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

NT Deco
Nordtreat Oy

EPD HUB, HUB-0234
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Nordtreat Finland Oy
Address	Mestarintie 11, Vantaa
Contact details	support@nordtreat.com
Website	www.nordreat.com.

LCA 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 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4 and D
EPD author	Susanna Kiviniemi, Greenstep Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	S.V, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the LCA. LCAs within the same product category but from different programs may not be comparable. LCAs of construction products may not be comparable if they do not comply with ISO 14067.

PRODUCT

Product name	NT Deco
Place of production	Porvoo and Vantaa, Finland
Period for data	Calendar year 2021
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 litre
Declared unit mass	1,15 kg
GWP-fossil, A1-A3 (kgCO2e)	2,21
GWP-total, A1-A3 (kgCO2e)	1,83
Secondary material, inputs (%)	0,275
Secondary material, outputs (%)	0,0
Total energy use, A1-A3 (kWh)	8,36
Total water use, A1-A3 (m3e)	0,0682

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

The increasing popularity of sustainable timber construction is accompanied by strong demand for durable, low-VOC (Volatile Organic Compounds) flame retardants that meet the demands of the latest fire safety regulations, enable industrial fire protection of wood and are easy to maintain. At Nordtreat, we develop and produce non-toxic flame retardants for the global wood construction sector.

PRODUCT DESCRIPTION

NT DECO is a pH-neutral, water-based and low-VOC flame retardant for wood products. It provides a Euroclass B-s1, d0 reaction to fire performance with a clear or semi-translucent toned finish. The product is available in thousands of translucent tones for interior and exterior use. NT DECO is typically used for fire protection of cladding, bearing elements and interior wood products in multistorey buildings.

Further information can be found at www.nordreat.com..

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	10-15	EU
Fossil materials	2	EU
Bio-based materials	10-15	-
Water	70	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	0,004

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 litre
Mass per declared unit	1.15 kg
Functional unit	350 g/m2

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 LCA 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	MRN							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 production of the flame retardant product consists of four steps: mixing in two reactors, tinting and packing in canisters. During the first two steps, water and flame retardant components are added and mixed. At tinting the product is made specially based on customer order (34 colors). The calculations are done for an untinted product. After that the flame retardant is packed in canisters and put onto pallets for storage. These calculations are made with the most typical canister size 25 litres. The manufacturing process requires electricity as well as heating. A production loss of under 0,1 % is included in the study.

Eventually, the product is moved out and transported to the wood treatment facilities.

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.
In this case the A4, Transport to the building site, represents the transportation to the wood treatment facility and the A5, Installation into the building represents here the treatment of the wood

The transportation distance is defined according to the PCR. Average distance of transportation from production plant to the treatment site is calculated with three different groups: 94% of the deliveries go to average of 154 km distance with smaller lorry, 5% of the deliveries go to Europe, in average 2000 km by lorry and 1 % go to in average 500 km distance by lorry. Vehicle capacity utilization volume factor is assumed to be 100 % which means full load. In reality they 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 to account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product is packaged properly. Also, volume capacity utilization factor is assumed to be 100 % for the nested packaged products.

Installation includes the treatment of the wood products (electricity used by the vacuum coating machine) and the packaging waste generated. The treatment is calculated on the basis that a piece of wood is treated four times and 90 g/m2 of the flame retardant is inserted on one layer.
After the wood products are treated with the flame retardant the wood is transported to the building site. Calculations have been made with an average 145 km transportation distance with lorry of 32 ton.

PRODUCT USE AND MAINTENANCE (B1-B7)

When NT Deco is used indoors, there is no need for retreatment or maintenance. Only if the wood is damaged mechanically more than 3 mm deep, the damaged area should be treated with 350 g/m^2 of NT Deco.

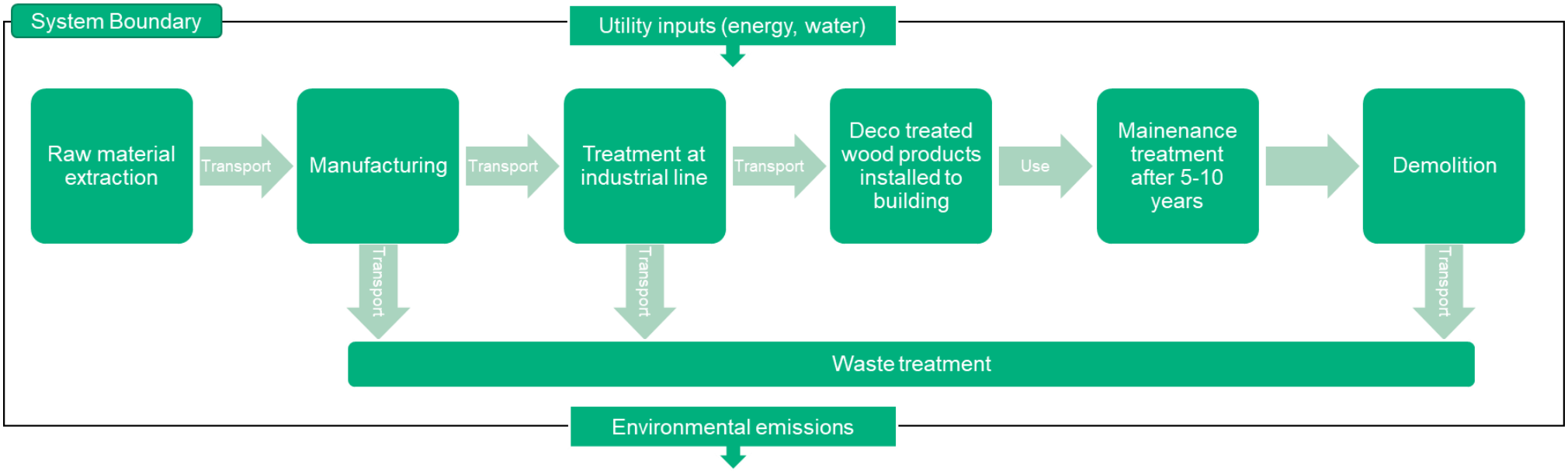
In outdoor use the treatment will last at least five years. After that the need for maintenance treatment should be checked and damaged surfaces should be treated with 175 g/m^2 of NT Deco.

These calculations are made for indoor application where no retreatment is needed.

PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase 100% the waste is assumed to be collected as wood waste. It is assumed that the water present in product is lost as evaporation after flame retardant application, therefore the end-of-life product has a lower weight than the declared product. The consumption of energy and natural resources is negligible for disassembling of the end-of-life product since the flame retardant becomes a part of another product. So, the impacts of demolition are assumed to be zero (C1). The dismantled structure on which the flame retardant is applied to is delivered to the nearest construction waste treatment plant (C2). At the waste treatment plant, waste that can be reused, recycled or recovered for energy is separated and diverted for further use. (C3). The heating value of dried flame retardant is assumed negligible and accordingly, no benefits are included (D).

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 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	No allocation
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 LCA 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. Ecoinvent and One Click LCA databases were used 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_2e	1,3E0	9,04E-2	4,36E-1	1,83E0	4,57E-2	1,67E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,73E-3	0E0	0E0	2,34E-2
GWP – fossil	kg CO_2e	1,73E0	9,03E-2	3,88E-1	2,21E0	4,61E-2	1,37E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,72E-3	0E0	0E0	8,84E-3
GWP – biogenic	kg CO_2e	-4,39E-1	-1,11E-5	4,84E-2	-3,91E-1	2,94E-5	2,81E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,84E-6	0E0	0E0	1,46E-2
GWP – LULUC	kg CO_2e	5,2E-3	5,56E-5	1,31E-4	5,39E-3	1,5E-5	1,17E-3	MND	MND	MND	MND	MND	MND	MND	0E0	1,62E-6	0E0	0E0	-1,22E-4
Ozone depletion pot.	kg CFC_{-11}e	1,48E-7	1,87E-8	1,75E-8	1,84E-7	1,07E-8	1,76E-8	MND	MND	MND	MND	MND	MND	MND	0E0	8,21E-10	0E0	0E0	-4,52E-9
Acidification potential	mol H^+e	1,34E-2	2,41E-3	9,81E-4	1,68E-2	1,91E-4	6,6E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,49E-5	0E0	0E0	-5,22E-4
EP-freshwater[2)]	kg Pe	1,11E-4	4,77E-7	1,51E-5	1,27E-4	3,79E-7	6,57E-6	MND	MND	MND	MND	MND	MND	MND	0E0	3,59E-8	0E0	0E0	-3,1E-6
EP-marine	kg Ne	2,51E-3	5,92E-4	1,88E-4	3,29E-3	5,72E-5	1,18E-4	MND	MND	MND	MND	MND	MND	MND	0E0	4,27E-6	0E0	0E0	-5,71E-5
EP-terrestrial	mol Ne	2,53E-2	6,58E-3	2,34E-3	3,43E-2	6,32E-4	1,38E-3	MND	MND	MND	MND	MND	MND	MND	0E0	4,73E-5	0E0	0E0	-6,79E-4
POCP ("smog")[3)]	kg NMVOCe	5,39E-3	1,72E-3	7,15E-4	7,82E-3	1,99E-4	3,53E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,45E-5	0E0	0E0	-1,89E-4
ADP-minerals & metals[4)]	kg Sbe	1,1E-4	9,81E-7	1,17E-6	1,12E-4	9,94E-7	2,14E-6	MND	MND	MND	MND	MND	MND	MND	0E0	1,33E-7	0E0	0E0	-6,94E-8
ADP-fossil resources	MJ	1,78E1	1,2E0	4,23E0	2,32E1	7,06E-1	3,46E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,54E-2	0E0	0E0	-8,49E-1
Water use[5)]	m^3e depr.	1,65E0	2,88E-3	5,62E-2	1,71E0	2,47E-3	4,57E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,97E-4	0E0	0E0	-6,5E-3

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	6,48E0	1E-2	1,62E0	8,12E0	9,37E-3	1,04E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,42E-4	0E0	0E0	-2,66E-1
Renew. PER as material	MJ	0E0	0E0	1,55E-1	1,55E-1	0E0	1,55E-3	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	6,48E0	1E-2	1,78E0	8,27E0	9,37E-3	1,04E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,42E-4	0E0	0E0	-2,66E-1
Non-re. PER as energy	MJ	1,78E1	1,2E0	3,01E0	2,2E1	7,06E-1	3,44E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,54E-2	0E0	0E0	-8,49E-1
Non-re. PER as material	MJ	0E0	0E0	1,22E0	1,22E0	0E0	1,22E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	1,78E1	1,2E0	4,23E0	2,32E1	7,06E-1	3,46E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,54E-2	0E0	0E0	-8,49E-1
Secondary materials	kg	2,9E-3	0E0	2,69E-4	3,16E-3	0E0	3,16E-5	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	6,69E-2	1,37E-4	1,12E-3	6,82E-2	1,35E-4	1,58E-3	MND	MND	MND	MND	MND	MND	MND	0E0	9,63E-6	0E0	0E0	-1,45E-4

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	5,81E-1	1,36E-3	7,4E-2	6,56E-1	7E-4	1,41E-2	MND	MND	MND	MND	MND	MND	MND	0E0	6,52E-5	0E0	0E0	-4,77E-3
Non-hazardous waste	kg	1,07E0	3,62E-2	5,03E-1	1,61E0	6,4E-2	2,42E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,62E-3	0E0	0E0	-7,44E-2
Radioactive waste	kg	1,64E-5	8,37E-6	5,35E-6	3,01E-5	4,85E-6	3,31E-5	MND	MND	MND	MND	MND	MND	MND	0E0	3,75E-7	0E0	0E0	-4,65E-6

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	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	3,72E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2E-2	2E-2	0E0	2E-4	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	1,14E-1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

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_2e	1,67E0	8,97E-2	3,77E-1	2,13E0	4,57E-2	1,35E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,69E-3	0E0	0E0	1,06E-2
Ozone depletion Pot.	kg CFC_{-11}e	1,88E-7	1,48E-8	1,7E-8	2,2E-7	8,48E-9	2,25E-8	MND	MND	MND	MND	MND	MND	MND	0E0	6,55E-10	0E0	0E0	-4,4E-9
Acidification	kg SO_2e	1,06E-2	1,91E-3	7,96E-4	1,33E-2	9,31E-5	5,3E-4	MND	MND	MND	MND	MND	MND	MND	0E0	7,69E-6	0E0	0E0	-4,6E-4
Eutrophication	kg PO_4^3e	3,05E-3	2,16E-4	4,75E-4	3,74E-3	1,89E-5	2,15E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,69E-6	0E0	0E0	-8,8E-5
POCP (“smog”)	kg C_2H_4e	4,38E-4	5,11E-5	7,5E-5	5,64E-4	6E-6	2,31E-5	MND	MND	MND	MND	MND	MND	MND	0E0	5,02E-7	0E0	0E0	-1,91E-5
ADP-elements	kg Sbe	1,1E-4	9,81E-7	1,17E-6	1,12E-4	9,94E-7	2,14E-6	MND	MND	MND	MND	MND	MND	MND	0E0	1,33E-7	0E0	0E0	-6,94E-8
ADP-fossil	MJ	1,78E1	1,2E0	4,23E0	2,32E1	7,06E-1	3,46E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,54E-2	0E0	0E0	-8,49E-1

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.

Silvia Vilčeková, as an authorized verifier acting for EPD Hub Limited
06.01.2023

EPD Hub
VERIFIED ISO 14025