ENVIRONMENTAL PRODUCT DECLARATION

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

Nordec Low CO_2 Truss, Peräseinäjoki factory.

Nordec Group Oyj

EPD HUB, HUB-0918

Published on 5 December 2023, last updated on 5 December 2023, valid until 5 December 2028.

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	Nordec Group Oyj
Address	Itämerenkatu 5, 00180 Helsinki, Finland
Contact details	info@nordec.com
Website	nordec.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	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	Dan Pada, Nordec Group Oyj
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly González Vázquez, 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	Nordec Low CO2 Truss
Additional labels	-
Product reference	-
Place(s) of raw material origin	EU, Turkey, UK
Place of production	Peräseinäjoki, Finland
Place(s) of installation and use	-
Period for data	01.01.2024-31.12.2024
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of painted steel truss
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	9,11E-01
GWP-total, A1-A3 ($kgCO_2e$)	8,61E-01
Secondary material, inputs (%)	94
Secondary material, outputs (%)	93
Total energy use, A1-A3 (kWh)	4,12
Net freshwater use, A1-A3 (m^3)	0,0133

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Nordec is the leading provider of frame structure solutions in the Nordic countries, operating also in Central Eastern Europe. Nordec has decades of experience in designing, producing and delivering frame structures and envelopes for buildings and bridges and industry, optimizing the whole value chain from design to installation. Nordec has 4 factories for the steel structure production in Finland, Poland and Lithuania.
Sustainability is an integral part of Nordec's strategy and the development of low-carbon products and solutions is of high priority. We want to minimize the environmental impact of our products by optimizing material usage and waste. We work together with our material suppliers and customers to find the most sustainable solutions for each project.

PRODUCT DESCRIPTION

This EPD represents steel trusses made of mainly hot-rolled open profiles and cold-formed hollow sections. The steel trusses are used in buildings and industrial projects, most often as roof trusses.
Both the hot-rolled open profiles and the cold-formed hollow sections are made of recycled steel, with a recycling content of 100 %. Steel used for outfitting parts, mainly plates, is made of virgin steel. The steel trusses are produced in Nordec's factory in Peräseinäjoki, Finland.
By using a steel truss, the design can be optimized by adjusting the height of the truss and by combining profiles of different sizes and thicknesses to enable an efficient use of the material. Steel trusses can span great lengths and carry big loads, providing a large open space in the building, enabling flexibility and adaptability of the building. Furthermore, as the steel trusses are connected to supporting structures using bolted connections, the truss can easily be dismounted and used in another building in the future, enabling a circular economy.

Further information can be found at nordec.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	99	EU, Turkey
Minerals	-	-
Fossil materials	1	EU, UK
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	0,0143

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of painted steel truss
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. Ancillary materials used are steel shots for shot blasting and welding gases. Packaging materials used are wood, cardboard, plastic film, metal strips and screws. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. Waste treatment include landfilling of inert materials and treatment and incineration of hazardous liquids. Also VOC-emissions to air are considered. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The main raw material is hot-rolled open steel profiles used in the chords, whereof close to 100 % is made from recycled steel in electric arc furnaces, as well as cold-formed hollow sections, used in the diagonals and vertical, whereof close to 100 % is made from recycled steel in electric arc furnaces. Outfitting parts are made of mostly hot-rolled plates, whereof close to 100 % is made from virgin steel produced in blast furnaces. Hence about 94 % of the final product is made of recycled steel. The steel is transported by lorry and ship to the production site in Peräseinäjoki, Finland. The steel profiles are shot blasted and cut to length and shape. The structure is assembled and outfitted with plates for connections and all parts are welded together. The welded structures are painted and packed for transportation.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

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.

Distance and method of transportation from the factory to the building sites is calculated as a weighted average of the actual transports in the year studied (2024). Method of transportation is lorry. Transportation does not cause any losses as the structures are packaged properly and secured to the trailer.

Energy consumption for installation on site is assumed to be the same as for demolition (C1), i.e. 0,01 kWh/kg, as diesel used in the building machinery.

Packaging materials (wood, metal, cardboard and plastics) are recycled or incinerated for energy recovery, which is considered in this model, as well as direct emissions to the air of carbon dioxide to balance emissions of biogenic CO_2.

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.

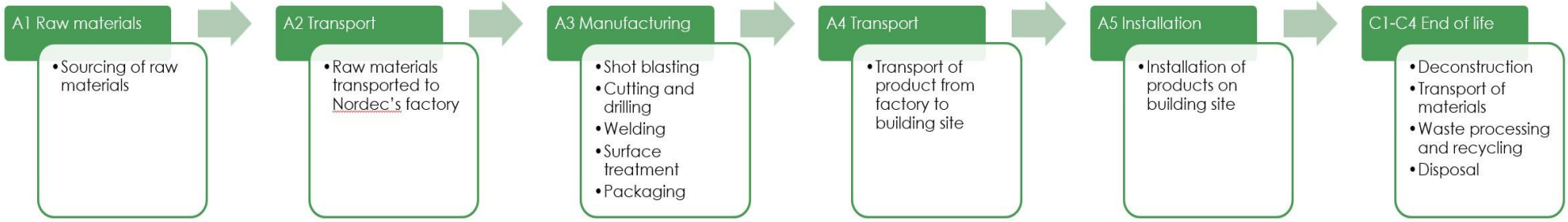
PRODUCT END OF LIFE (C1-C4, D)

The energy consumption of the demolition process is on average 10 kWh/m2 (Bozdag, Ö. & Secer, M. 2007). Considering an average mass of 1000 kg/m2 of a concrete building, the energy consumption for demolition (C1) can be assumed to be 0,01 kWh/kg. The source of energy is diesel used in the building machinery.

100 % of the steel structures are assumed to be collected during demolition and transported 50 km by lorry (C2) for further treatment.

Based on data from the European Steel Association, the recycling rate of steel from construction is assumed to be 93 % (C3). The remaining 7 % is taken to landfill for final disposal (C4). Due to the recycling process the end-of-life product is converted back into recycled steel (D), however, benefit can be considered only for the virgin steel, not for the recycled steel. As the ingoing amount of recycled steel is larger than the output, no benefit is accounted for. The benefit from the packaging material recovery is considered.

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.
Fastening materials are excluded from A5 as they form a very small part of the installed product and are not always part of the scope of delivery. The paint coating has not been separated from the steel for waste processing as it is assumed the paint is not removed before recycling and any impacts are deemed to be negligible.

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/AC2021 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.

Raw materials are based on data from produced trusses, whereas packaging materials, ancillary materials and manufacturing energy and waste are known on factory level and allocated to 1 kg of product.

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

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3 (%)	-

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 v3.10.1 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_2e	6,67E-01	1,30E-01	6,34E-02	8,61E-01	3,46E-02	5,79E-02	MND	MND	MND	MND	MND	MND	MND	3,61E-03	5,36E-03	1,94E-02	3,10E-04	-2,16E-02
GWP – fossil	kg CO_2e	6,64E-01	1,30E-01	1,17E-01	9,11E-01	3,46E-02	4,33E-03	MND	MND	MND	MND	MND	MND	MND	3,60E-03	5,36E-03	2,10E-02	4,37E-04	-2,16E-02
GWP – biogenic	kg CO_2e	2,03E-03	0,00E+00	-5,38E-02	-5,18E-02	0,00E+00	5,36E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,69E-03	-1,27E-04	0,00E+00
GWP – LULUC	kg CO_2e	1,27E-03	6,19E-05	1,37E-04	1,47E-03	1,55E-05	6,24E-07	MND	MND	MND	MND	MND	MND	MND	3,69E-07	2,01E-06	2,59E-05	2,50E-07	-3,98E-05
Ozone depletion pot.	kg CFC_{-11}e	2,81E-08	1,91E-09	2,17E-09	3,21E-08	5,11E-10	6,39E-11	MND	MND	MND	MND	MND	MND	MND	5,52E-11	1,08E-10	2,83E-10	1,27E-11	-1,74E-10
Acidification potential	mol H^+e	3,12E-03	1,50E-03	4,45E-04	5,07E-03	1,18E-04	3,87E-05	MND	MND	MND	MND	MND	MND	MND	3,25E-05	1,73E-05	2,50E-04	3,10E-06	-1,54E-04
EP-freshwater[2)]	kg Pe	5,11E-05	8,21E-06	2,40E-05	8,33E-05	2,70E-06	3,53E-07	MND	MND	MND	MND	MND	MND	MND	1,04E-07	3,61E-07	1,35E-05	3,59E-08	-1,05E-05
EP-marine	kg Ne	5,66E-04	3,98E-04	1,39E-04	1,10E-03	3,88E-05	1,82E-05	MND	MND	MND	MND	MND	MND	MND	1,51E-05	5,87E-06	5,54E-05	1,18E-06	-2,26E-05
EP-terrestrial	mol Ne	6,23E-03	4,40E-03	1,68E-03	1,23E-02	4,22E-04	1,95E-04	MND	MND	MND	MND	MND	MND	MND	1,65E-04	6,39E-05	6,26E-04	1,29E-05	-2,38E-04
POCP ("smog")[3)]	kg NMVOCe	1,80E-03	1,35E-03	1,19E-03	4,34E-03	1,74E-04	5,72E-05	MND	MND	MND	MND	MND	MND	MND	4,93E-05	2,82E-05	1,85E-04	4,62E-06	-7,46E-05
ADP-minerals & metals[4)]	kg Sbe	1,37E+00	2,88E-07	3,90E-07	1,37E+00	9,66E-08	3,91E-09	MND	MND	MND	MND	MND	MND	MND	1,29E-09	1,48E-08	1,49E-06	6,94E-10	-2,60E-08
ADP-fossil resources	MJ	5,49E+00	1,79E+00	1,45E+00	8,73E+00	5,02E-01	5,46E-02	MND	MND	MND	MND	MND	MND	MND	4,72E-02	7,76E-02	2,82E-01	1,07E-02	-2,78E-01
Water use[5)]	m^3e depr.	1,16E-01	7,78E-03	3,19E-02	1,56E-01	2,48E-03	1,21E-03	MND	MND	MND	MND	MND	MND	MND	1,18E-04	3,98E-04	5,07E-03	3,09E-05	-3,65E-03

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.

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[6)]	MJ	2,28E+00	2,16E-02	2,31E+00	4,61E+00	6,89E-03	-5,68E-01	MND	MND	MND	MND	MND	MND	MND	2,99E-04	1,26E-03	5,26E-02	1,04E-04	-1,17E-01
Renew. PER as material	MJ	8,78E-04	0,00E+00	4,29E-01	4,30E-01	0,00E+00	-4,29E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-7,64E-04	-5,75E-05	0,00E+00
Total use of renew. PER	MJ	2,28E+00	2,16E-02	2,74E+00	5,04E+00	6,89E-03	-9,97E-01	MND	MND	MND	MND	MND	MND	MND	2,99E-04	1,26E-03	5,18E-02	4,60E-05	-1,17E-01
Non-re. PER as energy	MJ	7,22E+00	1,79E+00	1,23E+00	1,02E+01	5,02E-01	5,28E-02	MND	MND	MND	MND	MND	MND	MND	4,72E-02	7,76E-02	2,82E-01	1,07E-02	-2,78E-01
Non-re. PER as material	MJ	7,85E-02	0,00E+00	-3,30E-03	7,52E-02	0,00E+00	-1,83E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-6,82E-02	-5,13E-03	0,00E+00
Total use of non-re. PER	MJ	7,30E+00	1,79E+00	1,22E+00	1,03E+01	5,02E-01	5,10E-02	MND	MND	MND	MND	MND	MND	MND	4,72E-02	7,76E-02	2,14E-01	5,59E-03	-2,78E-01
Secondary materials	kg	1,17E+00	7,89E-04	1,43E-03	1,17E+00	2,14E-04	3,20E-05	MND	MND	MND	MND	MND	MND	MND	1,96E-05	3,36E-05	3,44E-04	2,70E-06	1,05E-03
Renew. secondary fuels	MJ	2,77E-05	7,51E-06	1,12E-05	4,64E-05	2,72E-06	1,03E-07	MND	MND	MND	MND	MND	MND	MND	5,12E-08	4,24E-07	1,60E-05	5,58E-08	-1,77E-06
Non-ren. secondary fuels	MJ	3,99E-07	0,00E+00	0,00E+00	3,99E-07	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	1,23E-02	2,25E-04	7,44E-04	1,33E-02	7,43E-05	1,03E-05	MND	MND	MND	MND	MND	MND	MND	3,12E-06	1,15E-05	1,50E-04	1,12E-05	-1,92E-04

6) 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	1,53E-02	2,85E-03	6,78E-03	2,50E-02	8,51E-04	2,73E-04	MND	MND	MND	MND	MND	MND	MND	5,25E-05	1,12E-04	1,84E-03	1,18E-05	-2,18E-03
Non-hazardous waste	kg	1,17E-01	4,94E-02	1,09E-01	2,75E-01	1,58E-02	3,47E-02	MND	MND	MND	MND	MND	MND	MND	7,15E-04	2,25E-03	6,66E-02	2,71E-04	-4,52E-02
Radioactive waste	kg	3,33E-05	3,31E-07	1,91E-06	3,55E-05	1,07E-07	7,76E-09	MND	MND	MND	MND	MND	MND	MND	5,12E-09	2,31E-08	6,13E-07	1,64E-09	-1,07E-06

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	8,83E-02	0,00E+00	1,02E-01	1,90E-01	0,00E+00	1,30E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,30E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	2,68E-04	0,00E+00	7,70E-04	1,04E-03	0,00E+00	3,29E-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	7,87E-03	0,00E+00	0,00E+00	7,87E-03	0,00E+00	2,99E-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	4,51E-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	2,54E-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 – GWP-GHG / GWP-IOBC - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG / GWP-IOBC[7)]	kg CO_2e	6,65E-01	1,30E-01	1,17E-01	9,13E-01	3,46E-02	4,33E-03	MND	MND	MND	MND	MND	MND	MND	3,61E-03	5,36E-03	2,10E-02	4,37E-04	-2,16E-02

7) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, wind, 1-3MW turbine, onshore; Sweden; Ecoinvent 3.10.1
Electricity CO2e / kWh	0,0175
District heating data source and quality	Heat and power co-generation, wood chips, 6667 kW, state-of-the-art 2014; Finland; Ecoinvent 3.10.1
District heating CO2e / kWh	0,00936

Transport scenario documentation A4

Scenario parameter	Value
Specific transport CO2e emissions, kg CO2e / tkm	Diesel powered truck
Average transport distance, km	311
Capacity utilization (including empty return) %	50
Bulk density of transported products	8000
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 / m^3	0
Other resource use / kg	0
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	0,01
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	0
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
Direct emissions to ambient air, soil and water / kg	0

Use stages scenario documentation - B2 Maintenance

Scenario information	Value
Maintenance process / Description or source where description can be found	Module not declared
Maintenance cycle / Number per RSL or year *(Not applicable if only B2 is declared)*	Module not declared
Ancillary materials for maintenance, e.g. cleaning agent, specify materials / kg / cycle	Module not declared
Waste material resulting from maintenance (specify materials) / kg	Module not declared
Net fresh water consumption during maintenance / m³	Module not declared
Energy input during maintenance, e.g. vacuum cleaning, energy carrier type, e.g. electricity, and amount, if applicable and relevant / kWh	Module not declared

Use stages scenario documentation - B3 Repair

Scenario information	Value
Repair process / Description or source where description can be found	Module not declared
Inspection Process / Description or source where description can be found	Module not declared
Repair cycle / Number per RSL or year	Module not declared
Ancillary materials, e.g., lubricant (specify materials) / kg or kg/cycle	Module not declared
Waste material resulting from repair (specify materials) / kg	Module not declared
Net fresh water consumption during repair / m³	Module not declared
Energy input during repair, e.g., crane activity, energy carrier type, e.g., electricity, and amount / kWh/RSL, kWh/cycle	Module not declared

Use stages scenario documentation - B4 Replacement

Scenario information	Value
Replacement cycle / Number per RSL or year	Module not declared
Energy input during replacement, e.g., crane activity, energy carrier type, e.g., electricity and amount (if applicable and relevant) / kWh	Module not declared
Exchange of worn parts during the product's life cycle, e.g., zinc galvanized steel sheet (specify materials) / kg	Module not declared

Use stages scenario documentation - B5 Refurbishment

Scenario information	Value
Refurbishment process / Description or source where description can be found	Module not declared
Refurbishment cycle / Number per RSL or year	Module not declared
Energy input during refurbishment, e.g., crane activity, energy carrier type, e.g., electricity, and amount (if applicable and relevant) / kWh	Module not declared
Material input for refurbishment, e.g., bricks, including ancillary materials for the refurbishment process, e.g., lubricant (specify materials) / kg or kg/cycle	Module not declared
Waste material resulting from refurbishment (specify materials) / kg	Module not declared

Further assumptions for scenario development, e.g., frequency and time period of use, number of occupants / Units as appropriate	Module not declared

Use stages scenario documentation - B6-B7 Use of energy and use of water

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	Module not declared
Net fresh water consumption / m^3	Module not declared
Type of energy carrier, e.g., electricity, natural gas, district heating / kWh	Module not declared
Power output of equipment / kW	Module not declared
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc. / Units as appropriate	Module not declared
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants / Units as appropriate	Module not declared

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	1
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	0,93
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	0,07
Scenario assumptions e.g. transportation	Transported 50 km by lorry to closest point of recycling.

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

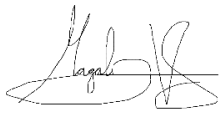
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
Updated 25.05.2025



VERIFIED ISO 14025

ANNEX 1 – ADDITIONAL INFORMATION FOR NORWAY

The following self-declared data are given to meet the requirements for Norway.

MODULE A4, TRANSPORT FROM PRODUCTION SITE TO OSLO

GWP total: 9,83E-02 $kgCO_2e$
GWP fossil: 9,82E-02 $kgCO_2e$

DANGEROUS SUBSTANCES

The ready product does not contain any dangerous substances according to REACH or the Norwegian priority list in amounts greater than 0,1 % (1000 ppm).

ELECTRICITY IN MANUFACTURING PROCESS, MODULE A3

Peräseinäjoki: Electricity production, wind, 1-3MW turbine, onshore; Sweden; Ecoinvent 3.10.1. 0,0175 $kgCO_2e/kWh$

INDOOR AIR EMISSIONS

The ready product does not cause any indoor air emissions.