

Environmental Product Declaration

according to ISO 14025 and EN 15804



This declaration is for:
Enviro-Mat

Provided by:
Heavy Duty Pavements B.V.



program operator
Stichting MRPI®
publisher
Stichting MRPI®
www.mrpi.nl

MRPI® registration
1.1.00296.2022
date of first issue
10-05-2022
date of this issue
10-05-2022
expiry date
10-05-2027





COMPANY INFORMATION



Heavy Duty Pavements B.V.
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PRODUCT

Enviro-Mat

DECLARED UNIT/FUNCTIONAL UNIT

m³

DESCRIPTION OF PRODUCT

In situ stabilization of soil

VISUAL PRODUCT



MRPI® REGISTRATION

1.1.00296.2022

DATE OF ISSUE

10-05-2022

EXPIRY DATE

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MORE INFORMATION

www.heavydutupavements.com

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **drs. N. Jonkers, PLUK Sustainability**.

The LCA study has been done by **dr. U. Hofstra, SGS INTRON**.

The certificate is based on an LCA-dossier according to ISO14025 and EN15804+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+A1. 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
1043GR
Amsterdam



ir. J-P den Hollander, Managing director MRPI®

DEMONSTRATION OF VERIFICATION

CEN standard EN15804 serves as the core PCR[a]

Independent verification of the declaration and data,

according to EN ISO 14025:2010:

internal: external: X

Third party verifier:



drs. N. Jonkers, PLUK Sustainability

[a] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

Enviro-Mat® is a soil stabilisation product. It provides a strong and durable foundation for transport or for buildings. Enviro-Mat is produced by mixing cement and an additive (Geosta®) through the soil on location.

COMPONENT >1% of tc	[kg / %]
Cement CEM III/B	150
Lime	31
Geosta	1.5

(*) > 1% of total mass

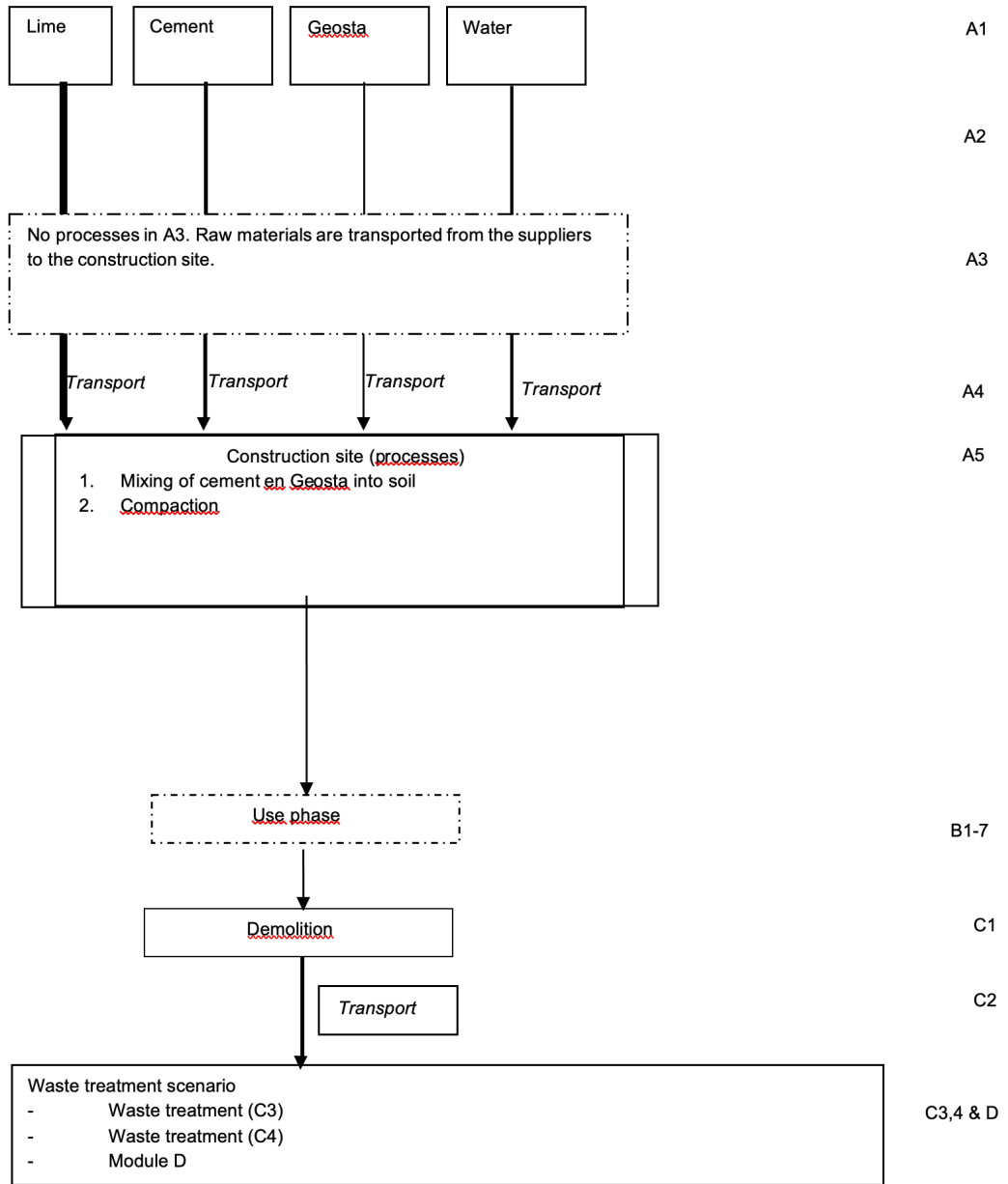
SCOPE AND TYPE

ENVIRO-MAT is produced with local soil to a solid base layer. The environmental profile has been calculated with SimaPro software and Ecoinvent 3.0 background data from the profiles of the raw materials and the process data. At the end-of-life it is crushed and may be applied for elevation in construction works. The data per m² meter may be calculated from the data per m³ and the layer thickness.

PRODUCT STAGE	CONSTRUCTION					USE STAGE							END OF LIFE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
	PROCESS												STAGE				
	STAGE																
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	x	x	x	x	x	x	x	x	x	x	x	x	x	x	

X = Modules Assessed

ND = Not Declared



Legenda:

Processes contributing to the environmental profile

Processes not contributing to the environmental profile being non-existent or 0

LCA process diagram according to EN 15804 (7.2.1)



REPRESENTATIVENESS

Not applicable, in this study a specific product is considered.

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.	0.00	0.00	0.00	1.69 E-4	1.02 E-5	1.14 E-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.34 E-7	3.94 E-5	0.00	1.25 E-7	-5.08 E-5
ADPF	MJ	0.00	0.00	0.00	1.96 E-1	2.68 E-2	2.71 E-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.75 E-3	1.03 E-1	0.00	1.62 E-3	-6.29 E-2
GWP	kg CO2 eq.	0.00	0.00	0.00	7.05 E+1	3.58 E+0	5.95 E+0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.97 E-1	1.38 E+1	0.00	1.11 E-1	-9.16 E+0
ODP	kg CFC11 eq.	0.00	0.00	0.00	2.80 E-6	6.69 E-7	5.85 E-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.19 E-8	2.59 E-6	0.00	4.00 E-8	-8.22 E-7
POCP	kg ethene eq.	0.00	0.00	0.00	1.52 E-2	2.12 E-3	2.85 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.02 E-4	8.19 E-3	0.00	1.21 E-4	-6.64 E-3
AP	kg SO2 eq.	0.00	0.00	0.00	1.35 E-1	1.55 E-2	2.23 E-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.01 E-3	5.97 E-2	0.00	8.36 E-4	-5.25 E-2
EP	kg (PO4)3- eq.	0.00	0.00	0.00	2.35 E-2	3.13 E-3	4.58 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.78 E-4	1.21 E-2	0.00	1.58 E-4	-9.14 E-3

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

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

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	0.00	0.00	0.00	1.68 E+1	5.86 E-1	1.12 E+0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36 E-2	2.36 E+0	0.00	2.79 E-2	-7.73 E+0
PERM	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	MJ	0.00	0.00	0.00	1.68 E+1	5.86 E-1	1.12 E+0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36 E-2	2.36 E+0	0.00	2.79 E-2	-7.73 E+0
PENRE	MJ	0.00	0.00	0.00	1.70 E+2	5.95 E+1	4.71 E+1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.16 E+0	2.30 E+2	0.00	3.62 E+0	-1.27 E+2
PENRM	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PENRT	MJ	0.00	0.00	0.00	1.70 E+2	5.95 E+1	4.71 E+1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.16 E+0	2.30 E+2	0.00	3.62 E+0	-1.27 E+2
SM	MJ	0.00	0.00	0.00	7.50 E+1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m3	0.00	0.00	0.00	1.68 E-2	9.43 E-3	6.30 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.59 E-6	1.37 E-4	0.00	3.52 E-3	-3.07 E+0

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

NRSF = Use of non renewable secondary fuels

FW = Use of net fresh water

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

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0.00	0.00	0.00	6.46 E-5	3.56 E-5	2.21 E-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.59 E-6	1.37 E-4	0.00	2.28 E-6	-1.69 E-4
NHWD	kg	0.00	0.00	0.00	2.03 E+0	3.41 E+0	2.00 E+0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.18 E-3	1.32 E+1	0.00	2.10 E+1	-1.20 E+0
RWD	kg	0.00	0.00	0.00	1.18 E-3	3.76 E-4	3.09 E-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.03 E-5	1.46 E-3	0.00	2.25 E-5	-5.34 E-4
CRU	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.10 E+3
MER	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ETE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

HWD = Hazardous Waste Disposed

RWD = Radioactive Waste Disposed

MFR = Materials for recycling

EEE = Exported Electrical Energy

NHWD = Non Hazardous Waste Disposed

CRU = Components for reuse

MER = Materials for energy recovery

ETE = Exported Thermal Energy

CALCULATION RULES

No materials or processes have been excluded from the study (cut-off rule is well below 1%).
The data have been collected in 2020.

In the background processes the following processes have been included:

- Emissions to air in the use of thermal energy of CO₂, CO, NO_x (NO₂ en NO), SO₂, C_xH_y and fine dust (PM₁₀ particles < 10µm).
- Emissions to water of COD, BOD, P-total, N-total en solids (PM₁₀: particles < 10µm).
- Emissions to soil of PAH and heavy metals.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

The production process of the Enviro-Mat® consists of a number of steps:

1. (in clay soil) spreading lime and mixing through the clay
2. (not part of the system) taking to the correct height, profiling, compaction
3. spreading water for the optimum water content
4. spreading Geosta®
5. spreading cement
6. mixing through the soil (stabilization)
7. compaction with a steel wheel roller and levelling with a grader
8. compaction of the top layer with a tire roller
9. (in combination with asphalt or as sealant) application of spray

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 the exceeds the limit for registration.

REFERENCES

SBK, Bepalingsmethode Milieuprestatie Gebouwen en GWW werken, versie 3.0, Januari 2019; met wijzingsblad 1 januari 2020

SGS INTRON report, A116270-R202200211d, Life Cycle assessment Enviro-Mat®, May 2021

SGS INTRON report A886640-R20160139, Cradle-to-gate environmental profile Geosta, April 2016.

REMARKS

None