Environmental Product Declaration
according to ISO 14025 and EN 15804

MRPI
milieu relevante product informatie

This declaration is for:
Sikkens Alpha Recycle Mat

Provided by:
AkzoNobel

sikkens

program operator
Stichting MRPI®
publisher
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1.1.00214.2021
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ECO PLATFORM
EPD
EN 15804 VERIFIED

ECO PLATFORM EPD EN 15804 VERIFIED

MRPI milieu relevante product informatie

COMPANY INFORMATION

sikkens

AkzoNobel
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MRPI® REGISTRATION
1.1.00214.2021

DATE OF ISSUE
20-05-2021

EXPIRY DATE
20-05-2026

PRODUCT
Sikkens Alpha Recycle Mat

DECLARED UNIT/FUNCTIONAL UNIT
All impacts are calculated using the declared unit "decoration of 1 m² of surface"

DESCRIPTION OF PRODUCT
This EPD covers a high-quality water-borne wall paint for interior use from Sikkens

VISUAL PRODUCT

sikkens ALPHA RECYCLE MAT — Goede dekkracht en hoog rendement / Bonne couverture et haute efficacité / Gute Deckkraft und hohe Effizienz / Good opacity and high efficiency / Buona copertura e alta efficienza — WHITE WIT BLANC WEISS BIANCO 5L MAT

MORE INFORMATION
www.sikkens.com

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **ing. Kamiel Jansen, Primum.**
The LCA study has been done by **Joanna Zhuravlova, Ecomatters.**
The certificate is based on an LCA-dossier according to ISO14025 and EN15804+A1. It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A1. 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®
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1043GR
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ir. J-P den Hollander, Managing director MRPI®

DEMONSTRATION OF VERIFICATION
CEN standard EN15804 serves as the core PCR[a]
Independent verification of the declaration and data, according to EN ISO 14025:2010:
internal: external: X
Third party verifier:
Kamiel Jansen, Primum

[a] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

This EPD is representative for the product paint belonging to the Sikkens Alpha Recycle Mat, as described below.

Product Information

This EPD covers a high-quality water-borne wall paint for interior use from Sikkens. The Sikkens Alpha Recycle Mat for the European market is designed to meet requirements of professional painters concerning durability, washability and specifically environmental sustainability. This EPD is representing environmental impacts of an typical Sikkens Alpha Recycle Mat batch based on production data.

Alpha Recycle Mat

Sikkens Alpha Recycle Mat is a waterborne, professional quality, high opacity emulsion made with 35% recycled paint content. Sikkens Alpha Recycle Mat has a smooth flow for easy application and offers excellent coverage with a high-quality finish. Suitable for all normal interior wall and ceiling surfaces.

COMPONENT (> 1%)	[kg / %]
Pigment: Lightfast Pigments	Confidential
Binder: Acrylic Copolymer Dispersion	Confidential
Solvent: Water	Confidential

(*) > 1% of total mass

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 the UK. The paint is produced in Prudhoe in the UK and the application market is for customers within the European Union, Russia and the UK.

The software GaBi 8.7 Professional is used to perform the LCA. The latest version of the AkzoNobel database for protective coatings (2017) was used, this includes the background datasets.
• Ecoinvent (2008).
• GaBi Professional Database
• Plastics Europe

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. Similarly, wastewater treatment activities are also considered within the technological 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	X	X	X	X	X	X	X	X	X	X	X	ND

X = Modules Assessed

ND = Not Declared
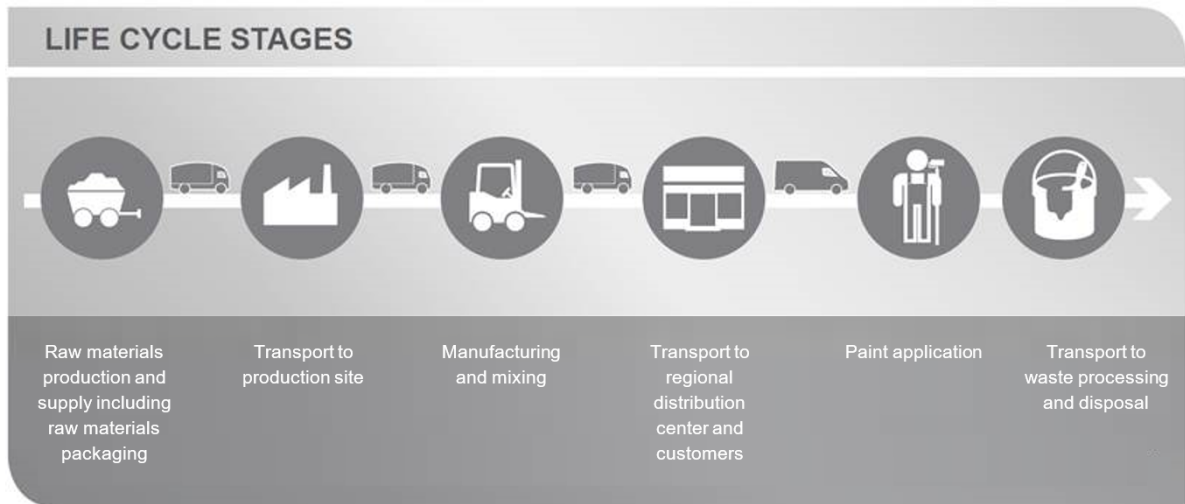
Figure: LCA process diagram according to EN 15804 (7.2.1)

REPRESENTATIVENESS

This EPD is representative for the Sikkens Alpha Recycle Mat paint produced in Prudhoe in the UK. The application market is for customers within the European Union, Russia and the UK.

ENVIRONMENTAL IMPACT per functional unit or declared unit (indicators A1)

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
ADPE	kg Sb. eq.	6.96 E-07	3.62 E-10	4.15 E-10	6.97 E-07	2.86 E-10	3.70 E-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.56 E-11	0.00	2.85 E-08
ADPF	MJ	2.41 E+00	5.94 E-02	3.53 E-01	2.82 E+00	4.69 E-02	6.30 E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41 E-02	0.00	6.00 E-02
GWP	kg CO2 eq.	1.44 E-01	4.33 E-03	3.51 E-02	1.83 E-01	3.42 E-03	6.31 E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02 E-03	0.00	4.95 E-02
ODP	kg CFC 11 eq.	1.39 E-08	1.19 E-16	9.23 E-10	1.48 E-08	9.42 E-17	1.01 E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.82 E-17	0.00	5.62 E-10
POCP	kg ethene eq.	6.03 E-05	1.76 E-06	1.03 E-05	7.24 E-05	1.39 E-06	3.74 E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16 E-07	0.00	2.97 E-06
AP	kg SO2 eq.	7.62 E-04	1.92 E-05	7.31 E-05	8.54 E-04	1.52 E-05	3.26 E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.54 E-06	0.00	2.42 E-05
EP	kg (PO4)3- eq.	1.53 E-04	4.84 E-06	5.97 E-05	2.18 E-04	3.82 E-06	1.22 E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15 E-06	0.00	7.29 E-04

ADPE = Abiotic Depletion Potential for non-fossil resources

ADPF = Abiotic Depletion Potential for fossil resources

GWP = Global Warming Potential

ODP = Depletion potential of the stratospheric ozone layer

POCP = Formation potential of tropospheric ozone photochemical oxidants

AP = Acidification Potential of land and water

EP = Eutrophication Potential

HTP = Human Toxicity Potential

FAETP = Fresh water aquatic ecotoxicity potential

MAETP = Marine aquatic ecotoxicity potential

TETP = Terrestrial ecotoxicity potential

ECI = Environmental Cost Indicator

ADPF = Abiotic Depletion Potential for fossil resources expressed in [kg Sb-eq.]

ND = Not Declared

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

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
PERE	MJ	4.33 E-02	3.29 E-03	1.48 E-02	6.14 E-02	2.60 E-03	5.88 E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78 E-04	0.00	1.14 E-06
PERM	MJ	1.45 E-03	1.80 E-11	9.28 E-05	1.54 E-03	1.42 E-11	1.12 E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.25 E-12	0.00	2.54 E-05
PERT	MJ	4.48 E-02	3.29 E-03	1.49 E-02	6.29 E-02	2.60 E-03	7.00 E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78 E-04	0.00	2.65 E-05
PENRE	MJ	2.72 E+00	5.96 E-02	4.09 E-01	3.19 E+00	4.71 E-02	8.60 E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41 E-02	0.00	4.64 E-02
PENRM	MJ	7.26 E-05	0.00	2.36 E-06	7.49 E-05	0.00	4.35 E-08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.66 E-07
PENRT	MJ	2.72 E+00	5.96 E-02	4.09 E-01	3.19 E+00	4.71 E-02	8.60 E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41 E-02	0.00	4.64 E-02
SM	kg	3.45 E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m3	3.13 E-02	2.51 E-04	2.06 E-03	3.36 E-02	1.98 E-04	8.94 E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.94 E-05	0.00	3.64 E-03

PERE = Use of renewable energy excluding renewable primary energy resources

PERM = Use of renewable 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

NRSF = Use of non renewable secondary fuels

FW = Use of net fresh water

ND = Not Declared

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

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
HWD	kg	1.53 E-04	0.00	0.00	1.53 E-04	0.00	3.36 E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68 E-01	0.00	0.00	0.00
NHWD	kg	6.91 E-03	0.00	9.53 E-03	1.64 E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RWD	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRU	kg	0.00	0.00	0.00	0.00	0.00	4.08 E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	0.00	0.00	0.00	5.37 E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MER	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ETE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

ND = Not Declared

CALCULATION RULES

Cut off criteria

The only cut-off is considered in the installation stage (A5). The energy consumed during application, used for instance in spray applicators, has not been included due to its insignificance.

Data quality and data collection period

Specific data was collected from AkzoNobel though a questionnaire, including inquiries about paint characteristics and packaging, logistics data (e.g. transport), production information and end-of-life. The data collection period for specific data was the year 2018.

Data gaps (i.e. transport data) were covered with data from previous internal AkzoNobel LCA studies, concerning the same type of products (paints and coatings). Generic data (i.e. upstream acquisition and production of raw materials, energy generation, transport, waste treatment processes) was selected from different publicly available databases, such as Ecoinvent, ThinkStep and Plastics Europe. 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 paint production is basically a process of mixing ingredients and, therefore, the environmental impact is fairly 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 Sikkens Alpha Recycle Mat 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, boat and/or train.

A3. Manufacturing

This module covers the manufacturing of the Sikkens Alpha Recycle Mat paint 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 taken into account as well.

Data regarding paint production was provided for the manufacturing site where the Sikkens Alpha Recycle Mat paint is produced: Prudhoe in United Kingdom. Furthermore, the specific transportation distances and transportation modes for raw materials, paint packaging and transportation to customer were collected from the AkzoNobel logistics department. Primary data and site-specific data were retrieved. For power used at the UK site, the country electricity mix for the year 2017 was chosen. For upstream (raw material processes) and downstream processes (application, use, and waste processing) generic data is used when no specific data is obtained.

The construction site data includes lighting, heating, offices, etc. The manufacture of production equipment and infrastructure is not included in the system boundary.

Packaging-related flows in the production process and all up-stream packaging are included in the manufacturing module. For the end-of-life packing of the paints a landfill scenario is assumed.

A4. Transport to Regional Distribution Centre and customer
All paint containers are transported from the Prudhoe manufacturing facility into a distribution centre and then finally to the customer.

PARAMETER	PRUDHOE TO RDC	RDC TO CUSTOMER
Vehicle type	Truck 40t-60t payload average fleet	Lorry 34t-40 payload average fleet
Distance	142.4 km	199 km
Capacity utilisation	60%	60%
Bulk density of transported products	1400 kg/m3	1400 kg/m3

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 or landfill
This module includes one-way transportation distance of the demolition or sorting site to the dump site.

PARAMETER	TRANSPORT TO WASTE PROCESSING
Vehicle type	Truck 34t-40t payload average fleet
Distance	100 km
Capacity utilisation	60%
Bulk density of transported products	1400 kg/m3

C3. Waste processing and C4. Disposal
The end of life stage is encompassed in these modules. It is assumed that paint is used as interior paint. It is assumed that part of the paint is lost during application and the rest is applied.

CLASSIFICATION OF PAINT, BASED ON FUNCTION	% SOLD PAINT IN WALLS > 100	% OF SOLD PAINT TO LANDFILLED	% OF SOLD PAINT TO INCINERATION
Interior Masonry Wall	70.4%	9.6%	20%

The main difference between interior and exterior paint is that for interior paints it is assumed that a percentage (20%) of the applied paint stays for more than 100 years. This is not valid for exterior paint because it is assumed that the polymer in exterior conditions will be flaking and finally disposed away.

Description	UNIT	A1	A2	A3	A4	A5	C2	C4
GWP 100 years	kg CO_2-eq.	1.44E-01	4.33E-03	3.51E-02	3.42E-03	6.31E-03	1.02E-03	4.95E-02
GWP 100 years incl. VOC char. fact.	kg CO_2-eq.	1.44E-01	4.33E-03	3.51E-02	3.42E-03	1.76E-02	1.02E-03	4.95E-02

ADDITIONAL INFORMATION ON ENVIRONMENTAL IMPACTS
The CML-IA methods do not have characterization factors for the "unspecified VOC" emission flow in the Global Warming Potential environmental impact category. However, VOCs are known to have influence in this category. In order to include the impacts of the VOCs and align with current practice of AkzoNobel, it was decided to calculate the VOC impact on Global Warming Potential separately. The Global Warming Potential impact category has been modified, adding a generic factor of 8 $KgCO_2$-eq/kg VOC, which is in line with AkzoNobel characterisation factors for carbon reporting.

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
• EN 15804:2012+A1:2013 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products, of 11/2013.

• ISO 14040/14044 on Life Cycle Assessments

• Murgett P., 2018. Personal communication with Paul Murgett, Sustainability Marketing Manager AkzoNobel Decorative Paints, UK (2018).

• Thinkstep GaBi Software-System and Database for Life Cycle Engineering. Copyright 1992-2017 ThinkStep AG.

REMARKS
None