AkzoNobel

EPD®

Interpon®
POWDER COATINGS

Third party verified EPD – According to the International EPD® system

Interpon D1000

Interpon D2000

Interpon D3000

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Description

This Environmental Product Declaration (EPD) is in accordance with ISO 14025 and EN 15804. It is a third party externally verified document that reports environmental data of products based on Life Cycle Assessment (LCA) and other relevant information.

EPD of construction products may not be comparable if they do not comply with EN 15804. Environmental product declarations within the same product category from different programs may not be comparable.

This EPD contains information for three Interpon D powder products produced in six plants world wide.

This EPD was prepared by IVL Swedish Environmental Research Institute and was externally verified by Carl-Otto Nevén, NEVÉN Miljökonsult.

Further, this document is in compliance with:

- ISO 14040/14044
- ISO 14025
- EN 15804
- The International EPD General Program Instructions, ver. 3.0 of 11/12/2017.
- PCR 2012:01 CONSTRUCTION PRODUCTS AND CONSTRUCTION SERVICES; ver.2.2 of 2017-05-30

This EPD is called “Cradle-to-gate with options” according to the definition in the above mentioned PCR.

1. The company

AKZONOBEL

AkzoNobel is a leading global paints and coatings company.

Over the past decade, AkzoNobel has built a very strong foundation for sustainability and is recognized as a leader in its industry, as demonstrated by a consistently high position on the Dow Jones Sustainability Index (DJSI).

AkzoNobel is also signatory in several initiatives such as the United Nations Global Compact, which reinforces the commitment to sustainability.

AkzoNobel Powder Coatings is a world leader in powder coatings. It offers effective coatings solutions for a wide range of applications, including furniture, automotive, functional, IT, appliance, the architectural market and general industry. It is a portfolio of strong brands, including Interpon and Resicoat.

Achieving longer term business success for AkzoNobel and its business partners relies on the ability to get the greatest positive impact out of products and services, from the fewest resources possible along the value.

Further information on www.akzonobel.com

Interpon® POWDER COATINGS

RESICOAT® Experts in Functional Powder Coatings

2. The product and the process

The Interpon D1000, D2000 and D3000 coatings are produced in:

- Nashville, US
- Bao An, China
- Como, Italy
- Dourdan, France
- Izmir, Turkey
- Dong Nai, Vietnam

This is the geographical scope of the study. The results are based on a weighted average, depending on volume and location.

The state of the art technology used for producing industrial powder coatings consists of several distinct stages, namely:

- Weighing, premixing and size reduction of raw materials
- Extrusion of pre-mix, cooling and crushing of the extrudate into chips
- Micronising the chips into the final powder
- Post mixing, packaging and storage

The products are usually packed in a cartoon box with a plastic liner. The weight of product in one box is up to 25 kg.

Additionally, the following processes are included in the use phase:

- Pre-treatment of the aluminium substrate, using the chromium process.
- Coating of the substrate and curing.

All of the AkzoNobel Powder Coatings manufacturing sites will fulfill the ISO 14001:2015 standards in the autumn of 2018.

3.1 Interpon D1000, D2000, D3000 products

Interpon D1000

These coatings are especially designed for the architectural and construction industry, and have been proven for last 40 years. They are mainly used on aluminium, but can be used anywhere that attractive, durable colors are required including on galvanized steel, or with a suitable primer on mild steel. They have standard exterior durability, meaning excellent color and gloss retention after 12 months Florida testing. Available in almost an unlimited range of colors and effects, these powders meet the requirements of global entry-level standards such as AAM2603, BS6496, BS EN 12206, and specific ranges have approvals from Qualicoat and GSB.

Interpon D2000

Interpon D2000 is a series of high durability powder coatings specifically formulated for use on prestigious architectural projects on components requiring a long lifespan without maintenance. The most common substrate is aluminium profiles. Conforming with the performance requirements of the AAMA2604 specification, specific ranges have higher level approvals from Qualicoat and GSB. Interpon D2000 gives superior durability and color retention. Interpon D2000 powders are available in a wide color range including metallic effects, but less colors than Interpon D1000 series because some bright colors might fade during the life of the coating and so are not offered.

Interpon D3000

For the toughest environments and the perfect long-lasting finish, Interpon D3000 is the answer. Liquid PVDF coatings have been the standard for many years. But our Interpon D3000 represents VOC free alternative with the same outstanding weather resistance. Interpon D3000 is proven. That is why it has been used on many landmark buildings of the past 10 years, including Bond Street in London and several towers of the King Abdullah Financial District in Saudi Arabia. Interpon D3000 is a series of hyperdurable* coatings, meeting the demanding requirements of standards such as AAM2605, and holding Qualicoat Class 3 and GSB Premium approvals where applicable.

Hyperdurable is a common market definition that corresponds with the highest levels of durability of commonly used specification standards like AAMA, Qualicoat.

3.2 Product system

Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
Raw material	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction, demolition	Transport	Waste processing	Disposal	Reuse, recycling or energy recovery potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	MND

The table illustrates the different life cycle stages according to the PCR. If a stage is included, it is indicated with an ”X” and if it is not included ”MND” (Module Not Declared) is noted.

4. Environmental performance – LCA

The Environmental performance was calculated using LCA (Life Cycle Assessment). All major steps from the extraction of natural resources until the final disposal of the product are included in the environmental assessment. The environmental impact of the aluminium substrate is however not included.

This study was conducted following the product category rules (PCR) published by the International EPD system: PCR 2012:01 CONSTRUCTION PRODUCTS AND CONSTRUCTION SERVICES; ver. 2.2 of 2017-05-30

Site-specific production data have been retrieved for year 2017. For some of the raw materials, generic data have been used according to the suggested sources in the PCR. Most data used in the study are collected within the last few years. No data is older than 10 years. About 99.5% of the raw materials have been covered in the analysis, which has been extrapolated to cover 100% raw material.

The LCA software GaBi 7.3 has been used in the modelling where related databased used are mainly based on AkzoNobel collected data, Ecoinvent 3.3 and Thinkstep (from 2016).

Powder coating production yields no commercial by-products. Thus, there is no need for allocation in this specific process.

No substances occur on the REACH candidate list of SVHC (*Candidate List of Substances of Very High Concern*) in the products of this EPD.

4. Environmental performance – LCA

Declared unit

The environmental performance refer to:

1 kg of Interpon D1000…

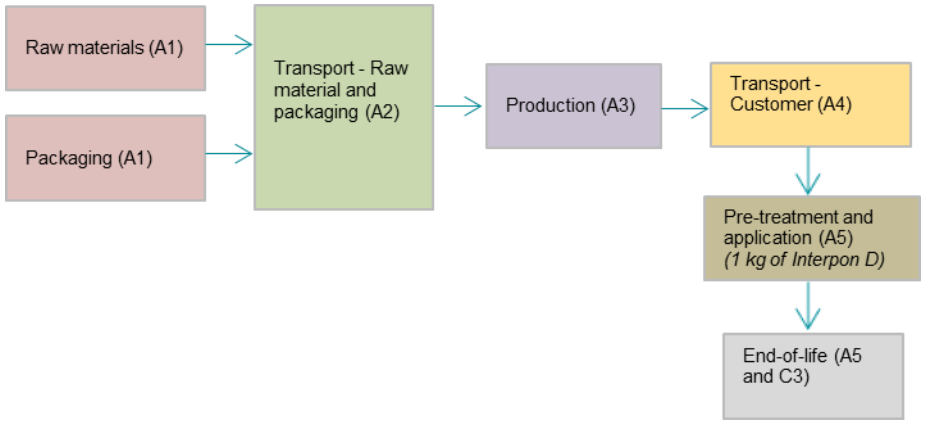
1 kg of Interpon D2000…

1 kg of Interpon D3000…

…applied to the aluminium surface.

The life lengths of the products are estimated as 10 years, 15 years and 20 years for D1000, D2000 and D3000 respectively.

Overview of the product system



5. End-of-Life

In the below table, the scenario for the waste types are displayed.

Waste	Waste treatment
Production waste	Landfill
Packaging waste	Recycling
Other production waste	Landfill
Used packaging	50% Recycling, 50% Incineration**
Used paint*	Incineration**

* The residue of the paint on the coated aluminium surface
** With energy recovery

6. Inventory and Impact categories for Results

In accordance to the International EPD system programme instructions and the specific PCR used, the following characterization factors were used:

Impact category (Unit)	Characterization factors
Abiotic depletion (elements) (kg Sb-e)	CML2001 – Jan. 2016, baseline method.
Abiotic resources (fossil) (MJ net calorific value)	CML2001 – Jan. 2016, baseline method.
Acidification potential (kg SO_2-e)	CML2001 – Jan. 2016, baseline method.
Eutrophication potential (kg Phosphate-e)	CML2001 – Jan. 2016, baseline method.
Global warming potential (GWP 100) (kg CO_2-e)	CML2001 – Jan. 2016, baseline method.
Ozone layer depletion potential (kg R11-e)	CML2001 – Jan. 2016, baseline method.
Photochemical ozone creation potential (kg C_2H_4e)	CML2001 – Jan. 2016, baseline method.

6. Inventory and Impact categories for Results

In addition, inventory factors are required according to the International EPD system programme instructions and the specific PCR used.

Inventory – Water use	Unit
Use of net fresh water	m3

Inventory – Energy & Material	Unit
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value
Use of renewable primary energy resources used as raw materials	MJ, net calorific value
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value
Use of non- renewable primary energy excluding non- renewable primary energy resources used as raw materials	MJ, net calorific value
Use of non- renewable primary energy resources used as raw materials	MJ, net calorific value
Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value
Use of renewable secondary fuels	MJ, net calorific value
Use of non-renewable secondary fuels	MJ, net calorific value
Use of secondary material	kg

Inventory – Waste	Unit
Hazardous waste disposed	kg
Non-hazardous waste disposed	kg
Radioactive waste disposed	kg

7.1 Results

Interpon D1000

ENVIRONMENTAL IMPACTS Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Abiotic depletion (elements) (kg Sb-e)	4.93E-04	2.62E-09	1.99E-08	4.93E-04	2.58E-09	1.03E-05	-	5.04E-04
Abiotic resources (fossil) (MJ net calorific value)	67.0	0.54	0.48	68.0	0.53	143	-	211
Acidification potential (kg SO_2-e)	0.01	1.83E-04	2.74E-04	0.01	1.80E-04	0.02	-	0.03
Eutrophication potential (kg Phosphate-e)	4.3E-03	4.49E-05	8.23E-04	5.1E-03	4.39E-05	0.03	-	0.04
Global warming potential (GWP 100) (kg CO_2-e)	2.96	0.04	0.28	3.29	0.04	11.07	0.67	15.1
Ozone layer depletion potential (kg R11-e)	1.82E-07	1.81E-13	1.45E-09	1.84E-07	1.78E-13	5.07E-07	-	6.91E-07
Photochemical ozone creation potential (kg C_2H_4e)	1.17E-03	2.02E-05	2.76E-05	1.22E-03	1.98E-05	1.72E-03	-	2.97E-03

WATER USE** Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Use of net fresh water (m3)	0.07	1.71E-03	0.02	0.10	1.68E-03	0.56	-	0.66

* Additional information
** Water consumption excludes water known to be used for energy turbines.

7.1 Results

Interpon D1000

ENERGY USE Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ, net calorific value)	2.76	0.03	0.02	2.82	0.03	15.3	-	18.1
Use of renewable primary energy resources used as raw materials (MJ, net calorific value)	0.01	4.67E-14	2.95E-08	0.01	4.59E-14	0.01	-	0.01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (MJ, net calorific value)	2.77	0.03	0.02	2.83	0.03	15.3	-	18.2
Use of non- renewable primary energy excluding non- renewable primary energy resources used as raw materials (MJ, net calorific value)	72.1	0.54	0.52	73.2	0.54	178	-	252
Use of non- renewable primary energy resources used as raw materials (MJ, net calorific value)	8.02E-03	3.50E-05	6.32E-06	8.07E-03	3.44E-05	0.26	-	0.26
Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials) (MJ, net calorific value)	72.1	0.54	0.52	73.2	0.54	179	-	252
Use of renewable secondary fuels (MJ, net calorific value)	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels (MJ, net calorific value)	-	-	-	-	-	-	-	-
Use of secondary material (kg)	-	-	-	-	-	-	-	-

* Additional information

7.1 Results

Interpon D1000

 WASTE Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Hazardous waste disposed (kg)	5.38E-05	4.12E-08	0.01	0.01	4.05E-08	0.07	-	0.08
Non-hazardous waste disposed (kg)	0.31	2.12E-03	0.06	0.38	2.09E-03	0.31	-	0.69
Radioactive waste disposed (kg)	1.36E-04	7.79E-07	7.61E-07	1.37E-04	7.66E-07	1.62E-04	-	3.01E-04

* Additional information

7.2 Results

Interpon D2000

ENVIRONMENTAL IMPACTS Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Abiotic depletion (elements) (kg Sb-e)	4.36E-04	2.63E-09	2.06E-08	4.36E-04	2.52E-09	1.03E-05	-	4.46E-04
Abiotic resources (fossil) (MJ net calorific value)	72.6	0.54	0.57	73.8	0.52	143	-	217
Acidification potential (kg SO_2-e)	0.01	1.87E-04	3.19E-04	0.01	1.78E-04	0.02	-	0.03
Eutrophication potential (kg Phosphate-e)	4.7E-03	4.58E-05	9.29E-04	0.01	4.35E-05	0.03	-	0.04
Global warming potential (GWP 100) (kg CO_2-e)	3.35	0.04	0.32	3.70	0.04	11.1	0.67	15.5
Ozone layer depletion potential (kg R11-e)	2.23E-07	1.82E-13	1.53E-09	2.25E-07	1.74E-13	5.07E-07	-	7.32E-07
Photochemical ozone creation potential (kg C_2H_4e)	1.36E-03	2.08E-05	3.08E-05	1.41E-03	1.98E-05	1.72E-03	-	3.15E-03

WATER USE** Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Use of net fresh water (m3)	0.35	1.71E-03	0.02	0.37	1.64E-03	0.56	-	0.94

* Additional information

** Water consumption excludes water known to be used for energy turbines.

7.2 Results

Interpon D2000

ENERGY USE Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ, net calorific value)	3.13	0.03	0.02	3.18	0.03	15.3	-	18.5
Use of renewable primary energy resources used as raw materials (MJ, net calorific value)	0.01	4.68E-14	1.89E-08	0.01	4.49E-14	0.01	-	0.01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (MJ, net calorific value)	3.14	0.03	0.02	3.19	0.03	15.3	-	18.5
Use of non- renewable primary energy excluding non- renewable primary energy resources used as raw materials (MJ, net calorific value)	79.4	0.55	0.60	80.5	0.52	178	-	259
Use of non- renewable primary energy resources used as raw materials (MJ, net calorific value)	7.47-03	3.50E-05	7.05E-06	7.51E-03	3.36E-05	0.26	-	0.26
Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials) (MJ, net calorific value)	79.4	0.55	0.60	80.5	0.52	179	-	260
Use of renewable secondary fuels (MJ, net calorific value)	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels (MJ, net calorific value)	-	-	-	-	-	-	-	-
Use of secondary material (kg)	-	-	-	-	-	-	-	-

* Additional information

7.2 Results

Interpon D2000

 WASTE Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Hazardous waste disposed (kg)	5.19E-04	4.13E-08	0.01	0.01	3.96E-08	0.07	-	0.08
Non-hazardous waste disposed (kg)	0.85	2.13E-03	7.18E-02	0.92	2.04E-03	0.31	-	1.23
Radioactive waste disposed (kg)	2.49E-04	7.81E-07	1.27E-06	2.51E-04	7.49E-07	1.62E-04	-	4.14E-04

* Additional information

7.3 Results

Interpon D3000

ENVIRONMENTAL IMPACTS Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Abiotic depletion (elements) (kg Sb-e)	2.70E-04	2.63E-09	2.48E-08	2.70E-04	2.02E-09	1.03E-05	-	2.81E-04
Abiotic resources (fossil) (MJ net calorific value)	145	0.55	0.29	146	0.42	143	-	289
Acidification potential (kg SO_2-e)	0.03	2.11E-04	4.36E-04	0.03	1.61E-04	0.02	-	0.05
Eutrophication potential (kg Phosphate-e)	0.01	5.16E-05	1.17E-03	0.01	3.95E-05	0.03	-	0.04
Global warming potential (GWP 100) (kg CO_2-e)	8.31	0.04	0.46	8.81	0.03	11.1	0.67	20.6
Ozone layer depletion potential (kg R11-e)	5.52E-07	1.82E-13	1.88E-09	5.54E-07	1.40E-13	5.07E-07	-	1.06E-06
Photochemical ozone creation potential (kg C_2H_4e)	2.91E-03	2.49E-05	3.85E-05	2.98E-03	1.90E-05	1.72E-03	-	4.72E-03

WATER USE** Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Use of net fresh water (m3)	7.12***	1.71E-03	0.02	7.1	1.32E-03	0.56	-	7.70

* Additional information
** Water consumption excludes water known to be used for energy turbines.
*** One raw material (fluoropolymer) contributes to a large amount of water use.

7.3 Results

Interpon D3000

ENERGY USE Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ, net calorific value)	16.2	0.03	0.02	16.3	0.02	15.3	-	31.6
Use of renewable primary energy resources used as raw materials (MJ, net calorific value)	0.01	4.68E-14	1.90E-08	0.01	3.60E-14	0.01	-	0.01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (MJ, net calorific value)	16.2	0.03	0.02	16.3	0.02	15.3	-	31.6
Use of non- renewable primary energy excluding non- renewable primary energy resources used as raw materials (MJ, net calorific value)	157	0.55	0.32	158	0.42	178	-	337
Use of non- renewable primary energy resources used as raw materials (MJ, net calorific value)	0.01	3.51E-05	8.56E-06	0.01	2.70E-05	0.26	-	0.26
Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials) (MJ, net calorific value)	157	0.55	0.32	158	0.42	179	-	337
Use of renewable secondary fuels (MJ, net calorific value)	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels (MJ, net calorific value)	-	-	-	-	-	-	-	-
Use of secondary material (kg)	-	-	-	-	-	-	-	-

* Additional information

7.3 Results

Interpon D3000

 WASTE Declared unit: 1 kg	Product stage				Construction process stage		End of life stage	
	A1 Raw material	A2 Transport	A3 Manufacturing	A1-A3	A4 Transport	A5 Construction installation	C3 Waste Processing	A-C*
Hazardous waste disposed (kg)	3.56E-03	4.14E-08	0.01	0.01	3.18E-08	0.07	-	0.08
Non-hazardous waste disposed (kg)	14.86**	2.13E-03	8.93E-02	14.95	1.64E-03	0.31	-	15.26
Radioactive waste disposed (kg)	3.15E-03	7.82E-07	7.13E-08	3.15E-03	6.01E-07	1.62E-04	-	3.32E-03

* Additional information

** One raw material (fluoropolymer) contributes to a large amout of water use.

8. Verification information

Verification	
CEN standard EN 15804 served as the core PCR	
PCR	PCR 2012:01 Construction products and construction services, Version 2.2 of 2017-05-30
PCR review was conducted by:	The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com
Independent verification of the declaration and data, according to ISO 14025:	□ EPD process certification □ EPD verification
Third party verifier:	*Carl-Otto Nevén* *NEVÉN Miljökonsult* *carlotto.neven@bredband.net*
Accredited or approved by:	*The International EPD® System*

9. Additional information

REFERENCES

- International EPD Consortium, General Programme Instructions (EPD), ver. 3.0 of 11/12/2017;
- PCR 2012:01 CONSTRUCTION PRODUCTS AND CONSTRUCTION SERVICES; ver.2.2 of 2017-05-30
- LCA Methodology Report for EPD of Interpon D

CONTACT US

For product/Health and Safety data sheets please visit our website www.interpon.com/

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This declaration is publicly available on: www.environdec.com