Environmental Product Declaration

according to ISO 14025 and EN 15804

MRPI

milieu relevante product informatie

This declaration is for:

International Interzinc 52E (Part A & Part B)

Provided by:

AkzoNobel

International

program operator

Stichting MRPI®

publisher

Stichting MRPI®

www.mrpi.nl

MRPI® registration

1.1.00113.2020

EPD registration

00001172

date of first issue

10-04-2020

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10-04-2025

ECO PLATFORM EPD

EN 15804 VERIFIED

PROGRAM OPERATOR

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COMPANY INFORMATION

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https://www.international-pc.com/

PRODUCT

International Interzinc 52E (Part A & Part B)

MRPI® REGISTRATION

1.1.00113.2020

EPD REGISTRATION

00001172

DATE OF ISSUE

10-04-2020

EXPIRY DATE

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DECLARED UNIT/FUNCTIONAL UNIT

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

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **ing. Kamiel Jansen, Primum.**
The LCA study has been done by **Max Sonnen, 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.v3.1'. EPDs 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

Interzinc 52E is a high solid, two component, metallic zinc-rich epoxy primer utilising phenalkamine technology to offer productivity through fast dry and rapid recoatability.

MORE INFORMATION

https://www.international-pc.com/product/interzinc-52e

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, Primum
[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

Interzinc 52E is a high solid, two component, metallic zinc-rich epoxy primer utilising advanced phenalkamine technology to offer improved productivity through fast dry and rapid recoatability.

Typical use

As a high performance primer to give maximum protection as part of any anti-corrosive coating system for aggressive environments including those found on offshore structures, petrochemical facilities, pulp and paper plants, bridges and power plants.

Application Method

Airless Spray, Air spray, Brush.

Production process and conditions of delivery

During paint production, the raw materials are pre-weighed according to the percentage of each in the formulation. The pigment is then dispersed in a mixture of binder using a variety of machines. Finally, the paint undergoes QC (quality control), is filtered and filled into the appropriate packaging container(s). All paint containers are transported from the production sites to a distribution center and finally to the customers.

Pack size

10 litre composite pack (2 part) as standard.

COMPONENT (> 1%)	[kg / %]
Pigment: Lightfast Pigments	Confidential
Binder: Ethylene copolymer	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. The coating is produced in Sweden, China, Indonesia, Saudi Arabia, United States and India and the application market is for customers around the world. Likewise, for the end-of-life, the fate of the coating product is described within a global context.
The software GaBi 9.2 Professional is used to perform the LCA. In the model Ecoinvent 3.5 database was used. The validity of this EPD is in correspondence with the specifications of the LCA project report.

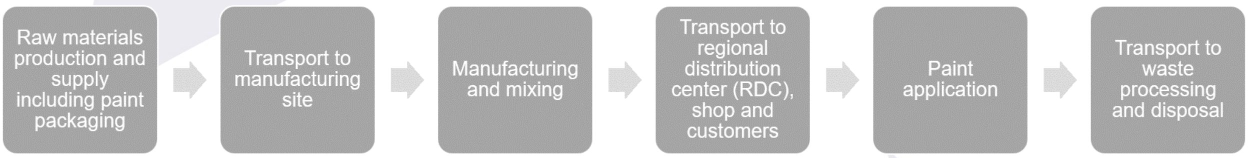
All impacts associated with the upstream production of materials and energy are included in the system boundaries. Mining activities and controlled landfills are included in the product systems. Similarly, wastewater treatment activities are also considered within the technological systems. The emissions 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	MNA

X = Module assessed

MNA = Module not assessed

Life cycle stages



REPRESENTATIVENESS

The coating is manufactured in different production sites (Sweden, China, Australia, Saudi Arabia, United States and India) and therefore, the following average calculation rule is used: the weighted average of the coating characteristics based on the production volumes per production site.

The used data is representative for all locations and thus this EPD is considered to be representative for products produced in Sweden, China, Indonesia, Saudi Arabia, United States and India which are sold in a global market.

Unit	Quantity
Density (kg/l)	2232
Coverage (kg/m2)	0.206
Number of Layers	1
Total product used (kg/m2)	0.206

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.	1.36 E -3	1.59 E -7	1.70 E -8	1.36 E -3	9.54 E -8	3.53 E -8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.59 E -9	0.00	1.03 E -7	0.00
ADPF	MJ	1.76 E +1	9.00 E -1	6.71 E -1	1.92 E +1	6.60 E -1	9.24 E -1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.93 E -2	0.00	3.69 E +0	0.00
GWP	kg CO2-eq.	1.25 E +0	5.87 E -2	6.94 E -2	1.38 E +0	4.19 E -2	1.69 E -1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83 E -3	0.00	8.24 E -1	0.00
ODP	kg CFC11-eq.	5.59 E -8	1.08 E -8	2.29 E -10	6.69 E -8	7.95 E -9	2.67 E -9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55 E -10	0.00	8.54 E -9	0.00
POCP	kg ethene-eq.	7.57 E -4	2.79 E -5	4.69 E -5	8.32 E -4	1.83 E -5	3.81 E -2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.03 E -7	0.00	7.21 E -4	0.00
AP	kg SO2-eq.	1.29 E -2	3.24 E -4	1.49 E -4	1.34 E -2	1.75 E -4	3.81 E -4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.25 E -6	0.00	1.65 E -3	0.00
EP	kg (PO4)3--eq.	4.26 E -3	7.67 E -5	2.47 E -5	4.36 E -3	5.05 E -5	1.54 E -4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.19 E -6	0.00	6.21 E -4	0.00

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	1.47 E +0	9.96 E -3	2.61 E -2	1.51 E +0	6.71 E -3	4.96 E -2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13 E -4	0.00	1.45 E -1	0.00
PERM	MJ	4.85 E -4	0.00	-4.20 E -6	4.81 E -4	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
PERT	MJ	1.47 E +0	9.96 E -3	2.61 E -2	1.51 E +0	6.71 E -3	4.96 E -2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13 E -4	0.00	1.45 E -1	0.00
PENRE	MJ	1.84 E +1	9.14 E -1	6.89 E -1	2.00 E +1	6.69 E -1	9.68 E -1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.98 E -2	0.00	3.72 E +0	0.00
PENRM	MJ	6.07 E -4	0.00	1.08 E -10	6.07 E -4	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
PENRT	MJ	1.84 E +1	9.15 E -1	6.89 E -1	2.00 E +1	6.69 E -1	9.68 E -1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.98 E -2	0.00	3.72 E +0	0.00
SM	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	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	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	0.00
FW	m3	2.36 E -2	1.65 E -4	-1.53 E -4	2.36 E -2	1.27 E -4	1.93 E -4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.89 E -6	0.00	4.89 E -4	0.00

INA = Indicator Not Assessed
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

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	0.00	0.00	1.86 E -3	1.86 E -3	0.00	3.71 E -2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.06 E -1	0.00
NHWD	kg	0.00	0.00	3.18 E -3	3.18 E -3	0.00	9.75 E -2	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	0.00
CRU	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	0.00
MFR	kg	0.00	0.00	0.00	0.00	0.00	1.07 E -2	0.00	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	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	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	0.00

INA = Indicator Not Assessed
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

CALCULATION RULES

Cut off criteria

There is no cut-off of inputs and outputs in any of the processes during the life cycle stage, hence the environmental impact of all unit processes of each life cycle stage are considered.

Data quality and data collection period

Specific data was collected from AkzoNobel though a questionnaire, including inquiries about coating characteristics and packaging, logistics data (e.g. transport), production information and end-of-life. The data collection period for specific data was the year 2019.

Data gaps (i.e. transport data for two productions sites Australia and India) 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. Further data gaps (i.e. end-of-life transport data) were covered with data from 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, waste treatment processes) was selected from Ecoinvent 3.5 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 an annual production of coating product for each site. The coating 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 International Interzinc 52E 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 and boat. On average, the transport characteristics for this life cycle stage are the following:

Transport Type	Truck 1	Truck 2	Container ship coast
Distance (km)	232.74	1135.56	1855.71
Capacity	34-40 t ,60% payload	40-60 t, 60% payload	70% utilization factor
Bulk density of transported products	2232 kg/m3	2232 kg/m3	2232 kg/m3

A3. Manufacturing

This module covers the manufacturing of the International Interzinc 52E coating and includes all processes linked to production such as storing, mixing, packing and internal transportation. Use of electricity and fuels in coating production are taken into account as well.

Data regarding coating production was provided for the manufacturing sites where International Interzinc 52E coating is produced: Sweden, China, Australia, Saudi Arabia, United States and India. Furthermore, the specific transport distances and transportation modes for raw materials, coating packaging and transportation to customer were collected from the AkzoNobel logistics department, except for two production sites were generic data is used. Primary data and site-specific data were retrieved. For electricity sources, Ecoinvent datasets were used for each of the countries where the production site is located. 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 coatings a landfill scenario is assumed.

A4. Transport to Regional Distribution Centre and customer

All coating containers are transported from the manufacturing facilities into a distribution centre and then finally, to the customer. On average, the transport characteristics for this life cycle stage are the following:

PARAMETER	Transport from factory to RDC	Transport from RDC to customer
Transport Type	Truck 1	Truck 2
Distance (km)	2,727.87	377.67
Capacity	34-40 t ,60% payload	40-60 t, 60% payload
Bulk density of transported products	2232 kg/m3	2232 kg/m3

A5. Application and use

This module includes the environmental aspects and impacts associated with the application and of the coating. The use of energy from air spray for coating application purposes is included.

PARAMETER	(KWh/ kg)
Energy for application	0.1

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	2232 kg/m3

C3. Waste processing and C4. Disposal

The end of life stage is encompassed in these modules. It is assumed that part of the coating is lost during application and the rest is applied. After its lifetime, it is assumed that the coatings end up in incineration. These assumptions are based on best knowledge of the end of life of coating from direct contact with AkzoNobel.

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 4.23 kgCO2-eq/kg VOC, which is sourced from IPCC 2013 data. This is also in line with Akzo Nobel’s current methodology for carbon reporting.

Environmental Impact	UNIT	A1	A2	A3	A4	A5	C2	C4
Global Warming potential (GWP 100 years)	[kg CO2-Eq.]	1.25E+0	5.87E-2	6.94E-2	4.19E-2	1.69E-1	1.83E-3	8.24E-1
Global Warming potential (GWP 100 years) incl. VOC char. fact.	[kg CO2-Eq.]	1.25E+0	5.87E-2	6.98E-2	4.19E-2	7.76E-1	1.83E-3	8.24E-1

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.

• Stephenson A. Personal communication with Adam Stephenson, AkzoNobel Protective Coatings, United Kingdom (2020).

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

• Ecoinvent 3.5 database (2019).

REMARKS

None