Environmental Product Declaration

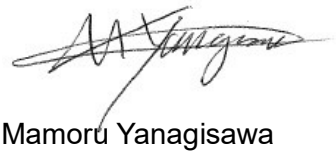
In accordance with ISO 14025 and EN 15804 for:

Wood Particleboard

by

TOKYO BOARD INDUSTRIES CO., LTD. SAKURA PLANT

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-00070
Publication date:	2004-09-16
Revision date:	2020-07-31
Valid until:	2023-07-30 An EPD should provide current information and may be updated if conditions change. The stated validity is, therefore, subject to the continued registration and publication at www.environdec.com

Summary --- Environmental product declaration		
Verified by	Mamoru Yanagisawa, EPD Verifier	
Owners declaration by	TOKYO BOARD INDUSTRIES CO., LTD. Sakura Plant 653-16 Nishimikado, Sakura-shi, Chiba-ken 285-0074, JAPAN	
Declaration as construction products	The products to be verified herein are the plain wooden particle boards, commercially designated as 18M type. References ・ISO14020, 14025, ISO14040, and 14044 ・General Programme Instructions for the International EPD System 3.01 published by Swedish Environmental Management Council ・Product Category Rules: PCR 2019:14 Construction products (EN 15804:A2) (1.11) ・LCA Report (2021:ver.1) by Tokyo Board Industries Co., Ltd.	
Validity	2023-7-30 Note: unless there is a variation greater than 10% on the environmental effects in any of the categories of impact.	
Contents of the declaration	This declaration is complete in itself and contains the following: -The product description -Description of manufacturer -Details of material and components -The results of the life cycle analysis -Data on formaldehyde	
Issuing date	2020-7-31	
Manufacturer	Masahide Nagashima, TOKYO BOARD INDUSTRIES CO., LTD.	
Verified by	Mamoru Yanagisawa, EPD Verifier	
Signatures	 Masahide Nagashima Tokyo Board Industries Co., Ltd.	 Mamoru Yanagisawa EPD Verifier

Product description	Particleboards are wood products, made of small chips of timber, lumber, and wood. All wooden chips are from used material such as demolition material. First, the wooden materials are crumbled into chips. The chips are bonded with glues, and then compressed into board by thermal compressor. Particleboards are used in many places in our daily life, such as frames of integrated kitchen system and subflooring. They have been well utilized in the field of construction, building materials, furniture, and woodworking industries.

Geological Boundary	This product is only for Japanese market, and used in Japan.
Application	Integrated kitchen system Construction and building materials, furniture, and woodworking industries.
Scope of application of the LCA	**Standards:** LCA was conducted in accordance with ISO14040 and 14044. This LCA study does not fully comply with LCA related part of EN 15804:2012+A1:2013. For testing method of formaldehyde, Japanese standards are applied and EN standards are not applicable to this product, because the horizontal standards on measurement of release of formaldehyde from construction products using harmonized test methods according to the provisions of the respective technical committees for European product standards are not available. **Data collection:** At the manufacturing phase of particleboard, wooden chips, and compounds, site specific data was used. At the transportation, average distance calculated from accumulated data of actual distance was applied. **General Data Source:** Tokyo Electric Power Company: Annual Report (2019) National Institute of Advanced Industrial Science and Technology Safety Science Research Division IDEA lab and Sustainable Management Promotion Organization: IDEA v2.3(Inventory Database for Environmental Analysis) **LCA method:** LCA Method: Buildup approach (Process to Process data accumulation) **Assess Life Cycle Stage(EN 15804):** LCA was conducted from A1 to A3 as following A1: Raw material Supply ・Production of raw material ・Production of glues A2: Transport ・Transport of recycled wood and of chips obtained from chip suppliers ・Transport of raw materials for glues for wood A3: Manufacturing ・Manufacturing chips ・Manufacturing of particleboards ・Secondary elaboration of particleboards (cutting) **Undeclared Module (MNA)** Construction Process Stage (A4,A5) Use Stage (B1-B7) End of Life Stage (C1-C4) Resource Recovery Stage (D)

Other evidence and verifications	The emission of free formalin is within the standard of JIS A 5908 (Particleboard). Measurement was made by TOKYO BOARD INDUSTRIES CO., LTD. in accordance with JIS A 1460 (Testing Method for the emission of free formalin of architectural boards).

Manufacturer: TOKYO BOARD INDUSTRIES CO., LTD.

URL : http://www.t-b-i.co.jp/

Place of Corporate Facility: Recycling Factory of

TOKYO BOARD INDUSTRIES CO., LTD.

Plain Particle Board (per m^3)						
Impact Category	Unit	No.	A1	A2	A3	Total
Greenhouse Gases	CO_2-eq（kg）	Ⅰ	1.74E+02	7.94E+01	1.27E+02	3.81E+02
		Ⅱ	1.77E+02	8.06E+01	1.29E+02	3.87E+02
		Ⅲ	1.82E+02	8.30E+01	1.33E+02	3.98E+02
		Ⅳ	1.88E+02	8.54E+01	1.37E+02	4.10E+02
		Ⅴ	1.93E+02	8.77E+01	1.41E+02	4.21E+02
		Ⅵ	2.03E+02	9.25E+01	1.48E+02	4.44E+02
		Ⅶ	2.08E+02	9.48E+01	1.52E+02	4.55E+02
Potential Deplation of Ozone Layer	CFC-11-eq（kg）	Ⅰ	4.85E-05	3.06E-08	6.91E-05	1.18E-04
		Ⅱ	4.92E-05	3.11E-08	7.01E-05	1.19E-04
		Ⅲ	5.07E-05	3.20E-08	7.22E-05	1.23E-04
		Ⅳ	5.21E-05	3.29E-08	7.43E-05	1.26E-04
		Ⅴ	5.36E-05	3.38E-08	7.63E-05	1.30E-04
		Ⅵ	5.65E-05	3.56E-08	8.05E-05	1.37E-04
		Ⅶ	5.79E-05	3.66E-08	8.25E-05	1.40E-04
potential Accidification	SO_2-eq（kg）	Ⅰ	9.15E-02	2.92E-01	4.05E-02	4.24E-01
		Ⅱ	9.28E-02	2.96E-01	4.11E-02	4.30E-01
		Ⅲ	9.56E-02	3.05E-01	4.23E-02	4.43E-01
		Ⅳ	9.83E-02	3.14E-01	4.35E-02	4.56E-01
		Ⅴ	1.01E-01	3.22E-01	4.47E-02	4.68E-01
		Ⅵ	1.06E-01	3.40E-01	4.72E-02	4.94E-01
		Ⅶ	1.09E-01	3.49E-01	4.84E-02	5.06E-01
Potential Eutrophication	PO_4^{3-}-eq（kg）	Ⅰ	1.75E-02	3.97E-08	3.51E-05	1.75E-02
		Ⅱ	1.78E-02	4.02E-08	3.56E-05	1.78E-02
		Ⅲ	1.83E-02	4.14E-08	3.66E-05	1.83E-02
		Ⅳ	1.88E-02	4.26E-08	3.77E-05	1.89E-02
		Ⅴ	1.93E-02	4.38E-08	3.87E-05	1.94E-02
		Ⅵ	2.04E-02	4.62E-08	4.08E-05	2.04E-02
		Ⅶ	2.09E-02	4.74E-08	4.19E-05	2.09E-02
Potential Formation of Photochemical Oxdants	ethene-eq（kg）	Ⅰ	2.80E-03	1.03E-03	2.75E-03	6.58E-03
		Ⅱ	2.84E-03	1.05E-03	2.79E-03	6.68E-03
		Ⅲ	2.92E-03	1.08E-03	2.88E-03	6.88E-03
		Ⅳ	3.01E-03	1.11E-03	2.96E-03	7.07E-03
		Ⅴ	3.09E-03	1.14E-03	3.04E-03	7.27E-03
		Ⅵ	3.26E-03	1.20E-03	3.20E-03	7.66E-03
		Ⅶ	3.34E-03	1.23E-03	3.29E-03	7.86E-03

Plain Particle Board (per m^3)						
Impact Category	Unit	No.	A1	A2	A3	Total
Primary Non Renewable Energy	MJ	Ⅰ	9.15E+01	2.07E+01	1.35E+01	1.26E+02
		Ⅱ	9.29E+01	2.10E+01	1.37E+01	1.28E+02
		Ⅲ	9.56E+01	2.16E+01	1.41E+01	1.31E+02
		Ⅳ	9.84E+01	2.22E+01	1.45E+01	1.35E+02
		Ⅴ	1.01E+02	2.28E+01	1.49E+01	1.39E+02
		Ⅵ	1.07E+02	2.40E+01	1.57E+01	1.46E+02
		Ⅶ	1.09E+02	2.47E+01	1.61E+01	1.50E+02
Primary Renewable Energy	MJ	Ⅰ	1.08E+00	0.00E+00	9.25E-05	1.08E+00
		Ⅱ	1.10E+00	0.00E+00	9.39E-05	1.10E+00
		Ⅲ	1.13E+00	0.00E+00	9.66E-05	1.13E+00
		Ⅳ	1.16E+00	0.00E+00	9.94E-05	1.16E+00
		Ⅴ	1.19E+00	0.00E+00	1.02E-04	1.19E+00
		Ⅵ	1.26E+00	0.00E+00	1.08E-04	1.26E+00
		Ⅶ	1.29E+00	2.47E+01	1.10E-04	1.29E+00
Electricity	kWh	Ⅰ	2.85E+01	1.19E+00	2.51E+02	2.80E+02
		Ⅱ	2.89E+01	1.21E+00	2.54E+02	2.85E+02
		Ⅲ	2.97E+01	1.25E+00	2.62E+02	2.93E+02
		Ⅳ	3.06E+01	1.28E+00	2.69E+02	3.01E+02
		Ⅴ	3.14E+01	1.32E+00	2.77E+02	3.10E+02
		Ⅵ	3.31E+01	1.39E+00	2.92E+02	3.26E+02
		Ⅶ	3.40E+01	1.43E+00	2.99E+02	3.35E+02
Secondary Energy other than Electricity	MJ	Ⅰ	2.24E+02	6.56E+02	1.92E+03	2.80E+03
		Ⅱ	2.27E+02	6.66E+02	1.95E+03	2.84E+03
		Ⅲ	2.34E+02	6.85E+02	2.01E+03	2.93E+03
		Ⅳ	2.41E+02	7.05E+02	2.07E+03	3.01E+03
		Ⅴ	2.47E+02	7.25E+02	2.12E+03	3.09E+03
		Ⅵ	2.61E+02	7.64E+02	2.24E+03	3.26E+03
		Ⅶ	2.67E+02	7.83E+02	2.29E+03	3.35E+03
Water Usage	kg	Ⅰ	6.79E+02	1.87E+02	9.85E+02	1.85E+03
		Ⅱ	6.89E+02	1.90E+02	1.00E+03	1.88E+03
		Ⅲ	7.09E+02	1.96E+02	1.03E+03	1.93E+03
		Ⅳ	7.29E+02	2.01E+02	1.06E+03	1.99E+03
		Ⅴ	7.49E+02	2.07E+02	1.09E+03	2.04E+03
		Ⅵ	7.90E+02	2.18E+02	1.15E+03	2.15E+03
		Ⅶ	8.10E+02	2.24E+02	1.18E+03	2.21E+03

Contents

1.DESCRIPTION OF THE PRODUCT AND OF THE COMPANY

1.1. Product Description

Particleboards are wood products, made of small chips of timber, lumber, and wood. First, the wooden materials are crumbled into chips. The chips are bonded with glues, and then compressed into board by thermal compressor.

Particleboards are used in many places in our daily life, such as frames of integrated kitchen system and subflooring. They have been well utilized in the field of construction, building materials, furniture, and woodworking industries.

The table below shows the classification by flexural strength and water resistance.

	Classification	Symbol①	Bending strength
Bending strength	Type 13	13	13.0 N/mm^2 or more in both longitudinal and transverse directions
	Type 18	18	18.0 N/mm^2 or more in both longitudinal and transverse directions

	Classification	Symbol②	Main applications
Water resistant	Regular	REG	Furniture, Cabinets, etc.
	Water resistant 1	MR1	Construction (beds, walls, fields), Millwork components, etc.
	Water resistant 2	MR2	Building substrate material (floors, walls, baseboards), Millwork components, etc. that require high water resistance.

1.2. Description of Manufacturer

TOKYO BOARD INDUSTRIES CO., LTD. started production of particleboards in April 1984. We are the first particleboard manufacturer in Japan, who has used exclusively forest resources in industrial and general wastes as raw materials since 1991, which would otherwise be incinerated or used for landfill.

The Sakura Plant of TOKYO BOARD INDUSTRIES CO., LTD. started operations in October 2017 and received JIS A 5908:2015 certification, a Japanese industrial standard for particleboard, in July 2018. In addition, the product received PEFC CoC certification, a forest certification standard, in June 2019.

Manufacturer:
TOKYO BOARD INDUSTRIES CO., LTD.
Place of Corporate Facility:
The Sakura Plant, TOKYO BOARD INDUSTRIES CO., LTD.
Address: 653-16 Nishimikado, Sakura, Chiba 285-0074, JAPAN
URL: http://www.t-b-i.co.jp/
Person in Contact:
Masahide NAGASHIMA

1.3. Consideration of Recycling

Materials used for the particleboards manufactured by Tokyo Board Industries Co., Ltd. are woodchips from demolition materials and classified as “Material Recycle” in the concept of wood cascading use.

Forests play a specific and important role in the global carbon cycle by absorbing carbon dioxide during photosynthesis, storing carbon above and below ground. Burning recyclable wood out or use them for thermal recycle contribute CO^2 release to the atmosphere and cause of the Global Worming (See Annex 1).

The most efficient use of wood is to reuse or recycle the resource as many times as possible, desirably from larger unit to smaller composites, and finally to burn the wood waste only that cannot be recycled as thermal recycling.

While cascading the forest based resource, the afforestation and proper forest management should be carried out, and it could increase the carbon stored in wood and consequently minimize its contribution to greenhouse effects.

1.4. Material and Component

The following table shows the constituent material and percentages for $1m^3$ particle board.

Glues	5～12%
Thickness	9～37.7mm
Density	0.670～0.800g/cm^3
Moisture content	7～8%
Bone-dry weight of wood	80～88%

1.5. Free Formalin

The table below shows that the emission of free formalin is within the standard of JIS A 5908:2015 (Particleboard). (JIS A 5908 certification number: TC 0308225). Measurement was made by TOKYO BOARD INDUSTRIES CO., LTD. in accordance with JIS A 1460:2015 (Testing Method for the emission of free formalin of architectural boards). Particleboards manufactured by TOKYO BOARD INDUSTRIES CO., LTD. are distributed only in Japan, and not exported to other countries.

Standard	JIS A 5908			JIS A 1460
	Acceptable Criteria (F☆☆☆☆)			Testing Method for Emission of Free Formalin
Details	No. of sample	Average	Maximum	Desiccator Method
	3	Less than 0.3 mg/l	Less than 0.4 mg/l	

Note: This product is only distributed and used in the Japanese market.

1.6. Picture of Products

【Construction Example：Floor substrate　material】

2.1 LIFECYCLE STAGE

The LCA results are classified into the following phases.

【Manufacturing phases】

・Transportation of waste wood and chips
・Chip manufacturing
・Manufacturing of raw materials for wood adhesives
・Transportation of raw materials for wood adhesives
・Manufacturing of wood adhesives
・Manufacturing of particleboard
・Secondary processing of particleboard (cutting, drilling)

2.2 CONDITION ON LCA

1) Functional Unit: 1m^3 of particleboard

2) The calculation is made on the basis of the data collected from April 2020 to March 2021.

3) The flow chart of LCA particleboard is attached in the Annex 2. Chip manufacturing phase, glue production phase, glue transport phase, particleboard manufacturing phase, and waste treatment are colored in different colors.

4) 2.3 to 2.6 are displayed by the following combinations of bending strength, water resistance and thickness.

No.	bending strength	water resistance	Thickness(mm)
Ⅰ	13	MR1	15
Ⅱ	13	REG	19.8 20 22 23 23.5 24 25 28 30 35 37.7
Ⅲ	13	REG	9 10 12 15
Ⅳ	13	REG	18
Ⅴ	18	REG	24.8 29.8
		MR1	9 12 15 20 25 30
Ⅵ	18	MR1	22
		MR2	9 11.8 20 22
Ⅶ	18	MR1	18

2.3 CHEMICAL SUBSTANCES USED IN PARTICLEBOARD MANUFACTURING

Unit	No.	Chemical substances		Regulation	Purpose
		Methanol	Formaldehyde		
kg	Ⅰ	2.25E-01	4.36E+00	Industrial Safety and Healthy Law Tokyo Ordinance Pollutant Release and Transfer Register Law	Raw material for glues for wood
	Ⅱ	2.29E-01	4.43E+00		
	Ⅲ	2.36E-01	4.56E+00		
	Ⅳ	2.42E-01	4.69E+00		
	Ⅴ	2.49E-01	4.82E+00		
	Ⅵ	2.62E-01	5.08E+00		
	Ⅶ	2.69E-01	5.21E+00		

2.4 LCIA AND RESOURCE USAGE

2.4.1 Global warming potential

Unit	No.	A1	A2	A3	Total
kg CO_2-eq.	Ⅰ	1.74E+02	7.94E+01	1.27E+02	3.81E+02
	Ⅱ	1.77E+02	8.06E+01	1.29E+02	3.87E+02
	Ⅲ	1.82E+02	8.30E+01	1.33E+02	3.98E+02
	Ⅳ	1.88E+02	8.54E+01	1.37E+02	4.10E+02
	Ⅴ	1.93E+02	8.77E+01	1.41E+02	4.21E+02
	Ⅵ	2.03E+02	9.25E+01	1.48E+02	4.44E+02
	Ⅶ	2.08E+02	9.48E+01	1.52E+02	4.55E+02

2.4.2 Depletion potential of the stratospheric ozone layer

Unit	No.	A1	A2	A3	Total
kg CFC11-eq.	Ⅰ	4.85E-05	3.06E-08	6.91E-05	1.18E-04
	Ⅱ	4.92E-05	3.11E-08	7.01E-05	1.19E-04
	Ⅲ	5.07E-05	3.20E-08	7.22E-05	1.23E-04
	Ⅳ	5.21E-05	3.29E-08	7.43E-05	1.26E-04
	Ⅴ	5.36E-05	3.38E-08	7.63E-05	1.30E-04
	Ⅵ	5.65E-05	3.56E-08	8.05E-05	1.37E-04
	Ⅶ	5.79E-05	3.66E-08	8.25E-05	1.40E-04

2.4.3 Acidification potential of soil and water

Unit	No.	A1	A2	A3	Total
kg SO_2-eq.	Ⅰ	9.15E-02	2.92E-01	4.05E-02	4.24E-01
	Ⅱ	9.28E-02	2.96E-01	4.11E-02	4.30E-01
	Ⅲ	9.56E-02	3.05E-01	4.23E-02	4.43E-01
	Ⅳ	9.83E-02	3.14E-01	4.35E-02	4.56E-01
	Ⅴ	1.01E-01	3.22E-01	4.47E-02	4.68E-01
	Ⅵ	1.06E-01	3.40E-01	4.72E-02	4.94E-01
	Ⅶ	1.09E-01	3.49E-01	4.84E-02	5.06E-01

2.4.4 Eutrophication potential

Unit	No.	A1	A2	A3	Total
kg PO_4^3-eq.	Ⅰ	1.75E-02	3.97E-08	3.51E-05	1.75E-02
	Ⅱ	1.78E-02	4.02E-08	3.56E-05	1.78E-02
	Ⅲ	1.83E-02	4.14E-08	3.66E-05	1.83E-02
	Ⅳ	1.88E-02	4.26E-08	3.77E-05	1.89E-02
	Ⅴ	1.93E-02	4.38E-08	3.87E-05	1.94E-02
	Ⅵ	2.04E-02	4.62E-08	4.08E-05	2.04E-02
	Ⅶ	2.09E-02	4.74E-08	4.19E-05	2.09E-02

2.4.5 Formation potential of tropospheric ozone

Unit	No.	A1	A2	A3	Total
kg ethene-eq.	Ⅰ	2.80E-03	1.03E-03	2.75E-03	6.58E-03
	Ⅱ	2.84E-03	1.05E-03	2.79E-03	6.68E-03
	Ⅲ	2.92E-03	1.08E-03	2.88E-03	6.88E-03
	Ⅳ	3.01E-03	1.11E-03	2.96E-03	7.07E-03
	Ⅴ	3.09E-03	1.14E-03	3.04E-03	7.27E-03
	Ⅵ	3.26E-03	1.20E-03	3.20E-03	7.66E-03
	Ⅶ	3.34E-03	1.23E-03	3.29E-03	7.86E-03

2.4.6 Resource usage

Impact Category	Unit	No.	A1	A2	A3	Total
Primary Non Renewable Energy	MJ	Ⅰ	9.15E+01	2.07E+01	1.35E+01	1.26E+02
		Ⅱ	9.29E+01	2.10E+01	1.37E+01	1.28E+02
		Ⅲ	9.56E+01	2.16E+01	1.41E+01	1.31E+02
		Ⅳ	9.84E+01	2.22E+01	1.45E+01	1.35E+02
		Ⅴ	1.01E+02	2.28E+01	1.49E+01	1.39E+02
		Ⅵ	1.07E+02	2.40E+01	1.57E+01	1.46E+02
		Ⅶ	1.09E+02	2.47E+01	1.61E+01	1.50E+02
Primary Renewable Energy	MJ	Ⅰ	1.08E+00	0.00E+00	9.25E-05	1.08E+00
		Ⅱ	1.10E+00	0.00E+00	9.39E-05	1.10E+00
		Ⅲ	1.13E+00	0.00E+00	9.66E-05	1.13E+00
		Ⅳ	1.16E+00	0.00E+00	9.94E-05	1.16E+00
		Ⅴ	1.19E+00	0.00E+00	1.02E-04	1.19E+00
		Ⅵ	1.26E+00	0.00E+00	1.08E-04	1.26E+00
		Ⅶ	1.29E+00	2.47E+01	1.10E-04	1.29E+00
Electricity	kWh	Ⅰ	2.85E+01	1.19E+00	2.51E+02	2.80E+02
		Ⅱ	2.89E+01	1.21E+00	2.54E+02	2.85E+02
		Ⅲ	2.97E+01	1.25E+00	2.62E+02	2.93E+02
		Ⅳ	3.06E+01	1.28E+00	2.69E+02	3.01E+02
		Ⅴ	3.14E+01	1.32E+00	2.77E+02	3.10E+02
		Ⅵ	3.31E+01	1.39E+00	2.92E+02	3.26E+02
		Ⅶ	3.40E+01	1.43E+00	2.99E+02	3.35E+02
Secondary Energy other than Electricity	MJ	Ⅰ	2.24E+02	6.56E+02	1.92E+03	2.80E+03
		Ⅱ	2.27E+02	6.66E+02	1.95E+03	2.84E+03
		Ⅲ	2.34E+02	6.85E+02	2.01E+03	2.93E+03
		Ⅳ	2.41E+02	7.05E+02	2.07E+03	3.01E+03
		Ⅴ	2.47E+02	7.25E+02	2.12E+03	3.09E+03
		Ⅵ	2.61E+02	7.64E+02	2.24E+03	3.26E+03
		Ⅶ	2.67E+02	7.83E+02	2.29E+03	3.35E+03
Water Usage	Kg	Ⅰ	6.79E+02	1.87E+02	9.85E+02	1.85E+03
		Ⅱ	6.89E+02	1.90E+02	1.00E+03	1.88E+03
		Ⅲ	7.09E+02	1.96E+02	1.03E+03	1.93E+03
		Ⅳ	7.29E+02	2.01E+02	1.06E+03	1.99E+03
		Ⅴ	7.49E+02	2.07E+02	1.09E+03	2.04E+03
		Ⅵ	7.90E+02	2.18E+02	1.15E+03	2.15E+03
		Ⅶ	8.10E+02	2.24E+02	1.18E+03	2.21E+03

2.5 SUPPLIED ELECTRICITY

Power generation facility ratio of Tokyo Electric Power Co., Ltd. in fiscal year 2019 is as follows.

The difference between electricity consumption in non-renewable resource and that in renewable resource was quantified based on the power generation facility ratio.

Unit	No.	Power generation facility ratio		Electricity consumed at Recycling Factory
		Generation of electricity by nuclear power（45%）	Hydraulic power generation（55%）	
kWh	Ⅰ	9.92E+01	1.81E+02	2.80E+02
	Ⅱ	1.01E+02	1.84E+02	2.85E+02
	Ⅲ	1.04E+02	1.89E+02	2.93E+02
	Ⅳ	1.07E+02	1.95E+02	3.01E+02
	Ⅴ	1.10E+02	2.00E+02	3.10E+02
	Ⅵ	1.16E+02	2.11E+02	3.26E+02
	Ⅶ	1.18E+02	2.16E+02	3.35E+02

2.6 WASTE

Unit	No.	A1	A2	A3	Total
Kg	Ⅰ	5.71E+02	2.01E+01	3.80E+01	6.29E+02
	Ⅱ	5.80E+02	2.04E+01	3.86E+01	6.39E+02
	Ⅲ	5.97E+02	2.10E+01	3.97E+01	6.58E+02
	Ⅳ	6.14E+02	2.16E+01	4.08E+01	6.76E+02
	Ⅴ	6.31E+02	2.22E+01	4.20E+01	6.95E+02
	Ⅵ	6.65E+02	2.34E+01	4.42E+01	7.33E+02
	Ⅶ	6.82E+02	2.40E+01	4.54E+01	7.51E+02

*The definition of industrial waste is in accordance with Waste Disposal and Public Cleaning Law

2.7 OTHER INFORMATION

1) EPD within the same product category may be comparable, but EPD from different Type III Environmental label programs may not be comparable.

2) Since the product is mostly made from wood, avoid the handling near the fire. In order to lengthen the life of the product, avoid the use in high-humidity environment.

2.8 INFORMATION ABOUT RECYCLING

The product itself can be recycled repeatedly as raw material for particleboard. For the purpose, plastic resin, non-ferrous metal, cloth, paper etc. should be removed from the product.

In recycling the particleboard used for furniture or woodworking such as frames of integrated kitchen system, case goods, plastic resin, non-ferrous metal, surface material, should be removed.

When the particleboard used for construction and/or building material eg subflooring is recycled, plastic resin, non-ferrous metal, height adjusters should be removed.

3.OTHER INFORMATION

3.1 VERIFICATION

The present declaration has been developed according to standards ISO 14025, ISO 14040, and ISO 14044.

Independent verification according to ISO 14025: 2006

Internal external

Validation of the present declaration by:

Mamoru Yanagisawa

3.2 DECLARATION

For detailed information on the environmental product declarations, see the web page of the Swedish Environmental Management Council (http://www.environdec.com/).

3.3 REFERENCE

・ISO14025:2006

・ISO14040:2006

・ISO14044:2006

・General Programme Instructions for the International EPD System 3.01 published by Swedish Environmental Management Council

・Product Category Rules: PCR 2019:14 Construction products (EN 15804:A2) (1.11)

・LCA Report (2021:ver.1)

by Tokyo Board Industries Co., Ltd. Sakura Plant

3.4 JAPANESE STANDARDS EQUIVARENT TO EN STANDARDS

For testing method of formaldehyde, Japanese standards are applied and EN standards are not applicable to this product because the horizontal standards on measurement of release of formaldehyde from construction products using harmonized test methods according to the provisions of the respective technical committees for European product standards are not available.

EN 312 is applied in the EU market, but JIS A1460 which is equivalent standard to EN312. applied in Japanese market.

Japanese Standard	EN Standard
JIS A 5908	EN312, 1350-1
JIS A 1460	EN120, 717-1

*Desiccator method is used.

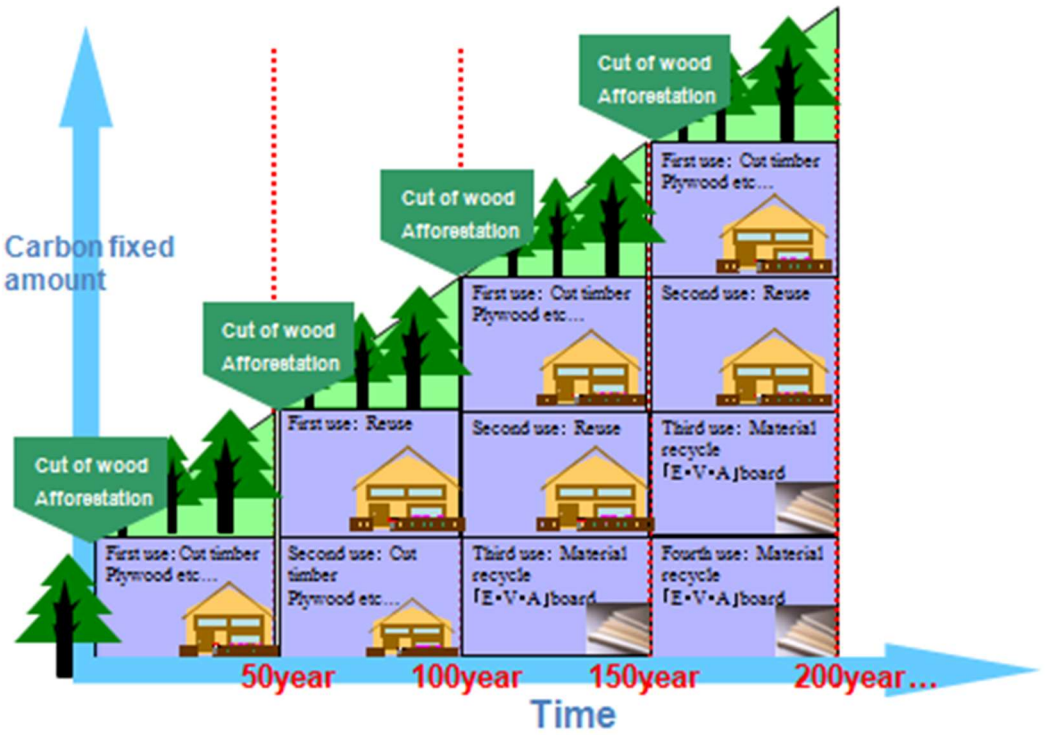
(Products are distributed and used only in Japanese market)

3.5 INTERPRETATION

The results show that a high level of impact of global warming is observed in the production process of glues. The amount of global-warming gases in the glue production phase accounts for about 45 % of the total global-warming gases emission, and above all, the amount of emission in the raw material production process accounts for about 99 % of the total emission. As for the second largest, the emission in particleboard manufacturing phase occupies more than 29% is observed. It is assumed that many big motors installed in the facility and thermal compressors as heat source are attributed to it.

Additional Information
Annex 1

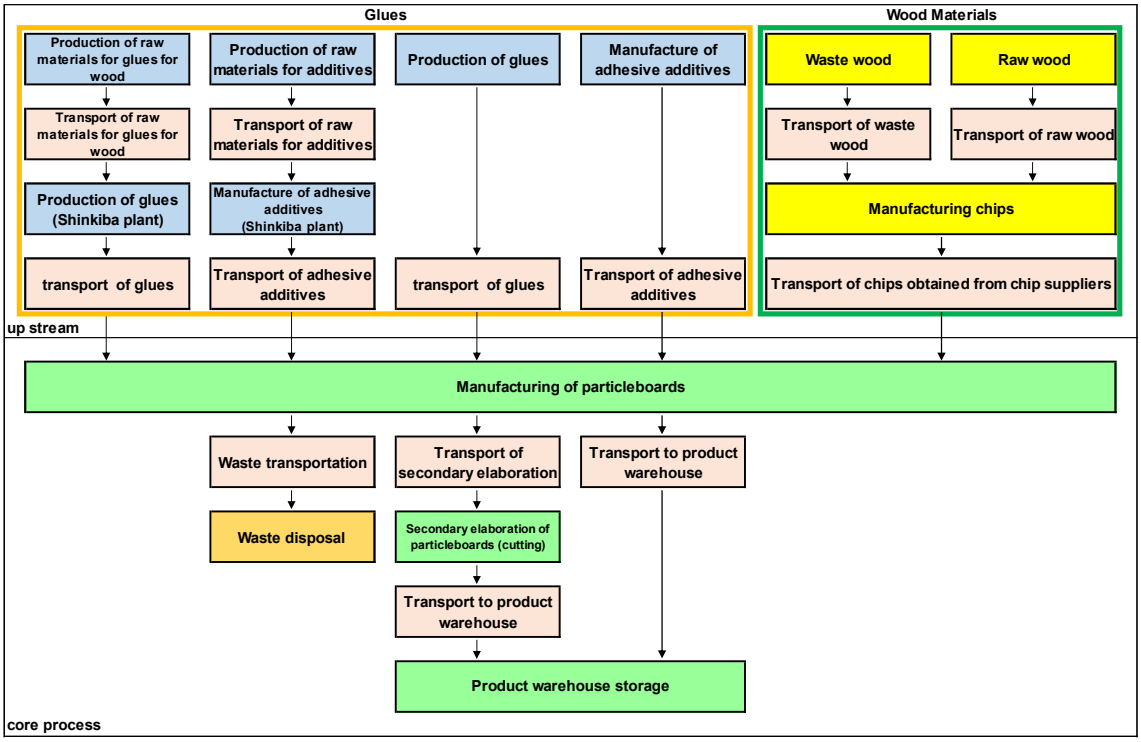
Recycling Model



*Afforestation described in the model above is not covered by this EPD, for conducting the life cycle environmental impact assessment at the stage of the primary use. The rough wood described in the life cycle flow diagram is the materials with no market value and diverted from the waste stream, which is not a resource produced by the afforestation or forestry activities carried out to provide raw materials.

Additional Information

Annex 2 Material Flow Chart



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