

# LION Boards®, hard fibreboard

## Environmental product declaration

### Owner of the declaration

Finnish Fibreboard Ltd  
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### Date

06.07.2020

### Manufacturing site

Heinola, Finland

### LCA performed by

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15210 LAHTI

### CEN standard EN 158045 serves as the core PCR\*

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Independent verification of the declaration and data, according to EN ISO 14025:2010

internal

external

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Third party verifier:

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\*Product category rules

## Product application and technical information

This EPD concerns uncoated LION board® (hard fibreboard) manufactured by Finnish Fibreboard Ltd in Heinola manufacturing plant. Products can be used in construction, furniture, carpentry, packaging and protection industry in different applications.

The main ingredients are sawdust and woodchips side streams from Finnish wood industry.

Products used in construction are manufactured and CE marked in accordance with EN 13986 standard. They have M1 emission classification.

The average density of the product is 940 kg/m<sup>3</sup>. The products are available in different thicknesses between 3-6 mm.

## Product content

Product composition	Amount [%]
Sawdust and woodchips	98
Additives	2
Total	100

## LCA calculation information

The calculation was made according to the EN 15804 standard.

### Declared unit:

1m<sup>3</sup> of the product.

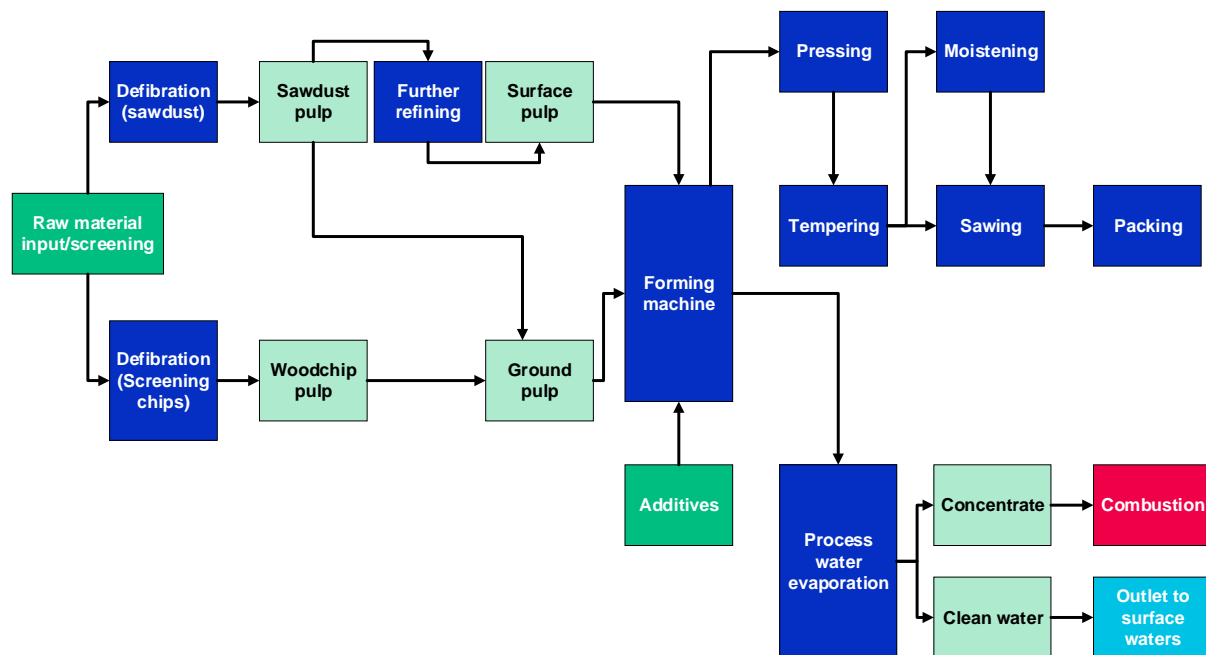
### Data collection year:

2018

### LCA modelling program:

GaBi 9.5

## 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.

The ready product is cut and trimmed before packing.

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

### System boundary

- Cradle to gate with options:
- Product stage (A1-A3)
- Transport (assembly stage) (A4)
- End of life stage (C1-C4)
- Beyond the system (D)

## Cut-off rules and assumptions

A1-3: The production of saw dust and wood chips is excluded since they are considered as side streams of wood industry.

Chemical used in cleaning the facility once a year is excluded

C1: The environmental impacts of the module are considered to negligible.

C2: The average transportation distance to the waste processing facility is assumed to be 100km.

C3: Demolition waste is assumed to be utilized in energy recovery.

## Life cycle stages

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	NR	NR	NR	NR	NR	NR	NR	NR	x	x	x	x	x	x	x
Raw Materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

	Mandatory
	Mandatory wood product
	Optional

## Results

Core environmental impacts								
Parameter	Unit	A1...3	A4	C1	C2	C3	C4	D
Climate change – total	[kg CO2 eq.]	1,88E+02	9,73E+00	0,00E+00	7,30E+00	1,69E+03	1,13E-01	-4,75E+02
Climate change – fossil	[kg CO2 eq.]	2,10E+02	9,64E+00	0,00E+00	7,24E+00	3,33E+01	1,18E-01	-4,73E+02
Climate change – biogenic	[kg CO2 eq.]	-2,26E+01	1,05E+00	0,00E+00	7,87E-01	1,66E+03	1,73E-02	-8,71E+01
Climate change – land use and land change	[kg CO2 eq.]	5,03E-01	1,46E-01	0,00E+00	1,09E-01	1,89E-02	5,71E-04	-3,16E-01
Ozone Depletion	[kg CFC-11 eq.]	1,64E-09	1,76E-15	0,00E+00	1,32E-15	2,34E-13	4,83E-16	-4,73E-12
Acidification	[Mole of H+ eq.]	1,51E+00	3,32E-02	0,00E+00	2,49E-02	8,25E-01	8,18E-04	-8,83E-01
Eutrophication aquatic freshwater	[kg P eq.]	8,20E-04	4,60E-05	0,00E+00	3,46E-05	3,86E-05	2,67E-07	-6,10E-04
Eutrophication aquatic marine	[kg N eq.]	4,54E-01	1,49E-02	0,00E+00	1,12E-02	3,86E-01	2,10E-04	-2,04E-01
Eutrophication terrestrial	[Mole of N eq.]	4,98E+00	1,66E-01	0,00E+00	1,25E-01	4,47E+00	2,30E-03	-2,19E+00
Photochemical ozone formation	[kg NMVOC eq.]	1,61E+00	2,91E-02	0,00E+00	2,19E-02	9,96E-01	6,35E-04	-5,86E-01
Depletion of abiotic resources – minerals and metals	[kg Sb eq.]	1,80E-03	7,61E-07	0,00E+00	5,72E-07	3,85E-06	1,08E-08	-7,28E-05
Depletion of abiotic resources – fossil fuels	[MJ]	4,32E+03	1,27E+02	0,00E+00	9,56E+01	4,88E+02	1,59E+00	-8,20E+03
Water use	[m <sup>3</sup> world equiv.]	-4,63E+02	2,13E-01	0,00E+00	1,60E-01	1,63E+02	1,23E-02	-4,31E+01

## Resource use

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renewable primary energy resources used as energy carriers	MJ	7,98E+03	7,34E+00	0,00E+00	5,51E+00	7,13E+01	2,01E-01	-1,63E+03
Renewable primary energy resources used as raw materials	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources	MJ	7,98E+03	7,34E+00	0,00E+00	5,51E+00	7,13E+01	2,01E-01	-1,63E+03
Nonrenewable primary energy resources used as energy carrier	MJ	4,33E+03	1,27E+02	0,00E+00	9,58E+01	4,88E+02	1,59E+00	-8,20E+03
Nonrenewable primary energy resources used as materials	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources	MJ	4,33E+03	1,27E+02	0,00E+00	9,58E+01	4,88E+02	1,59E+00	-8,20E+03
Use of secondary materials	kg	1,52E+04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ	6,81E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m <sup>3</sup>	4,45E+00	8,56E-03	0,00E+00	6,43E-03	3,85E+00	4,00E-04	-1,92E+00

## Output flows

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,05E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	6,86E+01	0,00E+00	0,00E+00	0,00E+00	9,40E+02	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,05E+04

## Waste

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	4,04E-04	5,90E-06	0,00E+00	4,43E-06	3,51E-07	2,71E-08	-3,36E-06
Non-hazardous waste	kg	1,30E+01	2,02E-02	0,00E+00	1,52E-02	1,19E+01	7,38E+00	-3,47E+00
Radioactive waste	kg	6,60E-01	2,35E-04	0,00E+00	1,76E-04	2,47E-02	2,13E-05	-6,48E-01

## Biogenic carbon

Biogenic carbon content	kg C/ m <sup>3</sup>
Biogenic carbon content in product	1,62E+03
Biogenic carbon content in accompanying packaging	2,63E+01

## References

ISO 15804:2012 + A2:2019:en Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products

ISO 14040 Environmental management. Life cycle assessment. Principles and framework

ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines (ISO 14044:2006)

ISO 16449:2014 Wood and wood-based products. Calculation of the biogenic carbon content of wood and conversion to carbon dioxide

EN ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures (ISO 14025:2006)

SFS-EN 16485:en Round and sawn timber. Environmental Product Declarations. Product category rules for wood and wood-based products for use in construction

LAB University of Applied Sciences. 2020. Kuitulevyn ympäristöseloste. LCA report