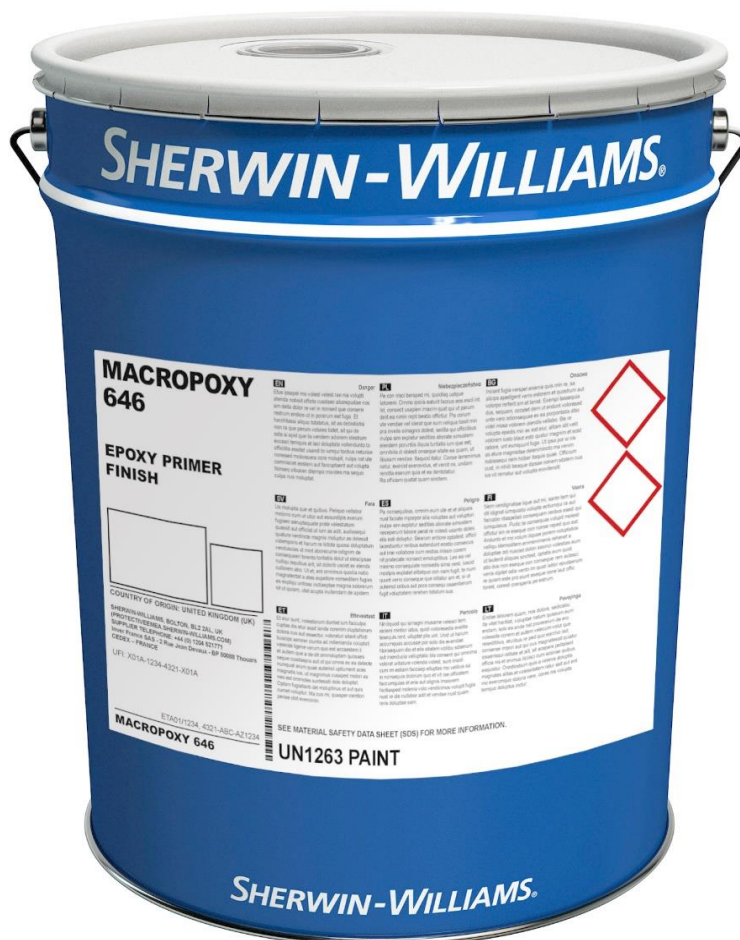


Environmental Product Declaration

According to ISO14025+EN15804+A2

This declaration is for:
Macropoxy 646

Provided by:
Sherwin-Williams UK Ltd, Protective & Marine Division



MRPI® registration:
1.1.01024.2025

Program operator:
Stichting MRPI®
Publisher:
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www.mrpi.nl

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COMPANY INFORMATION

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MRPI® REGISTRATION

1.1.01024.2025

DATE OF THIS ISSUE

22-10-2025

EXPIRY DATE

22-10-2030

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Gert-Jan Vroege, Eco-intelligence. The LCA study has been done by Gudo Wisselo, Brienne Wiersema, Max Sonnen, Ecomatters B.V.. The certificate is based on an LCA-dossier according to ISO14025+EN15804+A2. It is verified according to the 'Verification protocol for MRPI LCA project report & EPD 21th of May 2025, V. 5.2'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®
Kingsfordweg 151
1043 GR
Amsterdam

PRODUCT

Macropoxy 646

DECLARED UNIT / FUNCTIONAL UNIT

1 Area (m2)

DESCRIPTION OF PRODUCT

A versatile high performance polyamide cured epoxy designed to fulfil the needs of both new construction and maintenance painting.

VISUAL PRODUCT



MORE INFORMATION

www.sherwin-williams.com/protectiveEMEA

Ing. L. L. Oosterveen MSc. MBA Managing Director MRPI	DEMONSTRATION OF VERIFICATION
	CEN standard EN15804 serves as the core PCR [1]
	Independent verification of the declaration and data according to ISO14025+EN15804+A2 Internal: External: X
	Third party verifier: Gert-Jan Vroege, Eco-intelligence  [1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

Macropoxy 646 is a versatile high performance polyamide cured epoxy designed to fulfil the needs of both new construction and maintenance painting.

Typical Use

Application Method

Spray, brush, roller

Pack Size

20L

Production process and conditions of delivery

Part A and B are manufactured via a batch based high speed dispersion method. Product is supplied in two separate components, to be mixed immediately prior to use.

Paint characteristics		Unit
Waterborne / Solventborne	Solvent	value
Interior wall / Exterior wall / Trim	Interior and exterior	value
Service life of one coating layer	25	years
Density	1,55	kg/L
Coverage	5,8	m2/L
Number of layers	1	value
VOC content	250	g/L paint

Component (> 1%)	(kg / %)
Pigment - Titanium Dioxide	Confidential
Solvent - Xylene	Confidential
Resin - Phenolic Resin: 10-25%	Confidential
Pigment - Talc	Confidential
Resin - Polyamine	Confidential
Solvent - Ethylbenzene	Confidential
Pigment - Silica	Confidential
Solvent - Xylene	Confidential
Solvent - Methyl Isobutyl Ketone	Confidential
Pigment - Silica	Confidential
Resin - Epoxy	Confidential

SCOPE AND TYPE

The type of this EPD is Cradle-to-Gate with options. All major steps from the extraction of natural resources to the final disposal of the product are included in the environmental performance of the manufacturing phase, except those that are not relevant to the environmental performance of the product. This declaration does not imply an indicator result of zero.

This EPD is representative for products produced in Bolton, UK and the application market is for customers in Europe. Likewise, for the end-of-life, the fate of the paint product is described within a European context.

The software LCA for Experts 10.9.0.31 is used to perform the LCA. In the model Ecoinvent 3.10 database was used.

The validity of this EPD is in correspondence with the specifications of the LCA project report.

All impacts associated with the upstream production of materials and energy are included in the system boundaries. Mining activities and controlled landfills are included in the product systems. The emissions and resource extractions derived from these processes are considered elementary exchanges between the product systems and the environment.



PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

X = Modules Assessed

ND = Not Declared



REPRESENTATIVENESS

This is a product specific EPD for Macropoxy 646.



ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total kg CO2 eq.	8,42E-01	1,48E-02	1,87E-01	1,04E+00	2,60E-02	7,97E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,92E-03	0,00E+00	5,95E-01	-2,86E-01
GWP-fossil kg CO2 eq.	8,06E-01	1,48E-02	2,04E-01	1,02E+00	2,60E-02	7,94E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,92E-03	0,00E+00	5,38E-01	-2,85E-01
GWP-biogenic kg CO2 eq.	-3,81E-02	7,64E-06	-1,69E-02	-5,50E-02	1,34E-05	2,70E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,91E-07	0,00E+00	5,68E-02	-1,17E-03
GWP-luluc kg CO2 eq.	7,42E-02	5,07E-06	1,69E-04	7,44E-02	8,88E-06	1,20E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,57E-07	0,00E+00	8,42E-05	-1,11E-04
ODP kg CFC11 eq.	2,40E-08	2,98E-10	3,81E-09	2,81E-08	5,22E-10	7,69E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,86E-11	0,00E+00	5,19E-09	-1,10E-08
AP mol H+ eq.	3,90E-03	4,78E-05	8,52E-04	4,80E-03	8,38E-05	8,27E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,20E-06	0,00E+00	5,79E-04	-3,65E-04
EP-fresh water kg P eq.	2,74E-04	1,01E-06	5,87E-05	3,33E-04	1,76E-06	2,27E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,30E-07	0,00E+00	1,55E-04	-3,33E-05
EP-marine kg N eq.	9,75E-04	1,63E-05	1,71E-04	1,16E-03	2,87E-05	2,13E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,12E-06	0,00E+00	1,47E-04	-1,04E-04
EP-terrestrial mol N eq.	7,32E-03	1,77E-04	1,78E-03	9,27E-03	3,10E-04	1,94E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,29E-05	0,00E+00	1,35E-03	-1,04E-03
POCP kg NMVOC eq.	2,72E-03	7,79E-05	6,76E-04	3,48E-03	1,37E-04	4,32E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,01E-05	0,00E+00	5,84E-04	-5,69E-04
ADP-minerals & metals kg Sb eq.	1,73E-06	3,99E-08	4,45E-06	6,22E-06	7,00E-08	8,92E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,18E-09	0,00E+00	7,61E-07	-1,52E-07
ADP-fossil MJ, net calorific value	1,47E+01	2,15E-01	2,82E+00	1,77E+01	3,78E-01	3,86E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,79E-02	0,00E+00	2,60E+00	-4,74E+00
WDP m3 world eq. Deprived	1,43E+01	1,38E-03	6,64E-02	1,44E+01	2,42E-03	6,16E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,79E-04	0,00E+00	4,20E-02	-3,50E-02

GWP-total	=	Global Warming Potential total
GWP-fossil	=	Global Warming Potential fossil fuels
GWP-biogenic	=	Global Warming Potential biogenictotal
GWP-luluc	=	Global Warming Potential land use and land use change
ODP	=	Depletion potential of the stratospheric ozone layer
AP	=	Acidification Potential, Accumulated Exceedence
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 Exceedence
POCP	=	Formation potential of tropospheric ozone photochemical oxidants
ADP-minerals & metals	=	Abiotic Depletion Potential for non-fossil resources [1]
ADP-fossil	=	Abiotic Depletion for fossil resources potential [1]
WDP	=	Water (user) deprivation potential, deprivation-weighted water consumption [1]

Disclaimer [1]:

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.



ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM Disease incidence	5,19E-08	1,14E-09	1,05E-08	6,35E-08	1,99E-09	8,91E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,47E-10	0,00E+00	6,16E-09	-2,01E-09
IRP kBq U235 eq.	3,83E-02	2,61E-04	2,65E-02	6,51E-02	4,57E-04	1,90E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,38E-05	0,00E+00	1,31E-02	-2,09E-02
ETP-fw CTUe	2,07E+01	5,09E-02	1,28E+00	2,20E+01	8,93E-02	1,19E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,60E-03	0,00E+00	8,07E+00	-9,38E-01
HTP-c CTUh	7,31E-10	9,18E-11	2,90E-09	3,72E-09	1,61E-10	1,65E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,19E-11	0,00E+00	1,12E-09	-2,89E-09
HTP-nc CTUh	6,35E-09	1,29E-10	3,20E-09	9,68E-09	2,25E-10	2,35E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,67E-11	0,00E+00	1,72E-09	-7,82E-10
SQP -	5,13E+00	2,16E-01	2,99E+00	8,34E+00	3,78E-01	6,08E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,80E-02	0,00E+00	4,23E-01	-1,97E-01

PM	=	Potential incidence of disease due to PM emissions
IRP	=	Potential Human exposure efficiency relative to U235 [1]
ETP-fw	=	Potential Comparative Toxic Unit for ecosystems [2]
HTP-c	=	Potential Comparative Toxic Unit for humans, cancer [2]
HTP-nc	=	Potential Comparative Toxic Unit for humans, non-cancer [2]
SQP	=	Potential soil quality index [2]

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.

Disclaimer [2]:

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 en A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	4,48E-05	2,11E-04	1,45E-02	1,47E-02	3,71E-04	6,90E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,74E-05	0,00E+00	2,71E-01	0,00E+00
NHWD	kg	2,89E-05	0,00E+00	7,73E-03	7,76E-03	0,00E+00	3,74E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RWD	kg	9,52E-07	0,00E+00	0,00E+00	9,52E-07	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,51E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous Waste Disposed
 NHWD = Non Hazardous Waste Disposed
 RWD = Radioactive Waste Disposed
 CRU = Components for reuse
 MFR = Materials for recycling
 MER = Materials for energy recovery
 EEE = Exported Electrical Energy
 ETE = Exported Thermal Energy

RESOURCE USE per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,30E+00	3,42E-03	7,36E-01	2,04E+00	5,99E-03	2,09E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,43E-04	0,00E+00	1,47E-01	-1,81E-01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,30E+00	3,42E-03	7,36E-01	2,04E+00	5,99E-03	2,09E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,43E-04	0,00E+00	1,47E-01	-1,81E-01
PENRE	MJ	1,47E+01	2,15E-01	2,82E+00	1,77E+01	3,78E-01	3,86E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,79E-02	0,00E+00	2,60E+00	-4,74E+00
PENRM	MJ	6,98E-06	0,00E+00	0,00E+00	6,98E-06	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,47E+01	2,15E-01	2,82E+00	1,77E+01	3,78E-01	3,86E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,79E-02	0,00E+00	2,60E+00	-4,74E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NSRF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	5,01E-01	3,21E-05	1,55E-03	5,02E-01	5,63E-05	1,43E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,16E-06	0,00E+00	9,78E-04	-8,14E-04

PERE	=	Use of renewable primary energy excluding renewable primary energy used as raw materials
PERM	=	Use of renewable primary energy resources used as raw materials
PERT	=	Total use of renewable primary energy resources
PENRE	=	Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials
PENRM	=	Use of non-renewable primary energy resources used as raw materials
PENRT	=	Total use of non-renewable primary energy resources
SM	=	Use of secondary materials
RSF	=	Use of renewable secondary fuels
NSRF	=	Use of non-renewable secondary fuels
FW	=	Use of net fresh water

BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	kg C	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	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
BCCpa	kg C	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	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

BCCpr	=	Biogenic carbon content in product
BCCpa	=	Biogenic carbon content in packaging



CALCULATION RULES

Cut off criteria

Some cut-offs were applied in this study. During the manufacturing process, the input of consumables and the packaging waste from raw materials were excluded from the system boundaries due to a lack of data on the composition of this waste. A negligible amount of waste steel generated during manufacturing is also excluded. Furthermore, application tools such as brushes, cloths, and buckets are not included in the assessment, as they are considered capital goods. Reconditioned drums were not modelled as a separate input in the manufacturing process, as these are generally reused over several years. Therefore, the materials used for the drums are cut-off from, but all inputs required for reconditioning the drums in the manufacturing site are included. Additionally, energy consumed during application—for example, by spray applicators—has not been included due to its insignificance. No other cut-offs of outputs, raw materials, or other inputs were made at any life cycle stage.

Data quality and data collection period

Specific data was collected from Sherwin-Williams through a questionnaire, including inquiries about paint characteristics and packaging, production information and end-of-life. The data collection period for specific data was the year 2023. Data gaps (i.e. transport data, end of life scenarios) were covered with data generic values for transport as described in the Product Environmental Footprint Category Rules - Decorative Paints document version 1.0 published by CEPE and reviewed in April 2018 and the Product Environmental Footprint method (European Commission, 2021). Generic data (i.e. upstream acquisition and production of raw materials, transport, waste treatment processes) was selected from Ecoinvent 3.10 database. In the case of missing data, a relevant proxy was searched and adjusted to the corresponding unit process.

Allocation procedure

To allocate the emissions and inputs to the manufactured products, the decision-hierarchy in ISO 14044 is used (ISO 2006). It is not possible to sub-divide the site data into a more detailed level or find physical causalities between inputs and outputs, thus allocation is done based on mass, considering the annual production of paint product for each site. The production of paint comprises only of the mixing ingredients. Therefore, the environmental impact is expected to be related to the mass of the products.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

A1. Raw materials supply

This module considers the extraction and processing of all raw materials and energy which occur upstream to the manufacturing process, as well as waste processing up to the end-of waste state.

A2. Transport of raw materials to manufacturer

This includes the transport distance of the raw materials to the manufacturing facility via road. As no primary data was available for the transportation distances, the default values from the PEFCR for Decorative Paints were used.

Transport of raw materials		unit
Distance for raw materials	460	km
Distance for packaging materials	250	km
Capacity	> 32 t, 64% payload	value

A3. Manufacturing

This module covers manufacturing and includes all processes linked to production such as storing, mixing, packing and internal transportation. Use of electricity, fuels and auxiliary materials in paint production is accounted for.

Data regarding paint production was provided for the manufacturing site where the coating is produced in Bolton, UK. Primary data and site-specific data was provided for the consumption of utilities and product packaging. The electricity is modelled by the residual electricity mix using the Ecoinvent 3.10 datasets. For upstream (raw material processes) and downstream processes (application, use, and waste processing) generic data is used when no specific data was available.

The manufacture of production equipment and infrastructure is not included in the system boundary.

A4. Transport to Regional Distribution Centre and customer

All paint containers are transported from the production facility into a distribution centre and then finally to the customer. As no primary data was available for the transportation distances, the default values from the PEFCR for Decorative Paints were used.

Transport to RDC and PoS		unit
Factory to Regional Distribution Centre	350	km
Regional Distribution Centre to Point of Sale	370	km
Capacity	> 32 t, 64% payload	value

A5. Application and use

This module includes the environmental aspects and impacts associated with the application and of the paint. It is assumed that no energy is required during the application of this paint. The use of paintbrushes and other appliances used during application are not included. There are some raw materials added in the paint formulations which contain small amounts of solvents. The VOC emissions during application of paint are included in this module.

C2. Transport to incineration

This module includes one-way transportation distance of the demolition or sorting site to the dump site. As no primary data was available for the transportation distances, the default values from the PEFCR for Decorative Paints were used.

Transport of EoL waste		unit
Distance for raw materials	80	km
Capacity	> 32 t, 64% payload	value

C3. Waste processing and C4. Disposal

The end of life stage is encompassed in these modules. It is assumed that the paint is used as exterior paint and that part of the paint is lost during application. The applied paint is then disposed of with the substrate on which it has been applied.

EoL		unit
Incineration with energy recovery	100	%

DECLARATION OF SVHC

None of the substances contained in the product are listed in the "Candidate List of Substances of Very High Concern for authorisation", or they do not exceed the threshold with the European Chemicals Agency.

REFERENCES

- CEPE, Raw materials LCI database for the European Council of the Paint, Printing Ink and Artists' Colours Industry (CEPE), version 4.0, IVL Swedish Environmental Research Institute, 2024
- EN 15804:2012+A2:2019 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products, of 2019.
- European Commission, PEFCR Guidance document, - Guidance for the development of Product Environmental Footprint Category Rules (PEFCRs), version 6.3, December 2017.
- ISO 14040/14044 on Life Cycle Assessments
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REMARKS

None

