SuMPO EPD JAPAN VERIFIED

SuMPO EPD Japan

Third party verified

Environmental Product Declaration

In confromance with

ISO14025 | ISO14040 | ISO14044

Shin-Etsu Chemical Co., Ltd.

Enteric coating agent（HPMCP）

Registration number	Verification date	Publication date	Expiration date	EPD type
SuMPO-EPD-2604-133-1	2026/4/7	2026/6/17	2031/4/6	Single Product EPD

* First publication date

Additional standards in conformance

ISO21930:2007

EPD can be updated or withdrawn during the validity period. To confirm the validity of this EPD, check the following website:
https://ecoleaf-label.jp/epd/search

●General Information

＞Programme

Programme name	SuMPO EPD Japan
Programme operator	Sustainable Management Promotion Organization (SuMPO)
Address	KANDA SQUARE GATE 4F, 14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo, 101-0047, Japan
Website	https://ecoleaf-label.jp

＞GPI and PCR

GPI	SuMPO EPD Japan General Program Instructions v.2.1.1
PCR name	Cellulose Derivatives（intermediate goods）
PCR registration number	PA-161600-CP-02
PCR publication date	2025/6/10
PCR review panel chair	Tomoko Fuchigami
PCR valid until	2030/6/9
PCR issuer	Sustainable Management Promotion Organization (SuMPO)

＞Verification

Verification Type	Third-party verification in conformance with ISO14025		
	☐ Internal	■ External	
	■ Third-party verification by individual verifier	☐ Third-party verification by verification body	☐ Third-party verification by system certification
Verifier	Yuji Yamasaki		

＞Standards

Standards in conformance with;	■ ISO14040:2006	■ ISO14044:2006	☐ ISO14067:2018
	■ ISO14025:2006	■ ISO21930:2007	☐ ISO21930:2017
	☐ EN15804+A2	☐ EN50693:2019	☐ ISO/IEC63366:2025

EPD owner is responsible for the information contained in the EPD and for environmental claims related to the information. For any inquiries or requests regarding the content of the EPD, please contact the EPD owner.
EPDs are comparable only if they comply with the same standards, use the same sub-PCR where applicable, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works. Comparability of EPDs is limited to those applying a functional unit.

The LCIA results are relative expressions and do not predict impacts on category endpoints, the exceedance of thresholds, safety margins or risks.

When using weighted averages for calculation, the life cycle impact assessment results, life cycle inventory analysis-related information, waste-related information, and environmental information on output flows do not correspond to information about a specific product.

●EPD Owner's Information

Name of company and dept.	Cellulose & Pharmaceutical Excipients Department, Organic Chemicals Division
Address	4-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan
Contact	+81-3-6812-2441
LCA practitioner	Shin-Etsu Chemical Co., Ltd.
Company description	Shin-Etsu Chemical is a comprehensive chemical manufacturer engaged in chlor-alkali products (PVC and caustic soda), silicon wafers for semiconductors, silicones, and electronic/functional materials, holding world-leading market shares in these fields. The company also produces cellulose derivatives, among other products.

●Product Information

Product name		Enteric coating agent（HPMCP）		
Product /model number		HPMCP		
Product sepcification	Function	Material obtained by chemically reacting plant-derived cellulose		
	Mass	1kg	Conversion factor	—
	Applications	Pharmaceutical industry, chemical industry, etc.		
	TS*	–		
Service life	Service life	3 years after manufacture		
	In-use conditions	Use as a pharmaceutical excipient		
	reference	Quality guarantee period		
Manufacturing site(s)		Naoetsu Plant		
Product description		HPMCP is used in the pharmaceutical and chemical industries and is mainly used as an enteric coating agent.		
Website		https://www.metolose.jp/		

* TS: technical specifications,

●Product Content

Product components	Proportion (%)	Mass (unit)
Cellulose derivative	95.0	—
water	4.5	—
By-products that could not be completely removed	0.5	—
Packaging materials	Proportion (%)	Mass (unit)
Heavy-duty paper bag	100.0	—

●Biogenic Carbon Content

Item	Content (kg-C)	Content (kg-CO_2 eq)
Biogenic carbon content per product	0.42	1.55
Biogenic carbon content in packaging	–	–

●LCA-related Information

＞EPD Type Information

EPD type	Product type	■ Single product EPD	☐ Multiple products EPD	☐ Industry-wide EPD	
	Site type	■ Single site	☐ Multiple sites		
	Value	■ Specific	☐ Average	☐ Representative	☐ Worst case
Geographical coverage		Global			
Description of representativeness for multiple-products/sites EPD		—			
Description of variation for multiple-products/sites EPD		—			
Description of products covered in the multiple products EPD		—			

＞LCA Information

Declared unit		kg	
Mass per declared unit (Conversion factor to mass)		—	
Reference flow (number of products required to fulfil the function)		—	
System boundary		■ Cradle-to-Gate	☐ Cradle-to-Gate with options ☐ Cradle-to-Grave
LCA software		MiLCAv3.1.1.0	
LCI database		AIST-IDEAv3.1	
Characterization model		Climate change: IPCC Fifth Assessment Report (IPCC, 2013), Other impact categories: LIME2	
Use of other background data		—	
Secondary data quality		The calculation was performed using data that met the secondary data quality specified in the GPI.	
Primary data collection sites		Naoetsu Plant	
Primary data collection period		April , 2024 - March , 2025	
Biogenic carbon		■ 0/0 approach	☐ -1/+1 approach
Information about electricity	Use	■ Average consumption mix	☐ Others
	Type	—	
	Purchase date	—	
	Issuing body	—	

＞Modules

Production stage			Construction stage		Use stage							End-of-life stage				Suppl. info
					Use					Operation						
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Extraction and upstream production	Transport to factory	Manufacturing	Transport to site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction / Demolition	Transport to waste processing or disposal	Waste processing	Disposal of waste	Potential net benefits
■	■	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–

■ : declared module　– : module not declared

＞Allocation

This calculation was conducted in accordance with the procedure described in the GPI, examining whether the processes could be further subdivided and how allocation should be applied.
However, because products other than the subject product are also manufactured on the same production line, it is difficult to eliminate the need for allocation by subdividing the processes.
Therefore, physical allocation based on production weight was applied to the input amounts of cellulose raw materials, pharmaceuticals, utilities, packaging materials, auxiliary materials, and waste.

＞Cut-off rules

No cut-off was applied.

＞System Boundary

The configuration was established based on the PCR.
The temporal system boundary is100 years.

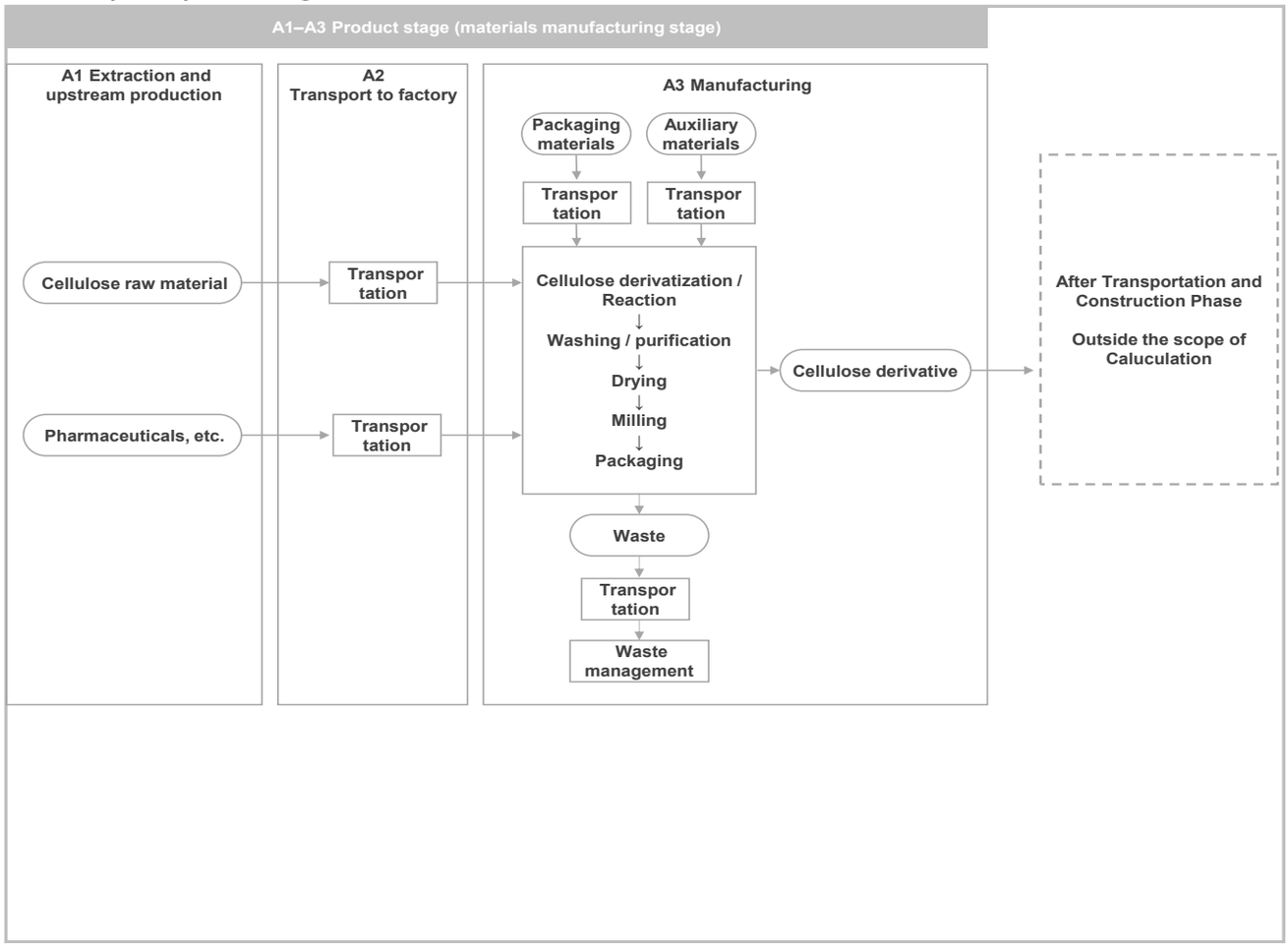
＞Scenario

Modules	Description
A2	For transportation of cellulose feedstock and chemicals for procurement, the transport mode and load factor scenarios in PCR Annex B were used.
A3	For transportation for procurement of packaging materials and for waste transportation, the transport mode and load factor scenarios in PCR Annex B were used.

＞Electricity Modelling

Calculations were performed using data on Japan's average grid electricity in fiscal year 2018 for all targeted lifecycle stages.

＞Life Cycle Sytem Diagram



●LCA Result

＞LCIA Indicators

		A1 Extraction and upstream production	A2 Transport to factory	A3 Manufacturing	—	—	D suppl. Info
GWP	kg-CO_2eq	1.05E+01	5.19E-01	3.32E+00	—	—	—
Ozone layer depletion	kg-CFC-11eq	1.13E-06	1.11E-12	7.37E-07	—	—	—
Acidification	kg-SO_2eq	1.09E-02	5.04E-04	3.34E-03	—	—	—
Photochemical oxidants	kg-C_2H_4eq	1.79E-04	1.74E-06	6.00E-05	—	—	—
Eutrophication	kg-PO_4^{3-}eq	5.66E-05	5.71E-12	5.13E-05	—	—	—

＞LCI

		A1 Extraction and upstream production	A2 Transport to factory	A3 Manufacturing	—	—	D suppl. Info
Use of non-renewable resources	kg	4.55E-01	4.87E-07	6.68E-02	—	—	—
Use of non-renewable energy	kg	5.09E+00	1.61E-01	1.20E+00	—	—	—
Use of non-renewable energy	MJ	2.18E+02	7.22E+00	4.94E+01	—	—	—
Use of renewable resources	kg	9.74E+00	1.53E-07	6.67E-02	—	—	—
Use of renewable energy	MJ	1.33E+01	1.73E-04	1.92E+01	—	—	—
Consumption of freshwater resources	m^3	1.43E+00	8.87E-06	5.03E-02	—	—	—

＞Waste Indicators

		A1 Extraction and upstream production	A2 Transport to factory	A3 Manufacturing	—	—	D suppl. Info
hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	–	–	–
non-hazardous waste disposed	kg	1.31E-02	3.43E-08	2.62E-03	–	–	–
Municipal waste, landfill	kg	2.84E-09	5.48E-17	9.35E-10	–	–	–
Industrial waste, landfill	kg	1.31E-02	3.43E-08	2.62E-03	–	–	–

*It indicates the amount of waste generated throughout the lifecycle.

＞Output Flow Indicators

			A1 Extraction and upstream production	A2 Transport to factory	A3 Manufacturing	Use stage	End of life stage	D suppl. Info
Components for reuse		kg	–	–	–	–	–	–
Materials for recycling		kg	–	–	–	–	–	–
Material for energy recovery		kg	–	–	–	–	–	–
Exported energy from waste (energy recovery efficiency≧60%)		MJ	–	–	–	–	–	–
Incineration of waste (energy recovery efficiency＜60%)	Waste disposed	kg	–	–	–	–	–	–
	Recovered energy	MJ	–	–	–	–	–	–
Waste disposed in landfill and energy recoved from landfill gas	Waste disposed	kg	–	–	–	–	–	–
	Recovered energy	MJ	–	–	–	–	–	–

＞Description of LCA Results

•Secondary data were used for unit process data for cellulose raw material and pharmaceuticals.
•As this is an intermediate product, transport/installation stages and beyond are outside the scope.
•For transport of cellulose raw material and pharmaceuticals, the transport mode and load factor scenarios in PCR Annex B were used.
•For transport related to packaging procurement and waste transport, the transport mode and load factor scenarios in PCR Annex B were used.

●Additional Environmental Information

＞Additional Environmental Information not related to LCA

Produced at a factory certified to ISO 14001.

＞Information on Hazardous Substances

Hazardous materials name	CAS No.	Standards or regulations
—	—	—
—	—	—
—	—	—

Release of dangerous substances from construction products
—

●Definitions of Terms

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●References

・ISO14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures
・ISO14040:2006 Environmental management - Life Cycle Assessment - Principles and framework
・ISO14044:2006 Environmental management - Life Cycle Assessment - Requirements and guidelines
・ISO 21930:2007 Sustainability in building construction — Environmental declaration of building products

●Version History