



**NIPPON
PAINT**



ENVIRONMENTAL PRODUCT DECLARATION

EXTERIOR PAINT

NIPPON PAINT SINGAPORE

DECLARATION NUMBER: 4791753641.102.2

DATE OF ISSUE: OCTOBER 31, 2025

VALIDITY: 5 YEARS



CERTIFIED

ENVIRONMENTAL
PRODUCT DECLARATION
UL.COM/EPD

NIPPON PAINT (SINGAPORE)

About Nippon Paint

Nippon Paint is a leading innovator in the global paint and coatings industry. Originating from Japan, the Nippon Paint Group has expanded its presence to 48 countries and territories, and is currently the No. 1 paint and coatings manufacturer in the Asia-Pacific region in terms of both production volume and sales revenue.

With over 144 years of heritage, Nippon Paint employs more than 38,500 people worldwide, who are dedicated to delivering excellence across the entire value chain – from research and development to manufacturing, and ultimately, customer satisfaction. Our mission is to continuously create value for our partners and customers by delivering high-performance, reliable, and sustainable solutions. We remain committed to customer-centric innovation that enhances both quality of life, environmental performance, and sustainability growth.

For Singapore market visit: <https://www.nipponpaint.com.sg>

Our commitment to a more sustainable future

To ensure alignment with the strategy of our parent company, Nippon Paint Holdings Co., Ltd. ("NPHD"), our approach to corporate sustainability is rooted in the philosophy of "Mutual Prosperity". This commitment extends beyond mere compliance, prioritising not only consistent financial performance but also environmental and social responsibility. By integrating ESG considerations into our operations, we ensure long term viability for both the company and the environment we operate within.

NIPSEA Group's Sustainability Steering Committee, led by the Group Chief Executive Officer, oversees group-wide initiatives. This cross-functional team comprises experts from various departments, ensuring a holistic approach to sustainability.

To further strengthen our sustainability efforts, we have identified five key pillars: Environment & Safety, People & Community, Innovation & Product Stewardship, Governance, and Sustainable Procurement.



ENVIRONMENTAL PRODUCT DECLARATION

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL ENVIRONMENT 333 PFINGSTEN ROAD NORTHBROOK, IL 60611	HTTPS://WWW.UL.COM/ HTTPS://SPOT.UL.COM/
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	PROGRAM OPERATOR RULES V2.7 2022	
MANUFACTURER NAME AND ADDRESS	Nippon Paint (Singapore) Co. Pte. Ltd. 1, First Lok Yang Road Jurong Singapore 629728	
DECLARATION NUMBER	4791753641.102.2	
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Nippon Exterior Paint 1 kg of paint product; including its packaging (the weight of the packaging is not included in this 1 kg).	
REFERENCE PCR AND VERSION NUMBER	EN 15804:2012+A2:2019+AC: 2021, Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products; Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, Version 1.4. Part B: Requirements on the EPD for Coatings with organic binders, Version 11.	
DESCRIPTION OF PRODUCT APPLICATION/USE	Nippon exterior paint products are professional architectural decoration coatings	
PRODUCT RSL DESCRIPTION (IF APPL.)	3 – 15 Years	
MARKETS OF APPLICABILITY	South East & South Asia	
DATE OF ISSUE	October 31, 2025	
PERIOD OF VALIDITY	5 Years	
EPD TYPE	Product-specific	
YEAR(S) OF REPORTED PRIMARY DATA	2024	
LCA SOFTWARE & VERSION NUMBER	open LCA 2.4.1	
LCI DATABASE(S) & VERSION NUMBER	Ecoinvent 3.11	
LCIA METHODOLOGY & VERSION NUMBER	EF v3.1	
The PCR review was conducted by:	IBU PCR Review Panel info@ibu-epd.com	
This declaration was independently verified in accordance with ISO 14025: 2006, EN 15804+A2, UL Part A. <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	Skye Tang, UL Solutions <i>Skye Tang.</i>	
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Kang An, UL Solutions	
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Ik-Kim, Smart-Eco <i>Ik-Kim</i>	

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: Comparison of the environmental performance of Flooring Products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR. EPDs from different programs may not be comparable. Full conformance with the PCR for flooring allows EPD comparability only when all stages of a life cycle have been considered, when they comply with all referenced standards, use the same sub-category PCR, and use equivalent scenarios with respect to construction works. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.



According to ISO 14025
EN 15804:2012+A2:2019/AC:2021



PRODUCT DEFINITION AND INFORMATION

Product Description

Nippon Paint's exterior paint products are professional architectural coatings specifically designed for outdoor applications. These water-based coatings are formulated with synthetic resin emulsions, pigments, extenders, and various functional additives to ensure durability and protection against external elements.

Exterior emulsion paints are widely used in residential and commercial construction due to their rapid drying time, ease of application, cost efficiency, excellent weather resistance, durability, anti-algae and anti-fungus properties, and low VOC emissions. They provide long-lasting protection and aesthetic appeal for external wall surfaces, even under harsh environmental conditions.

Product Specification

Within this report, a total of 20 types of exterior paint are analysed. The exterior paint products included in this LCA study are produced in Singapore (SG). The full list of products under analysis is shown below.

Table 1. Exterior Paint Product Specifications

No	Product Name / Descriptor	No	Product Name / Descriptor
1	Nippon Paint Walkleen	11	Nippon Paint Sand Dune 100
2	Nippon Paint Walkleen Express	12	Nippon Paint Sand Dune 100 Deluxe
3	Nippon Paint Polymeric WP	13	Nippon Paint JikiArt
4	Nippon Paint SolarCool	14	Nippon Paint EvoGLOSS Enamel
5	Nippon Paint SolarCool Express	15	Nippon Paint Vinilex 2000 Water Based Wall Sealer
6	Nippon Paint SolaReflect	16	Nippon Paint EvoPRIME
7	Nippon Paint SolaReflect Si	17	Nippon Paint Crystalux Aluminium Wood Primer
8	Nippon Paint Weatherbond AlgaeGuard	18	Nippon Paint Expresskote Sealer
9	Nippon Paint Durasil	19	Nippon Paint Crystalux Alkyd Resin Enamel
10	Nippon Paint TexKote	20	Nippon Paint Crystalux Alkyd Resin Undercoat

Application

Nippon Paint's exterior emulsion paints are widely used in both new construction and renovation projects. Their advantages – such as colour durability, excellent weather resistance, less dirt pick-up property, anti-fungus and anti-algae properties, high coverage and opacity, and low VOC emissions – make them highly suitable for residential and commercial exterior applications. These attributes ensure long-term surface durability and protection under various environmental conditions.

Declaration of Methodological Framework

The EPD analysis uses a cradle-to-gate (A1-A3) system boundary, due to the fact that the product is physically integrated with other products during installation so they cannot be physically separated from them at end of life, and the product is no longer identifiable at end of life as a result of a physical or chemical transformation process, and the products do not contain biogenic carbon. Additional details on cut-off and allocation procedures are found in sections 2.5 and 2.9, respectively. No known flows are deliberately excluded from this EPD.

Technical Requirements

The technical specifications of the exterior paint products are listed in the tables below.

Table 2. Constructional Data of Exterior Paint Products

Application Area		Interior & Exterior Paint						
Product Type		WB Sealer			WB-Top coat	SB Sealer		SB Topcoat
Product	Unit	Vinilex 2000 Waterbased Wall Sealer	Expresskote Sealer	EvoPRIME	EvoGLOSS Enamel	Crystalux Aluminium Wood Primer	Crystalux Alkyd Resin Undercoat	Crystalux Alkyd Resin Enamel
Density	g/cm ³	1.36±0.03	1.29±0.03	1.22±0.03	1.27±0.03	0.95±0.03	1.50±0.03	1.10±0.03
Gloss Level		Matt	Matt	Low Sheen	Gloss	Semi Gloss	Matt	Gloss
Theoretical Coverage	m ² /L	13 – 15	10 – 12	10 – 12	15 – 17	15 – 17	15 – 17	16 – 18
Number of Coats		1	1	1-2	2	1	1	2
Overcoating Time	Hrs	2	2	2	2	18	18	18

Application Area		Exterior Paint								
Product Type		WB-Top coat								
Product	Unit	Walkleen	Walkleen Express	Polymeric WP	SolarCool	SolarCool Express	SolaReflect	SolaReflect Si	Weatherbond AlgaeGuard	Durasil
Fineness	µm	Max 40	Max 40	Max 50	Max 40	Max 40	Max 50	Max 40	Max 40	Max 50
Density	g/cm ³	1.35±0.03	1.36±0.03	1.38±0.03	1.36±0.03	1.35±0.03	1.38±0.03	1.35±0.03	1.35±0.03	1.40±0.03
Gloss Level		Low Sheen	Low Sheen	Low Sheen	Low Sheen	Low Sheen	Low Sheen	Low Sheen	Low Sheen	Matt
Theoretical Coverage	m ² /L	9 – 11	8 – 10	7 – 9	8 – 10	8 – 10	7 – 9	8 – 10	8 – 10	7 – 9
Number of Coats		2	2	2	2	2	2	2	2	2
Overcoating Time	Hrs	2	2	2	2	2	2	2	2	2

Application Area		Exterior Paint			
Product Type		WB-Texture Coat			
Product	Unit	TexKote	Sand Dune 100	Sand Dune 100 Deluxe	Jikiart Stone & Granite Finish
Density	g/cm ³	1.77 – 1.85	1.55 – 1.75	1.60 – 1.80	1.53 – 1.87
Gloss Level		Matt	Matt	Matt	Matt
Viscosity	KU	–	–	–	101 – 106
Viscosity-HBDV	CPS	260000 – 340000	310000 – 370000	320000 – 380000	–
Non-volatile	%	78 – 82	73 – 79	73 – 79	37 – 43
Theoretical Coverage	kg/m ²	1.25 – 2.5	0.67 – 5.00	1.43 – 4.00	0.8 – 2.5

Values are guidance values and do not reflect a statistical evaluation or guaranteed value.

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no-CE marking).

Delivery Status

The Delivery Status of the exterior wall paint products is listed in the table below.

Table 3. Delivery Status of Exterior Wall Paint Products

No	Product Name / Descriptor	Delivery Status	No	Product Name / Descriptor	Delivery Status
1	Nippon Paint Walkleen	20L	11	Nippon Paint Sand Dune 100	20KG
2	Nippon Paint Walkleen Express	20L	12	Nippon Paint Sand Dune 100 Deluxe	20KG
3	Nippon Paint Polymeric WP	20L	13	Nippon Paint JikiArt	20KG
4	Nippon Paint SolarCool	20L	14	Nippon Paint EvoGLOSS Enamel	20L
5	Nippon Paint SolarCool Express	20L	15	Nippon Paint Vinilex 2000 Water Based Wall Sealer	20L
6	Nippon Paint SolaReflect	20L	16	Nippon Paint EvoPRIME	20L
7	Nippon Paint SolaReflect Si	20L	17	Nippon Paint Crystalux Aluminium Wood Primer	20L
8	Nippon Paint Weatherbond AlgaeGuard	5L, 20L	18	Nippon Paint Expresskote Sealer	20L
9	Nippon Paint Durasil	20L	19	Nippon Paint Crystalux Alkyd Resin Enamel	20L
10	Nippon Paint TexKote	26KG	20	Nippon Paint Crystalux Alkyd Resin Undercoat	20L

Base Materials / Ancillary Materials

The main constituents of the product are shown in Table 4 below.

Table 4. Constituents of Exterior Paint Products

Constituent	Unit	WB Sealer	SB Sealer	WB Topcoat	SB Topcoat
Polymer Dispersion	% w/w	30 – 55	20 – 75	45 – 55	50 – 60
Pigment & Minerals	% w/w	20 – 40	15 – 60	20 – 30	20 – 30
Additive	% w/w	2 – 5	1 – 5	5 – 10	3 – 5
Water	% w/w	15 – 35	7 – 20	10 – 20	10 – 20

This product/article (or at least one partial article) contains POPs substances in the candidate list of 08/2022/ND-CP (as of 10.01.2022) exceeding 0.1% by mass : No.

Biocide products have been added to our Nippon Paint product, or it has been treated with biocide products (regulated under EU Biocidal Products Regulation No. 528/2012). Please refer to the following list.

CAS Number	Chemical Formula	Ingredient Name
330-54-1	C9-H10-Cl2-N2-O	diuron (ISO)
26530-20-1	C11-H19-N-O-S	OIT
55406-53-6	C8-H12-I-N-O2	IPBC
2682-20-4	C4-H5-N-O-S	methylisothiazolinone

Manufacturing

The process begins with the input of raw materials, which are transported to the factory. These materials undergo a pre-mixing stage before entering the high-speed dispersion (HSD) process. After dispersion, the materials are filtered and packaged to form the final interior and exterior paint products.

The logistics system then manages the distribution of the paints. Any waste generated during the production process, such as incineration waste, landfill waste, and wastewater, is properly managed through end-of-life treatment methods, including wastewater treatment, landfilling, and incineration, specific production flow diagram shown in Figure 1.

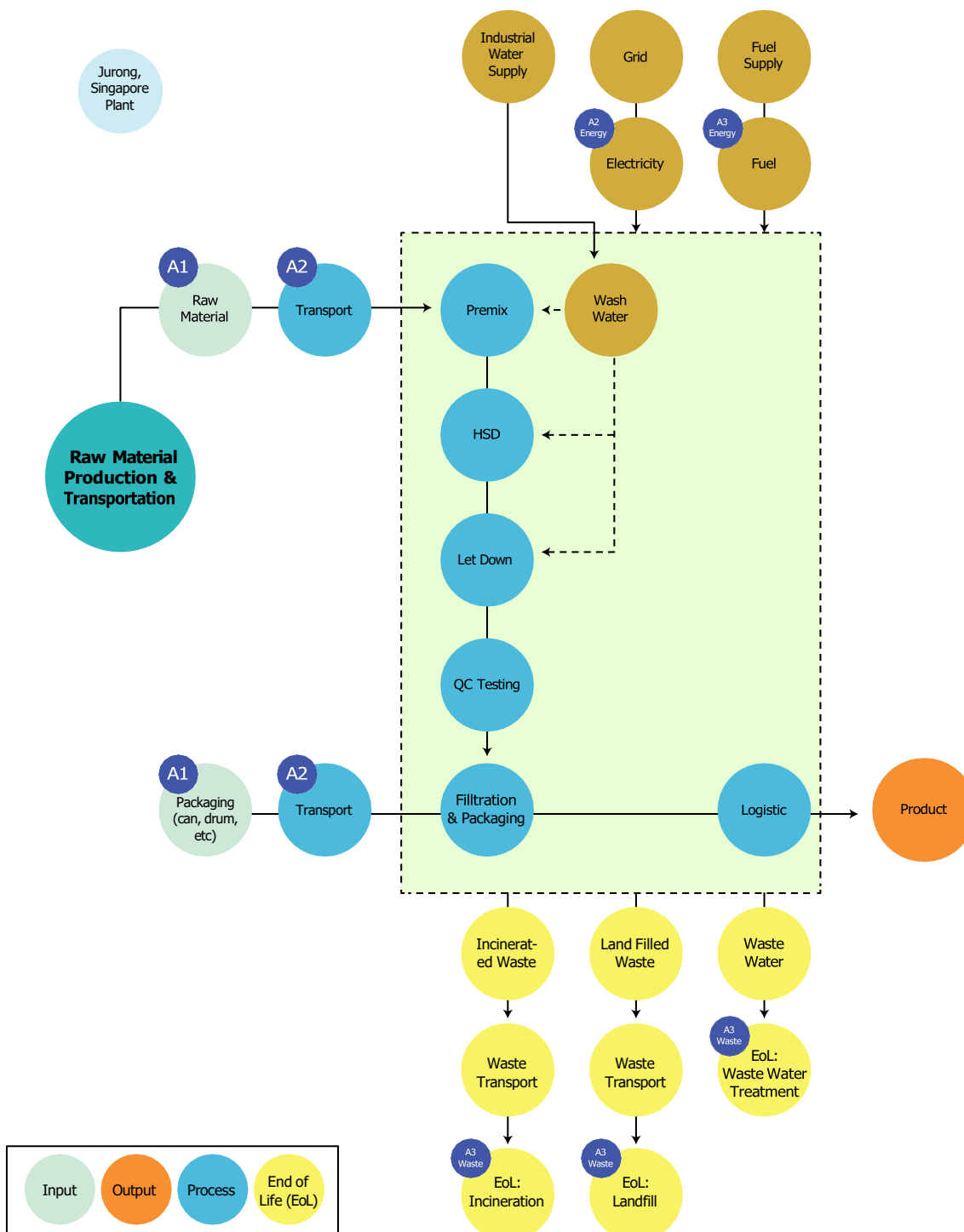


Figure 1: Diagram of Production Process

Environment and Health During Manufacturing

The manufacturing process is designed with consideration for both environmental impact and worker health and safety. The following measures are implemented:

- A dust extraction system is installed to minimise airborne particles and ensure good air quality during the production process.
- Annual workplace environment inspections are conducted by a third-party in accordance with state regulations, along with regular environmental monitoring as prescribed.
- Workers undergo annual general health check-up.
- Production workers are entitled to a 15-minute morning break, a 15-minute afternoon break, and a 45-minute lunch break.
- In terms of occupational safety, workers are fully equipped with personal protective equipment (PPE), clear safety signage is provided, and regular safety training is carried out.
- Environmental protection measures include waste separation, proper handling and disposal of hazardous waste, and strict compliance with all relevant environmental regulations.

Packaging

Tin Can and cap (Tin plated steel) and PP (polypropylene) container and cap is used to package exterior paint. Weight of product packaging is allocated to individual products according to the number of packaged items. The Tin and PP packaging materials may be recycled.

Conditions of Use

Surface must be clean, dry, and stable. Suggested Treatment:

- Dirt / Powder: Clean with damp cloth and remove loose powder. Mild detergent may be used.
- Old Paint / Plaster / Skimcoat / Putty: Unstable old film/substrate should be removed by chisel, scraper, power grinder whichever is appropriate. Uneven substrates must be re-plastered with an approved Skimcoat / Putty.
- Moisture: High moisture will cause paint defect. Observe the following level prior to painting: Masonry: below 6% by Sovereign 1150 Moisture meter; below 16% by Protimeter Mini BLD 2000 Moisture meter; below 60% by Lutron MS-7003 Moisture meter. All water seepage must be checked and repaired.
- Algae / Fungus: Remove by chisel or scraper and treat with NIPPON ANTI-FUNGUS SOLUTION. Rinse again with clean water and dry.
- Oil / Grease: Clean off with mild detergent and a little solvent if necessary. Wash thoroughly to remove all traces.

Environment and Health During Use

Products are water-based coatings with low odour and low VOC. The products contain no added lead or mercury.

LIFE CYCLE ASSESSMENT BACKGROUND INFORMATION

A full life cycle assessment has been carried out according to ISO 14040 (ISO, 2009) and 14044 (ISO, 2006), EN15804 per the product category rules (PCR) for Coatings with organic binders as published by IBU.

Declared Unit

In this study, a declared unit is defined as 1 kg of paint product; including its packaging (the weight of the packaging is not included in this 1 kg).

Table 5. Declared Unit and Mass Reference

Name	Declared Unit (Kg)	Grammage (kg/m ²)	Dry Film Thickness (mm)	Density (g/m ³)
Nippon Paint Walkleen	1	0.075	40	1.350
Nippon Paint Walkleen Express	1	0.082	40	1.360
Nippon Paint Polymeric WP	1	0.091	50	1.380
Nippon Paint SolarCool	1	0.074	40	1.360
Nippon Paint SolarCool Express	1	0.082	40	1.350
Nippon Paint SolaReflect	1	0.091	50	1.380
Nippon Paint SolaReflect Si	1	0.082	40	1.350
Nippon Paint Weatherbond AlgaeGuard	1	0.082	40	1.350
Nippon Paint Durasil	1	0.088	40	1.400
Nippon Paint TexKote	1	1.667	1000	1.810
Nippon Paint Sand Dune 100	1	1.429	1000	1.650
Nippon Paint Sand Dune 100 Deluxe	1	2.100	1000	1.700
Nippon Paint JikiArt	1	1.000	1000	1.700
Nippon Paint EvoGLOSS Enamel	1	0.079	25	1.270
Nippon Paint Vinilex 2000 Water Based Wall Sealer	1	0.092	30	1.360
Nippon Paint EvoPRIME	1	0.110	30	1.200
Nippon Paint Crystalux Aluminium Wood Primer	1	0.059	30	0.950
Nippon Paint Expresskote Sealer	1	0.118	30	1.290
Nippon Paint Crystalux Alkyd Resin Enamel	1	0.067	30	1.100
Nippon Paint Crystalux Alkyd Resin Undercoat	1	0.092	35	1.500



According to ISO 14025
EN 15804:2012+A2:2019/AC:2021



System Boundary

The life cycle stages considered in this LCA study are from cradle to gate. Figure 2 below illustrates the system boundaries for the paint product. The terms of defining life cycle stages in PCR from EN 15804 are adopted. Modules C1-C4 and module D are not declared in this LCA study, as the products fulfil the conditions in Declaration of Methodological Framework.

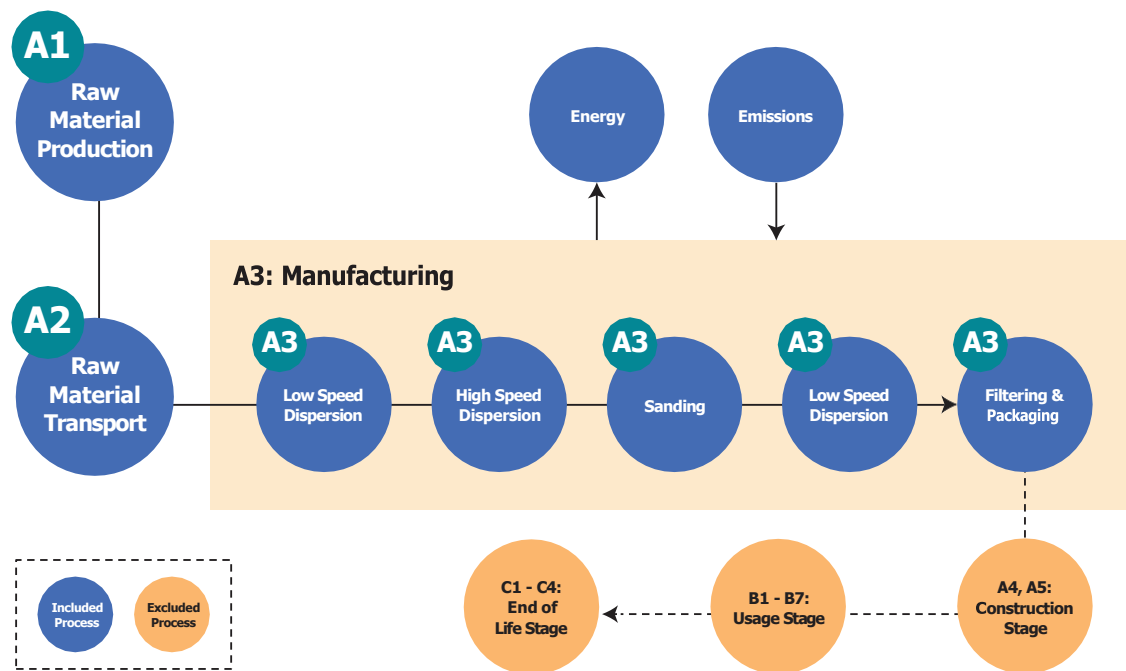


Figure 2: System Boundary

The production stage for paint products includes extraction and processing of raw materials, transportation to the factory, and manufacturing processes with packaging, etc. Throughout the production stages of products, resources of energy and materials used together with emissions to soil, water, and air are accounted for in the calculations of the impact assessment.

Estimates and Assumptions

Materials for which there are no inventories available are approximated with datasets of similar chemicals or estimated by merging available datasets.

The data for the generation of electricity applied in A3 is electricity mixes on the market, namely the Singapore market for electricity, medium voltage in the Ecoinvent 3.11 (cut-off) database. Its GWP-GHG impact is 0.5458 kg CO₂eq/kWh. The reference year of electricity dataset is 2021-2024.

In addition, the factory also has photovoltaic power generation, and the corresponding background dataset is electricity production, photovoltaic, 3kWp flat-roof installation, single-Si results in a GWP-GHG impact is 0.0841 kg CO₂eq/kWh.

Cut-off Criteria

Cut-off rules are consistent with PCR Part A and Part B. No known flows were deliberately excluded. In this study, the neglected flow is demonstrated in the table below. Machinery, plants, and infrastructure required in the manufacturing process were not considered.

Table 6. Cut-off Flows

Flow Name	Process Stage	Mass %	Reason to Cut-Off
Machinery, plants, and infrastructure	A3	N/A	Machinery, plants, and infrastructure spread on each unit of product can be ignored
Total cut-off mass % estimated		< 1%	< 1%

Data Sources

Primary data were collected as far as possible for the manufacturing stage, including the amount of raw materials, material information, transportation distance, etc. The key parameters for producer-specific foreground data were based on annualised production for 2024 of averaged data from Nippon Paint Singapore. The relevant background datasets were taken from the Ecoinvent 3.11, taking into consideration the degree to which it was technologically, temporally, and geographically representative.

Data Quality

A variety of tests and checks were performed throughout the project to ensure high quality of the completed LCA. Checks included an extensive review of project-specific LCA models as well as the background data used.

Temporal Coverage

Foreground data represent a continuous 12-month period over the 2024 calendar year. Background datasets are all based on data from the latest year, with the majority of datasets based on data from 2024, which were obtained from the Ecoinvent 3.11 databases.

Geographical Coverage

To satisfy cut-off criteria, proxy datasets were used as needed for raw material inputs to address lack of data for a specific material or for a specific geographical region. These proxy datasets were chosen for their representativeness of the actual product. Additionally, global data or rest of world data were used when Singapore data (for raw materials sourced in Singapore) were not available.

Technological Coverage

The primary data represent production of the product under evaluation. Secondary data were chosen to be specific to the technologies in question (or appropriate proxy data used where necessary).

Period Under Review

Manufacturer-supplied data (primary data) are based on annualised production for 2024. This analysis is intended to represent production in 2024.

Allocation

In this LCA study allocation is based on physical properties and is based on weight. For example, a variety of products flooring products are produced in one factory. The consumption of the target products is obtained by dividing the total annual production weight of each product by the total weight of all the products produced in the factory, obtaining the weight ratio of target product, and then multiplying by the total data.

Comparability and Benchmarking

No comparisons or benchmarking are included in this EPD. LCA results across EPDs can be calculated with different background databases, modelling assumptions, geographic scope, and time periods, all of which are valid and acceptable according to the Product Category Rules (PCR) and ISO standards. The user of the EPD should take care when comparing EPDs from different companies. Assumptions, data sources, and assessment tools may all impact the uncertainty of the final results and make comparisons misleading.

LIFE CYCLE ASSESSMENT RESULTS

Table 7. Description of the System Boundary Modules



EPD Type:	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw material	Transport	Manufacturing	Transport from GATE TO SU=ITE	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
Cradle to Gate	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

X = Module Declared, MND = Module Not Declared (such a declaration shall not be regard as an indicator result of zero)

Environmental Impact Indicators

Based on the model of NPSG’s paint products, the LCIA result is calculated based on EN15804+A2 (EF version 3.1) method, an optional additional impact assessment using the characterisation factors in accordance with TRACI (version 2.1) are declared. And the tables below show the results. And the tables below show the results.

Note: The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Table 8. Core Environmental Impact Category Indicators Assessment Results-EF v3.1

Application Area		Interior & Exterior Paint						
Product Type		WB Sealer			WB-Top coat	SB Sealer		SB Topcoat
Product	Unit	Vinilex 2000 Waterbased Wall Sealer	Expresskote Sealer	EvoPRIME	EvoGLOSS Enamel	Crystalux Aluminium Wood Primer	Crystalux Alkyd Resin Undercoat	Crystalux Alkyd Resin Enamel
GWP-total	kg CO ₂ eq	1.61E+00	2.00E+00	2.72E+00	3.56E+00	3.94E+00	2.16E+00	3.72E+00
GWP-luluc	kg CO ₂ eq	1.13E-03	3.95E-03	1.95E-03	2.45E-03	4.92E-01	4.11E-01	1.12E+00
GWP-biogenic	kg CO ₂ eq	1.98E-02	-6.93E-03	2.65E-02	3.44E-02	-4.61E-01	-2.00E-01	-5.88E-01
GWP-fossil	kg CO ₂ eq	1.59E+00	2.00E+00	2.70E+00	3.52E+00	3.91E+00	1.95E+00	3.18E+00
ADP-fossil ²	MJ, net calorific value	2.68E+01	3.23E+01	4.26E+01	5.08E+01	7.16E+01	3.52E+01	5.82E+01
ADP-minerals & metals ²	kg Sb eq	3.30E-05	6.54E-05	5.26E-05	3.80E-05	2.81E-05	2.59E-05	3.93E-05
EP-freshwater	kg P eq	5.76E-04	7.87E-04	9.34E-04	1.15E-03	1.25E-03	6.90E-04	1.17E-03
POCP	kg NMVOC eq	7.10E-03	9.39E-03	1.16E-02	1.52E-02	1.84E-02	1.04E-02	1.70E-02
AP	mol H+ eq	9.14E-03	1.20E-02	1.72E-02	2.26E-02	2.44E-02	1.27E-02	2.14E-02
EP-terrestrial	mol N eq	1.65E-02	2.27E-02	2.93E-02	3.71E-02	4.91E-02	2.33E-02	3.68E-02
EP-marine	kg N eq	1.68E-03	2.30E-03	3.04E-03	3.87E-03	7.62E-03	4.02E-03	8.32E-03
ODP	kg CFC 11 eq	2.77E-08	3.90E-08	5.38E-08	6.04E-08	6.15E-08	3.95E-08	6.84E-08
WDP ²	m ³ world eq deprived	5.45E-01	9.84E-01	9.93E-01	1.43E+00	2.29E+00	8.32E-01	1.42E+00

Application Area		Exterior Paint								
Product Type		WB-Top coat								
Product	Unit	Walkleen	Walkleen Express	Polymeric WP	SolarCool	SolarCool Express	Solareflect	Solareflect Si	Weatherbond AlgaGuard	Durasil
GWP-total	kg CO ₂ eq	2.80E+00	2.97E+00	3.04E+00	2.83E+00	3.13E+00	3.08E+00	3.35E+00	3.21E+00	2.67E+00
GWP-luluc	kg CO ₂ eq	2.09E-03	2.04E-03	2.08E-03	1.95E-03	2.15E-03	2.10E-03	2.40E-03	2.25E-03	1.92E-03
GWP-biogenic	kg CO ₂ eq	2.22E-02	3.38E-02	2.00E-02	3.05E-02	3.25E-02	3.10E-02	3.50E-02	3.19E-02	3.66E-02
GWP-fossil	kg CO ₂ eq	2.78E+00	2.93E+00	3.02E+00	2.80E+00	3.09E+00	3.05E+00	3.31E+00	3.17E+00	2.63E+00
ADP-fossil ²	MJ, net calorific value	4.11E+01	4.18E+01	4.28E+01	3.94E+01	4.34E+01	4.33E+01	4.48E+01	4.39E+01	3.39E+01
ADP-minerals & metals ²	kg Sb eq	6.16E-05	6.22E-05	4.52E-05	5.60E-05	6.53E-05	4.55E-05	3.73E-05	3.68E-05	2.82E-05
EP-freshwater	kg P eq	9.80E-04	9.73E-04	1.00E-03	9.46E-04	1.03E-03	1.01E-03	1.11E-03	1.07E-03	9.07E-04
POCP	kg NMVOC eq	1.27E-02	1.26E-02	1.30E-02	1.19E-02	1.32E-02	1.31E-02	1.38E-02	1.34E-02	1.08E-02
AP	mol H+ eq	1.96E-02	2.00E-02	1.95E-02	1.87E-02	2.10E-02	1.97E-02	2.18E-02	2.12E-02	1.73E-02
EP-terrestrial	mol N eq	3.11E-02	3.19E-02	3.19E-02	3.03E-02	3.36E-02	3.23E-02	3.56E-02	3.44E-02	2.79E-02
EP-marine	kg N eq	3.11E-03	3.26E-03	3.34E-03	3.16E-03	3.50E-03	3.37E-03	3.71E-03	3.61E-03	2.92E-03
ODP	kg CFC 11 eq	4.51E-08	4.08E-08	4.85E-08	4.14E-08	4.57E-08	4.92E-08	1.90E-05	5.12E-08	3.79E-05
WDP ²	m ³ world eq deprived	1.20E+00	1.33E+00	1.22E+00	1.17E+00	1.30E+00	1.24E+00	1.41E+00	1.36E+00	1.11E+00

Application Area		Exterior Paint			
Product Type		WB-Texture coat			
Product	Unit	TexKote	Sand Dune 100	Sand Dune 100 Deluxe	Jikiart Stone & Granite Finish
GWP-total	kg CO ₂ eq	1.05E+00	1.61E+00	1.54E+00	2.85E+00
GWP-luluc	kg CO ₂ eq	8.16E-04	1.01E-03	9.72E-04	1.27E-03
GWP-biogenic	kg CO ₂ eq	1.75E-02	1.61E-02	1.61E-02	1.26E-02
GWP-fossil	kg CO ₂ eq	1.03E+00	1.60E+00	1.53E+00	2.84E+00
ADP-fossil ²	MJ, net calorific value	1.49E+01	2.46E+01	2.34E+01	4.90E+01
ADP-minerals & metals ²	kg Sb eq	1.84E-05	2.18E-05	2.14E-05	2.44E-05
EP-freshwater	kg P eq	4.05E-04	5.20E-04	5.04E-04	7.26E-04
POCP	kg NMVOC eq	4.44E-03	6.51E-03	6.24E-03	1.06E-02
AP	mol H+ eq	5.14E-03	7.78E-03	7.44E-03	1.12E-02
EP-terrestrial	mol N eq	1.14E-02	1.58E-02	1.53E-02	2.17E-02
EP-marine	kg N eq	1.21E-03	1.72E-03	1.66E-03	2.46E-03
ODP	kg CFC 11 eq	1.56E-08	2.32E-08	2.19E-08	4.62E-08
WDP ²	m ³ world eq deprived	3.57E-01	5.17E-01	4.95E-01	7.81E-01

Table 9. Core Environmental Impact Category Indicators Assessment Results-TRACI v2.1

Impact Category	Ozone Depletion	Global Warming	Smog	Acidification	Eutrophication	Fossil Fuel Depletion
UNIT	kg CFC 11 eq	CO2 eq	kg O3 eq	kg SO2 eq	kg N eq	MJ surplus
Nippon Paint Walkleen	4.93E-08	3.27E+00	2.07E-01	1.90E-02	4.30E-02	4.38E+01
Nippon Paint Walkleen Express	4.09E-08	2.84E+00	1.98E-01	1.67E-02	3.52E-02	3.90E+01
Nippon Paint Polymeric WP	3.51E-08	2.65E+00	1.73E-01	1.47E-02	2.09E-02	3.82E+01
Nippon Paint SolarCool	3.75E-08	2.58E+00	1.79E-01	1.49E-02	3.11E-02	3.56E+01
Nippon Paint SolarCool Express	4.14E-08	2.85E+00	1.98E-01	1.67E-02	3.54E-02	3.93E+01
Nippon Paint SolaReflect	3.55E-08	2.66E+00	1.73E-01	1.47E-02	2.11E-02	3.84E+01
Nippon Paint SolaReflect Si	2.12E-05	3.84E+00	2.49E-01	2.18E-02	4.16E-02	4.99E+01
Nippon Paint Weatherbond AlgaeGuard	7.53E-08	3.71E+00	2.42E-01	2.11E-02	3.73E-02	4.89E+01
Nippon Paint Durasil	4.23E-05	2.64E+00	1.69E-01	1.56E-02	3.62E-02	3.31E+01
Nippon Paint TexKote	1.21E-08	9.22E-01	6.29E-02	3.96E-03	5.35E-03	1.33E+01
Nippon Paint Sand Dune 100	1.89E-08	1.26E+00	8.07E-02	5.37E-03	9.14E-03	2.09E+01
Nippon Paint Sand Dune 100 Deluxe	1.79E-08	1.21E+00	7.80E-02	5.14E-03	8.69E-03	1.98E+01
Nippon Paint JikiArt	5.73E-08	2.79E+00	1.42E-01	1.04E-02	2.80E-02	4.78E+01
Nippon Paint EvoGLOSS Enamel	6.45E-08	3.69E+00	2.30E-01	2.08E-02	4.53E-02	5.15E+01
Nippon Paint Vinilex 2000 Water Based Wall Sealer	3.06E-08	2.08E+00	1.17E-01	1.01E-02	2.89E-02	3.00E+01
Nippon Paint EvoPRIME	3.94E-08	2.68E+00	1.73E-01	1.45E-02	1.95E-02	3.98E+01
Nippon Paint Crystalux Aluminium Wood Primer	7.21E-08	4.58E+00	2.89E-01	2.15E-02	2.29E-02	7.50E+01
Nippon Paint Expresskote Sealer	4.15E-08	2.41E+00	1.48E-01	1.23E-02	3.07E-02	3.41E+01
Nippon Paint Crystalux Alkyd Resin Enamel	4.55E-08	2.45E+00	1.52E-01	1.14E-02	3.03E-02	3.71E+01
Nippon Paint Crystalux Alkyd Resin Undercoat	7.72E-08	4.44E+00	2.38E-01	1.89E-02	4.59E-02	6.02E+01

Acronyms: GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ; ADP-fossil = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential, deprivation-weighted water consumption; LVH=Lower Heating value.

Additional Environmental Impact Category Indicators Assessment Results

Table 10: Additional Environmental Impact Category Indicators Assessment Results

Application Area		Interior & Exterior Paint						
Product Type		WB Sealer			WB-Top coat	SB Sealer		SB Topcoat
Product	Unit	Vinilex 2000 Waterbased Wall Sealer	Expresskote Sealer	EvoPRIME	EvoGLOSS Enamel	Crystalux Aluminium Wood Primer	Crystalux Alkyd Resin Undercoat	Crystalux Alkyd Resin Enamel
ETP-fw ²	CTUe	2.95E+02	1.40E+01	1.74E+02	2.33E+01	3.68E+01	4.25E+01	2.19E+01
HTP-c ²	CTUh	2.09E-09	9.39E-10	2.19E-09	2.41E-09	1.73E-09	2.38E-09	1.39E-09
HTP-nc ²	CTUh	1.66E-07	5.41E-08	4.46E-08	3.27E-08	1.17E-07	3.87E-08	2.52E-08
SQP ²	Dimensionless	1.51E+01	6.98E+00	1.12E+01	3.99E+01	9.41E+00	7.87E+01	3.25E+01
PM	Disease incidence	2.31E-07	1.04E-07	1.84E-07	2.97E-07	1.30E-07	2.34E-07	1.42E-07
IRP ¹	kBq U235 eq	1.11E-01	5.24E-02	9.59E-02	1.18E-01	8.91E-02	1.56E-01	9.55E-02

Application Area		Exterior Paint								
Product Type		WB-Top coat								
Product	Unit	Walkleen	Walkleen Express	Polymeric WP	SolarCool	SolarCool Express	Solareflect	Solareflect Si	Weatherbond AlgaGuard	Durasil
ETP-fw ²	CTUe	3.15E+01	1.18E+02	2.47E+02	2.18E+02	2.40E+02	2.51E+02	2.87E+02	2.69E+02	2.45E+02
HTP-c ²	CTUh	1.75E-09	1.69E-09	1.75E-09	1.59E-09	1.75E-09	1.76E-09	2.91E-09	2.01E-09	2.97E-09
HTP-nc ²	CTUh	6.73E-08	6.13E-08	1.39E-07	6.16E-08	6.78E-08	1.39E-07	8.08E-08	8.31E-08	5.97E-08
SQP ²	Dimensionless	1.44E+01	1.40E+01	1.35E+01	1.31E+01	1.47E+01	1.36E+01	1.56E+01	1.47E+01	1.31E+01
PM	Disease incidence	2.08E-07	2.11E-07	2.02E-07	1.99E-07	2.21E-07	2.04E-07	2.30E-07	2.23E-07	1.79E-07
IRP ¹	kBq U235 eq	9.10E-02	8.97E-02	9.49E-02	8.74E-02	9.60E-02	9.58E-02	1.13E-01	1.04E-01	9.16E-02

Application Area		Exterior Paint			
Product Type		WB-Texture coat			
Product	Unit	TexKote	Sand Dune 100	Sand Dune 100 Deluxe	Jikiart Stone & Granite Finish
ETP-fw ²	CTUe	6.73E+01	1.81E+02	1.72E+02	4.15E+02
HTP-c ²	CTUh	6.07E-10	7.05E-10	6.80E-10	9.20E-10
HTP-nc ²	CTUh	4.14E-08	7.71E-08	7.29E-08	2.22E-07
SQP ²	Dimensionless	4.20E+00	5.70E+00	5.50E+00	6.57E+00
PM	Disease incidence	6.18E-08	9.06E-08	8.70E-08	1.31E-07
IRP ¹	kBq U235 eq	3.96E-02	4.97E-02	4.81E-02	6.64E-02

Acronyms: PM = Potential incidence of disease due to PM emissions; IRP = Potential Human exposure efficiency relative to U235; Potential Comparative Toxic Unit for ecosystems; HTP-c = Potential Comparative Toxic Unit for humans; HTP-nc = Potential Comparative Toxic Unit for humans; SQP = Potential Soil quality index

Disclaimer 1: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Life Cycle Inventory Results

Table 11. Resource Use

Application Area		Interior & Exterior Paint						
Product Type		WB Sealer			WB-Top coat	SB Sealer		SB Topcoat
Product	Unit	Vinilex 2000 Waterbased Wall Sealer	Expresskote Sealer	EvoPRIME	EvoGLOSS Enamel	Crystalux Aluminium Wood Primer	Crystalux Alkyd Resin Undercoat	Crystalux Alkyd Resin Enamel
PENRE	MJ, LHV	1.81E+01	2.42E+01	3.28E+01	4.14E+01	4.41E+01	2.07E+01	3.78E+01
PERE	MJ, LHV	1.45E+00	2.13E+00	2.23E+00	2.70E+00	7.84E+00	4.79E+00	1.07E+01
PENRM	MJ, LHV	8.72E+00	8.17E+00	9.80E+00	9.52E+00	2.80E+01	1.49E+01	2.14E+01
PERM	MJ, LHV	1.08E-01	1.99E-01	8.21E-02	7.16E-02	7.13E+00	1.92E+00	5.30E+00
PENRT	MJ, LHV	2.68E+01	3.23E+01	4.26E+01	5.08E+01	7.21E+01	3.56E+01	5.93E+01
PERT	MJ, LHV	1.56E+00	2.33E+00	2.31E+00	2.77E+00	1.50E+01	6.72E+00	1.61E+01
FW	m ³	1.21E-02	2.49E-02	2.15E-02	3.77E-02	4.82E-02	1.65E-02	3.05E-02
SM	kg	3.23E-02	3.50E-02	5.89E-02	4.82E-02	4.25E-02	3.39E-02	5.18E-02
RSF	MJ, LHV	2.31E-04	2.67E-04	3.68E-04	5.60E-04	1.95E-04	3.38E-04	2.51E-02
NRSF	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



According to ISO 14025
EN 15804:2012+A2:2019/AC:2021



Application Area		Exterior Paint								
Product Type		WB-Top coat								
Product	Unit	Walkleen	Walkleen Express	Polymeric WP	SolarCool	SolarCool Express	Solareffect	Solareffect Si	Weatherbond AlgaGuard	Durasil
PENRE	MJ, LHV	3.21E+01	3.34E+01	3.48E+01	3.17E+01	3.52E+01	3.52E+01	3.75E+01	3.66E+01	2.88E+01
PERE	MJ, LHV	2.40E+00	2.33E+00	2.39E+00	2.25E+00	2.45E+00	2.36E+00	2.94E+00	2.54E+00	2.69E+00
PENRM	MJ, LHV	8.97E+00	8.38E+00	7.99E+00	7.71E+00	8.19E+00	8.18E+00	7.36E+00	7.30E+00	5.21E+00
PERM	MJ, LHV	8.95E-02	8.95E-02	8.95E-02	8.95E-02	8.95E-02	8.95E-02	1.05E-01	1.05E-01	6.70E-02
PENRT	MJ, LHV	4.11E+01	4.18E+01	4.28E+01	3.94E+01	4.34E+01	4.33E+01	4.49E+01	4.39E+01	3.40E+01
PERT	MJ, LHV	2.49E+00	2.42E+00	2.48E+00	2.34E+00	2.54E+00	2.45E+00	3.04E+00	2.65E+00	2.75E+00
FW	m ³	2.84E-02	3.09E-02	3.17E-02	2.69E-02	3.02E-02	3.20E-02	3.31E-02	3.21E-02	2.54E-02
SM	kg	4.34E-02	4.27E-02	4.17E-02	4.13E-02	4.38E-02	4.19E-02	4.41E-02	4.39E-02	3.84E-02
RSF	MJ, LHV	5.43E-04	5.28E-04	4.92E-04	4.78E-04	5.36E-04	4.94E-04	5.36E-04	5.29E-04	4.43E-04
NRSF	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Application Area		Exterior Paint			
Product Type		WB-Texture coat			
Product	Unit	TexKote	Sand Dune 100	Sand Dune 100 Deluxe	Jikiart Stone & Granite Finish
PENRE	MJ, LHV	9.25E+00	1.67E+01	1.58E+01	3.51E+01
PERE	MJ, LHV	1.14E+00	1.37E+00	1.34E+00	1.61E+00
PENRM	MJ, LHV	5.69E+00	7.84E+00	7.57E+00	1.40E+01
PERM	MJ, LHV	6.70E-02	1.08E-01	1.05E-01	1.57E-01
PENRT	MJ, LHV	1.49E+01	2.46E+01	2.34E+01	4.90E+01
PERT	MJ, LHV	1.21E+00	1.48E+00	1.44E+00	1.76E+00
FW	m ³	6.64E-03	1.18E-02	1.11E-02	2.45E-02
SM	kg	2.88E-02	3.10E-02	3.16E-02	3.34E-02
RSF	MJ, LHV	1.09E-04	1.48E-04	1.42E-04	1.52E-04
NRSF	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Acronyms: PENRE = Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material; PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw material; PENRM = Use of non-renewable primary energy resources used as raw material; PERM = Use of renewable primary energy resources used as raw material; PENRT = Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); PERT = Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials); FW = Net use of fresh water; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels=Recovered energy; LVH=Lower Heating value

Table 12. Output Flows and Waste Categories

Application Area		Interior & Exterior Paint						
Product Type		WB Sealer			WB-Top coat	SB Sealer		SB Topcoat
Product	Unit	Vinilex 2000 Waterbased Wall Sealer	Expresskote Sealer	EvoPRIME	EvoGLOSS Enamel	Crystalux Aluminium Wood Primer	Crystalux Alkyd Resin Undercoat	Crystalux Alkyd Resin Enamel
HWD	kg	3.78E-01	4.43E-01	6.14E-01	7.55E-01	8.94E-01	4.59E-01	7.80E-01
NHWD	kg	8.56E+00	9.71E+00	1.33E+01	1.90E+01	1.01E+01	1.09E+01	1.72E+01
RWD	kg	1.44E-05	2.23E-05	2.40E-05	2.76E-05	3.03E-05	6.08E-05	9.34E-05
MER	kg	1.10E-05	3.49E-04	1.72E-05	2.62E-05	7.31E-06	1.62E-05	6.87E-04
MFR	kg	9.45E-04	1.63E-03	1.88E-03	2.19E-03	3.13E-03	1.28E-03	2.44E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	kg	1.78E-02	3.13E-02	2.09E-02	3.79E-02	1.19E-02	2.39E-02	3.78E-02
EEE	MJ	8.71E-03	9.33E-03	1.48E-02	1.46E-02	6.82E-03	1.04E-02	1.52E-02

LCA INTERPRETATION

Application Area		Exterior Paint								
Product Type		WB-Top coat								
Product	Unit	Walkleen	Walkleen Express	Polymeric WP	SolarCool	SolarCool Express	Solareflect	Solareflect Si	Weatherbond AlgaGuard	Durasil
HWD	kg	6.94E-01	6.92E-01	6.64E-01	6.45E-01	7.07E-01	6.67E-01	7.49E-01	7.36E-01	6.14E-01
NHWD	kg	1.70E+01	1.73E+01	1.69E+01	1.64E+01	1.80E+01	1.70E+01	1.83E+01	1.81E+01	1.56E+01
RWD	kg	2.31E-05	2.27E-05	2.35E-05	2.23E-05	2.43E-05	2.38E-05	2.87E-05	2.64E-05	2.26E-05
MER	kg	2.53E-05	2.43E-05	2.29E-05	2.20E-05	2.47E-05	2.31E-05	2.45E-05	2.42E-05	2.04E-05
MFR	kg	1.75E-03	1.76E-03	1.84E-03	1.66E-03	1.85E-03	1.85E-03	2.04E-03	1.93E-03	1.63E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	kg	2.88E-02	2.71E-02	3.32E-02	2.54E-02	2.77E-02	3.33E-02	2.96E-02	2.95E-02	2.26E-02
EEE	MJ	1.24E-02	1.23E-02	1.29E-02	1.20E-02	1.28E-02	1.30E-02	1.58E-02	1.46E-02	1.30E-02

Application Area		Exterior Paint			
Product Type		WB-Texture coat			
Product	Unit	TexKote	Sand Dune 100	Sand Dune 100 Deluxe	Jikiart Stone & Granite Finish
HWD	kg	2.59E-01	3.10E-01	3.02E-01	3.49E-01
NHWD	kg	5.63E+00	7.16E+00	6.93E+00	8.41E+00
RWD	kg	1.27E-05	1.48E-05	1.44E-05	1.64E-05
MER	kg	4.45E-06	6.51E-06	6.19E-06	7.70E-06
MFR	kg	6.20E-04	8.33E-04	8.04E-04	1.06E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	kg	1.13E-02	1.71E-02	1.64E-02	3.28E-02
EEE	MJ	7.43E-03	8.48E-03	8.31E-03	1.04E-02

Acronyms: HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; MER = Materials for energy recovery; MFR = Material for recycling; CRU = Components for reuse; ETE = Exported thermal energy; EEE = Exported electricity energy.

The contribution analysis and process contribution analysis reveal that the environmental impact of NPSG's exterior paint product is dominated by the upstream supply chain of the raw material in all declared indicators.

Sensitivity analysis shows that the changes in assumptions such as substituted raw materials background data can lead to certain fluctuation of the final LCA results, hence it is recommended to continuously update the model to get up-to-date results, in case the assumption or process parameters will be changed in the future or better data would be provided, especially regarding the substituted material where the background data for the raw material is not available.

The LCA study has been carried out based on available data, information, regional and global knowledge, and experience to achieve more possible accuracy, completeness, and representative of the results.

ADDITIONAL ENVIRONMENTAL INFORMATION

Extraordinary Effects

Fire
The exterior paint products usually have no or only have a subordinate influence on the fire characteristics of the structure in which they have been used.

Mechanical destruction

The mechanical destruction of exterior paint products does not have negative impact on the environment or health.

Re-use Phase

Material reuse of coatings is not possible. It may be possible to re-use the packaging.

Disposal

Possible disposal methods for powder coating waste are:

1. Material utilisation, e.g. in composite materials
2. Thermal utilisation in approved systems

The following waste codes according to the European List of Waste (2000/532/EC) can apply: European Waste Catalogue (EWC) code 08 01 12 (Paint and varnish waste with the exception of that covered by EWC 08 01 11); EWC code 08 04 10 (Adhesive and sealant compound waste with the exception of that covered by EWC 08 04 09).

Further Information

Additional information about Nippon Paint products can be found on the following website: <https://nipponpaint.com.sg>

REQUISITE EVIDENCE

Leaching

Only for outdoor applications: measurement of leaching performance (eluate analysis), where relevant for the area of application. Future measurement procedure to CEN TC 351 WG 1 and TC 139 WG 10 (no evaluation currently possible).

Fire Gas Toxicity

Fire gas toxicity test is usually carried out for one of the building structures, such as substrate of the wall, and it is not carried out for the coatings individually. Hence there is no information on fire gas toxicity for the paint products.

REFERENCES

1. UL Environment General Program Instructions, Version 2.7.
2. PCR by Institut Bauen und Umwelt e.V. (IBU): Product category rules for building-related products and services, Part A: Calculation rules for the life cycle assessment and requirements on the project report, Version 1.4, 2024.
3. PCR by Institut Bauen und Umwelt e.V.(IBU): Part B: Requirements on the EPD for coatings with organic binders, Version 11.
4. EN 15804: 2012+A2: 2019 – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
5. ISO. (2006). ISO 14044: Environmental management – Life cycle assessment – Requirements and guidelines.
6. ISO. (2009). ISO 14040: Environmental management – Life cycle assessment – principles and frameworks.
7. ISO. (2011). ISO 14025: Environmental labels and declarations – Type III environmental declarations – principles and procedures.

CONTACT INFORMATION

Study Commissioner



Nippon Paint Singapore
customer@nipponpaint.com.sg
<https://nipponpaint.com.sg>



According to ISO 14025
EN 15804:2012+A2:2019/AC:2021





**NIPPON
PAINT**

Nippon Paint (Singapore) Co. Pte. Ltd.
1, First Lok Yang Road Jurong Singapore 629728
Tel: (65) 6265 5355
www.nipponpaint.com.sg/trade