ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Nanten SL Bio, Nanten SL Bio AR, Nanten SL Bio Low VOC

Fescon Oy

EPD HUB, HUB-4226
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Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Fescon Oy
Address	Hämeenkatu 9, 05820 Hyvinkää, Finland
Contact details	fescon@fescon.fi, nanten@fescon.fi
Website	www.fescon.fi

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction 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	Pirjo Isosaari, Fescon Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. 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	Nanten SL Bio, Nanten SL Bio AR, Nanten SL Bio Low VOC
Additional labels	Nanten SL Bio A-osa (Part A), Nanten SL Bio B-osa (Part B), Nanten SL Bio AR B-osa, Nanten SL Bio Low VOC B-osa
Product reference	15000, 15001, 15002, 15093, 15094, 15096, 15098, 15099
Place(s) of raw material origin	Finland, Germany, United Kingdom, South-Korea
Place of production	Tuusula, Finland
Place(s) of installation and use	mainly Finland
Period for data	Calendar year 2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	-3,7 /+0,7
GTIN (Global Trade Item Number)	-
A1-A3 Specific data (%)	8,41

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of product (A+B)
Declared unit mass	1 kg
Mass of packaging	0,08 kg + Eur-pallet
GWP-fossil, A1-A3 ($kgCO_2e$)	4,32
GWP-total, A1-A3 ($kgCO_2e$)	4,34
Secondary material, inputs (%)	6,46
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	19,2
Net freshwater use, A1-A3 (m^3)	0,03

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Fescon is Finland's largest developer and manufacturer of mortar, sand, and coating products and a solution provider for the construction industry.

PRODUCT DESCRIPTION

Nanten SL Bio products are two-component self-leveling epoxy coatings. They are used as protective industrial and architectural coatings on concrete floors. The products can be applied with or without filler sand, and with or without lacquer on the top. Part A (resin) of the product is a reactive polymer component based on epoxy resin. Part B (curing agent /hardener) is a crosslinking component based on polyamines.

This EPD covers three products: Nanten SL Bio, Nanten SL Bio AR, and Nanten SL Bio Low VOC. All color variants that can be produced are included. Nanten SL Bio AR provides higher resistance to chemicals than the standard SL Bio. Nanten SL Bio Low VOC has the lowest indoor air emissions.

TECHNICAL INFORMATION
Components: 1 kg of the product consists of ca. 0,81 kg of Part A and 0,19 kg of Part B.
Consumption: ca. 1,3 /2,0 liters /m^2 at film thickness of 2 mm (with /without filler sand, respectively)
Film thickness: 1-3 mm
Density: 1,3-1,4 kg/l
Solids content: SL Bio and SL Bio 85-90%, SL Bio Low VOC 90-95%
Abrasion resistance: < 3000 mg
Capillary absorption and permeability to water: w < 0,1 kg/m^2 x $h^{0,5}$
Impact resistance: SL Bio and SL Bio AR Class III ≥ 20 Nm, SL Bio Low VOC Class II ≥ 10 Nm
Adhesion strength by pull-off test: ≥ 1,5 N/mm^2
Resistance to severe chemical attack: SL Bio and SL Bio AR Class II, SL Bio Low VOC not determined
Reaction to fire: Class Bfl – s1

VOC content (EU Decopaint Directive, 2004/42/EC): SL Bio and SL Bio AR ≤ 200 g/l, SL Bio Low VOC ≤ 90 g/l
Bio-based materials: 5-10% of the product's mass, based on unverified supplier information.

PRODUCT STANDARDS
Nanten SL Bio, SL Bio AR, and SL Bio Low VOC are CE-marked construction products that comply with the principles defined in EN 1504-2 Products and systems for the protection and repair of concrete structures. Essential characteristics are notified on the Declarations of Performance of the products. Nanten SL Bio Low VOC has low indoor air emissions, as proven by the Finnish M1 Emission Classification of Building Materials.

DELIVERY STATUS
Part A of Nanten SL Bio is delivered in a tin-plated steel pail of 15 liters (net contents). Part B is delivered in a plastic jerry can of 5 liters or a steel drum of 200 liters (net contents). The product is available in standard colors Nanten 257 and 241. Other colors from Nanten and RAL color charts can be provided on request.

Further information can be found at www.fescon.fi

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	30-40	Europe
Fossil materials	60-70	Europe, Asia
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	0,007

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of product (A+B)
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	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.

A location-based approach is used in modeling the electricity mix utilized in the factory.

The main manufacturing processes of the product are mixing the ingredients in batch mode and packaging. The ingredients, consisting of epoxy resins, diluents, pigments, fillers, and additives, are loaded into an industrial high-speed disperser. The disperser is operated at different shear rates to obtain

appropriate dispersing, milling, and mixing functions. Quality control tests are performed on each batch.

The finished Part A is filled into a tin-plated steel pail. Part B is either filled into a polyethylene jerry can or delivered in a steel drum. The containers are placed on a wooden pallet and wrapped in polyethylene film for transportation to the customer or building site.

Production waste consists of a production loss of 1%. Loss of raw materials occurs mainly in charging and discharging operations, quality control, process failures, or due to deterioration during storage. Waste is sent to a licensed waste management provider and incinerated as hazardous waste.

The manufacturing processes comply with the quality standard ISO 9001:2015, environmental standard ISO 14001:2025, and occupational health and safety standard ISO 45001:2018. The provisions outlined in the relevant regulations are adhered to.

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 main delivery modes of the product to customers are truck transportation and self-pick-up. Products sent to the customer (or directly to the building site; 48% of sales) have an average transportation distance of 302 km. The trucks are assumed to be in a full load. Products picked up by the customer (52% of sales) from the factory's warehouse are assumed to be transported to the installation site by a van. Transportation distance is assumed to be 50 km.

The product is installed manually. Parts A and B are mixed at 3:1 (by volume). Supplementary filler sand can be added according to the instructions. The mixture is poured on the floor and leveled with an adjustable squeegee, then finished with a spike roller. The coating is allowed to cure and harden before use. An installation loss of 1% is assumed to result from improper draining of the product from containers. As a worst-case scenario, the lost product has not been properly hardened and needs to be incinerated as hazardous waste. Empty, dried containers can be returned to the organized collection points of packaging waste in the framework of the producer responsibility system. Energy consumption and installation consumables were excluded from the analysis. Energy consumption of a handheld mixing machine was estimated to be negligible, and tools can be used multiple times or for multiple uses.

PRODUCT USE AND MAINTENANCE (B1-B7)

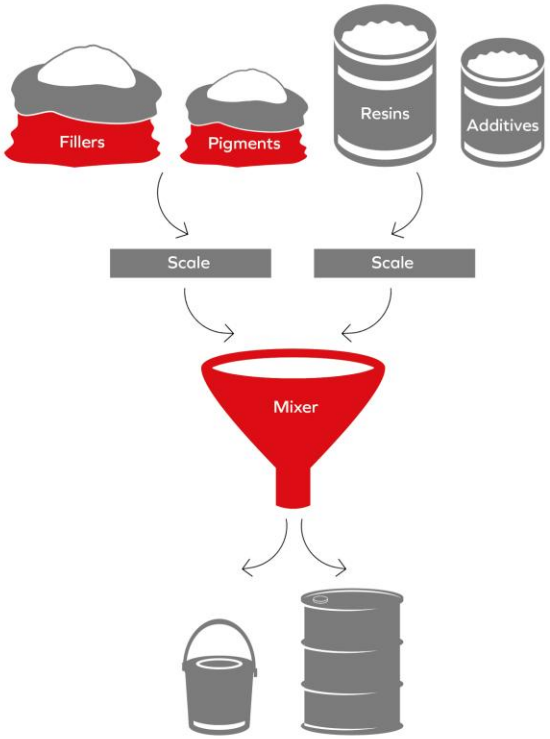
This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

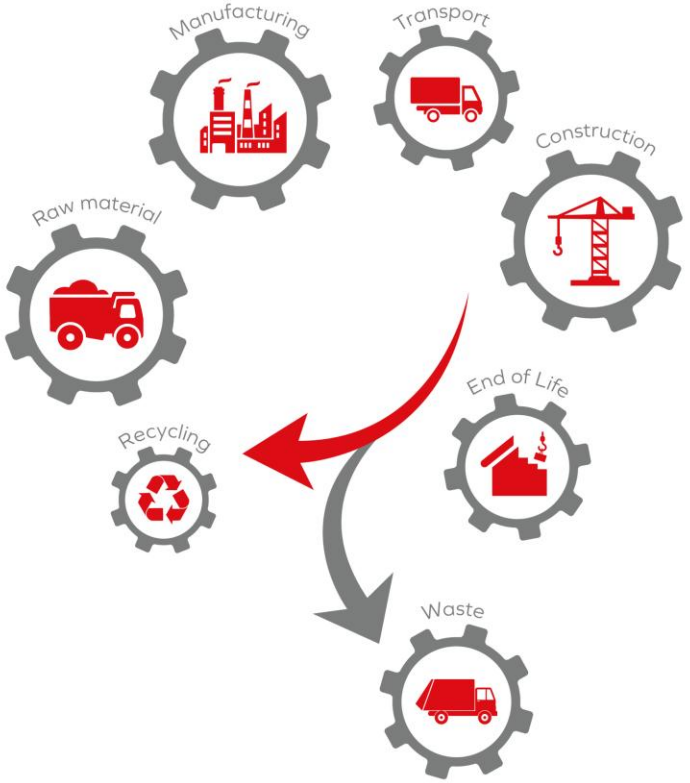
After application, solvents evaporate from the coating surface. At the end of the product life cycle, the remaining solid coating is strongly attached to the substrate and cannot be separated without great effort. Hence, the product is assumed to be demolished and crushed with concrete. In principle, the product does not contain hazardous compounds that could leach from the material and prevent concrete recycling according to the national end-of-waste criteria in Finland (VNa 466/2022). As a conservative approach and to simplify the calculation, however, it is assumed that the coating is landfilled as inert waste. Benefits included in Module D are obtained from the recycling and incineration of the packaging materials.

MANUFACTURING PROCESS

Manufacturing process - Coating products



Product life-cycle



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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

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 material	Allocated by mass or volume
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

Waste treatment scenarios for packaging waste were based on the most recent statistics from Finland, covering the calendar year 2023 (Eurostat, 2023).

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	-3,7 /+0,7

This is an EPD of multiple products, based on a representative product. It covers Nanten SL Bio, Nanten SL Bio AR, and Nanten SL Bio Low VOC. The products consist of similar materials. The products are manufactured at the same factory and with the same processes.

The average life-cycle impacts in the EPD are based on the product with the largest production volume, Nanten SL Bio in color Nanten 257. The exact GWP of a product depends both on the product type (SL Bio, SL Bio AR, or SL Bio Low VOC) and on the color variant. Different combinations, which are all covered in the EPD, may lead to a higher or lower GWP. The difference from the average GWP fossil for A1-A3 is -3,7% and +0,7% in the lowest and highest impact product, respectively. The contribution of the other modules (A4-A5, C1-C4) to the GWP fossil is less than 3,2% in each product; hence, variation in A1-A3 represents the entire life-cycle and product group covered in the EPD.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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_2e	3,57E+00	1,76E-01	5,95E-01	4,34E+00	3,15E-02	1,27E-01	MND	MND	MND	MND	MND	MND	MND	3,12E-03	4,65E-03	0,00E+00	8,63E-03	-1,11E-01
GWP – fossil	kg CO_2e	3,57E+00	1,76E-01	5,80E-01	4,32E+00	3,15E-02	8,11E-02	MND	MND	MND	MND	MND	MND	MND	3,11E-03	4,65E-03	0,00E+00	8,65E-03	-1,12E-01
GWP – biogenic	kg CO_2e	4,46E-03	3,47E-05	1,46E-02	1,91E-02	8,94E-06	4,62E-02	MND	MND	MND	MND	MND	MND	MND	3,18E-07	1,05E-06	0,00E+00	-1,43E-05	1,09E-03
GWP – LULUC	kg CO_2e	2,68E-03	7,94E-05	4,00E-04	3,16E-03	1,29E-05	3,78E-05	MND	MND	MND	MND	MND	MND	MND	3,19E-07	2,08E-06	0,00E+00	2,38E-06	-4,67E-05
Ozone depletion pot.	kg CFC_{-11}e	1,20E-07	2,78E-09	7,67E-09	1,30E-07	6,50E-10	1,57E-09	MND	MND	MND	MND	MND	MND	MND	4,77E-11	6,86E-11	0,00E+00	2,71E-10	-5,96E-10
Acidification potential	mol H^+e	1,51E-02	2,09E-03	2,91E-03	2,01E-02	7,87E-05	2,48E-04	MND	MND	MND	MND	MND	MND	MND	2,81E-05	1,59E-05	0,00E+00	9,54E-05	-4,98E-04
EP-freshwater[2)]	kg Pe	9,52E-04	1,05E-05	2,07E-04	1,17E-03	2,98E-06	1,96E-05	MND	MND	MND	MND	MND	MND	MND	8,99E-08	3,62E-07	0,00E+00	1,45E-05	-4,65E-05
EP-marine	kg Ne	3,49E-03	5,58E-04	5,12E-04	4,56E-03	1,74E-05	5,90E-05	MND	MND	MND	MND	MND	MND	MND	1,30E-05	5,21E-06	0,00E+00	2,38E-05	-9,88E-05
EP-terrestrial	mol Ne	3,20E-02	6,16E-03	6,24E-03	4,44E-02	1,88E-04	5,72E-04	MND	MND	MND	MND	MND	MND	MND	1,43E-04	5,67E-05	0,00E+00	2,55E-04	-1,08E-03
POCP ("smog")[3)]	kg NMVOCe	1,40E-02	1,88E-03	1,73E-03	1,76E-02	1,19E-04	2,23E-04	MND	MND	MND	MND	MND	MND	MND	4,26E-05	2,34E-05	0,00E+00	1,36E-01	-3,74E-04
ADP-minerals & metals[4)]	kg Sbe	3,99E-05	3,82E-07	8,15E-06	4,84E-05	1,95E-07	6,46E-07	MND	MND	MND	MND	MND	MND	MND	1,12E-09	1,30E-08	0,00E+00	1,70E-08	-9,26E-07
ADP-fossil resources	MJ	1,05E+02	2,42E+00	6,90E+00	1,14E+02	4,42E-01	1,29E+00	MND	MND	MND	MND	MND	MND	MND	4,07E-02	6,75E-02	0,00E+00	2,01E-01	-1,16E+00
Water use[5)]	m^3e depr.	1,18E+00	1,05E-02	1,82E-01	1,38E+00	2,82E-03	1,63E-02	MND	MND	MND	MND	MND	MND	MND	1,02E-04	3,33E-04	0,00E+00	1,22E-03	-1,89E-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, EF 3.1

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	1,47E-07	1,35E-08	3,50E-08	1,96E-07	2,33E-09	2,58E-09	MND	MND	MND	MND	MND	MND	MND	7,99E-10	4,66E-10	0,00E+00	1,45E-09	-7,48E-09
Ionizing radiation[6)]	kBq U235e	2,43E-01	1,98E-03	5,12E-02	2,96E-01	6,63E-04	3,71E-03	MND	MND	MND	MND	MND	MND	MND	1,80E-05	5,88E-05	0,00E+00	2,68E-04	-1,03E-03
Ecotoxicity (freshwater)	CTUe	1,31E+02	2,81E-01	6,19E+00	1,38E+02	8,25E-02	1,75E+00	MND	MND	MND	MND	MND	MND	MND	2,24E-03	9,55E-03	0,00E+00	1,31E+00	-2,59E-01
Human toxicity, cancer	CTUh	8,24E-09	3,15E-11	5,33E-10	8,80E-09	7,27E-12	1,17E-10	MND	MND	MND	MND	MND	MND	MND	3,20E-13	7,67E-13	0,00E+00	3,73E-12	-1,87E-11
Human tox. non-cancer	CTUh	3,73E-08	1,28E-09	8,06E-09	4,67E-08	2,75E-10	6,66E-10	MND	MND	MND	MND	MND	MND	MND	5,07E-12	4,37E-11	0,00E+00	8,70E-09	-8,88E-10
SQP[7)]	-	1,15E+01	1,78E+00	4,28E+00	1,75E+01	3,35E-01	2,47E-01	MND	MND	MND	MND	MND	MND	MND	2,86E-03	6,80E-02	0,00E+00	4,94E-01	-4,11E-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	3,35E+00	3,00E-02	1,13E+00	4,51E+00	9,66E-03	-1,80E-01	MND	MND	MND	MND	MND	MND	MND	2,58E-04	9,25E-04	0,00E+00	4,23E-03	-1,04E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,26E-01	2,26E-01	0,00E+00	-2,26E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,99E-03
Total use of renew. PER	MJ	3,35E+00	3,00E-02	1,36E+00	4,73E+00	9,66E-03	-4,07E-01	MND	MND	MND	MND	MND	MND	MND	2,58E-04	9,25E-04	0,00E+00	4,23E-03	-1,10E-01
Non-re. PER as energy	MJ	5,56E+01	2,42E+00	6,50E+00	6,45E+01	4,42E-01	4,20E-01	MND	MND	MND	MND	MND	MND	MND	4,07E-02	6,75E-02	0,00E+00	2,01E-01	-1,16E+00
Non-re. PER as material	MJ	1,31E+01	0,00E+00	5,89E-02	1,32E+01	0,00E+00	-1,89E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-1,30E+01	0,00E+00
Total use of non-re. PER	MJ	6,88E+01	2,42E+00	6,56E+00	7,77E+01	4,42E-01	2,31E-01	MND	MND	MND	MND	MND	MND	MND	4,07E-02	6,75E-02	0,00E+00	-1,28E+01	-1,16E+00
Secondary materials	kg	6,46E-02	1,05E-03	4,08E-02	1,06E-01	2,92E-04	1,14E-03	MND	MND	MND	MND	MND	MND	MND	1,69E-05	2,87E-05	0,00E+00	6,69E-05	5,20E-02
Renew. secondary fuels	MJ	3,68E-04	1,00E-05	7,82E-03	8,20E-03	2,83E-06	8,36E-05	MND	MND	MND	MND	MND	MND	MND	4,42E-08	3,65E-07	0,00E+00	1,21E-06	-7,77E-06
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	3,01E-02	3,00E-04	4,03E-03	3,45E-02	7,59E-05	4,01E-04	MND	MND	MND	MND	MND	MND	MND	2,69E-06	9,98E-06	0,00E+00	-2,43E-03	-3,83E-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	3,19E-01	3,66E-03	3,37E-01	6,59E-01	1,02E-03	1,10E-02	MND	MND	MND	MND	MND	MND	MND	4,54E-05	1,14E-04	0,00E+00	3,39E-04	-3,19E-02
Non-hazardous waste	kg	6,87E+00	6,44E-02	1,32E+00	8,26E+00	1,82E-02	1,25E-01	MND	MND	MND	MND	MND	MND	MND	6,18E-04	2,12E-03	0,00E+00	3,09E+00	-2,99E-01
Radioactive waste	kg	6,23E-05	4,85E-07	1,32E-05	7,60E-05	1,65E-07	9,59E-07	MND	MND	MND	MND	MND	MND	MND	4,43E-09	1,44E-08	0,00E+00	6,57E-08	-7,77E-08

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	2,40E-12	0,00E+00	0,00E+00	2,40E-12	0,00E+00	5,63E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	1,26E-20	0,00E+00	0,00E+00	1,26E-20	0,00E+00	1,58E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	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	2,64E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,98E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,24E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

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_2e	3,54E+00	1,75E-01	5,80E-01	4,30E+00	3,13E-02	8,09E-02	MND	MND	MND	MND	MND	MND	MND	3,10E-03	4,62E-03	0,00E+00	8,57E-03	-1,11E-01
Ozone depletion Pot.	kg CFC_{-11}e	1,05E-07	2,21E-09	6,31E-09	1,13E-07	5,18E-10	1,37E-09	MND	MND	MND	MND	MND	MND	MND	3,78E-11	5,48E-11	0,00E+00	2,16E-10	-5,81E-10
Acidification	kg SO_2e	1,22E-02	1,65E-03	2,35E-03	1,62E-02	6,36E-05	2,00E-04	MND	MND	MND	MND	MND	MND	MND	1,98E-05	1,21E-05	0,00E+00	7,65E-05	-4,07E-04
Eutrophication	kg PO_4^3e	7,15E-02	2,24E-04	6,25E-04	7,23E-02	2,27E-05	7,31E-04	MND	MND	MND	MND	MND	MND	MND	4,62E-06	2,95E-06	0,00E+00	2,03E-05	-6,78E-05
POCP (“smog”)	kg C_2H_4e	1,61E-03	9,45E-05	1,50E-04	1,86E-03	7,05E-06	2,13E-05	MND	MND	MND	MND	MND	MND	MND	1,48E-06	1,08E-06	0,00E+00	4,97E-06	-5,32E-05
ADP-elements	kg Sbe	3,20E-05	3,73E-07	8,08E-06	4,05E-05	1,92E-07	5,31E-07	MND	MND	MND	MND	MND	MND	MND	1,09E-09	1,26E-08	0,00E+00	1,65E-08	-9,24E-07
ADP-fossil	MJ	1,00E+02	2,39E+00	6,10E+00	1,09E+02	4,31E-01	1,23E+00	MND	MND	MND	MND	MND	MND	MND	4,05E-02	6,66E-02	0,00E+00	1,97E-01	-1,16E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	3,57E+00	1,76E-01	5,80E-01	4,33E+00	3,15E-02	8,11E-02	MND	MND	MND	MND	MND	MND	MND	3,11E-03	4,65E-03	0,00E+00	8,65E-03	-1,12E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, medium voltage, residual mix, Finland; Ecoinvent 3.11
Electricity CO2e / kWh	0,71
District heating data source and quality	District heat, Finland, 2022; LCA study for country specific district heating based on IEA, OneClickLCA 2024
District heating CO2e / kWh	0,18

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	Diesel truck (52%), petrol van (48%)
Average transport distance, km	Truck 302 km, van 50 km
Capacity utilization (including empty return) %	100
Bulk density of transported products	-
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	0
Water use / m³	0
Other resource use / kg	0
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	0
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	0,103
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	0,103
Direct emissions to ambient air, soil and water / kg	0

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	0,86
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	0
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	0,86
Scenario assumptions e.g. transportation	0,14 kg of solvents evaporated after installation. 50 km truck transportation to disposal.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
24.10.2025