ENVIRONMENTAL PRODUCT DECLARATION

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

Leijona levyt® Lion Boards ®

Suomen Kuitulevy Oy, Finnish Fibreboard Ltd

EPD HUB, HUB-0633

Publishing date 18 August 2023, last updated on 18 August 2023, valid until 18 August 2028

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Suomen Kuitulevy Oy, Finnish Fibreboard Ltd
Address VP-002	Vuorikatu 24 B, 18130 HEINOLA, FINLAND
Contact details	info@finfib.fi
Website	finfib.fi

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 and D
EPD author	Susanna Kiviniemi
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Haiha Nguyen, 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	Leijona levyt® LION Boards®
Additional labels	-
Product reference	-
Place of production	Finland
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m3
Declared unit mass	980 kg
GWP-fossil, A1-A3 (kgCO2e)	208 kgCO2e
GWP-total, A1-A3 (kgCO2e)	-1 740 kgCO2e
Secondary material, inputs (%)	98.43
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	2570.0
Total water use, A1-A3 (m3e)	3.98

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Finnish Fibreboard Ltd has manufactured high-quality wood fibre hardboards in Heinola, Finland since 1949. Over the decades, production technology, products and their end uses have developed significantly. However, the basic idea of the wood fibreboard has remained the same: the wood raw material used in manufacture of LION Boards®, are by-products from the Finnish wood processing industry - sawdust and wood chips.

PRODUCT DESCRIPTION

Finnish Fibreboard manufactures a comprehensive selection of LION Boards®, for example for renovations and new builds, construction sector, the furniture industry, DIY and for various packaging and protection needs. LION Boards® has many applications such as ceiling and wall linings, acoustic structures, protective structures, construction structures, and flooring and roof underlays.

LION Boards® are safe for both human health and the environment due to their natural composition. LION Boards® are produced using the wet method, which differs from dry process wood fibreboards (HDF, MDF) so that we use the wood's own natural binder, lignin. The wood fibres and the manufacturing method create our products excellent properties; strength, toughness, with natural purity of the wood. Due to this, no potentially harmful substances are released from the boards, and products can easily be reused and recycled.

Further information can be found at finnishfibreboard.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0%	-
Minerals	0%	-
Fossil materials	0%	-
Bio-based materials	100%	Finland

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	133.64
Biogenic carbon content in packaging, kg C	0.73

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m3
Mass per declared unit	980 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
-	-	-

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Ass-embly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1-B7							C1	C2	C3	C4	D		
x	x	x	MND		MNR							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.

Finnish Fibreboard hardboards are manufactured in their own factory in Heinola, Finland. The hardboards are produced from by-products such as wood chips and saw dust, from other local wood processing industries in Finland. The manufacturing process uses woods own agglutination agent, lignin. Also, small amount of wax and resin are used to improve moisture-proof properties of the hardboards. The wax is omitted in the calculations as the amount is less than 0,4 % and a suitable environmental information was not available. The finished products are packed into wooden pallets for delivery. Small amount of manufacturing waste and general waste from the facilities is produced. The waste are collected separately and transported to waste treatment centre in the vicinity of the factory.

TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not cover the transportation to client and installation stage. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT USE AND MAINTENANCE (B1-B7)

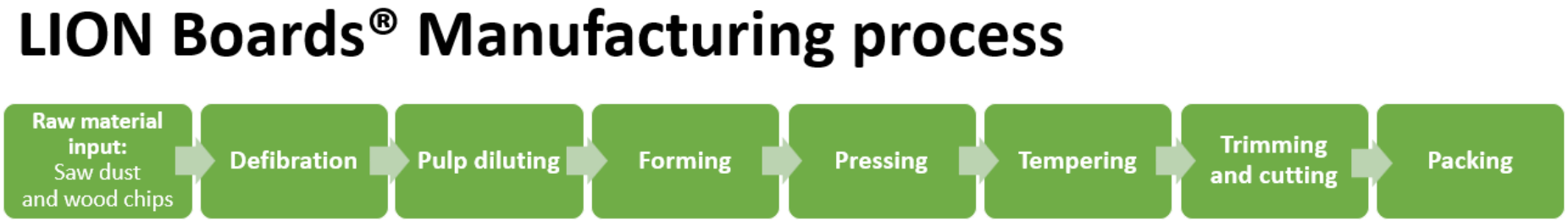
This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The demolition and/or de-construction of the product is part of the demolition of a construction the product has been installed to. The hardboards of Finnish Fibreboard are assumed to be incinerated after demolition. The treatments for waste hardboards of Finnish Fibreboard are conservatively assumed to be a market average of waste wood in Europe. The average transportation distance to the waste processing facility is assumed to be 80 km. Waste processing till end-of-waste status, as well as benefits and loads

beyond the system of packaging materials have been considered in the product end of life and module D, respectively.

MANUFACTURING PROCESS



Screened wood raw material is softened and defibrated. Pulp is diluted with water and conducted on to the screen meshes of the forming machine.

Formed mat is cut into sheets and then pressed in hot press. Pressed boards can be tempered for achieving better strength and moisture resistance properties. Boards are trimmed and cut before packing.

The mill has a closed water-recycling system. Excess process water is evaporated, and the reject generated in the evaporation is burnt in the power plant

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 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	-1,91E3	5,03E0	1,61E2	-1,74E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	7,38E0	1,97E3	0E0	-3,11E1
GWP – fossil	kg CO_2e	4E1	5,03E0	1,63E2	2,08E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	7,38E0	1,76E1	0E0	-3,14E1
GWP – biogenic	kg CO_2e	-1,95E3	0E0	-2,88E0	-1,95E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	1,95E3	0E0	6,26E-1
GWP – LULUC	kg CO_2e	2,3E-2	1,86E-3	1,36E0	1,38E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	2,72E-3	4,93E-3	0E0	-2,8E-1
Ozone depletion pot.	kg CFC_{-11}e	4,47E-6	1,16E-6	1,48E-5	2,04E-5	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,7E-6	1,05E-6	0E0	-1,78E-6
Acidification potential	mol H^+e	2,02E-1	2,13E-2	1,22E0	1,44E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	3,12E-2	1,61E-1	0E0	-1,27E-1
EP-freshwater[2)]	kg Pe	0E0	4,11E-5	7,2E-3	7,25E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,04E-5	2,05E-4	0E0	-1,17E-3
EP-marine	kg Ne	3,39E-2	6,32E-3	2,84E-1	3,24E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	9,28E-3	7,64E-2	0E0	-2,24E-2
EP-terrestrial	mol Ne	4,17E-1	6,98E-2	4,22E0	4,7E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,02E-1	8,12E-1	0E0	-2,6E-1
POCP ("smog")[3)]	kg NMVOCe	1,9E-1	2,23E-2	1,1E0	1,31E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	3,28E-2	2E-1	0E0	-6,86E-2
ADP-minerals & metals[4)]	kg Sbe	0E0	1,19E-5	6,75E-4	6,87E-4	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,73E-5	4,15E-5	0E0	-1,26E-4
ADP-fossil resources	MJ	0E0	7,55E1	4,46E3	4,54E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,11E2	1,29E2	0E0	-9,48E2
Water use[5)]	m^3e depr.	2,88E1	3,38E-1	1,09E2	1,38E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	4,96E-1	6,56E1	0E0	-1,98E1

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[8)]	MJ	2,24E1	8,55E-1	4,05E3	4,07E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,25E0	3,15E0	0E0	-2,3E2
Renew. PER as material	MJ	2,87E3	0E0	2,5E1	2,89E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-2,89E3	0E0	-7,15E0
Total use of renew. PER	MJ	2,89E3	8,55E-1	4,07E3	6,96E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,25E0	-2,89E3	0E0	-2,38E2
Non-re. PER as energy	MJ	7,45E2	7,55E1	4,36E3	5,18E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,11E2	1,29E2	0E0	-9,48E2
Non-re. PER as material	MJ	3,03E2	0E0	3,93E1	3,42E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-3,42E2	0E0	1,4E-1
Total use of non-re. PER	MJ	1,05E3	7,55E1	4,4E3	5,52E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,11E2	-2,13E2	0E0	-9,48E2
Secondary materials	kg	1,04E3	2,1E-2	1,18E0	1,04E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	3,08E-2	3,09E-1	0E0	-1,82E-1
Renew. secondary fuels	MJ	0E0	2,13E-4	6,42E-1	6,42E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	3,1E-4	7,28E-4	0E0	-4,1E-2
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	2,99E-1	9,78E-3	3,67E0	3,98E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,44E-2	-2,07E-1	0E0	-8,26E-1

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	2,81E0	9,99E-2	1E1	1,29E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,47E-1	1,53E-3	0E0	-1,98E0
Non-hazardous waste	kg	6,19E1	1,64E0	3,13E2	3,76E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	2,41E0	9,82E2	0E0	-2,52E3
Radioactive waste	kg	7,6E-4	5,06E-4	4,37E-2	4,5E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	7,41E-4	4,85E-7	0E0	-9,99E-3

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,02E0	2,02E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	6,06E-1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	7,68E1	7,68E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	9.82E2	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	MND	MND	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	4E1	4,98E0	1,61E2	2,06E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	7,3E0	1,69E1	0E0	-3,11E1
Ozone depletion Pot.	kg CFC-$_{11}$e	4,77E-6	9,17E-7	1,36E-5	1,92E-5	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,34E-6	9,04E-7	0E0	-1,55E-6
Acidification	kg SO_2e	1,64E-1	1,65E-2	8,8E-1	1,06E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	2,43E-2	1,13E-1	0E0	-1,04E-1
Eutrophication	kg PO_4^3e	5,78E-2	3,77E-3	4,22E-1	4,84E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	5,53E-3	1,3E-1	0E0	-4,56E-2
POCP (“smog”)	kg C_2H_4e	2,54E-2	6,46E-4	7,37E-2	9,97E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	9,48E-4	3,72E-3	0E0	-4,72E-3
ADP-elements	kg Sbe	5,51E-4	1,15E-5	6,75E-4	1,24E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,67E-5	3,66E-5	0E0	-1,27E-4
ADP-fossil	MJ	1,05E3	7,55E1	4,26E3	5,38E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,11E2	1,29E2	0E0	-8,99E2

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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
18.08.2023

VERIFIED ISO 14025