

# Environmental Profile

This LCA is calculated according to: ISO 14044, ISO 14040 and EN 15804

Ecochain v4.3.1



Product: CEM II/C-M (V-L) 32,5 R  
 Unit: 1 ton  
 Manufacturer: Cemminerals - update 2023

LCA standard: NMD Bepalingsmethode 1.1 (2022)  
 Standard database: Dutch - Nationale Milieudatabase v3.8 (obv Ecoinvent 3.6)  
 Externally verified: Yes  
 Issue date: 03-12-2024  
 End of validity: 03-12-2029  
 Verifier: Ulbert Hofstra - SGS Intron

De getoetste LCA's van Cemmineralsvoldoen aan het gestelde in NMD Bepalingsmethode 'Milieuprestatie Bouwwerken', versie 1.1, maart 2022 en amendementen (zonder NL-PCR cement).

The LCA background information and project dossier have been registered in the online Ecochain application in the account Cemminerals - update 2023 (2023). (☑ = module declared, MND = module not declared).

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
☑	☑	☑	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

## Product stage

A1 Raw material supply A2 Transport A3 Manufacturing

## Construction process stage

A4 Transport gate to site  
 A5 Assembly / Construction installation process

## Use stage

B1 Use B2 Maintenance B3 Repair B4 Replacement B5 Refurbishment  
 B6 Operational energy use B7 Operational water use

## End-of-Life stage

C1 De-construction demolition C2 Transport C3 Waste processing  
 C4 Disposal

## Benefits and loads beyond the system boundaries

D Reuse- Recovery- Recycling- potential

## Environmental impacts and parameters

**ECI** = Environmental Costs Indicator [euro]; **ADPE** = Abiotic depletion potential for non-fossil resources [kg Sb-eq]; **ADPF** = Abiotic depletion potential for fossil resources [kg Sb-eq]; **GWP** = Global warming potential [kg CO2-eq]; **ODP** = Depletion potential of the stratospheric ozone layer [kg CFC-11-eq]; **POCP** = Formation potential of tropospheric ozone photochemical oxidants [kg ethene-eq]; **AP** = Acidification potential of land and water [kg SO2-eq]; **EP** = Eutrophication potential [kg PO4 3--eq]; **HTP** = Human toxicity potential [kg 1,4-DB-eq]; **FAETP** = Freshwater aquatic ecotoxicity potential [kg 1,4-DB-eq]; **MAETP** = Marine aquatic ecotoxicity potential [kg 1,4-DB-eq]; **TETP** = Terrestrial ecotoxicity potential [kg 1,4-DB-eq]; **GWP-total** = EF EN15804+A2 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF EN15804+A2 Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF EN15804+A2 Climate Change - Land use and LU change [kg CO2 eq]; **ODP** = EF Ozone depletion [kg CFC11 eq]; **AP** = EF Acidification [mol H+ eq]; **EP-fw** = EF Eutrophication, freshwater [kg P eq]; **EP-m** = EF Eutrophication, marine [kg N eq]; **EP-T** = EF Eutrophication, terrestrial [mol N eq]; **POCP** = EF Photochemical ozone formation [kg NMVOC eq]; **ADP-mm** = EF Resource use, minerals and metals [kg Sb eq]; **ADP-f** = EF Resource use, fossils [MJ]; **WDP** = EF Water use [m3 depriv.]; **PM** = EF Particulate matter [disease inc.]; **IR** = EF Ionising radiation [kBq U-235 eq]; **ETP-fw** = EF Ecotoxicity, freshwater [CTUe]; **HTP-c** = EF Human toxicity, cancer [CTUh]; **HTP-nc** = EF Human toxicity, non-cancer [CTUh]; **SQP** = EF Land use [Pt]; **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ]; **PERM** = Use of renewable primary energy resources used as raw materials [MJ]; **PERT** = Total use of renewable primary energy resources [MJ]; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [MJ]; **PENRM** = Use of non-renewable primary energy resources used as raw materials [MJ]; **PENRT** = Total use of non-renewable primary energy resources [MJ]; **PET** = Total energy [MJ]; **SM** = Use of secondary material [kg]; **RSF** = Use of renewable secondary fuels [MJ]; **NRSF** = Use of non-renewable secondary fuels [MJ]; **FW** = Use of net fresh water [m3]; **HWD** = Hazardous waste disposed [kg]; **NHWD** = Non-hazardous waste disposed [kg]; **RWD** = Radioactive waste disposed [kg]; **CRU** = Components for re-use [kg]; **MFR** = Materials for recycling [kg]; **MER** = Materials for energy recovery [kg]; **EE** = Exported energy [MJ]; **EET** = Exported energy thermic [MJ]; **EEE** = Exported energy electric [MJ]

## Statement of Confidentiality

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# Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	Total
ECI	euro	36.709	3.555	1.346	41.611	41.611
ADPE	kg Sb-eq	7.313E-4	1.525E-4	1.283E-4	1.012E-3	1.012E-3
ADPF	kg Sb-eq	1.072E+0	1.034E-1	1.261E-1	1.301E+0	1.301E+0
GWP	kg CO2-eq	5.403E+2	1.689E+1	1.737E+1	5.746E+2	5.746E+2
ODP	kg CFC-11-eq	1.314E-5	2.643E-6	4.150E-6	1.993E-5	1.993E-5
POCP	kg ethene-eq	6.793E-2	2.019E-2	3.715E-3	9.183E-2	9.183E-2
AP	kg SO2-eq	1.142E+0	3.577E-1	2.923E-2	1.529E+0	1.529E+0
EP	kg PO4 3--eq	1.914E-1	3.827E-2	4.802E-3	2.345E-1	2.345E-1
HTP	kg 1,4-DB-eq	2.962E+1	8.941E+0	2.819E+0	4.138E+1	4.138E+1
FAETP	kg 1,4-DB-eq	8.631E-1	1.500E-1	7.776E-2	1.091E+0	1.091E+0
MAETP	kg 1,4-DB-eq	3.930E+3	6.788E+2	2.527E+2	4.861E+3	4.861E+3
TETP	kg 1,4-DB-eq	1.248E-1	2.825E-2	1.354E-1	2.885E-1	2.885E-1
Environmental impact	Unit	A1	A2	A3	A1-A3	Total
GWP-total	kg CO2 eq	5.511E+2	1.702E+1	1.776E+1	5.859E+2	5.859E+2
GWP-f	kg CO2 eq	5.424E+2	1.701E+1	1.757E+1	5.770E+2	5.770E+2
GWP-b	kg CO2 eq	8.517E+0	-2.835E-3	1.628E-1	8.677E+0	8.677E+0
GWP-luluc	kg CO2 eq	2.059E-1	1.718E-2	2.616E-2	2.493E-1	2.493E-1
ODP	kg CFC11 eq	1.645E-5	3.322E-6	3.254E-6	2.302E-5	2.302E-5
AP	mol H+ eq	1.512E+0	4.451E-1	3.749E-2	1.994E+0	1.994E+0
EP-fw	kg P eq	5.539E-3	9.955E-5	3.002E-4	5.938E-3	5.938E-3
EP-m	kg N eq	4.679E-1	1.054E-1	9.315E-3	5.825E-1	5.825E-1
EP-T	mol N eq	5.433E+0	1.174E+0	1.095E-1	6.716E+0	6.716E+0
POCP	kg NMVOC eq	1.326E+0	3.087E-1	2.990E-2	1.665E+0	1.665E+0
ADP-mm	kg Sb eq	7.313E-4	1.525E-4	1.283E-4	1.012E-3	1.012E-3
ADP-f	MJ	1.867E+3	2.166E+2	5.390E+2	2.622E+3	2.622E+3
WDP	m3 depriv.	3.913E+1	4.833E-1	4.216E+0	4.383E+1	4.383E+1
PM	disease inc.	7.501E-6	4.998E-7	2.921E-7	8.292E-6	8.292E-6
IR	kBq U-235 eq	4.663E+0	9.276E-1	4.980E+0	1.057E+1	1.057E+1
ETP-fw	CTUe	5.912E+3	1.528E+2	1.998E+2	6.265E+3	6.265E+3
HTP-c	CTUh	3.523E-8	1.072E-8	5.109E-9	5.106E-8	5.106E-8
HTP-nc	CTUh	1.212E-6	1.227E-7	1.318E-7	1.467E-6	1.467E-6
SQP	Pt	2.405E+3	5.059E+1	1.169E+2	2.573E+3	2.573E+3

Resource use	Unit	A1	A2	A3	A1-A3	Total
PERE	MJ	1.070E+2	2.205E+0	4.845E+1	1.577E+2	1.577E+2
PERM	MJ	0	0	0	0	0
PERT	MJ	1.070E+2	2.205E+0	4.845E+1	1.577E+2	1.577E+2
PENRE	MJ	1.987E+3	2.299E+2	5.617E+2	2.779E+3	2.779E+3
PENRM	MJ	0	0	0	0	0
PENRT	MJ	1.987E+3	2.299E+2	5.617E+2	2.779E+3	2.779E+3
PET	MJ	2.094E+3	2.321E+2	6.102E+2	2.936E+3	2.936E+3
SM	kg	0	0	0	0	0
RSF	MJ	0	0	0	0	0
NRSF	MJ	0	0	0	0	0
FW	m3	9.240E-1	1.756E-2	1.320E-1	1.074E+0	1.074E+0
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	Total
HWD	kg	1.328E-3	2.639E-4	4.789E-4	2.071E-3	2.071E-3
NHWD	kg	8.006E+0	6.622E-1	8.069E-1	9.475E+0	9.475E+0
RWD	kg	7.098E-3	1.482E-3	4.288E-3	1.287E-2	1.287E-2
CRU	kg	0	0	0	0	0
MFR	kg	0	0	0	0	0
MER	kg	0	0	0	0	0
EE	MJ	0	0	0	0	0
EET	MJ	0	0	0	0	0
EEE	MJ	0	0	0	0	0



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