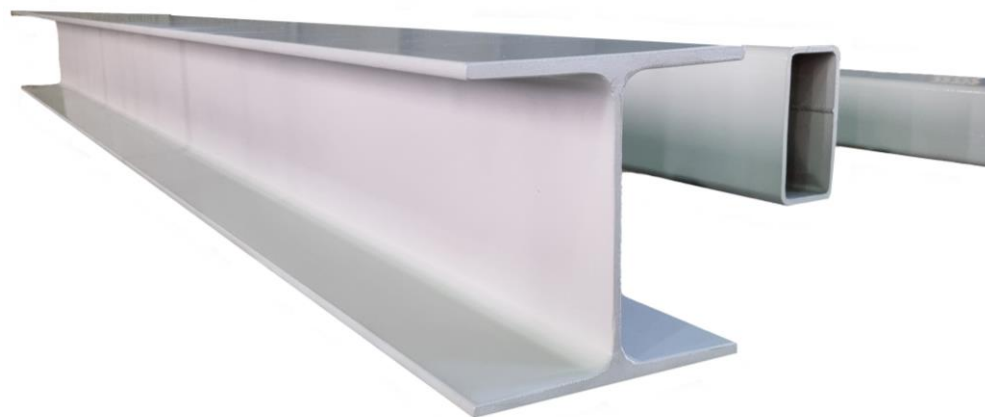


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Epocoat Aqua Primer

Nor-Maali Oy



EPD HUB, HUB-1470

Published on 28.05.2024, last updated on 28.05.2024, valid until 28.05.2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Nor-Maali Oy
Address	Vanhatie 20, 15240 Lahti, Finland
Contact details	sds@nor-maali.fi
Website	www.nor-maali.fi

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Sister EPD
Parent EPD number	HUB-1337
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Elina Syrja
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Nemanja Nedic, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Epocoat Aqua Primer
Place of production	Nor-Maali Oy, Lahti, Finland
Period for data	2023
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	2.90
GWP-total, A1-A3 (kgCO ₂ e)	2.91
Secondary material, inputs (%)	0.35
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	10.6
Net freshwater use, A1-A3 (m ³)	0.02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Nor-Maali offers a reliable range of industrial coatings for professionals. The product range includes anti-corrosion protective coatings for metal surfaces with water-borne and high-solid solvent-based alternatives. In addition, Nor-Maali produces CE-certified concrete floor products.

PRODUCT DESCRIPTION

Quick drying, water-borne two-component epoxy primer with polyamine adduct curing agent. Product contains rust preventing pigments. Recommended to use as a primer in epoxy paint systems in environmental classes C2 - C5.

PRODUCT APPLICATION

The surface should be dry and clean when applied. The mixing ratio is 5:1 (resin:cure) by volume. The resin part and the cure are stirred mechanically before application. Add a cure to a resin in a correct mixing ratio and stir thoroughly down to the bottom. Applied with an airless spray or brush.

TECHNICAL INFORMATION

Spreading rate (typical):	3.8 - 5.6 m ² /L
Dry film thickness:	80 - 120 µm
Finish:	Semimatt
Pot life:	5 h after mixing

PHYSICAL PROPERTIES OF THE PRODUCT

Volume of solids:	47 ± 2 %
Mass of solids:	781 g/L
VOC-value:	55 g/L
Density:	1.33 kg/L

Further information can be found at www.nor-maali.fi.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals		
Minerals	32	EU, CN
Fossil materials	32	EU, US
Bio-based materials		
Water	36	EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.0001

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

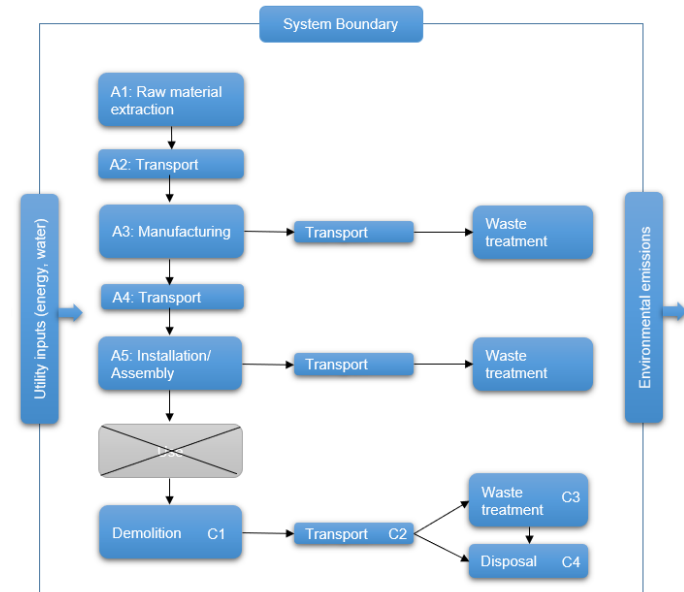
PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

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

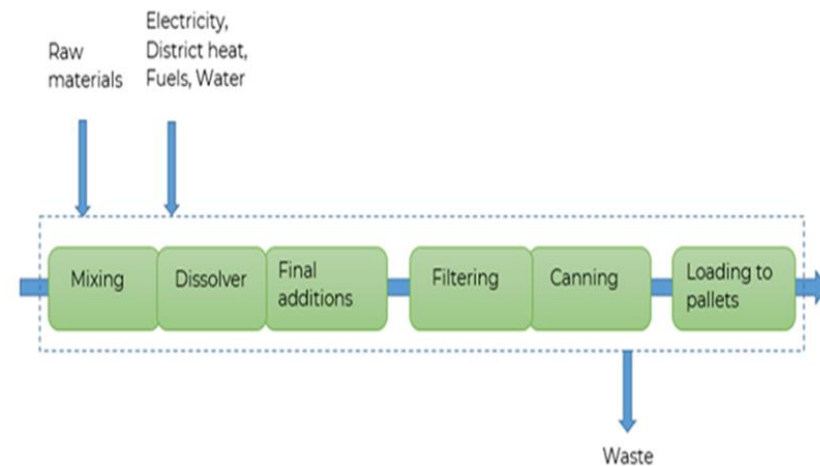
Modules not declared = MND. Modules not relevant = MNR.



MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The manufacturing process of paint consists of two distinct steps. The first step is the production of paint and second is the packaging of the product. The production begins with mixing, where water, solvents, powders (pigments, fillers, and thickeners), additives and sometimes binders are dispersed in a dissolver to a smooth paint paste. This is followed by finishing the paint, where binders, water, solvents, additives including any tinting pastes are mixed with the paint paste to a ready-to use paint. The packaging of the paint includes the canning of paint and loading the cans to pallets. The paint is filled in cans of various sizes in filling machines and then loaded to pallets. The full pallets are moved to a warehouse within the site.



TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation distance is defined according to average distance. Average distance of transportation from production plant to building site is assumed as 300 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 100 % which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients.

Manual application scenario was considered with 5 % material loss. During application and drying time all solvents and water evaporate from paint film.

Distance from the construction site to waste handling facility is assumed to be 50 km.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

During drying, all volatile compounds and water evaporate from the paint. At the end of the life cycle, the solid mass is less than 1 kg.

The impacts of demolition are assumed zero, as the consumption of energy and natural resources in disassembling the end-of-life product is negligible. As the product in this EPD is applied on metal surfaces, it is considered to follow the metal object to waste treatment at its end-of-life, treated in the nearest recycling / treatment facility.

As a part of the metal waste treatment process, the paint is assumed to be burned away. Thus, in the end-of-life scenario for the paint is incinerated without energy utilization or recovery.

Distance from the construction site to waste handling facility is assumed to be 50 km.

LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1 % of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5 % of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	1,85E+00	5,85E-01	4,76E-01	2,91E+00	3,04E-02	2,71E-01	MND	MND	MND	MND	MND	MND	MND	MNR	3,84E-03	0,00E+00	2,06E+00	-1,27E-01
GWP – fossil	kg CO ₂ e	1,85E+00	5,77E-01	4,76E-01	2,90E+00	3,04E-02	2,70E-01	MND	MND	MND	MND	MND	MND	MND	MNR	3,84E-03	0,00E+00	2,06E+00	-1,27E-01
GWP – biogenic	kg CO ₂ e	0,00E+00	3,72E-06	-3,35E-04	-3,31E-04	0,00E+00	3,56E-04	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO ₂ e	1,11E-03	7,24E-03	2,42E-04	8,59E-03	1,12E-05	4,60E-04	MND	MND	MND	MND	MND	MND	MND	MNR	1,56E-06	0,00E+00	7,58E-05	-2,11E-05
Ozone depletion pot.	kg CFC ₁₁ e	2,88E-07	1,09E-07	5,21E-08	4,49E-07	6,99E-09	3,76E-08	MND	MND	MND	MND	MND	MND	MND	MNR	9,00E-10	0,00E+00	1,52E-07	-4,95E-09
Acidification potential	mol H ⁺ e	9,89E-03	1,35E-02	1,52E-03	2,49E-02	1,29E-04	1,46E-03	MND	MND	MND	MND	MND	MND	MND	MNR	2,18E-05	0,00E+00	1,93E-03	-5,22E-04
EP-freshwater ²⁾	kg Pe	1,22E-03	5,55E-06	1,56E-05	1,24E-03	2,49E-07	6,48E-05	MND	MND	MND	MND	MND	MND	MND	MNR	2,83E-08	0,00E+00	2,13E-06	-5,24E-06
EP-marine	kg Ne	1,58E-03	3,44E-03	3,24E-04	5,35E-03	3,82E-05	3,11E-04	MND	MND	MND	MND	MND	MND	MND	MNR	7,83E-06	0,00E+00	2,82E-04	-1,07E-04
EP-terrestrial	mol Ne	1,71E-02	3,79E-02	3,37E-03	5,84E-02	4,22E-04	3,40E-03	MND	MND	MND	MND	MND	MND	MND	MNR	8,61E-05	0,00E+00	3,17E-03	-1,25E-03
POCP (“smog”) ³⁾	kg NMVOce	6,47E-03	9,94E-03	2,53E-03	1,89E-02	1,35E-04	4,30E-02	MND	MND	MND	MND	MND	MND	MND	MNR	2,46E-05	0,00E+00	1,03E-03	-6,35E-04
ADP-minerals & metals ⁴⁾	kg Sbe	1,75E-05	1,06E-06	3,30E-06	2,19E-05	7,12E-08	1,72E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,31E-08	0,00E+00	1,16E-06	-2,42E-06
ADP-fossil resources	MJ	2,38E+01	7,68E+00	8,37E+00	3,99E+01	4,56E-01	2,62E+00	MND	MND	MND	MND	MND	MND	MND	MNR	5,80E-02	0,00E+00	9,04E+00	-1,11E+00
Water use ⁵⁾	m ³ e depr.	7,15E-01	2,85E-02	1,48E-01	8,91E-01	2,04E-03	6,34E-02	MND	MND	MND	MND	MND	MND	MND	MNR	2,79E-04	0,00E+00	4,10E-02	-2,33E-02

1) GWP = Global Warming Potential;

2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e;

3) POCP = Photochemical ozone formation;

4) ADP = Abiotic depletion potential;

5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	4,99E-08	3,23E-08	1,87E-08	1,01E-07	3,50E-09	7,31E-09	MND	MND	MND	MND	MND	MND	MND	MNR	4,25E-10	0,00E+00	1,67E-08	-8,45E-09
Ionizing radiation ⁶⁾	kBq U235e	1,04E-01	3,66E-02	2,26E-01	3,66E-01	2,17E-03	2,24E-02	MND	MND	MND	MND	MND	MND	MND	MNR	3,05E-04	0,00E+00	4,39E-02	4,52E-03
Ecotoxicity (freshwater)	CTUe	6,32E+01	5,74E+00	9,38E+00	7,83E+01	4,11E-01	6,42E+00	MND	MND	MND	MND	MND	MND	MND	MNR	4,89E-02	0,00E+00	8,87E+00	-4,55E+00
Human toxicity, cancer	CTUh	1,87E-08	2,94E-10	1,70E-09	2,07E-08	1,01E-11	1,11E-09	MND	MND	MND	MND	MND	MND	MND	MNR	1,86E-12	0,00E+00	4,04E-09	1,08E-09
Human tox. non-cancer	CTUh	1,14E-07	4,63E-09	6,55E-09	1,25E-07	4,06E-10	7,32E-09	MND	MND	MND	MND	MND	MND	MND	MNR	5,44E-11	0,00E+00	7,21E-09	-3,05E-09
SQP ⁷⁾	-	3,19E+00	4,09E+00	2,01E+00	9,29E+00	5,26E-01	6,71E-01	MND	MND	MND	MND	MND	MND	MND	MNR	5,04E-02	0,00E+00	1,23E+00	-4,01E-01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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;

7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	1,11E+00	1,39E-01	4,66E-01	1,71E+00	5,14E-03	1,14E-01	MND	MND	MND	MND	MND	MND	MND	MNR	8,48E-04	0,00E+00	6,36E-02	-9,36E-02
Renew. PER as material	MJ	0,00E+00	0,00E+00	3,14E-03	3,14E-03	0,00E+00	-3,14E-03	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	1,11E+00	1,39E-01	4,69E-01	1,72E+00	5,14E-03	1,11E-01	MND	MND	MND	MND	MND	MND	MND	MNR	8,48E-04	0,00E+00	6,36E-02	-9,36E-02
Non-re. PER as energy	MJ	2,04E+01	7,68E+00	8,23E+00	3,63E+01	4,56E-01	2,44E+00	MND	MND	MND	MND	MND	MND	MND	MNR	5,80E-02	0,00E+00	9,04E+00	-1,11E+00
Non-re. PER as material	MJ	3,42E+00	0,00E+00	-5,07E-02	3,37E+00	0,00E+00	-1,63E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	-3,35E+00	0,00E+00
Total use of non-re. PER	MJ	2,38E+01	7,68E+00	8,18E+00	3,97E+01	4,56E-01	2,42E+00	MND	MND	MND	MND	MND	MND	MND	MNR	5,80E-02	0,00E+00	5,68E+00	-1,11E+00
Secondary materials	kg	3,52E-03	2,90E-03	3,98E-02	4,62E-02	1,27E-04	2,49E-03	MND	MND	MND	MND	MND	MND	MND	MNR	1,95E-05	0,00E+00	3,40E-03	7,33E-02
Renew. secondary fuels	MJ	2,05E-04	1,54E-05	2,81E-04	5,01E-04	1,28E-06	2,95E-05	MND	MND	MND	MND	MND	MND	MND	MNR	2,03E-07	0,00E+00	6,64E-06	-2,52E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	1,54E-04	1,54E-04	0,00E+00	7,69E-06	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,78E-02	6,99E-04	3,13E-03	2,17E-02	5,91E-05	1,53E-03	MND	MND	MND	MND	MND	MND	MND	MNR	7,73E-06	0,00E+00	9,78E-04	-2,75E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	7,83E-02	1,05E-02	1,07E-01	1,96E-01	6,05E-04	6,00E-02	MND	MND	MND	MND	MND	MND	MND	MNR	6,71E-05	0,00E+00	5,85E-01	-4,24E-02
Non-hazardous waste	kg	1,64E+00	1,10E-01	5,84E-01	2,34E+00	9,94E-03	1,23E-01	MND	MND	MND	MND	MND	MND	MND	MNR	1,19E-03	0,00E+00	0,00E+00	-2,08E-01
Radioactive waste	kg	3,90E-05	5,48E-05	5,23E-05	1,46E-04	3,05E-06	7,67E-06	MND	MND	MND	MND	MND	MND	MND	MNR	3,99E-07	0,00E+00	0,00E+00	3,46E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	3,27E-03	3,27E-03	0,00E+00	1,64E-04	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	3,41E-03	3,41E-03	0,00E+00	7,93E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	2,74E-03	2,74E-03	0,00E+00	5,03E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	1,81E+00	5,80E-01	4,66E-01	2,86E+00	3,01E-02	2,67E-01	MND	MND	MND	MND	MND	MND	MND	MNR	3,80E-03	0,00E+00	2,05E+00	-1,21E-01
Ozone depletion Pot.	kg CFC ₁₁ e	2,80E-07	8,65E-08	4,65E-08	4,13E-07	5,54E-09	3,43E-08	MND	MND	MND	MND	MND	MND	MND	MNR	7,13E-10	0,00E+00	1,21E-07	-5,53E-09
Acidification	kg SO ₂ e	1,34E-02	1,08E-02	1,24E-03	2,53E-02	1,00E-04	1,44E-03	MND	MND	MND	MND	MND	MND	MND	MNR	1,63E-05	0,00E+00	1,63E-03	-4,22E-04
Eutrophication	kg PO ₄ ³ e	7,51E-03	1,31E-03	6,67E-04	9,49E-03	2,28E-05	6,13E-04	MND	MND	MND	MND	MND	MND	MND	MNR	3,82E-06	0,00E+00	3,53E-04	-2,16E-04
POCP ("smog")	kg C ₂ H ₄ e	9,95E-04	2,90E-04	1,17E-04	1,40E-03	3,90E-06	7,69E-05	MND	MND	MND	MND	MND	MND	MND	MNR	5,31E-07	0,00E+00	6,36E-05	-7,25E-05
ADP-elements	kg Sbe	3,22E-05	1,04E-06	3,22E-06	3,64E-05	6,90E-08	2,30E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,28E-08	0,00E+00	1,09E-06	-2,42E-06
ADP-fossil	MJ	3,19E+01	7,68E+00	8,38E+00	4,80E+01	4,56E-01	3,02E+00	MND	MND	MND	MND	MND	MND	MND	MNR	5,80E-02	0,00E+00	9,03E+00	-1,11E+00

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? [Read more online](#)

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Nemanja Nedic, as an authorized verifier acting for EPD Hub Limited
28.05.2024

