



**Environmental
Product
Declaration**

According to EN15804+A2 (+indicators A1)



This declaration is for:
Interchar 212

Provided by:
AkzoNobel



program operator
Stichting MRPI®
publisher
Stichting MRPI®
www.mrpi.nl

MRPI® registration
1.1.00556.2024
date of first issue
24-5-2024
date of this issue
24-5-2024
expiry date
24-5-2029





COMPANY INFORMATION



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MRPI® REGISTRATION

1.1.00556.2024

DATE OF ISSUE

24-5-2024

EXPIRY DATE

24-5-2029

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Gert-Jan Vroegge, Eco Intelligence. The LCA study has been done by Mart van Assem & Mo Bei Du, Ecomatters. The certificate is based on an LCA-dossier according to EN15804+A2 (+indicators A1). It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPD's 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®
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Managing Director MRPI

PRODUCT

Interchar 212

DECLARED UNIT/FUNCTIONAL UNIT

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

DESCRIPTION OF PRODUCT

Epoxy Intumescent

VISUAL PRODUCT



MORE INFORMATION

<https://www.international-pc.com/en>

DEMONSTRATION OF VERIFICATION

CEN standard EN15804 serves as the core PCR(a)

Independent verification of the declaration and data according to
EN15804+A2 (+indicators A1)

internal: external: x

Third party verifier: Gert-Jan Vroegge, Eco-Intelligence

[a] PCR = Product Category Rules





DETAILED PRODUCT DESCRIPTION

Interchar 212 is a high performance, high build, solvent free, two pack modified epoxy intumescent fireproofing coating designed to be used on steelwork requiring protection from cellulosic fires. The product has excellent corrosion performance and mechanical properties. Interchar 212 performs without the requirement for any reinforcement.

Typical Use

To assist in preserving the structural integrity of steelwork in a cellulosic fire. Typical structures requiring this protection include a number of public access buildings e.g. Airport Terminals, Leisure Facilities, Convention Centres, Educational Facilities, Shopping Malls, Industrial Complexes and Hotels. Interchar 212 utilises tough durable epoxy technology to provide a material that allows for steelwork to be fabricated and fire protected away from the construction site which helps in both improving quality control and reducing construction schedules.

Application Method

Hot twin feed, modified single feed airless spray, Trowel

Pack Size

The products are packed in packaging with a capacity of 50 kg.

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 mixing equipment.

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.

Component	Weight %
Pigments	Confidential
Binder	Confidential
Additive	Confidential
Hardener	Confidential
Catalyst	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 worldwide. The paint is produced globally and the application market is for customers worldwide. Likewise, for the end-of-life, the fate of the paint product is described within a global context.

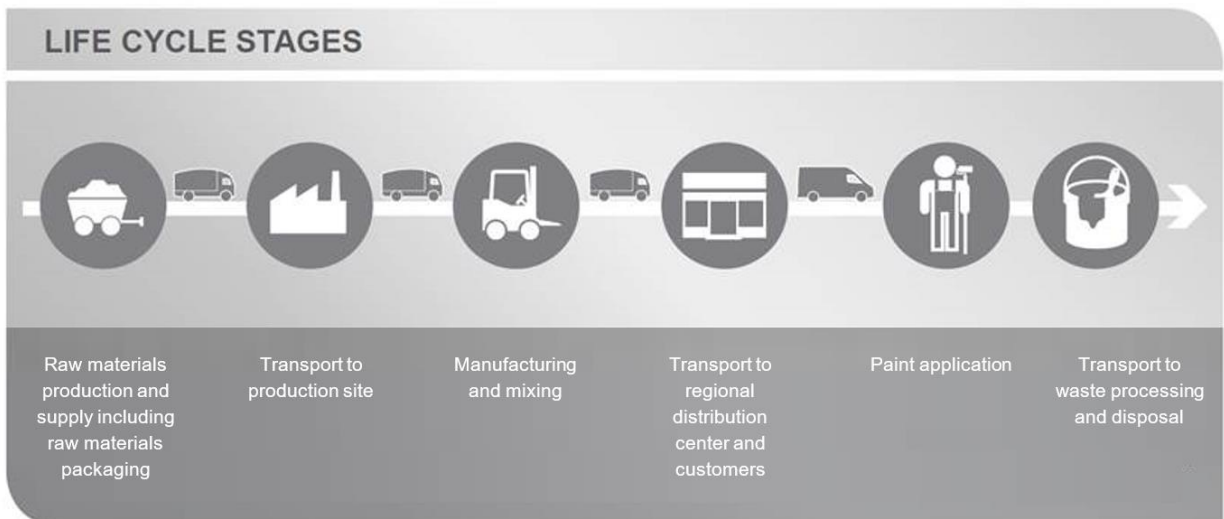
The software LCA for Experts 10.7.1.28 Professional is used to perform the LCA. In the model Ecoinvent 3.9.1. database was used.

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		USER 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 EPD is representative for the following paint products belonging to the Interchar 212 group:

1. Interchar 212

This EPD is representative for the products manufactured worldwide and sold globally. The paint is produced at the production sites: Amata (Vietnam), Chilseo (South Korea), Dammam (Kingdom of Saudi Arabia), Houston (USA), Wapenveld (Netherlands)



ENVIRONMENT 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.	1,97 E+01	2,77 E-01	1,45 E+00	2,14 E+01	4,72 E-01	5,24 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,86 E-02	0,00 E+00	1,78 E+00	0,00 E+00
GWP-fossil	kg CO2 eq.	1,97 E+01	2,77 E-01	1,71 E+00	2,17 E+01	4,71 E-01	3,86 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,85 E-02	0,00 E+00	1,32 E+00	0,00 E+00
GWP-biogenic	kg CO2 eq.	-2,05 E-01	1,24 E-04	-2,55 E-01	-4,60 E-01	2,42 E-04	1,38 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,73 E-05	0,00 E+00	4,60 E-01	0,00 E+00
GWP-luluc	kg CO2 eq.	2,03 E-01	1,38 E-04	1,31 E-03	2,05 E-01	2,69 E-04	7,54 E-05	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,91 E-05	0,00 E+00	1,93 E-05	0,00 E+00
ODP	kg CFC11 eq.	1,12 E-06	4,46 E-09	1,81 E-08	1,14 E-06	7,35 E-09	8,05 E-10	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,21 E-10	0,00 E+00	9,51 E-10	0,00 E+00
AP	mol H+ eq.	1,54 E-01	1,19 E-03	4,81 E-03	1,60 E-01	3,45 E-03	3,61 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,65 E-04	0,00 E+00	2,96 E-04	0,00 E+00
EP-freshwater	kg PO4 eq.	1,04 E-02	2,20 E-05	1,54 E-04	1,06 E-02	4,01 E-05	1,84 E-05	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,07 E-06	0,00 E+00	3,99 E-06	0,00 E+00
EP-marine	kg N eq.	2,23 E-02	4,36 E-04	1,14 E-03	2,39 E-02	1,11 E-03	1,42 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,07 E-05	0,00 E+00	1,22 E-04	0,00 E+00
EP-terrestrial	mol N eq.	1,72 E-01	4,65 E-03	1,17 E-02	1,88 E-01	1,20 E-02	1,13 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,47 E-04	0,00 E+00	1,32 E-03	0,00 E+00
POCP	kg NMVOC eq.	6,40 E-02	1,67 E-03	4,36 E-03	7,01 E-02	3,83 E-03	3,58 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,33 E-04	0,00 E+00	4,07 E-04	0,00 E+00
ADP-minerals & metals	kg Sb eq.	8,73 E-05	7,36 E-07	9,52 E-07	8,90 E-05	1,16 E-06	5,76 E-07	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,02 E-07	0,00 E+00	6,29 E-08	0,00 E+00
ADP-fossil	MJ, net calorific value	3,51 E+02	4,04 E+00	1,70 E+01	3,72 E+02	6,68 E+00	9,11 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	5,62 E-01	0,00 E+00	7,14 E-01	0,00 E+00
WDP	m3 world eq. Deprived	5,41 E+02	2,72 E-02	1,30 E-01	5,41 E+02	4,51 E-02	1,83 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,78 E-03	0,00 E+00	3,11 E-02	0,00 E+00

GWP-total = Global Warming Potential total

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 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 [2]

ADP-fossil = Abiotic Depletion for fossil resources potential [2]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [2]

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



ENVIRONMENT 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	1,93 E-06	2,16 E-08	5,51 E-08	2,01 E-06	3,60 E-08	4,86 E-09	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,01 E-09	0,00 E+00	4,81 E-09	0,00 E+00
IRP	kBq U235 eq.	1,65 E+00	3,64 E-03	5,82 E-02	1,71 E+00	6,87 E-03	3,95 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	5,06 E-04	0,00 E+00	5,25 E-04	0,00 E+00
ETP-fw	CTUe	2,86 E+03	4,68 E+00	1,07 E+01	2,88 E+03	7,71 E+00	1,48 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,51 E-01	0,00 E+00	9,41 E-01	0,00 E+00
HTP-c	CTUh	2,60 E-08	1,25 E-10	1,51 E-09	2,77 E-08	2,40 E-10	4,51 E-10	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,74 E-11	0,00 E+00	1,67 E-09	0,00 E+00
HTP-nc	CTUh	7,28 E-07	3,46 E-09	1,74 E-08	7,49 E-07	5,62 E-09	2,55 E-09	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,82 E-10	0,00 E+00	5,39 E-09	0,00 E+00
SQP	----	1,89 E+02	4,02 E+00	4,12 E+01	2,35 E+02	5,86 E+00	8,30 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	5,59 E-01	0,00 E+00	1,24 E+00	0,00 E+00

- 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 [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 / A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0,00 E+00	0,00 E+00	9,44 E-02	9,44 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
NHWD	kg	0,00 E+00	0,00 E+00	5,95 E-02	5,95 E-02	0,00 E+00	1,48 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,61 E-01	0,00 E+00
RWD	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
CRU	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MFR	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,43 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MER	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
EEE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
ETE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00

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



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	D
PERE	MJ	3,23 E+01	5,03 E-02	6,04 E+00	3,84 E+01	9,68 E-02	5,89 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,00 E-03	0,00 E+00	8,28 E-03	0,00 E+00
PERM	MJ	2,94 E-03	3,00 E-08	2,79 E-07	2,94 E-03	7,92 E-08	9,80 E-09	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,17 E-09	0,00 E+00	1,22 E-08	0,00 E+00
PERT	MJ	3,23 E+01	5,03 E-02	6,04 E+00	3,84 E+01	9,68 E-02	5,89 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,00 E-03	0,00 E+00	8,28 E-03	0,00 E+00
PENRE	MJ	3,51 E+02	4,04 E+00	1,70 E+01	3,72 E+02	6,68 E+00	9,11 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	5,62 E-01	0,00 E+00	7,14 E-01	0,00 E+00
PENRM	MJ	1,39 E-03	0,00 E+00	3,53 E-09	1,39 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PENRT	MJ	3,52 E+02	4,04 E+00	1,70 E+01	3,74 E+02	6,68 E+00	9,11 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	5,62 E-01	0,00 E+00	7,14 E-01	0,00 E+00
SM	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
RSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
NRSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
FW	m3	1,26 E+01	6,33 E-04	3,43 E-03	1,26 E+01	1,05 E-03	4,26 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	8,81 E-05	0,00 E+00	7,24 E-04	0,00 E+00

- 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

BIOGENIC CARBON CONTENT 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	D
BBCpr	kg C	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00
BCCpa	kg C	0,00 E+00	0,00 E+00	-9,20 E-02	-9,20 E-02	0,00 E+00	9,20 E-02	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00	0,0 E+00

- BBCpr = Biogenic carbon content in product
- BCCpa = Biogenic carbon content in packaging



CALCULATION RULES

Cut off criteria

The cut-off is considered in the raw material supply stage (A1). Cut-off of inputs comprises of the raw materials, for which no appropriate proxies were found. In this study there were no cut-off inputs. For recycling of waste packaging material (metal and plastic), a cut-off approach was followed. The cut-off point is chosen to be the end of waste treatment.

Data quality and data collection period

Specific data was collected from AkzoNobel through 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 2022.

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. 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, transport, waste treatment processes) was selected from Ecoinvent 3.9.1 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 paint production is basically a process of mixing ingredients and, therefore, the environmental impact is fairly likely to be related to the mass of the products.

Parameter	Unit	Value
VOC Content	g/l	0
Density	kg/l	1,400
Coverage	m ² /l	0,3
Number of layers	Quantity	1
Total product used	kg/m ²	4,500

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 Interchar 212 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.

Site	Amata, Vietnam	Chilseo, South Korea	Dammam, KSA	Houston, USA	Wapenveld, Netherlands
Vehicle type used for transport	Lorry	Lorry	Lorry	Lorry	Lorry
Distance, km	460	460	460	460	460
Capacity	>32 t ,64% payload	>32 t ,64% payload	>32 t ,64% payload	>32 t ,64% payload	>32 t ,64% payload

A3. Manufacturing

This module covers the manufacturing of Interchar 212 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 sites where the Interchar 212 is produced: Amata (Vietnam), Chilseo (South Korea), Dammam (Kingdom of Saudi Arabia), Houston (USA), Wapenveld (Netherlands). Furthermore, the specific transportation distances and transportation modes for transportation to distribution center and to customer were collected from the AkzoNobel logistics department. Primary data and site-specific data were retrieved. For electricity sources (Dammam: 100% standard market mix, Saudi Arabia; Houston: 100% renewable from hydro, including transmission; Amata: 100% standard market mix, Vietnam; Wapenveld: 100% renewable from wind, including transmission losses; Chilseo: 100% standard market mix, South Korea) the Ecoinvent 3.9.1. dataset was used. For upstream (raw material processes) and downstream processes (application, use, and waste processing) generic data was 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.

A4. Transport to Regional Distribution Centre and customer

All paint containers are transported from the production facility into a distribution center and then finally to the customer. On average, the transport characteristics for this life cycle stage are the following

Production site	Amata, Vietnam	Amata, Vietnam	Chilseo, South Korea	Dammam, KSA	Dammam, KSA	Houston, USA	Houston, USA	Houston, USA	Houston, USA	Wapenveld, Netherlands	Wapenveld, Netherlands
Coatings transport type	Transport from factory to RDC	Transport from RDC to PoS	Transport from RDC to PoS	Transport from factory to RDC	Transport from RDC to PoS	Transport from factory to RDC	Transport from RDC to PoS	Transport from RDC to PoS	Transport from RDC to PoS	Transport from factory to RDC	Transport from RDC to PoS
Transport Type	Lorry	Sea - Container ship	Lorry	Lorry	Lorry	Lorry	Lorry	Rail	Sea - Container ship	Lorry	Lorry
Distance (km)	747	2804	119	469	387	60	471	2567	3516	810	676
Capacity	>32 t ,64% payload	NA	>32 t ,64% payload	>32 t ,64% payload	>32 t ,64% payload	>32 t ,64% payload	>32 t ,64% payload	NA	NA	>32 t ,64% payload	>32 t ,64% payload

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.

End-of-life transport type	Transport to waste processing
Vehicle type	Truck 34t-40t payload average fleet
Distance	80 km
Capacity utilisation	60%

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 and exterior paint. In both cases, it is assumed that part of the paint is lost during application and the rest is applied.

Classification of paint, based on function	% of sold paint to landfill	% of sold paint to incineration
Interior Masonry Wall	88%	12%
Exterior, Trim and other paints	88%	12%



DECLARATION OF SVHC

This product contains melamine, CAS# 108-78-1. A substance listed in the "Candidate List of Substances of Very High Concern for authorisation", from the European Chemicals Agency.

REFERENCES

- AkzoNobel, Protective Coatings LCA study, 2023.
- Assari, Mohammad Reza, et al. (2014) Exergy modeling and performance evaluation of pulp and paper production process of bagasse, a case study. Thermal Science 18.4 (2014): 1399-1412.
- CEPE, Raw materials LCI database for the European Council of the Paint, Printing Ink and Artists' Colours Industry (CEPE), version 3.0, IVL Swedish Environmental Research Institute, 2016
- EN 15804:2012+A2:2019 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products, of 2019.
- ISO 14040/14044 on Life Cycle Assessments
- Lamlom, S. H., and R. A. Savidge. (2003) A reassessment of carbon content in wood: variation within and between 41 North American species." Biomass and Bioenergy 25.4: 381-388.
- 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.
- Sphera GaBi Software-System and Database for Life Cycle Engineering. Copyright 1992-2018 Sphera.
- Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at: <<http://link.springer.com/10.1007/s11367-016-1087-8>> [Accessed 20-01-2021]
- Sanséau-Blanchard, A, 2023. Personal communication with Ana Sanséau -Blanchard, Technical Specialist, Marine, Protective, Yacht R&D – Global Support, Akzo Nobel, UK

REMARKS

None.