	2,25E-06	9,49E-07	2,85E-06	6,05E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AP	mol H+ eq.	8,91E-02	2,31E-02	2,62E-01	3,75E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EP-fresh water	kg PO4 eq.	3,78E-02	3,43E-05	8,97E-03	4,68E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EP-marine	kg N eq.	1,75E-02	8,22E-03	4,12E-02	6,68E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EP-terrestrial	mol N eq.	2,42E-01	9,06E-02	8,82E-01	1,21E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
POCP	kg NMVOC eq.	5,16E-02	2,60E-02	2,61E-01	3,39E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADP-minerals & metals	kg Sb eq.	1,01E-04	1,04E-04	2,40E-04	4,46E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADP-fossil	MJ, net calorific value	1,67E+03	6,33E+01	8,56E+02	2,59E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WDP	m3 world eq. Deprived	4,36E+00	1,96E-01	1,91E+01	2,36E+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	4,94E-07	3,72E-07	7,51E-06	8,38E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IRP	kBq U235 eq.	1,55E+00	2,77E-01	2,71E+00	4,54E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	5,61E+02	5,14E+01	5,83E+02	1,20E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	6,36E-09	1,80E-09	1,18E-06	1,19E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	2,31E-07	6,10E-08	4,15E-06	4,44E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SQP	-	8,45E+01	5,50E+01	1,52E+02	2,91E+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 [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	3,15E-04	1,61E-04	5,36E-02	5,40E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NHWD	kg	1,72E+00	4,00E+00	4,03E+00	9,75E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RWD	kg	1,99E-03	4,30E-04	3,53E-03	5,96E-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	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MER	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
EEE	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
ETE	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

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	4,55E+01	9,15E-01	1,00E+02	1,47E+02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PERT	MJ	4,55E+01	9,15E-01	1,00E+02	1,47E+02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRE	MJ	1,86E+03	6,72E+01	9,18E+02	2,85E+03	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRT	MJ	1,86E+03	6,72E+01	9,18E+02	2,85E+03	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
SM	kg	1,01E+02	0,00E+00	0,00E+00	1,01E+02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
RSF	MJ	3,11E+02	0,00E+00	0,00E+00	3,11E+02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
NSRF	MJ	1,37E+03	0,00E+00	0,00E+00	1,37E+03	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
FW	m3	2,37E-01	7,22E-03	7,35E-01	9,79E-01	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

PERE = Use of renewable energy excluding renewable primary energy resources
PERM = Use of renewable 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 (PART 1)

Virtually no materials or processes have been excluded from the study (cut-of rule is well below 1%).

Data collected in 2024-2025 over base year 2022.

The NL-PCR cement has been followed. The “production” of secondary fuels and materials that are wastes is allocated to the previous life cycle. Only transportation to the production site of tz is allocated to the production of cement.

Infrastructure processes in Ecoinvent processes have been included, long term emissions in Ecoinventprocesses have been excluded from the LCA calculations.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 1)

Natural raw materials (mainly limestone) are quarried, crushed and ground into raw meal. The raw meal is fed into the clinker kiln together with primary and secondary raw materials and fuels. In the kiln the raw materials are calcinated and sintered into Portland cement clinker.

The second step is the production of cement. Cement is produced by intergrinding Portland cement clinker and the other constituents.

DECLARATION OF SVHC

No substances that are listed in the latest “Candidate List of Substances of Very High Concern for authorisation” are included in the product that exceeds the limit for registration.

REFERENCES

•Stichting Nationale Milieudatabase, Bepalingsmethode Milieuprestatie Bouwwerken Versie 1.1 (maart 2022).
•EN 15804:2012+A2:2019, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products, 2019.
•ISO 14040:2006. Environmental management — Life cycle assessment — Principles and framework. 2006.
•ISO 14044:2006. Environmental management — Life cycle assessment — Requirements and guidelines. 2006.
•ISO 21930:2017. Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services. 2017.
• ISO 14025:2006. Environmental labels and declarations — Type III environmental declarations — Principles and procedures. 2006.
• SGS INTRON, Product Category Rules voor cement en grondstoffen voor cementproductie (“NL-PCR”), 05-04-2023.
•SGS INTRON report: A156340/R20242064, February 2025

REMARKS