PPG Architectural Coatings
400 Bertha Lamme Drive
Cranberry Township, PA, 16066

Environmental Product Declaration – Aquapon WB EP® Interior Epoxy

Certified Environmental Product Declaration
www.nsf.org

Aquapon WB EP® Interior Epoxy is the next generation of water-based epoxy technology that gives you excellent performance in abrasion, chemical and corrosion resistance. This durable and stain-resistant finish protects both floor and vertical surfaces in healthcare, education and industrial facilities. With fast recoat times, your facility maintenance schedules are shortened with limited usage interruption. *Aquapon WB EP* is available in both standard and custom-tinted colors. Visit ppgpmc.com for more information.

The product image to the right is an example of one of the formulas covered by the EPD. A list of all relevant Aquapon WB EP *formulas is shown in Table 1 in this EPD.*

Declaration Holder	PPG Architectural Finishes, Inc. (email: PPGACProductStewardship@ppg.com); website: www.ppgac.com for additional information)	
Declaration Number	EPD10330	
Declared Product	*Aquapon WB EP* Interior Epoxy	
Product Category and Subcategory	Resinous Floor Coatings – Thin-Mil Type	
Program Operator	NSF International (ncss@nsf.org)	
PCR	PCR for Resinous Floor Coatings – December 17, 2018	
Reference PCR Standard	ISO 21930:2017	
Date of Issue	February 10, 2020	
Period of Validity	5 years from date of issue	
Product Contents	See Table 2.	
The PCR review was conducted by	Thomas P. Gloria, PhD – Industrial Ecology Consultants (t.gloria@industrial-ecology.com)	
This EPD was independently verified by NSF Certification, LLC in accordance with ISO 14025 and the PCR.	Jenny Oorbeck joorbeck@nsf.org	☐ Internal ☒ External
The Life Cycle Analysis Background Report, including LCI data, was independently verified in accordance with ISO 14044 and the PCR by	Jack Geibig – EcoForm jgeibig@ecoform.com	☐ Internal ☒ External
Functional Unit	1m² of covered and protected substrate for a period of 60 years (the assumed average lifetime of a building)	
Market-Based Lifetime Used in Assessment	10 years for commercial applications; 5 years for industrial applications	
Design Lifetime Used in Assessment	15 years for commercial applications; 5 years for industrial applications	
Estimated Amount of Colorant	Varies (see Table 4)	
Data Quality Assessment Score	Very Good	
Manufacturing Location(s)	All PPG manufacturing locations in the United States producing the products listed in this EPD.	
LCA Software and Version Number Used	SimaPro v 9.0.0.47	

Contents of the Declaration:

In order to support comparative assertions, this EPD meets all comparability requirements stated in ISO 14025:2006. However, differences in certain assumptions, data quality, and variability between LCA data sets may still exist. As such, caution should be exercised when evaluating EPDs from different manufacturers, as the EPD results may not be entirely comparable. Any EPD comparison must be carried out at the building level per ISO 21930 guidelines. The results of this EPD reflect an average performance by the product and its actual impacts may vary on a case-to-case basis.

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Product Definition, Characteristics and Specifications:

Aquapon WB EP® is a two component, ultra-low VOC, water-based epoxy finish suitable for both floors and vertical surfaces. Its performance characteristics are impact, mar, and abrasion resistance; breathability; low odor; soap and water cleanup; stain resistance and low VOC content. *Aquapon WB EP* meets MPI 115 and 215 specifications for water-based epoxy modified latex paints. Products included in this study comprise 16 two-part epoxy coatings based on 13 in-the-can products (9 "Part A" resins and 4 "Part B" cure/hardeners) from PPG's *Aquapon WB EP* product line. The as-applied mixed products are listed in Table 1, together with their component product numbers.

Table 1 - List of *Aquapon WB EP* formulas assessed by LCA model and report

EPD Product Name	Part A (Product number in parentheses)	Part B (Product number in parentheses)	Volume mixing ratio
WHITE - GLOSS	WHITE (98E-1)	CURE (98E-98)	4:1
PASTEL BASE - GLOSS	PASTEL BASE (98E-51)	CURE (98E-98)	4:1
MIDTONE BASE - GLOSS	MIDTONE BASE (98E-56)	CURE (98E-98)	4:1
NEUTRAL BASE - GLOSS	NEUTRAL BASE (98E-53)	CURE (98E-98)	4:1
BLACK - GLOSS	BLACK BASE (98E-2)	CURE (98E-98)	4:1
GRAY #49 - GLOSS	GRAY #49 BASE (98E-3)	CURE (98E-98)	4:1
LIGHT GRAY - GLOSS	LIGHT GR BASE (98E-4)	CURE (98E-98)	4:1
WHITE - SEMI-GLOSS	WHITE (98E-1)	SG CURE (98E-100)	4:1
PASTEL BASE - SEMI-GLOSS	PASTEL BASE (98E-51)	SG CURE (98E-100)	4:1
MIDTONE BASE - SEMI-GLOSS	MIDTONE BASE (98E-56)	SG CURE (98E-100)	4:1
NEUTRAL BASE - SEMI-GLOSS	NEUTRAL BASE (98E-53)	SG CURE (98E-100)	4:1
BLACK - SEMI-GLOSS	BLACK BASE (98E-2)	SG CURE (98E-100)	4:1
GRAY #49 - SEMI-GLOSS	GRAY #49 BASE (98E-3)	SG CURE (98E-100)	4:1
LIGHT GRAY - SEMI-GLOSS	LIGHT GR BASE (98E-4)	SG CURE (98E-100)	4:1
PRIMER LIGHT GRAY	PRMR LIGHT GR (98E-46)	PRIMER CURE (98E-99)	4:1
CLEAR	CLEAR BASE (98E-57)	CLEAR CURE (98E-58)	4:1

The manufacturing process for architectural coatings primarily involves the mixing and dispersing of raw materials into a homogeneous mixture. Raw materials include *pigments and fillers*, which provide color, hiding, and gloss control; *resins/binders*, which dry to form a solid film and adhere the coating to the substrate; *water*, which acts as a thinner and carrier; and *additives*, which assist with various coating properties. The product is then packaged for distribution to the customer. The typical composition of an *Aquapon WB EP* coating is shown by % weight in Table 2 along with simplified version of this process shown in Figure 1. Components of *Aquapon WB EP* products considered to be hazardous as listed on Safety Data Sheets (SDS) are listed along with their quantities and CAS numbers in Table 3. Note that all of these hazardous substances may not exist in any single product, and that the percentages given are calculated on the in-the-can Part A and Part B formulas.

Ingredient category	% of product by weight
Additives	5-8%
Preservatives	0-1%
Binders	22-34%
Fillers	0-20%
Glycols, esters, ethers	2-4%
Pigments	0-7%
Solvents	0-1%
Titanium dioxide	0-19%
Water	41-56%

Table 2 - Composition of products in this EPD

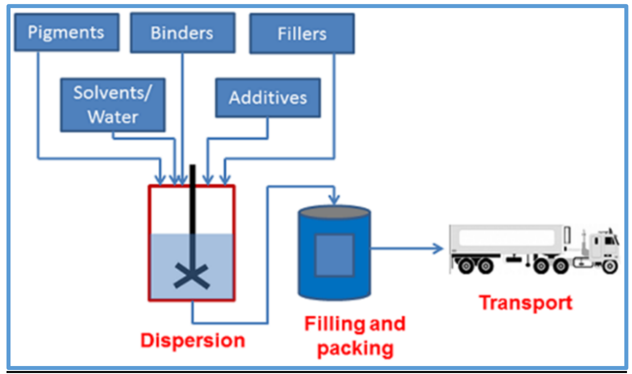

Figure 1 - Simplified process diagram for architectural coatings manufacturing

Table 3 - Hazardous substances contained in products in this EPD

Substance	Range (%)	CAS Number
2-(propyloxy)ethanol	≥1.0 - ≤5.0	2807-30-9
2-butoxyethanol	≥5.0 - ≤10	111-76-2
Aluminium hydroxide	≥1.0 - ≤5.0	21645-51-2
Amides, from tall-oil fatty acids and tetraethylenepentamine	≥10 - <20	Not available.
Barium sulfate	≥20 - ≤50	7727-43-7
Carbon black, respirable powder	<1.0	1333-86-4
Crystalline silica, respirable powder (>10 microns)	≤1.0	14808-60-7
Neodecanoic acid	≥1.0 - ≤5.0	26896-20-8
Neodecanoic acid, 2-oxiranylmethyl ester, reaction products with bisphenol A-bisphenol A diglycidyl ether polymer, glycidyl o-tolyl ether, 2-methyl1,5-pentanediamine, oxidized polyethylene glycol and triethylenetetramine	≥20 - ≤50	219687-87-3
Titanium dioxide	≥5.0 - ≤10	13463-67-7
Toluene	≥1.0 - ≤5.0	108-88-3
Wollastonite	≥1.0 - ≤5.0	13983-17-0
Zinc oxide	≤1.9	1314-13-2

Life Cycle Assessment Methodology:

Calculation of quantities needed to satisfy the functional unit:

In accordance with the Product Category Rule (PCR) for Resilient Floor Coatings, this EPD is based on a cradle-to-grave LCA, and the functional unit for the study is defined as 1 m^2 of covered and protected substrate for a period of 60 years (the assumed average lifetime of a building). The PCR requires separate analyses for a market-based service lifetime and a technical service lifetime for the coating product. *Aquapon WB EP* is considered a "thin-mil floor coating" by the PCR and is marketed for use in both commercial and industrial facilities. Therefore, the service lifetime criteria for both commercial and industrial uses have been calculated. For commercial uses, the prescribed technical lifetime is 15 years for thin-mil floor coatings and the prescribed market-based lifetime is 10 years, while both the market and technical lifetimes for industrial uses are 5 years. According to *Aquapon WB EP* product literature, the desired coating thickness is 2 to 4 mils and the spreading rate is 8.3 m^2/L for a 2-mil thickness. A 3-mil average coat thickness and a corresponding spreading rate of 6.2 m^2/L has been assumed throughout this report. Two coats for each initial application and replacement coating are assumed. Table 4 summarizes the calculation of quantities for each formula used in the LCA.

Following the PCR, for any coating that can accept colorant, it was assumed that the full allowable amount of colorant is added to the paint either at the point of sale or application site. The tint/colorant inventory was taken from the GaBi carbon black pigment data (furnace black; deep black pigment – Revised 11/30/2014) in the appropriate quantity specified for the type of coating base for the respective *Aquapon WB EP* product. The amount of colorant needed for each formula is shown in Table 4, and its impact is included in the overall LCA results.

Allocation:

In the LCA model, the only allocation used was a mass-based allocation during the manufacturing process, to assign PPG manufacturing plant inputs and outputs across multiple products produced at the same plant.

Table 4 - Coating lifetimes and quantities needed to satisfy functional unit

EPD Product Name	**AQUAPON WB EP EPOXY WHITE - GLOSS**	**AQUAPON WB EP EPOXY PASTEL BASE - GLOSS**	**AQUAPON WB EP EPOXY MIDTONE BASE - GLOSS**	**AQUAPON WB EP EPOXY NEUTRAL BASE - GLOSS**	**AQUAPON WB EP EPOXY BLACK - GLOSS**	**AQUAPON WB EP EPOXY GRAY #49 - GLOSS**	**AQUAPON WB EP EPOXY LIGHT GRAY - GLOSS**	**AQUAPON WB EP EPOXY WHITE - SEMI-GLOSS**	**AQUAPON WB EP EPOXY PASTEL BASE - SEMI-GLOSS**	**AQUAPON WB EP EPOXY MIDTONE BASE - SEMI-GLOSS**	**AQUAPON WB EP EPOXY NEUTRAL BASE - SEMI-GLOSS**	**AQUAPON WB EP EPOXY BLACK - SEMI-GLOSS**	**AQUAPON WB EP EPOXY GRAY #49 - SEMI-GLOSS**	**AQUAPON WB EP EPOXY LIGHT GRAY - SEMI-GLOSS**	**AQUAPON WB EP EPOXY PRIMER LIGHT GRAY**	**AQUAPON WB EP EPOXY CLEAR**
Mixed product VOC content (g/L)	8.88	10.24	10.00	10.00	8.48	8.56	8.56	8.88	10.24	10.00	10.00	8.48	8.56	8.56	11.76	2.32
Application thickness per coat (mil)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Mixed product coverage (m2/L)	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
Coats per application	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Technical lifetime (years)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Market lifetime (years)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Industrial lifetime (years)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Technical lifetime quantity (kg)	1.82	1.81	1.70	1.64	1.75	1.77	1.77	1.83	1.82	1.71	1.65	1.76	1.78	1.78	1.87	1.54
Market lifetime quantity (kg)	2.73	2.71	2.55	2.46	2.63	2.65	2.66	2.74	2.72	2.56	2.48	2.64	2.66	2.67	2.80	2.31
Industrial lifetime quantity (kg)	5.46	5.42	5.10	4.93	5.26	5.30	5.31	5.49	5.45	5.13	4.95	5.29	5.33	5.34	5.60	4.63
Colorant - Technical lifetime (g)	0	81	81	163	0	0	0	0	81	81	163	0	0	0	0	0
Colorant - Market lifetime (g)	0	121	121	245	0	0	0	0	121	121	245	0	0	0	0	0
Colorant - Industrial lifetime (g)	0	242	242	490	0	0	0	0	242	242	490	0	0	0	0	0

System Boundary:

Informational modules from ISO 21930:2017 included in and excluded from the analysis, in accordance with the PCR, are shown in Table 5. The system process flow diagram is shown in Figure 2. Items shown outside the system boundary in Figure 2 were excluded from the assessment in accordance with the PCR. No benefits beyond the system boundary (optional module D) are included.

Criteria for the inclusion of inputs and outputs:

All components of the coating formulations which comprised more than 0.1% of the manufactured product were included in the study. The models were constructed to meet the minimum of 95% of the total mass, energy, and environmental relevance of the system, except for items excluded from the study as specified in the PCR.

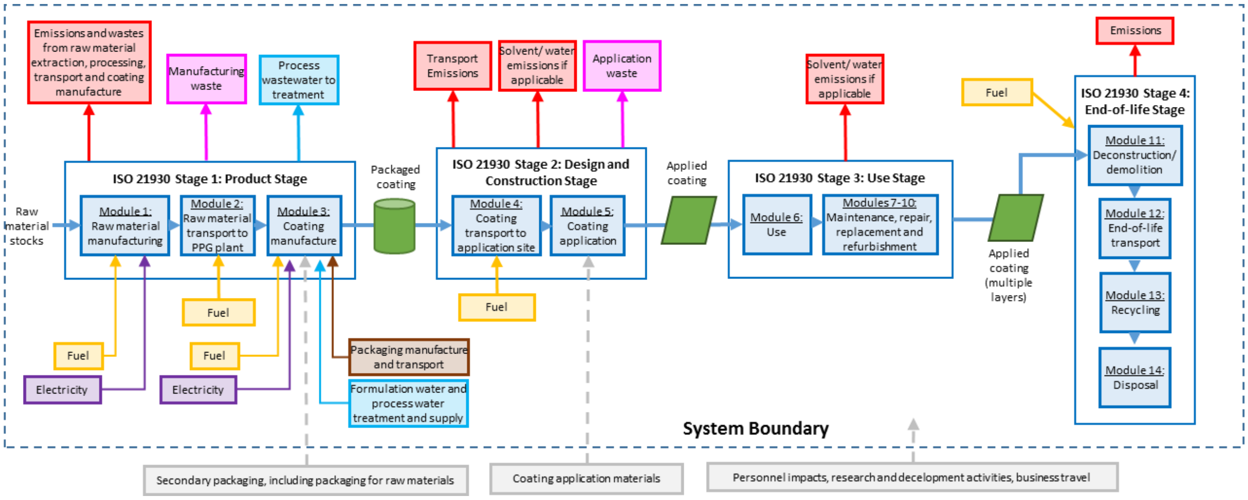

Figure 2 - Process flow diagram and system boundary for this EPD

Table 5 – ISO 21930 Information modules covered in this analysis

Product			Construction		Use Stage							End-of-life				Benefits and loads beyond
					Related to the building fabric					Related to the building						
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction - Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse, Recovery and/or Recycling
X	X	X	X	X		X		X				X	X	X	X	

X = Checked box = Module used in this analysis (unchecked = not used)

Additional information relevant to the analysis:

Additional information used in the analysis are summarized in Table 6 as well as the following:

- Module A2: Transportation impacts are calculated for the total mass of raw materials, including wastage, minus the amount of water added at the plant, which varies with each formulation.
- Module A3: All *Aquapon WB EP* products are made at PPG's East Point, GA plant. Plant energy and water usage, waste generation and environmental emissions are assigned to the products based on the total mass of all output from the plant.

- Module B2: In accordance with the PCR, cleanings are performed daily with a mop-and-bucket solution, resulting in a total of 220 gallons of water used for the functional unit. A cleaning solution is used at a specified dilution rate given in the PCR at ½ cup (4 oz) per gallon. However, a concentrated, "green" cleaning solution was chosen for this analysis, with a manufacturer-recommended dilution rate of ½ to 2 oz per gallon. The dilution rate was modeled as 1 oz/gallon as shown in Table 6.
- Module B4: As specified in the PCR, all replacement coats, including modules A1-A5 for each coat, are included in this module. This resulted in a range of 3 to 11 times the original mass being used Module B4, depending on the service lifetime used.

Table 6 - Scenarios, parameters and other technical information used in the analysis

Scenario	Parameter or Scenario description	Units	Value
A2 - Raw material transport	Transport mode		16-32 tonne truck (e.g. Euro5) (1)
	Distance: (Road)	km	1207 (3)
	Capacity utilisation (incl. empty returns)	%	50 (2)
	Bulk density of transported products	kg/m3	1.18 (2)
	Mass transported per kg total raw material mass	kg	1 - % of factory added water
A3 - Manufacturing	Material wastage at manufacturing plant	%	1 (3)
	Packaging transport mode		Rail + truck + water
	Distance for plastics	km	0 + 1218 + 1545 = 2763 (4)
	Distance for steel	km	904 + 1500 + 1340 = 3744 (4)
	Capacity utilization/density		(2)
	Waste transport mode		Truck
	Distance for nonhazardous waste to landfill	km	32
	Distance for nonhazardous waste to other disposal	km	80
	Distance for hazardous waste to all disposal	km	160
A4 – Transport to the building site	Transport mode		Truck to distribution; truck to point of sale; passenger vehicle to project site
	Distance: (Road)	km	402; 804; 8 (4)
	Capacity utilisation (incl. empty returns)	%	50; 50; N/A (2)
	Bulk density of transported products	kg/m3	1.18; 1.18; NA (2)
A5 – Installation in the building	Wet mass of coating unused	%	2 (3)
	Disposal of unused coating and packaging	km	11, to disposal via truck (3)
	Mass of packaging waste (polyethylene; steel) per functional unit	kg	0.07; 0.07
	GWP based in biogenic carbon content of packaging	kg CO2eq	None
	Recycling rates for packaging (plastic; steel; other) - remainder is landfilled	%	10; 70; 0 (USEPA WARM Model, (3))
B2 - Maintenance	Cleaning events per functional unit (1 gal water each)	gal	220 (3)
	Cleaning solution composition		
	Water	%	86 (4)
	Sodium xylene sulfonate	%	7.5 (4)
	3% Alcohols, C12-16, ethoxylated	%	3 (4)
	3% 1-(1-methyl-2-propoxyethoxy)propan-2-ol	%	3 (4)
	Cleaning solution dilution rate	oz/gal	1 (4)
C1 to C4 - End of Life	Coating is demolished and disposed of along with the substrate it is applied to, via truck		
	Disposed coating incinerated	%	0 (3)
	Disposed coating landfilled	%	100 (3)
	Distance to incineration	km	32 (3)
	Distance to landfill	km	32 (3)

Notes: (1) Hereafter the same unless noted otherwise; (2) ecoinvent defaults, (3) As specified in the PCR, (4) Best estimate.

Life Cycle Impact Assessment Methodology:

The Life Cycle Impact Assessment (LCIA) step of the analysis groups emissions and resource consumption into categories by known environmental impacts to which they contribute, and applies characterization factors to calculate the relative importance of each substance in a category. The U.S.-based TRACI 2.1 (Bare 2011) method was used to calculate the impacts in the following impact categories, in accordance with the PCR:

- Climate change or global warming potential (GWP 100 years) [kg CO_2-eq.]
- Acidification potential of land and water sources (AP) [kg SO_2-eq]
- Photochemical ozone creation potential (POCP, or "Smog Formation") [kg O_3 eq.]
- Eutrophication potential (EP) [kg N eq.]
- Stratospheric ozone depletion potential (ODP) [kg CFC-11 eq.]

Additional life cycle inventory results reported in accordance with the PCR, using the EN15804 method with the exception of the "energy carrier" metrics are the following:

- Non-Renewable Primary Resources Used as an Energy Carrier [MJ]
- Non-Renewable Primary Resources with Energy Content Used as a Material [kg]
- Renewable Primary Resources Used as an Energy Carrier [MJ]
- Abiotic Depletion Potential for Fossil Resources Used as Energy [MJ]
- Abiotic Depletion Potential for Fossil Resources Used as Materials [kg]
- Consumption of Freshwater [m^3]
- Hazardous waste [kg] – as defined by RCRA under 40 CFR 261.33
- Non-hazardous waste [kg]
- Radioactive waste [kg]. All radioactive waste is assumed to be high-level radioactive waste, given the limitations of the method.

The following additional categories are required to be evaluated by ISO 21930:2017, but were analyzed and all results were determined to be zero, and are therefore excluded from the charts and tables:

- Renewable Primary Resources with Energy Content Used as a Material [kg]
- Recovered Energy from disposal of waste in previous systems –[MJ]
- Additional product attributes including components for reuse, materials for recycling, materials for energy recovery, or recovered energy from the product system
- Secondary materials, renewable and non-renewable secondary fuels
- All biogenic carbon uptake and emissions, or those from carbonation, in accordance with Section 13F of the PCR.

To fulfill the requirement of Section 13G1-G5 of the PCR, the Cumulative Energy Demand (CED) v1.11 method was used to recalculate the Non-Renewable Primary Resources Used as an Energy Carrier [MJ] and Renewable Primary Resources Used as an Energy Carrier [MJ] categories, so that each could be subdivided into Fossil, Nuclear, Hydroelectric, Bio-, Wind and Other energy sources (Note that this method includes the Other sources Solar and Geothermal in a combined category with Wind). The metrics listed by Section 13G6-G12 of the PCR overlap with the other categories listed above.

Optional LCIA categories related to human health and environmental toxicity were not included in this analysis.

Life Cycle Assessment Results:

The total LCA results for each formulation are shown numerically for the technical, market and industrial service lifetimes in Table 7, Table 8 and Table 9, respectively. Table 10 shows the worst case results (maximum impact in each category for the entire range of products) for LCI categories by module, and Table 11 shows worst case results for LCIA categories by stage, except modules B2 and B4, which are broken out by module to highlight their individual contributions. Average results for all products included in this EPD are shown graphically for the technical service lifetime in Figure 3. Results for individual products are not expected to differ substantially from the results shown above.

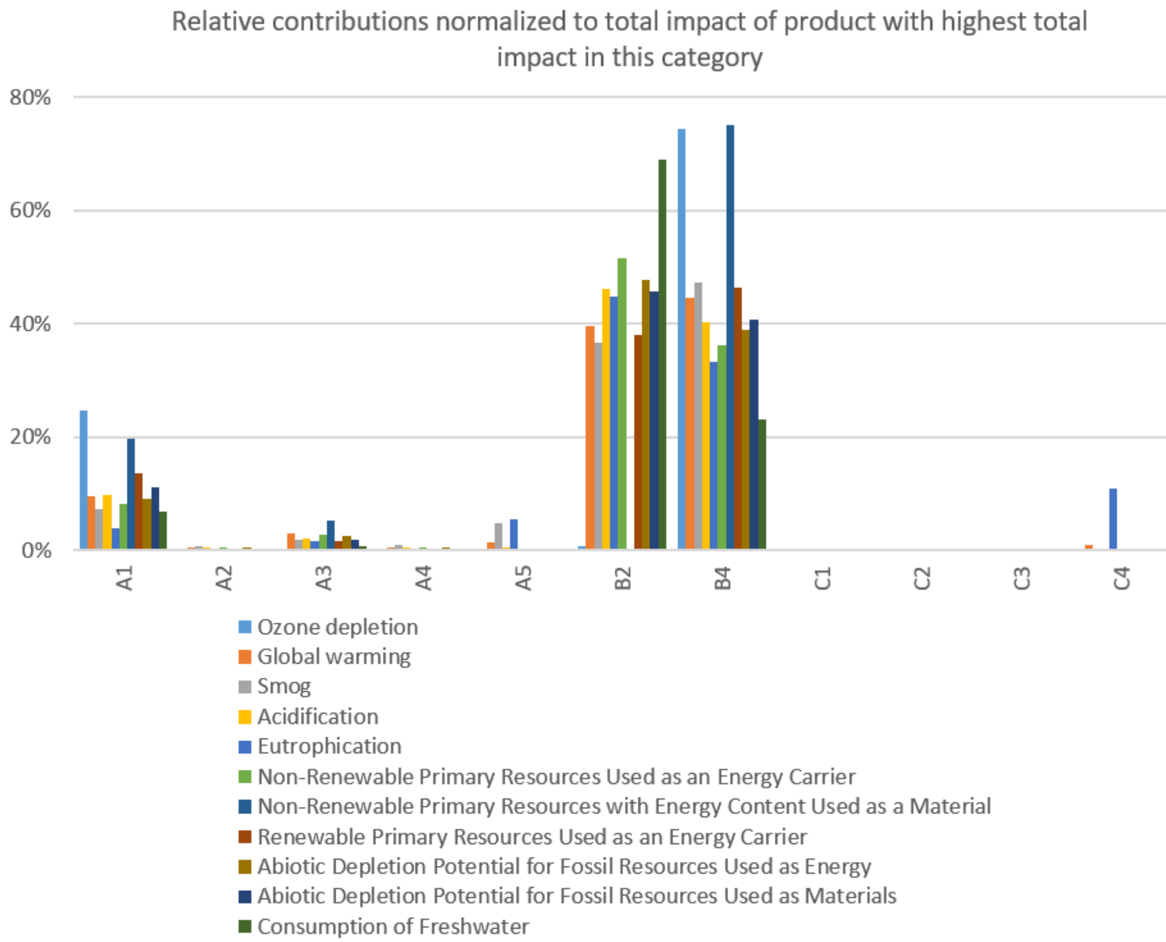

Figure 3 - Graphical impacts for the average *Aquapon WB EP* product showing % contribution by life cycle stage

Limitations and Data Gaps:

No significant data gaps are believed to exist within the primary datasets collected for this analysis, or within the stated system boundaries. However, as noted in the PCR, significant data limitations currently exist within the LCI data used to generate waste metrics for Life Cycle Assessments and Environmental Product Declarations. The waste metrics were calculated in a way conformant with the requirements of ISO 21930:2017, but these values represent rough estimates and are for informational purposes only. As such, no decisions regarding actual cradle-grave waste performance between products should be derived from these reported values.

Emissions to Water, Soil, and to Indoor Air:

Because coatings are a passive product during use, the only impacts occurring during this phase are generally due to the off-gassing of material components in the paint. The VOC content of *Aquapon WB EP* products is calculated per US EPA Method 24. Colorants added to the base paints may increase the VOC level significantly depending on color choice. PPG offers a low VOC line of colorants which, if used even at maximum tint load in any color, contributes less than 8 g/L of VOC to the final tinted product.

LCA Interpretation

The LCA results show that the raw materials (Modules A1 for initial coats and B4 for replacement coats) tend to contribute highly to the impact of many indicators. This high contribution of raw materials to the impact indicators is not unexpected. As paints are primarily mixtures of pre-processed ingredients, much of the expenditure of energy, raw materials, processing, waste processing, etc. in bringing the product to existence has occurred prior to the entry of the raw materials onto the PPG production site. The majority of the impact of the raw materials comes from the titanium dioxide and the binder. This is typical for coatings products since these two raw materials are often present in high proportions and have a relatively high processing energy demand. The daily cleaning process specified by the PCR also contributes significantly to the impact in many categories.

Additional Environmental Information:

Preferred End-of Life Options:

Please visit www.paintcare.org for information about disposing unused latex paint. If possible, unused paint should be taken to an appropriate recycling/take-back center or disposed of in accordance with local environmental regulatory agency guidance.

Data Quality Assessment:

To assess the input quality of the specific product data used in the LCA modeling, the pedigree matrix developed by Weidema and Wesnaes (1996) was used. The pedigree matrix rates data on a scale of 1 to 5 (1-poor, 2-fair, 3-good, 4-very good, 5-excellent) for each of 5 rating criteria: reliability of source, completeness, temporal correlation, geographical correlation, and technological correlation. Primary data for the year 2015 was obtained from PPG environmental reporting systems dealing with manufacturing plant operations. When primary data was for processes not directly under PPG's control, data was taken from the ecoinvent v3.1 database. ecoinvent is widely accepted by the LCA community. The regional U.S. electric power grid generation mix for each plant was used in the LCA model according to the percentage of product made at that plant. The primary data is considered to be of excellent quality and ecoinvent very good. Because the transportation, application and disposal stages contained several assumptions specified in the PCR, these stages received a minimum score of good. Considering that the majority of environmental impact is in the stages for which the data was of higher quality, the overall data quality rating was assessed as Very Good.

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Table 7 – Life cycle assessment result totals for technical lifetime scenario for each formulation

Impact category	Formulations															
	AQUAPON WB EP EPOXY WHITE - GLOSS	AQUAPON WB EP EPOXY PASTEL BASE - GLOSS	AQUAPON WB EP EPOXY MIDTONE BASE - GLOSS	AQUAPON WB EP EPOXY NEUTRAL BASE - GLOSS	AQUAPON WB EP EPOXY BLACK - GLOSS	AQUAPON WB EP EPOXY GRAY #49 - GLOSS	AQUAPON WB EP EPOXY LIGHT GRAY - GLOSS	AQUAPON WB EP EPOXY WHITE - SEMI-GLOSS	AQUAPON WB EP EPOXY PASTEL BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY MIDTONE BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY NEUTRAL BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY BLACK - SEMI-GLOSS	AQUAPON WB EP EPOXY GRAY #49 - SEMI-GLOSS	AQUAPON WB EP EPOXY LIGHT GRAY - SEMI-GLOSS	AQUAPON WB EP EPOXY PRIMER LIGHT GRAY	AQUAPON WB EP EPOXY CLEAR
Life cycle impact assessment results for technical life scenario																
Ozone depletion (kg CFC-11 eq)	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
Global warming (kg CO2 eq)	9.18	10.10	9.17	8.52	7.22	7.51	7.61	9.13	10.05	9.12	8.48	7.18	7.47	7.60	8.50	7.09
Smog (kg O3 eq)	0.66	0.69	0.63	0.54	0.53	0.55	0.55	0.66	0.69	0.63	0.54	0.53	0.55	0.56	0.53	0.51
Acidification (kg SO2 eq)	0.044	0.047	0.041	0.033	0.031	0.033	0.034	0.044	0.047	0.041	0.033	0.031	0.033	0.034	0.040	0.031
Eutrophication (kg N eq)	0.093	0.095	0.087	0.080	0.082	0.084	0.084	0.093	0.094	0.087	0.080	0.082	0.084	0.084	0.091	0.076
Additional environmental metrics results for technical life scenario																
Non-Renewable Primary Resources Used as an Energy Carrier (MJ)	165	168	158	144	143	145	146	165	168	158	144	143	145	147	156	143
Non renewable, fossil (MJ)	*153*	*157*	*147*	*134*	*133*	*135*	*136*	*154*	*157*	*147*	*134*	*134*	*135*	*137*	*145*	*133*
Non-renewable, nuclear (MJ)	*10.5*	*10.7*	*10.0*	*9.1*	*9.0*	*9.3*	*9.3*	*10.5*	*10.7*	*10.0*	*9.1*	*9.0*	*9.3*	*9.4*	*10.0*	*8.8*
Non-renewable, biomass (MJ)	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.71*	*0.71*	*0.71*	*0.71*	*0.71*	*0.71*	*0.73*	*0.81*	*0.76*
Non-Renewable Primary Resources with Energy Content Used as a Material (kg)	12.3	13.1	13.4	13.8	12.7	12.0	12.0	12.4	13.2	13.5	13.9	12.8	12.1	12.1	12.0	12.9
Renewable Primary Resources Used as an Energy Carrier (MJ)	9.29	9.57	8.91	7.95	7.77	8.02	8.10	8.77	9.06	8.40	7.45	7.26	7.51	7.69	8.63	7.37
Renewable, biomass (MJ)	*5.05*	*5.18*	*4.92*	*4.51*	*4.42*	*4.52*	*4.56*	*4.53*	*4.67*	*4.41*	*4.00*	*3.91*	*4.01*	*4.13*	*4.66*	*4.02*
Renewable, wind, solar, geothermal (MJ)	*0.66*	*0.69*	*0.62*	*0.53*	*0.52*	*0.54*	*0.55*	*0.66*	*0.69*	*0.62*	*0.53*	*0.52*	*0.54*	*0.55*	*0.61*	*0.52*
Renewable, water (MJ)	*3.58*	*3.70*	*3.37*	*2.91*	*2.84*	*2.96*	*3.00*	*3.58*	*3.71*	*3.37*	*2.91*	*2.84*	*2.96*	*3.01*	*3.35*	*2.83*
Abiotic Depletion Potential for Fossil Resources Used as Energy (MJ)	143	146	137	125	124	126	127	143	146	137	125	124	126	127	135	124
Abiotic Depletion Potential for Fossil Resources Used as Materials (kg Sb eq)	4.04E-5	3.86E-5	3.36E-5	2.62E-5	2.55E-5	2.73E-5	2.79E-5	4.10E-5	3.92E-5	3.41E-5	2.68E-5	2.60E-5	2.78E-5	2.85E-5	3.70E-5	2.57E-5
Consumption of Freshwater (m3)	0.20	0.20	0.19	0.17	0.16	0.17	0.17	0.20	0.20	0.19	0.17	0.16	0.17	0.17	0.18	0.17
Hazardous waste disposed (kg)	0.87	0.95	0.71	0.38	0.38	0.46	0.48	0.87	0.94	0.71	0.38	0.37	0.46	0.48	0.71	0.33
Non hazardous waste disposed (kg)	8.18	8.38	7.57	6.56	6.67	6.92	7.00	8.18	8.38	7.57	6.56	6.67	6.92	7.01	7.73	6.30
Radioactive waste disposed (kg)	2.81E-4	2.89E-4	2.61E-4	2.25E-4	2.40E-4	2.36E-4	2.39E-4	2.82E-4	2.90E-4	2.62E-4	2.26E-4	2.40E-4	2.37E-4	2.40E-4	2.68E-4	2.15E-4
VOC emissions to indoor air (g)	13.0	15.0	14.6	14.6	12.4	12.5	12.5	13.0	15.0	14.6	14.6	12.4	12.5	12.5	17.2	3.4

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Table 8 - Life cycle assessment results totals for market lifetime scenario for each formulation

Impact category	Formulations															
	AQUAPON WB EP EPOXY WHITE - GLOSS	AQUAPON WB EP EPOXY PASTEL BASE - GLOSS	AQUAPON WB EP EPOXY MIDTONE BASE - GLOSS	AQUAPON WB EP EPOXY NEUTRAL BASE - GLOSS	AQUAPON WB EP EPOXY BLACK - GLOSS	AQUAPON WB EP EPOXY GRAY #49 - GLOSS	AQUAPON WB EP EPOXY LIGHT GRAY - GLOSS	AQUAPON WB EP EPOXY WHITE - SEMI-GLOSS	AQUAPON WB EP EPOXY PASTEL BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY MIDTONE BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY NEUTRAL BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY BLACK - SEMI-GLOSS	AQUAPON WB EP EPOXY GRAY #49 - SEMI-GLOSS	AQUAPON WB EP EPOXY LIGHT GRAY - SEMI-GLOSS	AQUAPON WB EP EPOXY PRIMER LIGHT GRAY	AQUAPON WB EP EPOXY CLEAR
Life cycle impact assessment results for technical life scenario																
Ozone depletion (kg CFC-11 eq)	1.02E-4	9.75E-5	9.05E-5	8.95E-5	9.69E-5	9.78E-5	9.79E-5	1.02E-4	9.75E-5	9.05E-5	8.94E-5	9.69E-5	9.78E-5	9.83E-5	1.08E-4	1.09E-6
Global warming (kg CO2 eq)	9.18	10.10	9.17	8.52	7.22	7.51	7.61	9.13	10.05	9.12	8.48	7.18	7.47	7.60	8.50	7.09
Smog (kg O3 eq)	0.66	0.69	0.63	0.54	0.53	0.55	0.55	0.66	0.69	0.63	0.54	0.53	0.55	0.56	0.53	0.51
Acidification (kg SO2 eq)	0.044	0.047	0.041	0.033	0.031	0.033	0.034	0.044	0.047	0.041	0.033	0.031	0.033	0.034	0.040	0.031
Eutrophication (kg N eq)	0.093	0.095	0.087	0.080	0.082	0.084	0.084	0.093	0.094	0.087	0.080	0.082	0.084	0.084	0.091	0.076
Additional environmental metrics results for technical life scenario																
Non-Renewable Primary Resources Used as an Energy Carrier (MJ)	165	168	158	144	143	145	146	165	168	158	144	143	145	147	156	143
Non renewable, fossil (MJ)	*153*	*157*	*147*	*134*	*133*	*135*	*136*	*154*	*157*	*147*	*134*	*134*	*135*	*137*	*145*	*133*
Non-renewable, nuclear (MJ)	*10.5*	*10.7*	*10.0*	*9.1*	*9.0*	*9.3*	*9.3*	*10.5*	*10.7*	*10.0*	*9.1*	*9.0*	*9.3*	*9.4*	*10.0*	*8.8*
Non-renewable, biomass (MJ)	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.71*	*0.71*	*0.71*	*0.71*	*0.71*	*0.71*	*0.73*	*0.81*	*0.76*
Non-Renewable Primary Resources with Energy Content Used as a Material (kg)	12.3	13.1	13.4	13.8	12.7	12.0	12.0	12.4	13.2	13.5	13.9	12.8	12.1	12.1	12.0	12.9
Renewable Primary Resources Used as an Energy Carrier (MJ)	9.29	9.57	8.91	7.95	7.77	8.02	8.10	8.77	9.06	8.40	7.45	7.26	7.51	7.69	8.63	7.37
Renewable, biomass (MJ)	*5.05*	*5.18*	*4.92*	*4.51*	*4.42*	*4.52*	*4.56*	*4.53*	*4.67*	*4.41*	*4.00*	*3.91*	*4.01*	*4.13*	*4.66*	*4.02*
Renewable, wind, solar, geothermal (MJ)	*0.66*	*0.69*	*0.62*	*0.53*	*0.52*	*0.54*	*0.55*	*0.66*	*0.69*	*0.62*	*0.53*	*0.52*	*0.54*	*0.55*	*0.61*	*0.52*
Renewable, water (MJ)	*3.58*	*3.70*	*3.37*	*2.91*	*2.84*	*2.96*	*3.00*	*3.58*	*3.71*	*3.37*	*2.91*	*2.84*	*2.96*	*3.01*	*3.35*	*2.83*
Abiotic Depletion Potential for Fossil Resources Used as Energy (MJ)	143	146	137	125	124	126	127	143	146	137	125	124	126	127	135	124
Abiotic Depletion Potential for Fossil Resources Used as Materials (kg Sb eq)	4.04E-5	3.86E-5	3.36E-5	2.62E-5	2.55E-5	2.73E-5	2.79E-5	4.10E-5	3.92E-5	3.41E-5	2.68E-5	2.60E-5	2.78E-5	2.85E-5	3.70E-5	2.57E-5
Consumption of Freshwater (m3)	0.20	0.20	0.19	0.17	0.16	0.17	0.17	0.20	0.20	0.19	0.17	0.16	0.17	0.17	0.18	0.17
Hazardous waste disposed (kg)	0.87	0.95	0.71	0.38	0.38	0.46	0.48	0.87	0.94	0.71	0.38	0.37	0.46	0.48	0.71	0.33
Non hazardous waste disposed (kg)	8.18	8.38	7.57	6.56	6.67	6.92	7.00	8.18	8.38	7.57	6.56	6.67	6.92	7.01	7.73	6.30
Radioactive waste disposed (kg)	2.81E-4	2.89E-4	2.61E-4	2.25E-4	2.40E-4	2.36E-4	2.39E-4	2.82E-4	2.90E-4	2.62E-4	2.26E-4	2.40E-4	2.37E-4	2.40E-4	2.68E-4	2.15E-4
VOC emissions to indoor air (g)	13.0	15.0	14.6	14.6	12.4	12.5	12.5	13.0	15.0	14.6	14.6	12.4	12.5	12.5	17.2	3.4

Table 9 – Life cycle assessment results totals for industrial lifetime scenario for each formulation

Impact category	Formulations															
	AQUAPON WB EP EPOXY WHITE - GLOSS	AQUAPON WB EP EPOXY PASTEL BASE - GLOSS	AQUAPON WB EP EPOXY MIDTONE BASE - GLOSS	AQUAPON WB EP EPOXY NEUTRAL BASE - GLOSS	AQUAPON WB EP EPOXY BLACK - GLOSS	AQUAPON WB EP EPOXY GRAY #49 - GLOSS	AQUAPON WB EP EPOXY LIGHT GRAY - GLOSS	AQUAPON WB EP EPOXY WHITE - SEMI-GLOSS	AQUAPON WB EP EPOXY PASTEL BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY MIDTONE BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY NEUTRAL BASE - SEMI-GLOSS	AQUAPON WB EP EPOXY BLACK - SEMI-GLOSS	AQUAPON WB EP EPOXY GRAY #49 - SEMI-GLOSS	AQUAPON WB EP EPOXY LIGHT GRAY - SEMI-GLOSS	AQUAPON WB EP EPOXY PRIMER LIGHT GRAY	AQUAPON WB EP EPOXY CLEAR
Life cycle impact assessment results for technical life scenario																
Ozone depletion (kg CFC-11 eq)	1.02E-4	9.75E-5	9.05E-5	8.95E-5	9.69E-5	9.78E-5	9.79E-5	1.02E-4	9.75E-5	9.05E-5	8.94E-5	9.69E-5	9.78E-5	9.83E-5	1.08E-4	1.09E-6
Global warming (kg CO2 eq)	9.18	10.10	9.17	8.52	7.22	7.51	7.61	9.13	10.05	9.12	8.48	7.18	7.47	7.60	8.50	7.09
Smog (kg O3 eq)	0.66	0.69	0.63	0.54	0.53	0.55	0.55	0.66	0.69	0.63	0.54	0.53	0.55	0.56	0.53	0.51
Acidification (kg SO2 eq)	0.044	0.047	0.041	0.033	0.031	0.033	0.034	0.044	0.047	0.041	0.033	0.031	0.033	0.034	0.040	0.031
Eutrophication (kg N eq)	0.093	0.095	0.087	0.080	0.082	0.084	0.084	0.093	0.094	0.087	0.080	0.082	0.084	0.084	0.091	0.076
Additional environmental metrics results for technical life scenario																
Non-Renewable Primary Resources Used as an Energy Carrier (MJ)	165	168	158	144	143	145	146	165	168	158	144	143	145	147	156	143
Non renewable, fossil (MJ)	*153*	*157*	*147*	*134*	*133*	*135*	*136*	*154*	*157*	*147*	*134*	*134*	*135*	*137*	*145*	*133*
Non-renewable, nuclear (MJ)	*10.5*	*10.7*	*10.0*	*9.1*	*9.0*	*9.3*	*9.3*	*10.5*	*10.7*	*10.0*	*9.1*	*9.0*	*9.3*	*9.4*	*10.0*	*8.8*
Non-renewable, biomass (MJ)	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.71*	*0.71*	*0.71*	*0.71*	*0.71*	*0.71*	*0.73*	*0.81*	*0.76*
Non-Renewable Primary Resources with Energy Content Used as a Material (kg)	12.3	13.1	13.4	13.8	12.7	12.0	12.0	12.4	13.2	13.5	13.9	12.8	12.1	12.1	12.0	12.9
Renewable Primary Resources Used as an Energy Carrier (MJ)	9.29	9.57	8.91	7.95	7.77	8.02	8.10	8.77	9.06	8.40	7.45	7.26	7.51	7.69	8.63	7.37
Renewable, biomass (MJ)	*5.05*	*5.18*	*4.92*	*4.51*	*4.42*	*4.52*	*4.56*	*4.53*	*4.67*	*4.41*	*4.00*	*3.91*	*4.01*	*4.13*	*4.66*	*4.02*
Renewable, wind, solar, geothermal (MJ)	*0.66*	*0.69*	*0.62*	*0.53*	*0.52*	*0.54*	*0.55*	*0.66*	*0.69*	*0.62*	*0.53*	*0.52*	*0.54*	*0.55*	*0.61*	*0.52*
Renewable, water (MJ)	*3.58*	*3.70*	*3.37*	*2.91*	*2.84*	*2.96*	*3.00*	*3.58*	*3.71*	*3.37*	*2.91*	*2.84*	*2.96*	*3.01*	*3.35*	*2.83*
Abiotic Depletion Potential for Fossil Resources Used as Energy (MJ)	143	146	137	125	124	126	127	143	146	137	125	124	126	127	135	124
Abiotic Depletion Potential for Fossil Resources Used as Materials (kg Sb eq)	4.04E-5	3.86E-5	3.36E-5	2.62E-5	2.55E-5	2.73E-5	2.79E-5	4.10E-5	3.92E-5	3.41E-5	2.68E-5	2.60E-5	2.78E-5	2.85E-5	3.70E-5	2.57E-5
Consumption of Freshwater (m3)	0.20	0.20	0.19	0.17	0.16	0.17	0.17	0.20	0.20	0.19	0.17	0.16	0.17	0.17	0.18	0.17
Hazardous waste disposed (kg)	0.87	0.95	0.71	0.38	0.38	0.46	0.48	0.87	0.94	0.71	0.38	0.37	0.46	0.48	0.71	0.33
Non hazardous waste disposed (kg)	8.18	8.38	7.57	6.56	6.67	6.92	7.00	8.18	8.38	7.57	6.56	6.67	6.92	7.01	7.73	6.30
Radioactive waste disposed (kg)	2.81E-4	2.89E-4	2.61E-4	2.25E-4	2.40E-4	2.36E-4	2.39E-4	2.82E-4	2.90E-4	2.62E-4	2.26E-4	2.40E-4	2.37E-4	2.40E-4	2.68E-4	2.15E-4
VOC emissions to indoor air (g)	13.0	15.0	14.6	14.6	12.4	12.5	12.5	13.0	15.0	14.6	14.6	12.4	12.5	12.5	17.2	3.4

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Table 10 - Worst case results for LCI metrics by informational module

Impact category	Modules										
	A1	A2	A3	A4	A5	B2	B4	C1	C2	C3	C4
Additional environmental metrics results for Industrial life scenario											
Non-Renewable Primary Resources Used as an Energy Carrier (MJ)	18	0.78	4.56	0.87	0.14	72	72	3.07E-2	4.43E-2	0.00	0.26
Non renewable, fossil (MJ)	17	0.77	3.89	0.85	0.13	68	67	2.71E-2	4.37E-2	0.00	0.25
Non-renewable, nuclear (MJ)	1.05	0.01	0.67	0.01	0.00	3.77	5.22	3.60E-3	6.97E-4	0.00	6.53E-3
Non-renewable, biomass (MJ)	0.18	0.00	0.00	0.00	0.00	0.14	0.54	9.87E-8	8.10E-7	0.00	1.47E-6
Non-Renewable Primary Resources with Energy Content Used as a Material (kg)	2.80	0.00	0.68	0.00	0.00	0.00	10.4	0.00E+0	0.00E+0	0.00	0.00
Renewable Primary Resources Used as an Energy Carrier (MJ)	1.46	0.01	0.13	0.01	0.00	3.14	4.82	2.10E-3	4.42E-4	0.00	3.88E-3
Renewable, biomass (MJ)	0.95	0.00	0.04	0.00	0.00	1.21	2.97	2.58E-4	1.16E-4	0.00	8.85E-4
Renewable, wind, solar, geothermal (MJ)	0.09	0.00	0.01	0.00	0.00	0.31	0.29	3.38E-4	5.98E-5	0.00	4.79E-4
Renewable, water (MJ)	0.43	0.00	0.08	0.01	0.00	1.62	1.56	1.50E-3	2.66E-4	0.00	2.52E-3
Abiotic Depletion Potential for Fossil Resources Used as Energy (MJ)	15.5	0.73	3.59	0.80	0.13	63	62	2.53E-2	4.11E-2	0.00	0.24
Abiotic Depletion Potential for Fossil Resources Used as Materials (kg Sb eq)	5.83E-6	8.95E-8	5.95E-7	1.15E-7	7.75E-9	1.44E-5	1.99E-5	9.50E-10	5.07E-9	0.00	1.36E-8
Consumption of Freshwater (m3)	0.02	0.00	0.00	0.00	0.00	0.12	0.06	1.18E-5	8.30E-6	0.00	2.53E-4
Hazardous waste disposed (kg)	0.17	0.00	0.02	0.00	0.00	0.19	0.56	7.28E-5	2.45E-5	0.00	2.60E-4
Non hazardous waste disposed (kg)	0.64	0.07	0.13	0.07	0.45	2.11	4.03	9.88E-4	3.75E-3	0.00	0.91
Radioactive waste disposed (kg)	2.86E-5	5.01E-6	1.07E-5	5.54E-6	7.92E-7	8.76E-5	1.50E-4	1.27E-7	2.84E-7	0.00	1.49E-6
VOC emissions to indoor air (g)	0.0	0.0	0.0	0.0	4.3	0.0	12.9	0.00	0.00	0.00	0.00
Additional environmental metrics results for market life scenario											
Non-Renewable Primary Resources Used as an Energy Carrier (MJ)	18	0.78	4.56	0.87	0.14	72	121	4.61E-2	6.65E-2	0.00	0.39
Non renewable, fossil (MJ)	17	0.77	3.89	0.85	0.13	68	111	4.07E-2	6.55E-2	0.00	0.38
Non-renewable, nuclear (MJ)	1.05	0.01	0.67	0.01	0.00	3.77	8.69	5.40E-3	1.05E-3	0.00	9.80E-3
Non-renewable, biomass (MJ)	0.18	0.00	0.00	0.00	0.00	0.14	0.90	1.48E-7	1.21E-6	0.00	2.21E-6
Non-Renewable Primary Resources with Energy Content Used as a Material (kg)	2.80	0.00	0.68	0.00	0.00	0.00	17.4	0.00E+0	0.00E+0	0.00	0.00
Renewable Primary Resources Used as an Energy Carrier (MJ)	1.46	0.01	0.13	0.01	0.00	3.14	8.03	3.15E-3	6.64E-4	0.00	5.82E-3
Renewable, biomass (MJ)	0.95	0.00	0.04	0.00	0.00	1.21	4.96	3.87E-4	1.74E-4	0.00	1.33E-3
Renewable, wind, solar, geothermal (MJ)	0.09	0.001	0.01	0.00	0.00	0.31	0.48	5.07E-4	8.97E-5	0.00	7.19E-4
Renewable, water (MJ)	0.43	0.00	0.08	0.01	0.00	1.62	2.61	2.25E-3	4.00E-4	0.00	3.78E-3
Abiotic Depletion Potential for Fossil Resources Used as Energy (MJ)	15.5	0.73	3.59	0.80	0.13	63	103	3.80E-2	6.16E-2	0.00	0.36
Abiotic Depletion Potential for Fossil Resources Used as Materials (kg Sb eq)	5.83E-6	8.95E-8	5.95E-7	1.15E-7	7.75E-9	1.44E-5	3.32E-5	1.43E-9	7.60E-9	0.00	2.03E-8
Consumption of Freshwater (m3)	0.02	0.00	0.00	0.00	0.00	0.12	0.10	1.78E-5	1.25E-5	0.00	3.79E-4
Hazardous waste disposed (kg)	0.17	0.00	0.02	0.00	0.00	0.19	0.94	1.09E-4	3.68E-5	0.00	3.90E-4
Non hazardous waste disposed (kg)	0.64	0.07	0.13	0.07	0.45	2.11	6.72	1.48E-3	5.62E-3	0.00	1.37
Radioactive waste disposed (kg)	2.86E-5	5.01E-6	1.07E-5	5.54E-6	7.92E-7	8.76E-5	2.51E-4	1.91E-7	4.26E-7	0.00	2.23E-6
VOC emissions to indoor air (g)	0.0	0.0	0.0	0.0	4.3	0.0	21.5	0.00	0.00	0.00	0.00

Impact category	Modules										
	A1	A2	A3	A4	A5	B2	B4	C1	C2	C3	C4
Additional environmental metrics results for Industrial life scenario											
Non-Renewable Primary Resources Used as an Energy Carrier (MJ)	18	0.78	4.56	0.87	0.14	72	265	1.38E-1	2.00E-1	0.00	1.18
Non renewable, fossil (MJ)	*17*	*0.77*	*3.89*	*0.85*	*0.13*	*68*	*245*	*1.22E-1*	*1.96E-1*	*0.00*	*1.15*
Non-renewable, nuclear (MJ)	*1.05*	*0.01*	*0.67*	*0.01*	*0.00*	*3.77*	*19.12*	*1.62E-2*	*3.14E-3*	*0.00*	*2.94E-2*
Non-renewable, biomass (MJ)	*0.18*	*0.00*	*0.00*	*0.00*	*0.00*	*0.14*	*1.98*	*4.44E-7*	*3.64E-6*	*0.00*	*6.63E-6*
Non-Renewable Primary Resources with Energy Content Used as a Material (kg)	2.80	0.00	0.68	0.00	0.00	0.00	38.3	0.00E+0	0.00E+0	0.00	0.00
Renewable Primary Resources Used as an Energy Carrier (MJ)	1.46	0.01	0.13	0.01	0.00	3.14	17.67	9.44E-3	1.99E-3	0.00	1.75E-2
Renewable, biomass (MJ)	*0.95*	*0.00*	*0.04*	*0.00*	*0.00*	*1.21*	*10.90*	*1.16E-3*	*5.23E-4*	*0.00*	*3.98E-3*
Renewable, wind, solar, geothermal (MJ)	*0.09*	*0.00*	*0.01*	*0.00*	*0.00*	*0.31*	*1.05*	*1.52E-3*	*2.69E-4*	*0.00*	*2.16E-3*
Renewable, water (MJ)	*0.43*	*0.00*	*0.08*	*0.01*	*0.00*	*1.62*	*5.73*	*6.76E-3*	*1.20E-3*	*0.00*	*1.13E-2*
Abiotic Depletion Potential for Fossil Resources Used as Energy (MJ)	15	1	4	1	0	63	227	1.14E-1	1.85E-1	0.00	1.08
Abiotic Depletion Potential for Fossil Resources Used as Materials (kg Sb eq)	5.83E-6	8.95E-8	5.95E-7	1.15E-7	7.75E-9	1.44E-5	7.30E-5	4.28E-9	2.28E-8	0.00	6.10E-8
Consumption of Freshwater (m3)	0.02	0.00	0.00	0.00	0.00	0.12	0.21	5.33E-5	3.74E-5	0.00	1.14E-3
Hazardous waste disposed (kg)	0.17	0.00	0.02	0.00	0.00	0.19	2.07	3.28E-4	1.10E-4	0.00	1.17E-3
Non hazardous waste disposed (kg)	0.64	0.07	0.13	0.07	0.45	2.11	14.78	4.45E-3	1.69E-2	0.00	4.11
Radioactive waste disposed (kg)	2.86E-5	5.01E-6	1.07E-5	5.54E-6	7.92E-7	8.76E-5	5.51E-4	5.72E-7	1.28E-6	0.00	6.69E-6
VOC emissions to indoor air (g)	0.0	0.0	0.0	0.0	4.3	0.0	47.3	0.00	0.00	0.00	0.00

Table 11 - Worst case results for LCIA category by life cycle stage

Impact category	Stage				
	A1-A3 (Product)	A4-A5 (Construction)	B2 (Use - Maintenance)	B4 (Use - Replacement)	C1-C4 (End-of-life)
Life cycle impact assessment results for technical life scenario					
Ozone depletion (kg CFC-11 eq)	2.67E-5	1.49E-8	6.41E-7	8.03E-5	4.53E-9
Global warming (kg CO2 eq)	1.44E+0	3.95E-1	3.31E+0	5.03E+0	8.96E-2
Smog (kg O3 eq)	8.09E-2	3.84E-2	2.14E-1	3.57E-1	2.38E-3
Acidification (kg SO2 eq)	7.02E-3	7.00E-4	1.73E-2	2.24E-2	1.04E-4
Eutrophication (kg N eq)	6.66E-3	5.09E-3	3.85E-2	3.47E-2	1.06E-2
Life cycle impact assessment results for market life scenario					
Ozone depletion (kg CFC-11 eq)	2.67E-5	1.49E-8	6.41E-7	1.34E-4	6.79E-9
Global warming (kg CO2 eq)	1.44E+0	3.95E-1	3.31E+0	8.38E+0	1.34E-1
Smog (kg O3 eq)	8.09E-2	3.84E-2	2.14E-1	5.94E-1	3.57E-3
Acidification (kg SO2 eq)	7.02E-3	7.00E-4	1.73E-2	3.74E-2	1.56E-4
Eutrophication (kg N eq)	6.66E-3	5.09E-3	3.85E-2	5.78E-2	1.59E-2
Life cycle impact assessment results for Industrial life scenario					
Ozone depletion (kg CFC-11 eq)	2.67E-5	1.49E-8	6.41E-7	2.94E-4	2.04E-8
Global warming (kg CO2 eq)	1.44E+0	3.95E-1	3.31E+0	1.84E+1	4.03E-1
Smog (kg O3 eq)	8.09E-2	3.84E-2	2.14E-1	1.31E+0	1.07E-2
Acidification (kg SO2 eq)	7.02E-3	7.00E-4	1.73E-2	8.23E-2	4.68E-4
Eutrophication (kg N eq)	6.66E-3	5.09E-3	3.85E-2	1.27E-1	4.76E-2

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Glossary:

Acronyms & Abbreviated Terms:

- ACA: American Coating Association
- ASTM: A standards development organization that serves as an open forum for the development of international standards. ASTM methods are industry-recognized and approved test methodologies for demonstrating the durability of an architectural coating in the United States.
- ecoinvent: a life cycle database that contains international industrial life cycle inventory data on energy supply, resource extraction, material supply, chemicals, metals, agriculture, waste management services, and transport services.
- EPA WARM model: Unite States Environmental Protection Agency Waste Reduction Model.
- EPD: Environmental Product Declaration. EPDs are form of as Type III environmental declarations under ISO 14025. They are the summary document of data collected in the LCA as specified by a relevant PCR. EPDs can enable comparison between products if the underlying studies and assumptions are similar.
- GaBi: Created by PE INTERNATIONAL GaBi Databases are LCA databases that contain ready-to-use Life Cycle Inventory profiles.
- LCA: Life Cycle Assessment or Analysis. A technique to assess environmental impacts associated with all the stages of a product's life from cradle to grave (i.e., from raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling).
- NCSS: NSF International’s National Center for Sustainability Standards
- PCR: Product Category Rule. A PCR defines the rules and requirements for creating EPDs of a certain product category.
- TRACI: Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts.
- VOC: Volatile organic compounds

Terminology from the PCR:

- Architectural coating: a coating recommended for field application to stationary structures or their appurtenances at the site of installation, to portable buildings, to pavements, or to curbs. For purposes of the PCR an 'architectural coating' does not include adhesives and coatings for shop applications or original equipment manufacturing, nor does it include coatings solely for application to non-stationary structures, such as airplanes, ships, boats, and railcars. Please see the product category requirements in Section 1.1 of the PCR. General architectural coatings are decorative or protective paints or coatings formulated for interior or exterior architectural substrates including, but not limited to: drywall, stucco, wood, metal, concrete, and masonry. Primers, sealers and undercoaters are coatings formulated for one or more of the following purposes: to provide a firm bond between the substrate and the subsequent coatings; to prevent subsequent coatings from being absorbed by the substrate; or to prevent harm to subsequent coatings by materials in the substrate; or to provide a smooth surface for the subsequent application of coatings; or to provide a clear finish coat to seal the substrate; or to prevent materials from penetrating into or leaching out of a substrate. Interior architectural coatings are defined as coatings that meet the product category requirements in section 1.1 of the PCR and that are applied to substrates that primarily reside in interior.
- Biologic growth or bio deterioration: any undesirable change in material properties brought about by the activities of microorganisms.
- Blistering: the formation of dome shaped hollow projections in paints or varnish films resulting from the local loss of adhesion and lifting of the film from the surface or coating.
- Burnish resistance: the resistance of a coating to an increase in gloss or sheen due to polishing or rubbing.
- Design life: The estimated lifetime of a coating based solely on its hiding and performance characteristics determined by results in certain ASTM durability tests.
- Durability: the degree to which coatings can withstand the destructive effect of the conditions to which they are subjected and how long they retain an acceptable appearance and continue to protect the substrate.
- Erosion: the wearing away of the top coating of a painted surface e.g., by chalking, or by the abrasive action of windborne particles of grit, which may result in exposure of the underlying surface. The degree of resistance is dependent on the amount of coating retained.
- Flaking/Peeling: the phenomenon manifested in paint films by the actual detachment of pieces of the film itself either from its substrate or from paint previously applied. Peeling can be considered as an aggravated form of flaking. It is frequently due to the collection of moisture beneath the film.
- Gloss: a value of specular reflection which is often used to categorize certain types of paints.
- Intermediate processing: the conversion of raw materials to intermediates (e.g. titanium dioxide ore into titanium dioxide pigment, etc.).
- Market-based life: The estimated lifetime of a coating based off the actual use pattern of the product type. In this instance, a repaint may occur before the coating fails.
- Pigment: the material(s) that give a coating its color.
- Primary materials: resources extracted from nature. Examples include titanium dioxide ore, crude oil, etc. that are used to create basic materials used in the production of architectural coatings (e.g., titanium dioxide).
- Resin/Binder: acts as the glue or adhesive to adhere the coating to the substrate.
- Scrubbability or scrub resistance: the ability of a coating to resist being worn away or to maintain its original appearance when rubbed repetitively with an abrasive material.
- Secondary materials: recovered, reclaimed, or recycled content that is used to create basic materials to be used in the production of architectural coatings.
- Washability: the ease with which the dirt can be removed from a paint surface by washing; also refers to the ability of the coating to withstand washing without removal or substantial damage.