



ENVIRONMENTAL PRODUCT DECLARATION

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

Gravity die casted components in aluminum alloy EN AC-47000

Nordic Flanges Oy



EPD HUB, HUB-3348

Published on 23.05.2025, last updated on 23.05.2025, valid until 23.05.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Nordic Flanges Oy
Address	Ferralintie 1, 68500 Kruunupyy
Contact details	inquiries.finland@nordicflanges.com
Website	https://www.nordicflanges.com/

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	Manufactured product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Lauri Pulkkinen
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

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 manufactured products may not be comparable if they do not comply with EN 15804.

PRODUCT

Product name	Gravity die casted aluminum alloy EN AC-47000
Additional labels	Gravity die casted aluminum alloy EN AC-47000 (without surface treatment). Gravity die casted aluminum alloy EN AC-47000 with epoxy polyester powder coating.
Product reference	Aluminum flanges, Aluminum components
Place of production	Finland, Kruunupyy
Period for data	2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	< 2 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of Gravity die casted aluminum alloy EN AC-47000
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1,69E+00
GWP-total, A1-A3 (kgCO ₂ e)	1,54E+00
Secondary material, inputs (%)	92
Secondary material, outputs (%)	95
Total energy use, A1-A3 (kWh)	10,3
Net freshwater use, A1-A3 (m ³)	0,04

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Nordic Flanges Oy has a strong position as a leading manufacturer of casted aluminum flanges in Europe. We also manufacture a significant number of customer-specific casted aluminum components. The most important factor for competitiveness has been the use of recycled aluminum. This gives us a big advantage on the raw material price when compared to the use of finished alloy ingots. Alloying requires high competence and knowledge of environmental standards and regulations. Our foundry has also a high rate of automation when compared to traditional gravity die casting foundries.

PRODUCT DESCRIPTION

Aluminum flanges produced by Nordic Flanges Oy are used as fitting components in industrial piping. Among aluminum flanges, Nordic Flanges produces also a wide variety of customer-specific casted aluminum components to OEM customers in different industries.

This Environmental Product Declaration (EPD) encompasses products for which the primary raw material is aluminum scrap.

Further information can be found at <https://www.nordicflanges.com/>.

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of Gravity die casted aluminum alloy EN AC-47000
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	99,6	EU
Minerals	0	-
Fossil materials	0,4	EU
Bio-based materials	0	-

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	0,042

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	Deconstruction/ demolition	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 starts with the supply of raw materials. Main raw material is aluminum scrap. Energy use consists of sourced electricity and propane. Wastes are recycled or directed to waste to energy treatment. Drivable diesel machinery is used for onsite transportation. Finished products are packed to containerboard and transported on EUR flat pallets.

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.

Installation (A5): Packaged products are transported to the customers and installed to the final use site. Packaging materials at the assembly stage are directed to waste treatment. The installation scenario is based on the assembly of the most produced product. Production of assembly materials, bolts and nuts (0,83 kg/declared unit) are included in module A5.

PRODUCT USE AND MAINTENANCE (B1-B7)

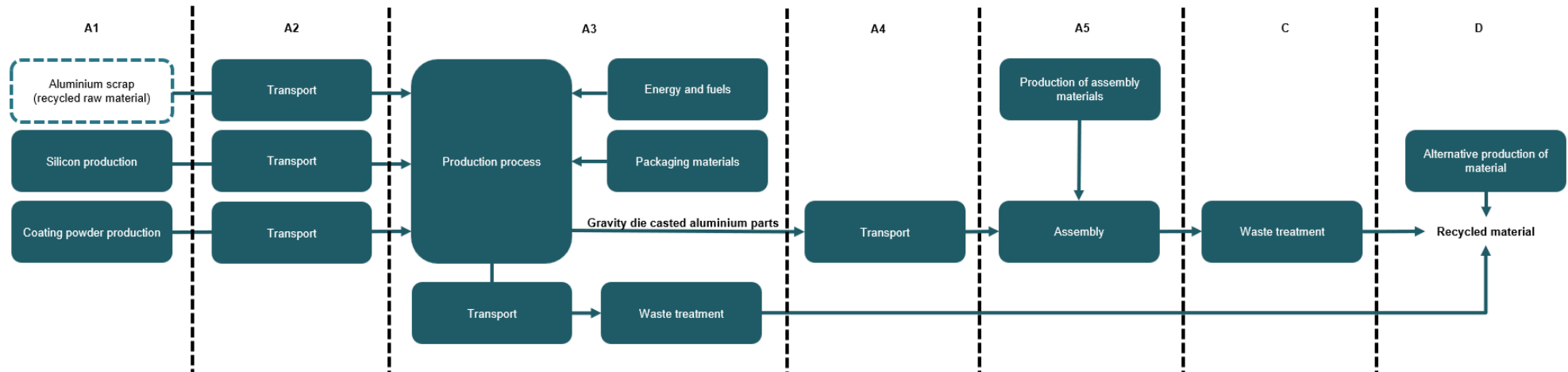
This EPD does not cover the use phase.

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

PRODUCT END OF LIFE (C1-C4, D)

End of life scenario: 95 % of the studied product and auxiliary assembly materials are directed to recycling and 5 % to landfill. Sorted aluminium scrap and steel scrap are considered to substitute the production of primary aluminium/steel with a factor 1:1. 95 % of EUR-flat pallets are directed to reuse to substitute the primary production of pallets. Rest of the packaging material is directed to energy recovery.

MANUFACTURING PROCESS



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 made according to 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 material	Mass based allocation
Ancillary materials	Mass based allocation
Manufacturing energy and waste	Mass based allocation

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Production weighted averaging
Variation in GWP-fossil for A1-A3	< 2 %

Results are presented for averaged product. Nordic Flanges Oy produces coated (26 %) and uncoated (74 %) gravity die casted aluminum products, which are included to the production weighted averaging. The difference between the production processes of these products is the applied surface treatment: epoxy polyester powder coating is possible.

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 v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2.

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	4,65E-01	5,11E-02	1,03E+00	1,54E+00	2,57E-01	2,23E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,91E-03	6,51E-02	5,72E-04	-1,04E+00
GWP – fossil	kg CO ₂ e	4,65E-01	5,11E-02	1,18E+00	1,69E+00	2,57E-01	2,07E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,90E-03	6,51E-02	5,71E-04	-1,04E+00
GWP – biogenic	kg CO ₂ e	0,00E+00	0,00E+00	-1,48E-01	-1,48E-01	0,00E+00	1,48E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO ₂ e	2,69E-04	2,29E-05	4,63E-04	7,55E-04	1,15E-04	8,32E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,43E-06	3,55E-05	3,26E-07	5,04E-05
Ozone depletion pot.	kg CFC-11e	4,06E-09	7,55E-10	1,47E-07	1,52E-07	3,79E-09	1,02E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,46E-10	2,33E-10	1,65E-11	-2,42E-09
Acidification potential	mol H ⁺ e	2,85E-03	1,74E-04	4,69E-03	7,71E-03	8,76E-04	9,16E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,38E-05	1,93E-04	4,05E-06	-3,25E-03
EP-freshwater ²⁾	kg Pe	9,60E-05	3,98E-06	1,61E-04	2,61E-04	2,00E-05	1,35E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,71E-07	1,41E-05	4,70E-08	-4,48E-04
EP-marine	kg Ne	4,84E-04	5,73E-05	7,55E-04	1,30E-03	2,88E-04	2,01E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,11E-05	7,75E-05	1,54E-06	-8,35E-04
EP-terrestrial	mol Ne	5,19E-03	6,24E-04	1,26E-02	1,84E-02	3,13E-03	2,03E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,21E-04	5,23E-04	1,69E-05	-9,19E-03
POCP (“smog”) ³⁾	kg NMVOce	1,74E-03	2,57E-04	3,33E-03	5,33E-03	1,29E-03	1,08E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,98E-05	1,57E-04	6,04E-06	-3,33E-03
ADP-minerals & metals ⁴⁾	kg Sbe	6,54E-07	1,43E-07	3,59E-06	4,39E-06	7,17E-07	3,64E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,76E-08	6,82E-07	9,07E-10	-5,27E-08
ADP-fossil resources	MJ	4,50E+00	7,42E-01	2,32E+01	2,84E+01	3,73E+00	2,14E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,44E-01	2,90E-01	1,40E-02	-8,92E+00
Water use ⁵⁾	m ³ e depr.	1,17E+00	3,66E-03	1,18E+00	2,35E+00	1,84E-02	1,23E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,10E-04	8,99E-03	4,04E-05	-1,55E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterization 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	1,52E-08	5,12E-09	3,48E-08	5,52E-08	2,57E-08	1,57E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,91E-10	8,58E-09	9,22E-11	-5,80E-08
Ionizing radiation ⁶⁾	kBq U235e	1,11E-02	6,46E-04	3,99E-01	4,11E-01	3,25E-03	9,98E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,25E-04	2,72E-03	8,81E-06	6,65E-02
Ecotoxicity (freshwater)	CTUe	1,75E+00	1,05E-01	5,11E+00	6,97E+00	5,28E-01	6,95E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,03E-02	6,01E-01	1,18E-03	-1,97E+00
Human toxicity, cancer	CTUh	4,79E-10	8,44E-12	3,19E-10	8,07E-10	4,24E-11	1,47E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,63E-12	8,11E-11	1,05E-13	-2,32E-11
Human tox. non-cancer	CTUh	1,74E-09	4,80E-10	5,80E-09	8,02E-09	2,41E-09	6,99E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,30E-11	1,19E-09	2,42E-12	-4,67E-10
SQP ⁷⁾	-	6,43E+00	7,47E-01	1,31E+01	2,03E+01	3,76E+00	7,29E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,45E-01	1,48E+00	2,76E-02	-1,27E+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	5,38E+00	1,02E-02	3,07E+00	8,46E+00	5,11E-02	1,75E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,97E-03	4,71E-02	1,35E-04	-3,77E-01
Renew. PER as material	MJ	2,11E-03	0,00E+00	1,30E+00	1,30E+00	0,00E+00	-1,03E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,56E-01	-1,35E-02	0,00E+00
Total use of renew. PER	MJ	5,38E+00	1,02E-02	4,37E+00	9,76E+00	5,11E-02	7,14E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,97E-03	-2,09E-01	-1,33E-02	-3,77E-01
Non-re. PER as energy	MJ	4,75E+00	7,42E-01	2,31E+01	2,86E+01	3,73E+00	2,14E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,44E-01	1,80E-02	1,40E-02	-8,84E+00
Non-re. PER as material	MJ	9,68E-02	0,00E+00	8,49E-02	1,82E-01	0,00E+00	-6,41E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,12E-01	-5,88E-03	0,00E+00
Total use of non-re. PER	MJ	4,85E+00	7,42E-01	2,31E+01	2,87E+01	3,73E+00	2,14E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,44E-01	-9,37E-02	8,14E-03	-8,84E+00
Secondary materials	kg	1,01E+00	3,16E-04	8,05E-03	1,02E+00	1,59E-03	3,13E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,12E-05	5,38E-04	3,52E-06	7,20E-01
Renew. secondary fuels	MJ	2,05E-05	4,01E-06	4,35E-02	4,35E-02	2,02E-05	2,07E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,77E-07	4,22E-05	7,30E-08	-4,11E-02
Non-ren. secondary fuels	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	2,77E-02	1,10E-04	1,12E-02	3,91E-02	5,51E-04	2,10E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,12E-05	1,76E-04	1,46E-05	-1,02E-03

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	2,17E-02	1,26E-03	3,20E-02	5,49E-02	6,32E-03	7,95E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,43E-04	4,38E-03	1,55E-05	4,26E-02
Non-hazardous waste	kg	4,69E-01	2,33E-02	8,72E-01	1,37E+00	1,17E-01	3,51E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,51E-03	1,63E-01	3,54E-04	-2,72E+00
Radioactive waste	kg	3,94E-06	1,58E-07	1,50E-04	1,54E-04	7,95E-07	4,52E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,06E-08	6,87E-07	2,15E-09	1,72E-05

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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,55E-04	0,00E+00	1,01E-01	1,02E-01	0,00E+00	1,61E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,74E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,09E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,00E-02	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,52E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,50E-01
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,81E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,08E-02	0,00E+00	-3,76E-02
Exported energy –	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,84E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,74E-01	0,00E+00	-2,12E-01

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	4,93E-01	5,08E-02	1,19E+00	1,73E+00	2,56E-01	2,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,85E-03	8,99E-02	5,66E-04	-1,03E+00
Ozone depletion Pot.	kg CFC-11e	3,52E-09	6,02E-10	1,01E-07	1,06E-07	3,03E-09	9,89E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,17E-10	1,95E-10	1,31E-11	-3,24E-09
Acidification	kg SO ₂ e	2,52E-03	1,33E-04	3,57E-03	6,22E-03	6,69E-04	7,45E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,58E-05	1,52E-04	3,00E-06	-2,55E-03
Eutrophication	kg PO ₄ ³ e	3,63E-04	3,24E-05	1,98E-03	2,37E-03	1,63E-04	4,94E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,28E-06	6,04E-05	9,53E-07	-1,57E-03
POCP ("smog")	kg C ₂ H ₄ e	2,75E-04	1,19E-05	2,20E-04	5,07E-04	5,96E-05	8,40E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,30E-06	2,24E-05	2,83E-07	-5,86E-04
ADP-elements	kg Sbe	8,15E-07	1,39E-07	3,54E-06	4,50E-06	6,99E-07	3,61E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,69E-08	6,78E-07	8,90E-10	-5,99E-08
ADP-fossil	MJ	4,48E+00	7,32E-01	2,28E+01	2,80E+01	3,68E+00	2,14E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,42E-01	2,44E-01	1,39E-02	-1,01E+01

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.

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited
23.05.2025

