



ENVIRONMENTAL PRODUCT DECLARATION

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

Raw particleboard (PB) Kronospan Polska Sp. z o.o.



EPD HUB, HUB-1166

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GENERAL INFORMATION

MANUFACTURER

Manufacturer	Kronospan Polska Sp. z o.o.
Address	Waryńskiego 1, 78-400 Szczecinek, Poland
Contact details	kronosfera@kronospan.pl
Website	https://kronospan.com/en_PL

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 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Jakub Włodarczyk, Viverno Sp. z o.o.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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	Raw Particleboard (PB)
Additional labels	Particleboard P2, Particleboard P3, Particleboard P5, PB FR
Product reference	-
Place of production	Szczecinek, Poland
Period for data	January 2022 - December 2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m3
Declared unit mass	633.14 kg
GWP-fossil, A1-A3 (kgCO2e)	2,93E+02
GWP-total, A1-A3 (kgCO2e)	-7,15E+02
Secondary material, inputs (%)	0.125
Secondary material, outputs (%)	100.0
Total energy use, A1-A3 (kWh)	2150.0
Total water use, A1-A3 (m3e)	1,13E+01









PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

The Szczecinek plant is a world leader in the production of raw MDF, HDF and particleboard, laminated MDF and particleboard and lacquered HDF. The plant produces top-quality materials for the furniture industry from certified, post-consumer and recycled wood. The factory is certified to demonstrate the legal origin of the wood raw material.

The Szczecinek plant is one of the partners forming the Szczecin Furniture Cluster. The aim of the clusters development is to create a wood and furniture center in Szczecinek and develop this industry in the region.

PRODUCT DESCRIPTION

Particleboard (sometimes known as chipboard) is a multi-purpose material and one of the most widely-used wood-based panels. Particleboard is an engineered wood-based product manufactured from wood chip particles and a synthetic binding resin by forming the board in a press using heat and pressure. Raw particleboard is a basic semi-product used by the furniture industry. Their three-layer structure, formed by pressing small fractions of wood, ensures ease of processing and stability of physicomechanical and dimensional parameters. The outer layers, made up of fine fractions, form the surface of the board with low roughness, so they can be successfully covered with thin films while ensuring high resistance to peeling. The smooth transition between successive layers of particleboard makes the structure uniform, thereby increasing the strength parameters of the board. Particleboard is successfully used for refining furniture fronts by laminating and veneering. It is also used for direct application - as structural elements in the production of upholstered furniture. Raw particle boards are widely used in the construction industry, primarily as insulation materials and partitions. They are a basic semifinished product for the production of worktops, window sills.

The Kronobuild® product line includes boards with specialist application properties – Fire Retardant FR PB (FireBoard).

Further information can be found at https://kronospan.com/en_PL.



Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	7	Europe
Bio-based materials	93	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	274.77
Biogenic carbon content in packaging, kg C	0.078

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m3
Mass per declared unit	633.14 kg (thickness 12-38mm)
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.

	rodu stage			mbly age				Use s	tage			En	d of li	fe sta	age	S	Beyond the system boundaries			
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D			
х	х	х	MND	MND	MND	MND	MND	MND	MND	MND	MND	х	х	х	х		х			
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.

Raw material extraction and supply (A1):

This stage includes extraction and processing of all raw materials (e.g. logs, wood chips, sawdust, scrap wood, recycled wood, chemicals) used to manufacture the product.

Transport of raw materials and inputs to the manufacturer (A2): This module covers the delivery of all materials for the production process, including those in the product itself, ancillary materials, and the products packaging materials.

- Transportation of the logs, woodchips, sawdust and post-consumer recycled timber to the Szczecinek site.
- Transportation of chemicals and packaging materials from manufacturer/supplier to the Szczecinek site.

Manufacturing of the products, and packaging (A3):

Manufacturing stage includes:

- Electricity, heat, and fuel (for boilers, dryer burners, working machinery, e.g. forklifts) consumption in the production process
- Ancillary materials that are used in the production process but don't form part of the product (e.g. water, chemicals for water treatment) and packaging materials that are used to package the final product (e.g. PET straps, laths)
- Treatment of waste and generated from the production process.

The wood waste (wood leftovers, trimmings) and sanding dust are burned in an on-site biomass plant. The thermal energy generated is recycled for consumption in production.

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.

This EPD does not cover the assembly stage. Air, soil, and water impacts during the transport and installation have not been studied.

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)

De-construction, demolition (C1):

Mechanical dismantling - 0.01 kWh diesel use per kg of material was assumed for deconstruction.

Transport to waste processing (C2):

Transport to waste treatment by EURO 6 truck over a distance of 50 km is used as a representative scenario.

Waste processing for reuse, recycling, and energy recovery (C3):

The scenario at end of life assumes the product is considered to be incinerating with energy recovery (100%). Incineration does not require any additional process. This module includes environmental loads due to waste incineration. The resulting effects and potential credits are declared in module D.

Disposal and the associated processes (C4):

The scenario at end of life assumes the product is considered to be incinerating with energy recovery (100%). This module includes environmental impact of waste packaging landfilling only.

Environmental benefits and loads (D):

Energy from utilization of the boards in an incineration plant is assigned to module D. It is also assumed that the thermal energy of the incineration process is higher than 60%. Energy produced in the form of electricity and thermal energy replaces thermal energy and electrical energy in accordance with the European mix.

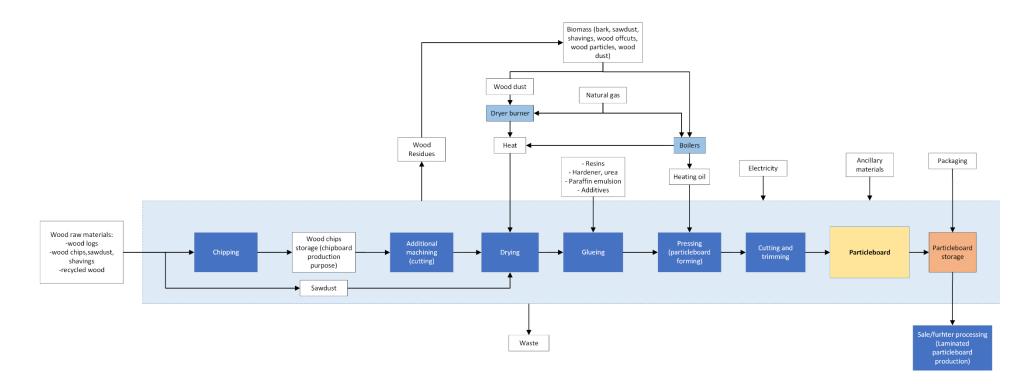








MANUFACTURING PROCESS











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	Allocated by mass or volume							
Packaging materials	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. Ecoinvent v3.8 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	А3	A1-A3	A4	A5	B1	B2	В3	B4	B5	B6	B7	C1	C2	С3	C4	D
GWP – total ¹⁾	kg CO₂e	-8,44E+02	1,06E+01	1,18E+02	-7,15E+02	MND	2,10E+00	2,85E+00	1,01E+03	1,39E-02	-6,06E+02								
GWP – fossil	kg CO₂e	1,64E+02	1,06E+01	1,19E+02	2,93E+02	MND	2,10E+00	2,85E+00	5,83E+00	1,39E-02	-6,06E+02								
GWP – biogenic	kg CO₂e	-1,01E+03	0,00E+00	-2,88E-01	-1,01E+03	MND	0,00E+00	0,00E+00	1,01E+03	0,00E+00	0,00E+00								
GWP – LULUC	kg CO₂e	2,26E-01	4,26E-03	2,75E-02	2,58E-01	MND	2,09E-04	1,11E-03	2,05E-03	2,97E-07	-3,95E-01								
Ozone depletion pot.	kg CFC-11e	2,97E-05	2,48E-06	4,48E-06	3,66E-05	MND	4,48E-07	6,70E-07	6,75E-07	4,28E-10	-3,24E-05								
Acidification potential	mol H⁺e	7,84E-01	3,49E-02	8,50E-01	1,67E+00	MND	2,18E-02	9,28E-03	1,96E-01	1,02E-05	-4,71E+00								
EP-freshwater ²⁾	kg Pe	4,28E-03	9,14E-05	1,52E-02	1,96E-02	MND	6,94E-06	2,41E-05	1,03E-04	1,03E-08	-3,30E-02								
EP-marine	kg Ne	1,76E-01	7,68E-03	1,02E-01	2,86E-01	MND	9,64E-03	2,04E-03	9,20E-02	2,15E-05	-5,48E-01								
EP-terrestrial	mol Ne	1,96E+00	8,52E-02	1,15E+00	3,20E+00	MND	1,06E-01	2,26E-02	1,05E+00	4,24E-05	-6,39E+00								
POCP ("smog") ³⁾	kg NMVOCe	5,24E-01	3,28E-02	3,22E-01	8,79E-01	MND	2,91E-02	8,77E-03	2,76E-01	1,50E-05	-1,77E+00								
ADP-minerals & metals ⁴⁾	kg Sbe	2,79E-03	2,59E-05	1,18E-04	2,94E-03	MND	1,06E-06	6,94E-06	2,58E-05	4,31E-09	-4,56E-04								
ADP-fossil resources	MJ	4,78E+03	1,66E+02	1,34E+03	6,29E+03	MND	2,82E+01	4,46E+01	5,92E+01	3,06E-02	-7,28E+03								
Water use ⁵⁾	m³e depr.	3,02E+02	7,54E-01	2,63E+01	3,29E+02	MND	7,58E-02	1,99E-01	1,28E+01	3,19E-04	-1,04E+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, PEF

Impact category	Unit	A1	A2	А3	A1-A3	A4	A5	B1	B2	В3	B4	B5	В6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	5,91E-06	1,20E-06	2,08E-06	9,19E-06	MND	5,83E-07	3,24E-07	1,58E-06	2,24E-10	-4,12E-05								
Ionizing radiation ⁶⁾	kBq U235e	9,71E+00	7,98E-01	3,45E+00	1,40E+01	MND	1,30E-01	2,14E-01	2,28E-01	2,05E-04	-8,89E+01								
Ecotoxicity (freshwater)	CTUe	2,40E+03	1,48E+02	1,60E+03	4,15E+03	MND	1,69E+01	3,97E+01	1,38E+02	4,77E-02	-1,33E+04								
Human toxicity, cancer	CTUh	1,55E-06	3,65E-09	4,31E-08	1,60E-06	MND	6,49E-10	9,71E-10	1,88E-07	8,99E-13	-1,85E-07								
Human tox. non-cancer	CTUh	2,07E-06	1,42E-07	1,97E-06	4,18E-06	MND	1,23E-08	3,82E-08	5,50E-07	1,37E-11	-6,10E-06								
SQP ⁷⁾	-	7,44E+03	1,90E+02	2,40E+02	7,87E+03	MND	3,66E+00	5,13E+01	1,79E+01	8,05E-02	-4,45E+03								

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	А3	A1-A3	A4	A5	B1	B2	В3	B4	B5	В6	B7	C1	C2	С3	C4	D
Renew. PER as energy ⁸⁾	MJ	1,77E+03	1,93E+00	9,27E+01	1,86E+03	MND	1,61E-01	5,02E-01	2,65E+00	1,63E-03	-1,36E+03								
Renew. PER as material	MJ	5,10E+03	0,00E+00	1,72E+00	5,10E+03	MND	0,00E+00	0,00E+00	-5,10E+03	0,00E+00	0,00E+00								
Total use of renew. PER	MJ	6,86E+03	1,93E+00	9,44E+01	6,96E+03	MND	1,61E-01	5,02E-01	-5,10E+03	1,63E-03	-1,36E+03								
Non-re. PER as energy	MJ	3,28E+03	1,66E+02	1,34E+03	4,78E+03	MND	2,82E+01	4,46E+01	5,92E+01	3,06E-02	-7,28E+03								
Non-re. PER as material	MJ	8,86E+02	0,00E+00	3,17E+00	8,89E+02	MND	0,00E+00	0,00E+00	-8,86E+02	-3,17E+00	0,00E+00								
Total use of non-re. PER	MJ	4,16E+03	1,66E+02	1,34E+03	5,67E+03	MND	2,82E+01	4,46E+01	-8,27E+02	-3,14E+00	-7,28E+03								
Secondary materials	kg	7,91E-01	4,68E-02	1,19E-01	9,57E-01	MND	1,10E-02	1,24E-02	1,97E-01	1,16E-05	-6,03E-01								
Renew. secondary fuels	MJ	6,35E-03	4,65E-04	1,10E+03	1,10E+03	MND	3,61E-05	1,25E-04	2,52E-04	5,29E-07	-3,81E-03								
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00								
Use of net fresh water	m³	7,77E+00	2,17E-02	3,46E+00	1,13E+01	MND	1,71E-03	5,76E-03	3,08E-01	4,03E-05	-5,66E+00								

⁸⁾ PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	А3	A1-A3	A4	A5	B1	B2	В3	B4	B5	В6	В7	C1	C2	С3	C4	D
Hazardous waste	kg	8,30E+00	2,21E-01	1,33E+01	2,18E+01	MND	3,77E-02	5,88E-02	0,00E+00	0,00E+00	-4,81E+01								
Non-hazardous waste	kg	1,56E+02	3,66E+00	6,75E+02	8,35E+02	MND	2,65E-01	9,65E-01	6,33E+02	1,38E-01	-2,29E+03								
Radioactive waste	kg	5,20E-03	1,12E-03	1,37E-03	7,69E-03	MND	1,98E-04	3,01E-04	0,00E+00	0,00E+00	-3,26E-02								

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	А3	A1-A3	A4	A5	B1	B2	В3	B4	B5	В6	B7	C1	C2	С3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00								
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00								
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	MND	0,00E+00	0,00E+00	8,22E+03	0,00E+00	0,00E+00								









ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	В3	B4	B5	В6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO₂e	1,58E+02	1,05E+01	1,17E+02	2,86E+02	MND	2,07E+00	2,82E+00	5,72E+00	1,13E-02	-5,95E+02								
Ozone depletion Pot.	kg CFC ₋₁₁ e	2,53E-05	1,97E-06	3,42E-06	3,07E-05	MND	3,55E-07	5,31E-07	6,09E-07	3,39E-10	-2,65E-05								
Acidification	kg SO₂e	6,07E-01	2,83E-02	7,29E-01	1,36E+00	MND	1,55E-02	7,53E-03	1,32E-01	7,58E-06	-4,03E+00								
Eutrophication	kg PO₄³e	3,79E-01	6,20E-03	4,81E-01	8,66E-01	MND	3,60E-03	1,65E-03	1,86E-01	8,43E-04	-1,16E+00								
POCP ("smog")	kg C ₂ H ₄ e	6,76E-02	1,30E-03	2,72E-02	9,61E-02	MND	3,40E-04	3,47E-04	5,35E-03	2,03E-06	-1,72E-01								
ADP-elements	kg Sbe	2,79E-03	2,52E-05	1,18E-04	2,93E-03	MND	1,05E-06	6,74E-06	2,05E-05	4,15E-09	-4,54E-04								
ADP-fossil	MJ	4,16E+03	1,66E+02	1,34E+03	5,66E+03	MND	2,82E+01	4,46E+01	5,92E+01	3,06E-02	-7,28E+03								









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

22.02.2024













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