PROGRAMME OPERATOR

Stichting MRPI®
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COMPANY INFORMATION

Fleetwood Sherwin Williams
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PRODUCT

Bio-Tec 2k Water-based Epoxy

MRPI®-REGISTRATIONNUMBER

1.1.00041.2019

EPD-REGISTRATIONNUMBER

00000860

DATE OF ISSUE

15-3-2019

DATE OF EXPIRY

15-3-2024

DECLARED UNIT/FUNCTIONAL UNIT

All impacts are calculated using the declared unit “1 m2 of paint”

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **NIBE**
The LCA study has been done by **Ecomatters**
The certificate is based on an LCA-dossier according to ISO14025 and NEN-EN15804+A1. It is verified according to the 'EPD-MRPI verification protocol May 2017'. EPD of construction products may not be comparable if they do not comply with NEN-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.

VISUAL PRODUCT

DESCRIPTION OF PRODUCT

Fleetwood Water-based Epoxy is a 2 pack epoxy coating system designed to cope with the demands of modern sanitary areas.

MORE INFORMATION

www.fleetwood.ie

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
(where appropriate[b]) Third party verifier: Kamiel Jansen, NIBE
[a] Product Category Rules [b] Optional for B-to-B communication, mandatory for B-to-C communication (see EN ISO 14025:2010, 9.4).

DETAILED PRODUCT DESCRIPTION

Product description

Fleetwood Water-based Epoxy is a 2 pack epoxy coating system designed to cope with the demands of modern sanitary areas where the highest levels of asceptic conditions are required. Key benefits of the product are: Excellent durability, low odour, flash rust resistant. It inhibits growth of MRSA, E.Coli and other bacteria: Tested under Japanese JIS Z 2801:2000. The paint contains highly active silver ion bactericide technology. The coating gives excellent adhesion and superior abrasion resistance. Suitable for use where aggressive cleaning regimes are required. Suitable for high wood, plaster and masonry surfaces. Particularly appropriate for areas of high traffic or where cleaning regimes are harsh such as operating theatres, abattoirs or dairies.

Application method

Brush, roller or conventional spray.

Production process and conditions of delivery

Paints are produced to pre-determined formulations that are specific to each individual product. Raw materials are pre-weighed according to the percentage of each in the formulation. Pigment and fillers are dispersed in a solvent and then transferred to another mixing vessel and combined with binder. The amount and type of dispersion is product specific and depends on the type of finish required. Subsequently, colourants are added (if required) to generate the colour desired. Finally, the paint is adjusted to the correct viscosity, filtered and filled into the appropriate packaging container. All paint containers are transported from the production sites to the paint storage warehouse and finally to our customers.

Pack size

The products are packed in a packaging with a capacity of 5.0 litres

COMPONENT (*)	[kg]
Pigment: Lightfast Pigments	confidential
Binder: Epoxy Resin	confidential
Solvent: Water.	confidential

(*) > 1% of total mass

SCOPE AND TYPE

The type of this EPD is cradle-to-gate with options for a specific paint. 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 and sold in Ireland. The paint is produced in the Virginia, County Cavan manufacturing site in Ireland and the application market is also for customers within Ireland and the United Kingdom. Likewise, for the end-of-life, the fate of the paint product is described within an Irish and UK context.

The software GaBi 8.7 Professional is used to perform the LCA. The background databases used are:
a)Raw materials LCI database for the European coatings and printing ink industries
b)Ecoinvent 3.5 (2018)

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

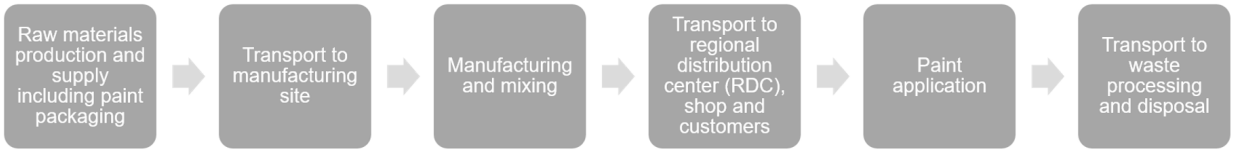
PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction 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	x

X = Module assessed

MNA = Module Not Assessed

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.

Life cycle stages



REPRESENTATIVENESS (IF AVERAGE)

Not applicable

ENVIRONMENTAL IMPACT per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	kg Sb-eq.	3.47 E -6	2.79 E -8	1.24 E -8	3.51 E -6	4.80 E -8	1.15 E -7	0	0	0	0	0	0	0	0	4.18 E -9	0	4.66 E -9	-2.89 E -9
ADPF	MJ	1.53 E +1	2.26 E -1	1.86 E +0	1.74 E +1	3.89 E -1	2.40 E -1	0	0	0	0	0	0	0	0	3.39 E -2	0	7.88 E -2	-1.53 E -1
GWP	kg CO2-eq.	9.71 E -1	1.42 E -2	9.69 E -2	1.08 E +0	2.45 E -2	6.02 E -2	0	0	0	0	0	0	0	0	2.13 E -3	0	2.92 E -2	-1.03 E -2
ODP	kg CFC11-eq.	9.45 E -8	2.76 E -9	1.14 E -9	9.84 E -8	4.75 E -9	6.16 E -9	0	0	0	0	0	0	0	0	4.14 E -10	0	8.61 E -10	-8.98 E -10
POCP	kg ethene-eq.	6.48 E -4	6.25 E -6	4.35 E -5	6.98 E -4	1.08 E -5	3.97 E -2	0	0	0	0	0	0	0	0	9.38 E -7	0	6.84 E -6	-1.92 E -6
AP	kg SO2-eq.	1.12 E -2	5.62 E -5	3.62 E -4	1.16 E -2	9.68 E -5	7.68 E -5	0	0	0	0	0	0	0	0	8.44 E -6	0	2.18 E -5	-3.10 E -5
EP	kg (PO4)3--eq.	1.54 E -3	1.70 E -5	7.30 E -5	1.63 E -3	2.92 E -5	5.17 E -4	0	0	0	0	0	0	0	0	2.55 E -6	0	4.39 E -3	-7.64 E -6

INA = Indicator Not Assessed
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.

RESOURCE USE per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	8.57 E -2	1.22 E -5	9.16 E -3	9.49 E -2	2.11 E -5	1.12 E -3	0	0	0	0	0	0	0	0	1.83 E -6	0	9.93 E -6	-2.04 E -6
PERM	MJ	4.40 E -3	1.84 E -4	1.45 E -2	1.91 E -2	3.17 E -4	1.08 E -2	0	0	0	0	0	0	0	0	2.76 E -5	0	7.73 E -5	-9.26 E -4
PERT	MJ	9.01 E -2	1.96 E -4	2.37 E -2	1.14 E -1	3.38 E -4	1.19 E -2	0	0	0	0	0	0	0	0	2.95 E -5	0	8.73 E -5	-9.28 E -4
PENRE	MJ	1.66 E +1	2.30 E -1	2.03 E +0	1.88 E +1	3.95 E -1	2.63 E -1	0	0	0	0	0	0	0	0	3.45 E -2	0	8.12 E -2	-1.59 E -1
PENRM	MJ	5.33 E -7	0	0	5.33 E -7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.66 E +1	2.30 E -1	2.03 E +0	1.88 E +1	3.95 E -1	2.63 E -1	0	0	0	0	0	0	0	0	3.45 E -2	0	8.12 E -2	-1.59 E -1
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m3	1.20 E +0	1.18 E -2	3.98 E -2	1.25 E +0	2.03 E -2	0	0	0	0	0	0	0	0	0	1.77 E -3	0	6.58 E -3	-2.13 E -2

INA = Indicator Not Assessed
PERE = Use of renewable primary energy excluding renewable primary energy resources 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 primary energy resources used as materials;
PENRM = Use of non-renewable primary energy 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.

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0	0	1.01 E -3	1.01 E -3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NHWD	kg	0	0	2.41 E -3	2.41 E -3	0	2.99 E -2	0	0	0	0	0	0	0	3.00 E -1	0	0	0	0
RWD	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INA = Indicator Not Assessed
HWD = Hazardous waste disposed;
NHWD = Non hazardous waste disposed;
RWD = Radioactive waste disposed;
CRU = Components for re-use;
MFR = Materials for recycling;
MER = Materials for energy recovery;
EEE = Exported electrical energy;
ETE = Exported thermal energy.

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 Fleetwood though a data collection questionnaire, including inquiries about paint characteristics and packaging, manufacturing 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, end of life scenarios) were covered by using the assumptions for the life cycle stages as described in the Product Environmental Footprint Category Rules Decorative paints version 1.0 developed by the Technical Secretariat Decorative Paints from the European Council of the Paint, Printing Ink and Artists' Colours Industry. 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.

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 the production 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 Bio-Tec 2k WB Epoxy product 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.

Type of transport	Articulated lorry
Distance (km)	460
Capacity	>32 t
Bulk density of transported products	1200 kg/m3

A3. Manufacturing

This module covers the manufacturing of the Bio-Tec 2k WB Epoxy product 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 Bio-Tec 2k WB Epoxy product is produced: Virginia County, in Ireland. Primary data and site-specific data were retrieved. For power used at the site, the Irish electricity mix from Ecoinvent 3.5 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 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 Virginia County manufacturing facility into a to the regional distribution center, to a shop and then finally to the customer.

Travel type	Transport from factory to RDC	Transport from RDC to shop and to customer
Transport Type	Articulated lorry	Articulated lorry
Distance (km)	350	430
Capacity	>32 t	>32 t
Bulk density of transported products	1200 kg/m3	1200 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 landfill

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

Type of transport	Articulated lorry
Distance (km)	80
Capacity	>32 t
Bulk density of transported products	1200 kg/m3

C3. Waste processing and C4. Disposal

The end-of-life stage of paints is reached when the paint products are discarded with the surface they are applied on. Paint is normally not separated from that surface during the disposal process, therefore, the typical disposal process is landfill.

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
• Product Environmental Footprint Category Rules - Decorative Paints version 1.0, 2018. Developed by the Technical Secretariat Decorative Paints of the European Council of the Paint, Printing Ink and Artists' Colours Industry.
• Hetherton J. Personal communication with John Hetherton, Technical Manager at Fleetwood Sherwin Williams, Ireland (2018).
• Thinkstep GaBi Software-System and Database for Life Cycle Engineering. Copyright 1992-2017 ThinkStep AG.

REMARKS

None