# Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 for:

# Wood Particleboard

by

# TOKYO BOARD INDUSTRIES CO., LTD. SAKURA PLANT





Programme: Programme operator: EPD registration number: Publication date: Revision date: Valid until: The International EPD® System, <u>www.environdec.com</u> EPD International AB S-P-00070 2004-09-16 2020-07-31 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 Y	Verifier			
Owners declaration by	TOKYO BOARD INDUSTRIES CO., LTD. Sakura Plant				
	JAPAN	a-sni, Unida-ken 285-0074,			
Declaration as	The products to be verified herein are the plain wooden				
products	particle boards, commercial	ly designated as 18M type.			
	References				
	•ISO14020, 14025, ISO140	40, and 14044			
	<ul> <li>General Programme Instru</li> </ul>	uctions for the International			
	EPD System 3.01 published	by Swedish Environmental			
	•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 varia	tion greater than 10% on the			
	environmental effects in any	of the categories of impact.			
Contents of the declaration	following:				
	-The product description				
	-Description of manufacture	er			
	-Details of material and con	nponents			
	-The results of the life cycle	analysis			
	-Data on formaldehyde				
Issuing date	2020-7-31				
Manufacturer	Masahide Nagashima, TO	YO BOARD INDUSTRIES			
Verified by	Mamoru Vanadisawa, EPD V	Verifier			
Signatures					
Signatures	14 magachima	Attingime			
	Masahide Nadashima	Mamoru Yanagisawa			
	Tokyo Board Industries				
	Co., Ltd.				

Product description	Particleboards are wood products, made of small chips				
•	of timber lumber and wood. All wooden abing are from				
	of under, lumber, and wood. All wooden chips are norm				
	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				
Annlingtion	Japan.				
Application	Integrated kitchen system				
	Construction and building materials, furniture, and				
Coope of explication of the	Stenderde:				
Scope of application of the	Standards:				
LCA	14044 This I CA study does not fully comply with I CA				
	related part of EN 15804-2012+A1-2012, For testing				
	method of formaldehyde Jananese 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: Buildun annroach (Process to Process				
	data accumulation)				
	Assess Life Cycle Stage(FN 15804):				
	I CA was conducted from A1 to A3 as following				
	A1: Raw material Supply				
	Production of raw material				
	Production of alues				
	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)				
	Lindeclared Module (MNA)				
	Construction Process Stage ( $\Delta 4 \Delta 5$ )				
	Use Stage (B1-B7)				
	End of Life Stage (C1-C4)				
	Resource Recovery Stage (D)				





Other	evidence	and	The emission of free formalin is within the standard of JIS		
verificat	ions		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 <sup>3</sup> )						
Impact Category	Unit	No.	A1	A2	A3	Total
		Ι	1.74E+02	7.94E+01	1.27E+02	3.81E+02
		Π	1.77E+02	8.06E+01	1.29E+02	3.87E+02
		Ш	1.82E+02	8.30E+01	1.33E+02	3.98E+02
Greenhouse Gases	CO <sub>2</sub> -eq(kg)	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
		Ι	4.85E-05	3.06E-08	6.91E-05	1.18E-04
		Π	4.92E-05	3.11E-08	7.01E-05	1.19E-04
		Ш	5.07E-05	3.20E-08	7.22E-05	1.23E-04
Potential Depiation of	(ka)	IV	5.21E-05	3.29E-08	7.43E-05	1.26E-04
Ozone Layer	(Ng)	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
		Ι	9.15E-02	2.92E-01	4.05E-02	4.24E-01
		Π	9.28E-02	2.96E-01	4.11E-02	4.30E-01
		Ш	9.56E-02	3.05E-01	4.23E-02	4.43E-01
potential Accidification	SO <sub>2</sub> -eq(kg)	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
		Ι	1.75E-02	3.97E-08	3.51E-05	1.75E-02
		Π	1.78E-02	4.02E-08	3.56E-05	1.78E-02
		Ш	1.83E-02	4.14E-08	3.66E-05	1.83E-02
Potential Eutrophication	PO <sub>4</sub> <sup>3-</sup> -eq(kg)	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
		Ι	2.80E-03	1.03E-03	2.75E-03	6.58E-03
		Π	2.84E-03	1.05E-03	2.79E-03	6.68E-03
Potential Formation of	ethene-ea	Ш	2.92E-03	1.08E-03	2.88E-03	6.88E-03
Photochemical Oxdants	(ka)	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 <sup>3</sup> )						
Impact Category	Unit	No.	A1	A2	A3	Total
		Ι	9.15E+01	2.07E+01	1.35E+01	1.26E+02
		Π	9.29E+01	2.10E+01	1.37E+01	1.28E+02
Drimony Mar		Ш	9.56E+01	2.16E+01	1.41E+01	1.31E+02
Primary Non Renewable Energy	MJ	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
		Ι	1.08E+00	0.00E+00	9.25E-05	1.08E+00
		Π	1.10E+00	0.00E+00	9.39E-05	1.10E+00
Drimen Bergewichte		Ш	1.13E+00	0.00E+00	9.66E-05	1.13E+00
Primary Renewable	MJ	IV	1.16E+00	0.00E+00	9.94E-05	1.16E+00
Energy		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
	kWh	Ι	2.85E+01	1.19E+00	2.51E+02	2.80E+02
		Π	2.89E+01	1.21E+00	2.54E+02	2.85E+02
		Ш	2.97E+01	1.25E+00	2.62E+02	2.93E+02
Electricity		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
		Ι	2.24E+02	6.56E+02	1.92E+03	2.80E+03
		Π	2.27E+02	6.66E+02	1.95E+03	2.84E+03
0		Ш	2.34E+02	6.85E+02	2.01E+03	2.93E+03
Secondary Energy	MJ	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
		Ι	6.79E+02	1.87E+02	9.85E+02	1.85E+03
		Π	6.89E+02	1.90E+02	1.00E+03	1.88E+03
		Ш	7.09E+02	1.96E+02	1.03E+03	1.93E+03
Water Usage	kg	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





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Annex 1 Recycling Model

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# **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	Symbol(1)	Bending strength
Bending	Туре 13	13	13.0 N/mm <sup>2</sup> or more in both longitudinal and transverse directions
Strength	Туре 18	18	18.0 N/mm <sup>2</sup> or more in both longitudinal and transverse directions

	Classification	Symbol2	Main applications
	Regular REG		Furniture, Cabinets, etc.
Water	Water	MR1	Construction (beds, walls, fields), Millwork
resistant	resistant 1		components, etc.
roolotant	Water	MR2	Building substrate material (floors, walls,
			baseboards), Millwork components, etc. that
	1031310111 2		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<sup>2</sup> 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<sup>3</sup> particle board.

Glues	5~12%
Thickness	9~37.7mm
Density	0.670~0.800g/cm <sup>3</sup>
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.

	, 1			
Standard		JIS A 5908	JIS A 1460	
		Acceptable Crite	Testing Method for Emission of	
		(F☆☆☆☆)	Free Formalin	
	No. of sample	Average	Maximum	
Details	2	Less than	Less than	Desiccator Method
	3	0.3 mg/l	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<sup>3</sup> 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)			
Ι	13	MR1	15			
Π	13	REG	19.8 20 22 23 23.5 24 25 28 30 35 37.7			
Ш	13	REG	9 10 12 15			
IV	13	REG	18			
		REG	24.8 29.8			
V 18		MR1	9 12 15 20 25 30			
177	40	MR1	22			
VI	18	MR2	9 11.8 20 22			
VII	18	MR1	18			





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

#### 2.3 CHEMICAL SUBSTANCES USED IN PARTICLEBOARD MANUFACTURING

# 2.4 LCIA AND RESOURCE USAGE

#### 2.4.1 Global warming potential

Unit	No.	A1	A2	A3	Total
	Ι	1.74E+02	7.94E+01	1.27E+02	3.81E+02
	П	1.77E+02	8.06E+01	1.29E+02	3.87E+02
kg CO₂-eq.	Ш	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
	Ι	4.85E-05	3.06E-08	6.91E-05	1.18E-04
	Π	4.92E-05	3.11E-08	7.01E-05	1.19E-04
kg CFC11-eq.	Ш	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
	Ι	9.15E-02	2.92E-01	4.05E-02	4.24E-01
kg SO₂-eq.	Π	9.28E-02	2.96E-01	4.11E-02	4.30E-01
	Ш	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 PO₄³-eq.	Ι	1.75E-02	3.97E-08	3.51E-05	1.75E-02
	Π	1.78E-02	4.02E-08	3.56E-05	1.78E-02
	Ш	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
	Ι	2.80E-03	1.03E-03	2.75E-03	6.58E-03
	Π	2.84E-03	1.05E-03	2.79E-03	6.68E-03
kg ethene-eq.	Ш	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
		Ι	9.15E+01	2.07E+01	1.35E+01	1.26E+02
		П	9.29E+01	2.10E+01	1.37E+01	1.28E+02
Primary Non		Ш	9.56E+01	2.16E+01	1.41E+01	1.31E+02
Renewable	MJ	IV	9.84E+01	2.22E+01	1.45E+01	1.35E+02
Energy		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
		Ι	1.08E+00	0.00E+00	9.25E-05	1.08E+00
		Π	1.10E+00	0.00E+00	9.39E-05	1.10E+00
Primary		Ш	1.13E+00	0.00E+00	9.66E-05	1.13E+00
Renewable	MJ	IV	1.16E+00	0.00E+00	9.94E-05	1.16E+00
Energy		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
	kWh	Ι	2.85E+01	1.19E+00	2.51E+02	2.80E+02
		Π	2.89E+01	1.21E+00	2.54E+02	2.85E+02
		Ш	2.97E+01	1.25E+00	2.62E+02	2.93E+02
Electricity		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
		Ι	2.24E+02	6.56E+02	1.92E+03	2.80E+03
		Π	2.27E+02	6.66E+02	1.95E+03	2.84E+03
		Ш	2.34E+02	6.85E+02	2.01E+03	2.93E+03
Secondary Energy	MJ	IV	2.41E+02	7.05E+02	2.07E+03	3.01E+03
outor than Elocatory		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
		Ι	6.79E+02	1.87E+02	9.85E+02	1.85E+03
		Π	6.89E+02	1.90E+02	1.00E+03	1.88E+03
	Kg	Ш	7.09E+02	1.96E+02	1.03E+03	1.93E+03
Water Usage		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	Electricity consumed at	
		Generation of electricity by nuclear power (45%)	Hydraulic power generation (55%)	Recycling Factory
	I	9.92E+01	1.81E+02	2.80E+02
	Π	1.01E+02	1.84E+02	2.85E+02
	Ш	1.04E+02	1.89E+02	2.93E+02
kWh	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
	Ι	5.71E+02	2.01E+01	3.80E+01	6.29E+02
	П	5.80E+02	2.04E+01	3.86E+01	6.39E+02
	Ш	5.97E+02	2.10E+01	3.97E+01	6.58E+02
Kg	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



