ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Pinja Protect G, tonad vit

Tikkurila Group

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Tikkurila Group
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Contact details	Elisabet Sahlin +46 707456360 elisabet.sahlin@tikkurila.com
Website	www.tikkurilagroup.com

PRODUCT IDENTIFICATION

Product name	Pinja Protect G, tonad vit
Product number / reference	1025009001
Place(s) of production	Nykvarn, Sweden

Laura Sariola

Committee Secretary

Markku Hedman

RTS General Director

EPD INFORMATION

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.

EPD program operator	Rakennustietosäätiö RTS sr Malminkatu 16 A, 00100 Helsinki, Finland www.cer.rts.fi
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804+A2 serves as the core PCR. In addition, the RTS PCR (Finnish version, 1.6.2020) is used.
EPD author	Valtteri Kainila, at Bionova Ltd, Suvilahdenkatu 10 B, 00500 Helsinki, Finland, www.bionova.fi
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Verification date	25.09.2020
EPD verifier	Anni Oviir, Rangi Maja OÜ, Tondi 22-4, Tallinn, 11613, Estonia, www.lcasupport.com
EPD number	RTS_80_20
ECO Platform nr.	-
Publishing date	5.10.2020
EPD valid through	25.9.2020-24.9.2025

PRODUCT INFORMATION

PRODUCT DESCRIPTION

The product is a waterborne alkyd primer paint product for exterior wood, intended for industrial application. When used for priming prior to Alcro and Beckers topcoats, Pinja Protect G ensures the overall durability of the paint system. The primer is an excellent choice when there is a high demand for permanence in a surface treatment The Nordic Swan ecolabel shows that the product fulfills strict environmental and health requirements. CMP, Certifierad Målad Panel, ensures the quality of industrially painted exterior panels

- For sawn or planed timber
- Suitable for priming of exterior boards and claddings
- Gives good protection for 12 months
- Fast drying

PRODUCT APPLICATION

Designed to be used prior to Alcro and Beckers exterior paints, thus providing a high-quality painting system for the most demanding customers. The product is used for industrial priming of exterior wood and can be applied with a spraying gun or a brushing machine. The typical customer is a saw mill or a producer of modular housing.

TECHNICAL SPECIFICATIONS

The recommended spreading amounts: wet 150 g/m2, dry 50 µm Theoretical coverage is 8-9 m2/l.

Practical coverage depends on the application method, painting conditions and the shape and roughness of the surface to be coated.

Drying times for 150 g/m2 are 1-4 h in +20 °C and 3-20 min in +50 °C temperatures.

Drying and recoating times are related to the film thickness, temperature, the relative humidity of the air and ventilation

PRODUCT STANDARDS

No relevant standards. More information can be found at the company website.

PHYSICAL PROPERTIES OF THE PRODUCT

- Weight solids 54,43%
- Water content 44,88%
- Spec. gravity 1,284 kg/l
- PVC (Pigment Volume Concentration*): 29,9 %
- VOC content 7±5 g/l.

Titanium dioxide, above box.
* definition PVC: [V pigment]/([V pigment]+[V binder] * 100
[V pigment] = Volume of pigment
[V binder] = Volume of binder

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at *https://www.tikkurila.se/produkter/pinja-protect-g#produktinformation*

PRODUCT RAW MATERIAL COMPOSITION

Material	Amount % (by weight)	Origin
Binders	50,1	EU
Fillers	17,0	Finland
Pigments	13,2	Norway
Water solvent	15,5	Sweden
Preservatives	1,3	EU
Thickeners	0,1	EU
Wetting and ph-agents	0,2	EU
Other small constituents	1,7	EU

SUBSTANCES, REACH - VERY HIGH CONCERN

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

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

Containers are provided with safety labels, which should be observed. Further information about hazardous influences and protection are detailed in individual health and safety data sheets.

A health and safety data sheet are available on request from Tikkurila Group.

RAW MATERIAL SUMMARY

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	32	EU
Water	46	EU
Fossil materials	22	EU
Bio-based materials	-	-

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

The manufacturing process of paint at Nykvarn consists of four distinct steps. Two steps for the production of paint and two for the packaging of the product. First is pre-mixing, where Water, powders (pigments, fillers, and thickeners), additives and sometimes binders are dispersed in a dissolver to a smooth paint paste. The second step is finishing the paint, where Binders, water, additives including any tinting pastes are mixed with the paint paste to a ready-to use paint.

The last two steps include the canning of the paint and loading to pallets. The paint is filled in cans of various sizes in filling machines and then loaded to pallets by robots. The full pallets are moved to a warehouse within the site.

Eventually, the paint is moved out and transported to the construction site.

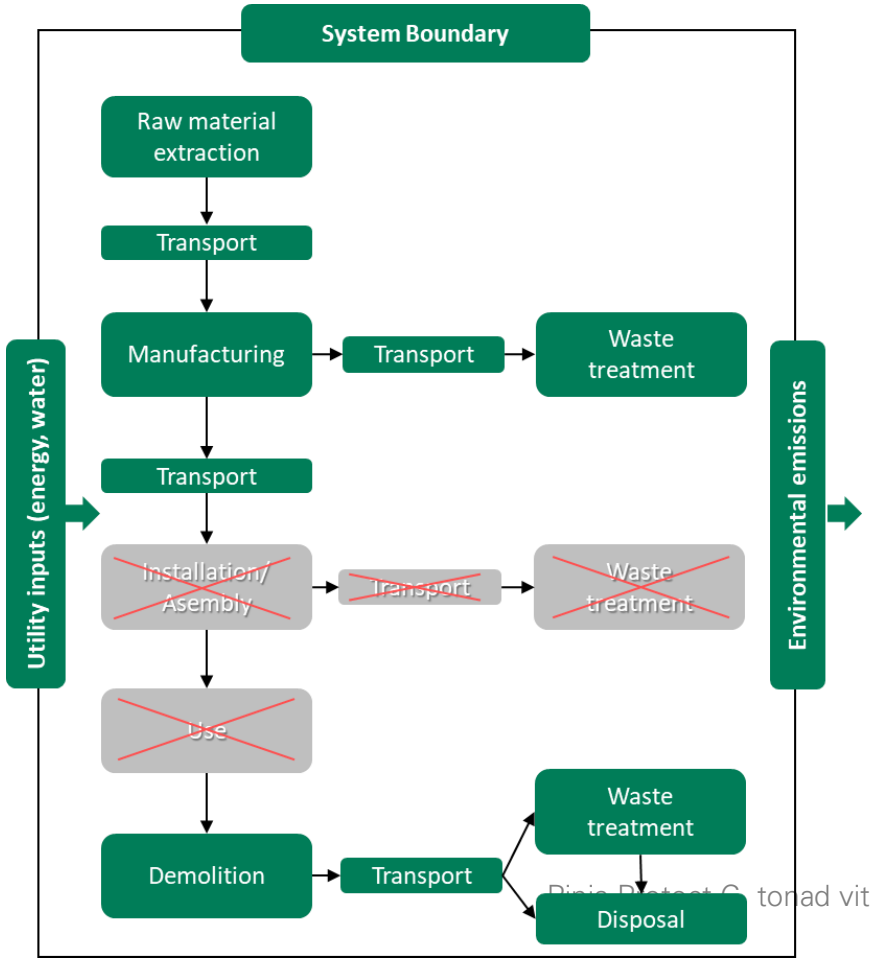
TRANSPORT (A4)

Transportation impacts occurred from final product's delivery to construction site cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions.

PRODUCT END OF LIFE (C1-C4, D)

Since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed zero (C1). All of end-of-life product is assumed to be sent to the closest facilities (C2). The heating value of dried paint is assumed negligible so the paint going to incineration is considered in final disposal (C3). About 70% of paint is assumed to be disposed of by incineration. The remaining 30% of paint is taken to landfill for final disposal (C4). The heating value of dried paint is assumed negligible. (D).

Life cycle stages diagram:



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2019 year

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 liter of paint
Mass per declared unit	1,284 kg

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	0,002

SYSTEM BOUNDARY

The scope of the EPD is "cradle to gate with modules C1-C4 and D". The modules A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport) as well as C1 (Deconstruction/ demolition), C2 (Transport at end-of-life), C3 (Waste processing), C4 (Disposal) and D (benefits and loads beyond the system boundary) are included in the study.

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	D	D
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	x	x	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.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the *EN 15804:2012+A2:2019* and *RTS 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 which data are available for are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total neglected input and output flows do also not exceed 5% of energy usage or mass. The life cycle analysis includes all industrial processes from raw material acquisition to production, distribution, and end-of-life stages.

For easier modelling and because of lack of accuracy in available modelling resources many constituents under 0,5% of product mass are excluded. These include preservatives and biocides which are all present in the product only in very small amounts and have no serious impact on the emissions of the product.

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.

ALLOCATION

As it is impossible to collect ancillary material, energy and waste consumption data separately for each product produced the in the plant, data is allocated. Allocation is based on annual production rate and made with high accuracy and precision.

The values for 1 litre of the product which is used within this study is calculated by considering the total annual production. In the factory, several kinds of paints are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. Even if the formulations have some changes, all processes are same for all of the products produced in the plant. Therefore, energy consumption and waste streams are assumed to be the same for all types of products.

According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total energy consumption, packaging materials and the generated waste per the declared product are allocated. Subsequently, the product output fixed to 1 litre of paint the corresponding amount of product is used in the calculations.

ESTIMATES AND ASSUMPTIONS

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below:

- Module A4: The transportation distance is defined according to RTS PCR. It was assumed that typical installation place is situated in the region of the production plant. Average distance of transportation from production plant to building site is equal to 442 km. Transportation method is assumed to be lorry. The transportation does not cause losses as products are packaged properly. Also, volume capacity utilisation factor is assumed to be 1 for the nested packaged products.

- Module C1: Since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed zero (C1)

- Module C2: It is estimated that the product loses some of its mass as the solvents of the paint evaporate during use. It is assumed that all the solvents in the paint have been released. All of the end-of-life product is assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is assumed to be 50 km and the transportation method is assumed as lorry which is the most common.

• Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality it may vary but as role of transportation emission in total results is small and so the variety in load assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by transportation company to serve needs of other clients.

• Module C3: The heating value of dried paint is assumed negligible so the paint going to incineration is considered in final disposal (C4).

• Module C4: All the paint waste is gathered as a part of another product and is generally not separated from it at the end of life. It is assumed that the paint follows said product to waste treatment and is treated similarly. As the paint is a primer for exterior wood the end of life scenario is the same as for wooden construction waste (CEPE, 2018). The share of waste that is recycled is therefore conservatively about 70%, as it is in a Current European practises' scenario for dimensional lumber in a study about deconstruction of wood-framed houses (Diyamandoglu and Fortuna, 2015). In said study about 40% is incinerated and 30% is recycled as raw material.

However, as dried paint is not currently recycled as material all of it goes to incineration (CEPE, 2018). As per the scenario for Current European practices in dimensional wood EOL, the remaining 30% of paint is assumed to be send to the landfill. (Diyamandoglu and Fortuna, 2015).

• Module D: The heating value of dried paint is assumed negligible.

ENVIRONMENTAL IMPACT DATA

NOTE! ENVIRONMENTAL IMPACTS - EN 15804+A1, CML / ISO 21930 ARE PRESENTED IN ANNEX

MND abbreviation stands for Module Not Declared

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Climate change – total	kg CO2e	1,83E0	1,36E−1	2,8E−1	2,25E0	7,88E−2	MND	MND	0E0	4,6E−3	0E0	1,19E0	0E0
Climate change – fossil	kg CO2e	1,74E0	1,35E−1	2,11E−1	2,08E0	7,8E−2	MND	MND	0E0	4,57E−3	0E0	1,19E0	0E0
Climate change – biogenic	kg CO2e	9,25E−2	5,8E−4	6,27E−2	1,56E−1	3,41E−4	MND	MND	0E0	2E−5	0E0	9,91E−5	0E0
Climate change – LULUC	kg CO2e	6,36E−4	5,16E−5	6,17E−3	6,86E−3	2,9E−5	MND	MND	0E0	1,7E−6	0E0	3,3E−6	0E0
Ozone depletion	kg	3,12E−6	2,99E−8	5,84E−9	3,16E−6	1,73E−8	MND	MND	0E0	1,01E−9	0E0	1,77E−9	0E0
Acidification	mol H+e	2,7E−2	6,71E−4	8E−4	2,85E−2	2,97E−4	MND	MND	0E0	1,74E−5	0E0	1,1E−4	0E0
Eutrophication, aquatic	kg PO4e	1E−3	1,15E−5	4,18E−5	1,06E−3	6,82E−6	MND	MND	0E0	4E−7	0E0	2,08E−6	0E0
Eutrophication, aquatic marine	kg Ne	2,04E−3	1,82E−4	1,44E−4	2,36E−3	8,29E−5	MND	MND	0E0	4,86E−6	0E0	4,68E−5	0E0
Eutrophication, terrestrial	mol Ne	1,62E−2	1,99E−3	1,52E−3	1,97E−2	9,01E−4	MND	MND	0E0	5,28E−5	0E0	5,12E−4	0E0
Photochemical ozone formation	kg	5,85E−3	6,03E−4	5,43E−4	7E−3	2,87E−4	MND	MND	0E0	1,68E−5	0E0	1,33E−4	0E0
Abiotic depletion, minerals &	kg Sbe	2,71E−5	3,22E−6	2,35E−6	3,27E−5	1,92E−6	MND	MND	0E0	1,12E−7	0E0	1,22E−7	0E0
Abiotic depletion of fossil	MJ	3,22E1	2,04E0	4,63E0	3,89E1	1,19E0	MND	MND	0E0	6,95E−2	0E0	1,63E−1	0E0
Water use	m3e	7,13E1	2,57E0	5,47E1	1,29E2	1,52E0	MND	MND	0E0	8,94E−2	0E0	3,55E−1	0E0

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all 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 experienced with the indicator.

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	8,45E−8	9,97E−9	9,21E−9	1,04E−7	5,9E−9	MND	MND	0E0	3,46E−10	0E0	1,15E−9	0E0
Ionizing radiation, human health	kBq	1E−1	9,51E−3	9,72E−3	1,19E−1	5,53E−3	MND	MND	0E0	3,24E−4	0E0	6,06E−4	0E0
Eco-toxicity (freshwater)	CTUe	3,87E0	7,05E−2	7,53E−2	4,01E0	4,2E−2	MND	MND	0E0	2,46E−3	0E0	1,48E−2	0E0
Human toxicity, cancer effects	CTUh	8,71E−9	4,26E−11	6,3E−10	9,38E−9	2,4E−11	MND	MND	0E0	1,41E−12	0E0	8,23E−10	0E0
Human toxicity, non-cancer	CTUh	9,09E−8	2,82E−9	6,44E−9	1E−7	1,67E−9	MND	MND	0E0	9,81E−11	0E0	2,63E−8	0E0

Land use related impacts/soil	-	2,39E0	2,08E0	6,44E−2	4,54E0	1,25E0	MND	MND	0E0	7,35E−2	0E0	1,05E−1	0E0

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

ENVIRONMENTAL IMPACTS - TRACI 2.1. / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global warming potential	kg CO2e	1,12E0	1,35E−1	2,1E−1	1,47E0	7,79E−2	MND	MND	0E0	4,57E−3	0E0	1,19E0	0E0
Ozone depletion	kg	3,1E−5	3,16E−8	6,86E−9	3,1E−5	1,83E−8	MND	MND	0E0	1,07E−9	0E0	1,88E−9	0E0
Acidification	kg SO2e	1,93E−2	5,8E−4	6,6E−4	2,05E−2	2,59E−4	MND	MND	0E0	1,52E−5	0E0	1E−4	0E0
Eutrophication	kg Ne	3,45E−3	1,51E−4	4,01E−4	4,01E−3	8,59E−5	MND	MND	0E0	5,04E−6	0E0	2,56E−3	0E0
Photochemical Smog Formation	kg O3e	5,56E−2	1,14E−2	7,79E−3	7,47E−2	5,17E−3	MND	MND	0E0	3,03E−4	0E0	2,94E−3	0E0
Depletion of non-renewable	MJ	2,18E0	2,85E−1	5,98E−1	3,06E0	1,65E−1	MND	MND	0E0	9,68E−3	0E0	2,04E−2	0E0

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renewable PER used as energy	MJ	0E0	2,29E−2	1,14E0	1,16E0	1,35E−2	MND	MND	0E0	7,92E−4	0E0	0E0	0E0
Renewable PER used as	MJ	1,6E0	0E0	4,16E−1	2,01E0	0E0	MND	MND	0E0	0E0	0E0	3,72E−3	0E0
Total use of renewable PER	MJ	1,6E0	2,29E−2	1,55E0	3,17E0	1,35E−2	MND	MND	0E0	7,92E−4	0E0	3,72E−3	0E0
Non-renew. PER used as	MJ	0E0	2,07E0	5,18E−2	2,12E0	1,2E0	MND	MND	0E0	7,05E−2	0E0	0E0	0E0
Non-renew. PER used as	MJ	2,15E1	0E0	4,82E0	2,63E1	0E0	MND	MND	0E0	0E0	0E0	1,68E−1	0E0
Total use of non-renewable	MJ	2,15E1	2,07E0	4,87E0	2,84E1	1,2E0	MND	MND	0E0	7,05E−2	0E0	1,68E−1	0E0
Use of secondary materials	kg	3,26E−2	7,92E−4	5,22E−3	3,86E−2	4,6E−4	MND	MND	0E0	2,69E−5	0E0	2,66E−4	0E0
Use of renewable secondary	MJ	4,48E−2	4,77E−4	1,9E−2	6,43E−2	2,8E−4	MND	MND	0E0	1,64E−5	0E0	1,31E−4	0E0
Use of non-renew. secondary	MJ	2,15E−2	3,68E−3	7,31E−3	3,25E−2	2,13E−3	MND	MND	0E0	1,25E−4	0E0	9,58E−4	0E0
Use of net fresh water	m3	4,73E−1	4,41E−2	5,99E−2	5,77E−1	2,62E−2	MND	MND	0E0	1,54E−3	0E0	4,16E−3	0E0

PER abbreviation stands for primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	Kg	2,22E−1	2,65E−3	5,44E−2	2,79E−1	1,55E−3	MND	MND	0E0	9,08E−5	0E0	1,65E−2	0E0
Non-hazardous waste	Kg	2,46E0	1,75E−1	2,09E−1	2,84E0	1,05E−1	MND	MND	0E0	6,15E−3	0E0	7,18E−1	0E0
Radioactive waste	Kg	4,4E−5	1,35E−5	3,66E−6	6,11E−5	7,81E−6	MND	MND	0E0	4,58E−7	0E0	5,96E−7	0E0

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	Kg	0E0	0E0	0E0	0E0	0E0	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	Kg	3E−2	6,81E−4	1,41E−2	4,48E−2	3,89E−4	MND	MND	0E0	2,28E−5	0E0	2,6E−4	0E0
Materials for energy recovery	Kg	4,84E−4	6,03E−6	1,9E−4	6,81E−4	3,56E−6	MND	MND	0E0	2,08E−7	0E0	1,38E−6	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	MND	MND	0E0	0E0	0E0	0E0	0E0

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Climate change – total	kg CO2e	1,38E0	1,06E−1	1,71E−1	1,66E0	6,14E−2	MND	MND	0E0	3,6E−3	0E0	9,29E−1	0E0
Abiotic depletion, minerals & metals	kg Sbe	2,11E−5	2,51E−6	1,83E−6	2,54E−5	1,49E−6	MND	MND	0E0	8,75E−8	0E0	9,53E−8	0E0
Abiotic depletion of fossil	MJ	2,51E1	1,59E0	3,6E0	3,03E1	9,24E−1	MND	MND	0E0	5,42E−2	0E0	1,27E−1	0E0
Water use	m3e	3,69E−1	3,43E−2	4,66E−2	4,5E−1	2,04E−2	MND	MND	0E0	1,2E−3	0E0	3,24E−3	0E0
Use of secondary materials	kg	2,54E−2	6,17E−4	4,07E−3	3,01E−2	3,58E−4	MND	MND	0E0	2,1E−5	0E0	2,07E−4	0E0
Biogenic carbon content in product	kg C	N/A	N/A	2,00E−3	N/A	N/A	MND	MND	N/A	N/A	N/A	N/A	N/A

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, hydro, reservoir, non-alpine region (Reference product: electricity, high voltage), Sweden, Ecoinvent 3.6, year: 2020 Electricity production, wind, 1-3mw turbine, onshore (Reference product: electricity, high voltage), Sweden, Ecoinvent 3,6, year: 2020 Electricity production, photovoltaic, 570kwp open ground installation, multi-si (Reference product: electricity, low voltage), Sweden, Ecoinvent 3,6, year: 2020
Electricity CO2e / kWh	Hydro: 0.0447 kg CO_2e / kWh Wind: 0.0154 kg CO_2e / kWh Solar: 0.0786 kg CO_2e / kWh
District heating data source and quality	Heat and power co-generation, wood chips, 6667 kw, state-of-the-art 2014 (Reference product: heat, district or industrial, other than natural gas), Sweden, Ecoinvent 3,6, year: 2020 Heat and power co-generation, oil (Reference product: heat, district or industrial, other than natural gas), Sweden, Ecoinvent 3,6, year: 2020
District heating CO2e / kWh	Wood chip: 0.0111 kg CO_2e / kWh Oil: 0.1500 kg CO_2e / kWh

Transport scenario documentation

Scenario parameter	Value
A4 specific transport CO2e emissions, kg CO2e / tkm	0,132
A4 average transport distance, km	442
Transport capacity utilization, %	100
Bulk density of transported products, kg/m^3	1284
Volume capacity utilisation factor for nested packaged products	1

End of life scenario documentation

Scenario parameter	Value
Collection process – kg collected separately	0,488
Collection process – kg collected with mixed waste	0,209
Recovery process – kg for re-use	-
Recovery process – kg for recycling	-
Recovery process – kg for energy recovery	0,488
Disposal (total) – kg for final deposition	0,209
Scenario assumptions for transportation	End-of-life product is transported 50 km with an average lorry.

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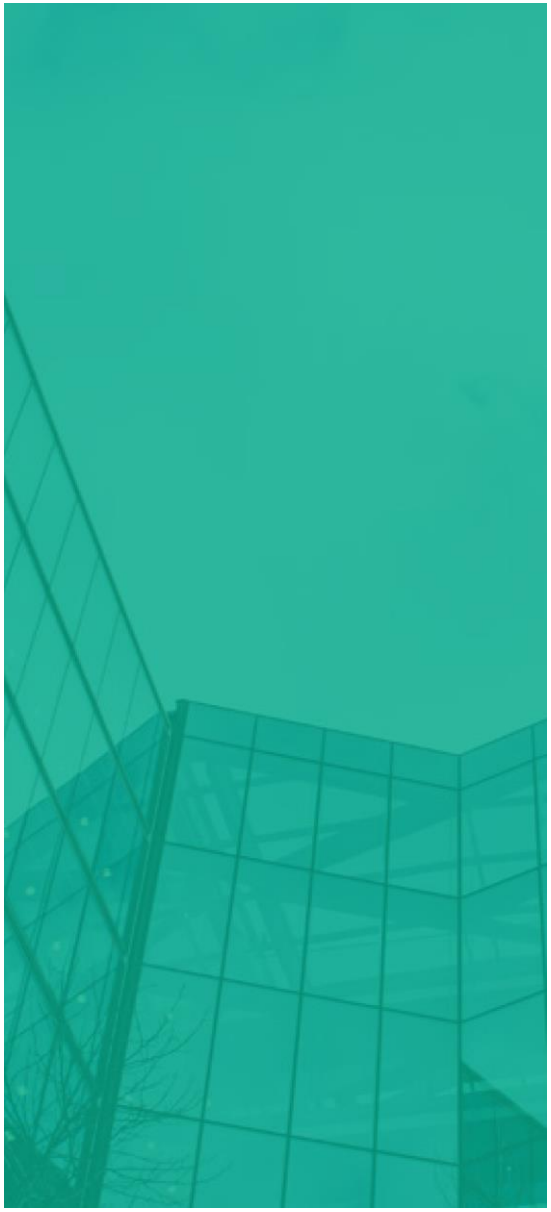

ABOUT THE MANUFACTURER

Tikkurila offers a broad range of decorative paints for consumers and professionals for surface protection and decoration. The product offering includes, among others, interior paints, lacquers, and effect products, exterior products for wood, masonry, and metal surfaces, as well as services related to painting. In addition, Tikkurila produces paints and coatings for the metal and wood industries.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	Tikkurila Group
EPD author	Valtteri Kainila, Bionova Ltd
EPD verifier	Anni Oviir, Rangi Maja OÜ
EPD program	RTS EPD
Background data	This EPD is based on Ecoinvent 3.6 (cut-off), CEPE database v3.0 and One Click LCA databases
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for Paints, Coatings, Sealants and Adhesives

ANNEX: ENVIRONMENTAL IMPACTS - EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global warming potential	kg CO2e	1,77E0	1,36E−1	2,2E−1	2,13E0	7,88E−2	MND	MND	0E0	4,62E−3	0E0	1,19E0	0E0
Depletion of stratospheric ozone	kg	3,89E−6	2,37E−8	5,44E−9	3,92E−6	1,38E−8	MND	MND	0E0	8,06E−10	0E0	1,51E−9	0E0
Acidification	kg SO2e	3,11E−2	5,39E−4	6,8E−4	3,23E−2	2,39E−4	MND	MND	0E0	1,4E−5	0E0	8,05E−5	0E0
Eutrophication	kg PO4	2,3E−3	1,07E−4	2,04E−4	2,61E−3	5,49E−5	MND	MND	0E0	3,22E−6	0E0	9,16E−4	0E0
Photochemical ozone formation	kg	1,17E−3	2,09E−5	8,09E−5	1,27E−3	1,04E−5	MND	MND	0E0	6,07E−7	0E0	5,76E−6	0E0
Abiotic depletion of non-fossil	kg Sbe	2,71E−5	3,22E−6	2,35E−6	3,27E−5	1,92E−6	MND	MND	0E0	1,12E−7	0E0	1,22E−7	0E0
Abiotic depletion of fossil	MJ	3,22E1	2,04E0	4,63E0	3,89E1	1,19E0	MND	MND	0E0	6,95E−2	0E0	1,63E−1	0E0