Declaration Owner:	Dunn-Edwards Corporation
Address:	4885 E. 52nd Place, Los Angeles, CA 90058
Declared Products:	SPARTAZERO Low Odor Zero VOC Interior Flat Paint SPARTAWALL Interior Flat Paint SPARTAWALL Interior Velvet Paint SPARTAWALL Interior Eggshell Paint SPARTAWALL Interior Low Sheen Paint SPARTAWALL Interior Semi-Gloss Paint
Product Category and Subcategory:	Interior Architectural Coatings
Product Category Rule:	NSF PCR for Environmental Product Declarations. Architectural Coatings.
Declaration Number:	SCS-EPD-05977
Declaration Validity Period:	Valid February 18, 2020 – February 17, 2025
Version Date:	July 29, 2020
Program Operator:	SCS Global Services
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide
LCA Practitioner:	thinkstep Inc.
LCA Software:	GaBi 9.2, 2019 database (SP37)
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	☐ internal ☑ external
LCA Reviewer:	Gerard Mansell, Sr. LCA Practitioner, SCS Global Services
Product Category Rule Review conducted by:	Thomas Gloria, Ph.D., Industrial Ecology Consultants; Bill Stough, Sustainable Research Group; Michael Overcash, Ph.D., Environmental Clarity
Independent verification of the declaration and data, according to ISO 14025 and the PCR	☐ internal ☑ external
EPD Verifier:	Gerard Mansell, Sr. LCA Practitioner, SCS Global Services
Functional Unit:	1 m^2 of covered and protected substrate for a period of 60 years.
Market-Based Lifetime used in Assessment:	5-years
Design Lifetime used in Assessment:	varies (3 to 15 years)
Test Methods used to Calculate Design Life:	ASTM D2486 - 06(2012)e1 ASTM D6736 - 08(2013) ASTM D4828 - 94(2012)e1
Amount of Colorant Needed:	*varies*
Content of the Product:	The content of the product is reported in Table 3 of this EPD.
Manufacturing Location:	Phoenix, AZ
Data Quality Assessment Score:	Very good
Disclaimer:	*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 average performance by the product and its actual impacts may vary on a cate-to-case basis.*

ABOUT DUNN-EDWARDS

Dunn-Edwards Paints® is one of the nation's leading manufacturers and distributors of premium architectural, industrial and high-performance paints, coatings and paint supplies. It operates 141 company stores in California, Arizona, Nevada, New Mexico, and Texas, and 90+ authorized dealers throughout the West. Dunn-Edwards is dedicated to preserving and protecting the environment, and produces its coatings in a LEED® Gold-certified manufacturing plant. Based in Southern California, the 94-year old company has approximately 1,700 employees. Dunn-Edwards is a wholly owned subsidiary of Osaka, Japan-based Nippon Paint Holdings Co., Ltd. (TYO 4612), one of the world's largest paint companies. For more information, visit www.dunnedwards.com.

PRODUCT DESCRIPTION

SPARTAZERO® Flat is a premium, interior, Zero VOC, latex flat paint that has very low odor and no added organic solvents. SPARTAZERO Flat is ideal for use on residential and commercial projects, schools, hospitals, and in other occupied spaces where low odor products are preferred. SPARTAZERO Flat exhibits excellent hide, coverage and touch-up, and is self-priming on new drywall. It dries to a smooth, uniform finish.

SPARTAWALL® is a line of premium ZERO VOC, interior, acrylic latex paints, that has very low odor and no added organic solvents. It has great flow and leveling properties and dries to a smooth, uniform finish. It is ideal for use on residential and commercial projects such as single family and multi-tenant housing, schools, hospitals, or hotels and in other occupied spaces where low odor products are preferred. SPARTAWALL Flat is self-priming on new drywall (first coat). The higher sheens exhibit very good hide, touch-up, and washability, and are ideal for use on high traffic areas such as hallways, offices, classrooms, kitchen and bathroom walls, and window frames and handrails. SPARTAWALL Semi-Gloss provides very good non-blocking properties and excellent adhesion. SPARTAWALL is available in Flat, Velvet, Eggshell, Low Sheen and Semi-Gloss.

PRODUCT CHARACTERISTICS

The product lifespan scenarios in this EPD are derived from design and market-based lifetimes provided by the PCR. The lifespan scenarios that define the criteria for choosing the design lifetime are shown in Table 1.

Table 1. *Product lifespan scenarios for the products in this EPD*

Product name	Coating type	ASTM D2486 – 06(2012)e1	ASTM D6736 – 08(2013)	ASTM D4828 – 94(2012)e1	Design quality	Design lifetime (years)	Market life (years)
SPARTAZERO - Flat	Interior	203	1.07	5.3	Low	3	5
SPARTAWALL - Flat	Interior	444	1	5.7	Low	3	5
SPARTAWALL - Velvet	Interior	654	0	4.8	Mid	7	5
SPARTAWALL - Eggshell	Interior	288	0.04	4	Mid	7	5
SPARTAWALL - Low Sheen	Interior	635	0.06	7.8	High	15	5
SPARTAWALL - Semi-Gloss	Interior	534	0.05	5	Mid	7	5

Table 2, below, shows additional product characteristics.

Table 2: *Product details*

Product name	Density (lb / gal)	Coverage (ft^2 / gal)	Colorant (mL colorant / L paint)
SPARTAZERO - Flat	11.7	375	23
SPARTAWALL - Flat	11.6	375	23
SPARTAWALL - Velvet	10.8	375	23
SPARTAWALL - Eggshell	10.4	350	23
SPARTAWALL - Low Sheen	10.3	350	23
SPARTAWALL - Semi-Gloss	10.3	350	23

PRODUCT COMPOSITION

Dunn-Edwards interior paint products are primarily water- and acrylic resin-based. They also contain minerals, pigments, and other additives such as preservatives, antifoamers, thickeners, and surfactants. Since there are only slight variations in the exact materials used, a dataset reflecting a representative material was chosen for each chemical class (see Table 29 for more details). Table 3 shows material composition ranges for all the formulations considered. Material composition data are based on product recipes for each SKU.

Table 3. *Approximate material composition of Dunn-Edwards paints based on interior pilot product formulations*

Material	Mass [%]
Binder (Copolymer Resin 1)	0 - 41%
Binder (Copolymer Resin 2)	0 - 32%
Carrier (Water)	20 - 26%
Prime Pigment	19 - 23%
Binder (Copolymer Resin 4)	0 - 21%
Reinforcing Pigment (Mineral 2)	0 - 16%
Reinforcing Pigment (Mineral 5)	0 - 15%
Binder (Copolymer Resin 3)	0 - 0%
Reinforcing Pigment (Mineral 7)	0 - 0%
Reinforcing Pigment (Mineral 1)	0 - 4.7%
Rheology Modifier	1.4 - 4%
Reinforcing Pigment (Mineral 3)	0 - 7.3%
Reinforcing Pigment (Mineral 6)	0 - 6%
Reinforcing Pigment (Mineral 4)	0 - 4.7%
Coalescent	0.29 - 1.1%
Preservative	0.28 - 0.71%

PRODUCT LIFE CYCLE FLOW DIAGRAM

Figure 1, below, is a representation of the most significant contributions to the life cycle of each product. This includes resource extraction and processing, product manufacture, use and maintenance, and end-of-life. Figure 2, below, presents the manufacturing process.

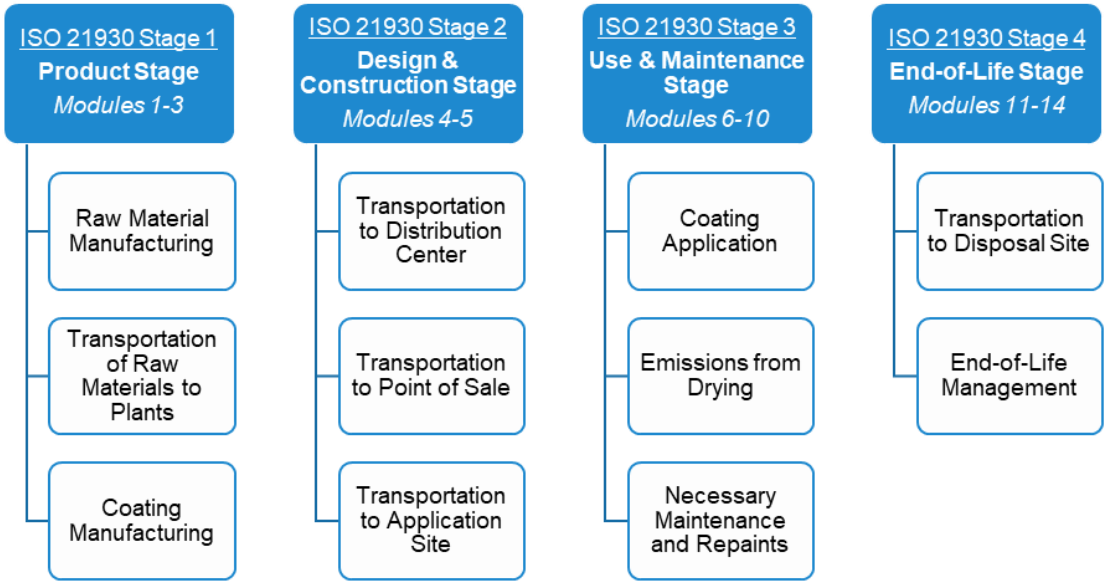

Figure 1. *Product life cycle*

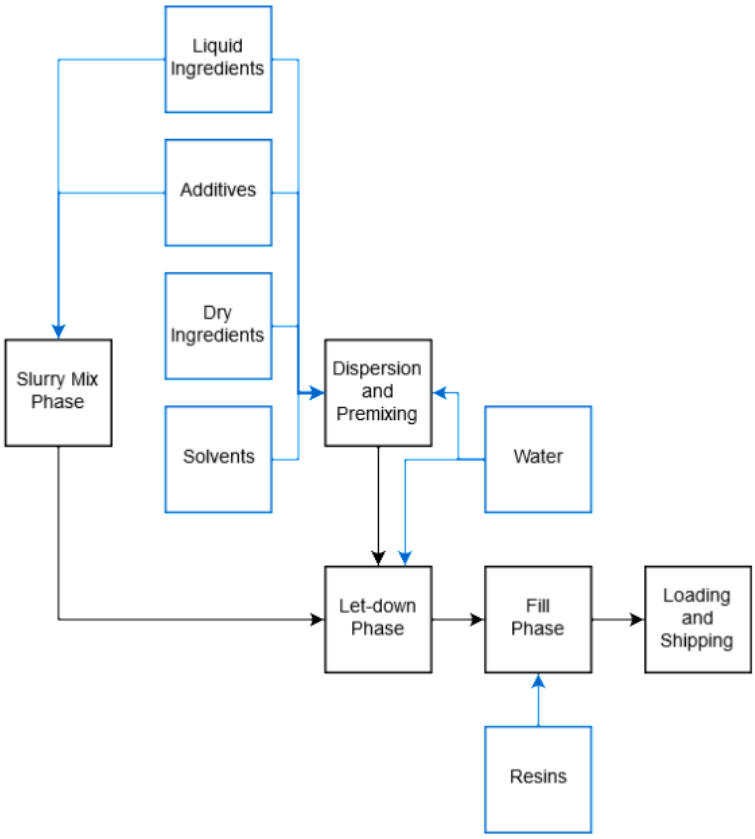

Figure 2: *Product manufacturing flow diagram*

LIFE CYCLE INVENTORY RESULTS

The life cycle inventory parameter results for the products in this EPD are presented below and are rounded to three significant figures. Additionally, the following information is reported, in accordance with the PCR:

- The waste allocated to the building product for the foreground system (the operations under direct control of Dunn-Edwards) is 99.88% non-hazardous and 0.12% hazardous waste.
- This LCA study does not include measurable amounts of secondary fuels.
- The "Other Energy" inventory parameter includes energy from wave, solar, and geothermal sources.
- The VOC emissions occurring during the use phase for each product were derived from the values presented in Table 4.

Table 4: *Product VOC emissions*

Parameter	Unit	SPARTAZERO - Flat	SPARTAWALL - Flat	SPARTAWALL - Velvet	SPARTAWALL - Eggshell	SPARTAWALL - Low Sheen	SPARTAWALL - Semi-Gloss
VOC emissions	g/L of paint	3.47	15.0	1.88	1.86	1.82	1.84

Table 5. *Key life cycle inventory parameters for SPARTAZERO - Flat. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*7.66E+01*	6.69E+01	8.18E+00	0.00E+00	1.45E+00
Depletion of Non-renewable Material Resources	kg	*8.63E+00*	8.03E+00	1.01E-01	0.00E+00	5.02E-01
Use of Renewable Primary Energy	MJ	*6.87E+00*	6.47E+00	2.88E-01	0.00E+00	1.09E-01
Use of Renewable Material Resources	kg	*2.60E+01*	2.45E+01	1.29E+00	0.00E+00	2.31E-01
Consumption of Freshwater	m^3	*2.14E-02*	1.90E-02	2.27E-03	0.00E+00	1.72E-04
Hydro/Wind Power	MJ	*2.35E+00*	2.28E+00	5.14E-02	0.00E+00	2.66E-02
Fossil Energy	MJ	*7.07E+01*	6.12E+01	8.06E+00	0.00E+00	1.41E+00
Nuclear Energy	MJ	*5.90E+00*	5.74E+00	1.27E-01	0.00E+00	3.50E-02
Bio-Energy	MJ	*3.75E-04*	3.57E-04	1.45E-05	0.00E+00	4.24E-06
Other Energy	MJ	*4.51E+00*	4.19E+00	2.37E-01	0.00E+00	8.23E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.84E-02*	1.84E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 6. *Key life cycle inventory parameters for SPARTAZERO - Flat. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 3-year design lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*1.28E+02*	1.12E+02	1.36E+01	0.00E+00	2.41E+00
Depletion of Non-renewable Material Resources	kg	*1.44E+01*	1.34E+01	1.68E-01	0.00E+00	8.36E-01
Use of Renewable Primary Energy	MJ	*1.14E+01*	1.08E+01	4.81E-01	0.00E+00	1.82E-01
Use of Renewable Material Resources	kg	*4.33E+01*	4.08E+01	2.15E+00	0.00E+00	3.84E-01
Consumption of Freshwater	m^3	*3.42E-02*	3.01E-02	3.79E-03	0.00E+00	2.87E-04
Hydro/Wind Power	MJ	*3.92E+00*	3.79E+00	8.57E-02	0.00E+00	4.44E-02
Fossil Energy	MJ	*1.18E+02*	1.02E+02	1.34E+01	0.00E+00	2.35E+00
Nuclear Energy	MJ	*9.83E+00*	9.56E+00	2.12E-01	0.00E+00	5.84E-02
Bio-Energy	MJ	*6.26E-04*	5.94E-04	2.42E-05	0.00E+00	7.06E-06
Other Energy	MJ	*7.52E+00*	6.99E+00	3.95E-01	0.00E+00	1.37E-01
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*3.07E-02*	3.07E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 7. *Key life cycle inventory parameters for SPARTAWALL - Flat. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*8.18E+01*	7.22E+01	8.20E+00	0.00E+00	1.43E+00
Depletion of Non-renewable Material Resources	kg	*7.60E+00*	7.01E+00	1.01E-01	0.00E+00	4.95E-01
Use of Renewable Primary Energy	MJ	*5.35E+00*	4.96E+00	2.88E-01	0.00E+00	1.08E-01
Use of Renewable Material Resources	kg	*2.83E+01*	2.68E+01	1.29E+00	0.00E+00	2.28E-01
Consumption of Freshwater	m^3	*2.72E-02*	2.47E-02	2.27E-03	0.00E+00	1.70E-04
Hydro/Wind Power	MJ	*2.03E+00*	1.95E+00	5.17E-02	0.00E+00	2.63E-02
Fossil Energy	MJ	*7.70E+01*	6.75E+01	8.07E+00	0.00E+00	1.39E+00
Nuclear Energy	MJ	*4.79E+00*	4.63E+00	1.28E-01	0.00E+00	3.46E-02
Bio-Energy	MJ	*1.05E-03*	1.03E-03	1.45E-05	0.00E+00	4.19E-06
Other Energy	MJ	*3.32E+00*	3.00E+00	2.36E-01	0.00E+00	8.13E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.83E-02*	1.83E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 8. *Key life cycle inventory parameters for SPARTAWALL - Flat. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 3-year design lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*1.36E+02*	1.20E+02	1.37E+01	0.00E+00	2.38E+00
Depletion of Non-renewable Material Resources	kg	*1.27E+01*	1.17E+01	1.69E-01	0.00E+00	8.26E-01
Use of Renewable Primary Energy	MJ	*8.92E+00*	8.26E+00	4.79E-01	0.00E+00	1.79E-01
Use of Renewable Material Resources	kg	*4.72E+01*	4.47E+01	2.16E+00	0.00E+00	3.80E-01
Consumption of Freshwater	m^3	*4.37E-02*	3.97E-02	3.79E-03	0.00E+00	2.83E-04
Hydro/Wind Power	MJ	*3.39E+00*	3.26E+00	8.61E-02	0.00E+00	4.38E-02
Fossil Energy	MJ	*1.28E+02*	1.13E+02	1.35E+01	0.00E+00	2.32E+00
Nuclear Energy	MJ	*7.99E+00*	7.72E+00	2.13E-01	0.00E+00	5.76E-02
Bio-Energy	MJ	*1.76E-03*	1.72E-03	2.42E-05	0.00E+00	6.98E-06
Other Energy	MJ	*5.53E+00*	5.00E+00	3.93E-01	0.00E+00	1.35E-01
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*3.06E-02*	3.06E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 9. *Key life cycle inventory parameters for SPARTAWALL - Velvet. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*7.76E+01*	6.84E+01	7.88E+00	0.00E+00	1.33E+00
Depletion of Non-renewable Material Resources	kg	*7.52E+00*	6.96E+00	9.76E-02	0.00E+00	4.61E-01
Use of Renewable Primary Energy	MJ	*3.22E+00*	2.85E+00	2.69E-01	0.00E+00	1.00E-01
Use of Renewable Material Resources	kg	*2.52E+01*	2.37E+01	1.27E+00	0.00E+00	2.12E-01
Consumption of Freshwater	m^3	*2.19E-02*	1.95E-02	2.16E-03	0.00E+00	1.58E-04
Hydro/Wind Power	MJ	*1.37E+00*	1.30E+00	5.03E-02	0.00E+00	2.44E-02
Fossil Energy	MJ	*7.47E+01*	6.57E+01	7.75E+00	0.00E+00	1.30E+00
Nuclear Energy	MJ	*2.86E+00*	2.71E+00	1.25E-01	0.00E+00	3.21E-02
Bio-Energy	MJ	*3.12E-04*	2.94E-04	1.38E-05	0.00E+00	3.89E-06
Other Energy	MJ	*1.85E+00*	1.55E+00	2.19E-01	0.00E+00	7.56E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.69E-02*	1.69E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 10. *Key life cycle inventory parameters for SPARTAWALL - Velvet. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 7-year design lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*5.54E+01*	4.88E+01	5.63E+00	0.00E+00	9.49E-01
Depletion of Non-renewable Material Resources	kg	*5.37E+00*	4.97E+00	6.97E-02	0.00E+00	3.29E-01
Use of Renewable Primary Energy	MJ	*2.30E+00*	2.04E+00	1.92E-01	0.00E+00	7.14E-02
Use of Renewable Material Resources	kg	*1.80E+01*	1.70E+01	9.09E-01	0.00E+00	1.51E-01
Consumption of Freshwater	m^3	*1.50E-02*	1.33E-02	1.54E-03	0.00E+00	1.13E-04
Hydro/Wind Power	MJ	*9.79E-01*	9.25E-01	3.59E-02	0.00E+00	1.75E-02
Fossil Energy	MJ	*5.34E+01*	4.69E+01	5.54E+00	0.00E+00	9.26E-01
Nuclear Energy	MJ	*2.04E+00*	1.93E+00	8.90E-02	0.00E+00	2.30E-02
Bio-Energy	MJ	*2.23E-04*	2.10E-04	9.86E-06	0.00E+00	2.78E-06
Other Energy	MJ	*1.32E+00*	1.11E+00	1.56E-01	0.00E+00	5.40E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.20E-02*	1.20E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 11. *Key life cycle inventory parameters for SPARTAWALL - Eggshell. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*9.46E+01*	8.49E+01	8.30E+00	0.00E+00	1.37E+00
Depletion of Non-renewable Material Resources	kg	*8.41E+00*	7.83E+00	1.03E-01	0.00E+00	4.74E-01
Use of Renewable Primary Energy	MJ	*3.72E+00*	3.33E+00	2.80E-01	0.00E+00	1.03E-01
Use of Renewable Material Resources	kg	*2.83E+01*	2.67E+01	1.36E+00	0.00E+00	2.18E-01
Consumption of Freshwater	m^3	*2.98E-02*	2.74E-02	2.27E-03	0.00E+00	1.62E-04
Hydro/Wind Power	MJ	*1.70E+00*	1.62E+00	5.34E-02	0.00E+00	2.52E-02
Fossil Energy	MJ	*9.08E+01*	8.13E+01	8.17E+00	0.00E+00	1.33E+00
Nuclear Energy	MJ	*3.81E+00*	3.65E+00	1.32E-01	0.00E+00	3.31E-02
Bio-Energy	MJ	*3.75E-04*	3.57E-04	1.45E-05	0.00E+00	4.00E-06
Other Energy	MJ	*2.02E+00*	1.71E+00	2.26E-01	0.00E+00	7.78E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.73E-02*	1.73E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 12. *Key life cycle inventory parameters for SPARTAWALL - Eggshell. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 7-year design lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*6.75E+01*	6.06E+01	5.93E+00	0.00E+00	9.77E-01
Depletion of Non-renewable Material Resources	kg	*6.01E+00*	5.59E+00	7.36E-02	0.00E+00	3.39E-01
Use of Renewable Primary Energy	MJ	*2.65E+00*	2.38E+00	2.00E-01	0.00E+00	7.35E-02
Use of Renewable Material Resources	kg	*2.02E+01*	1.91E+01	9.69E-01	0.00E+00	1.56E-01
Consumption of Freshwater	m^3	*2.07E-02*	1.89E-02	1.62E-03	0.00E+00	1.16E-04
Hydro/Wind Power	MJ	*1.21E+00*	1.16E+00	3.81E-02	0.00E+00	1.80E-02
Fossil Energy	MJ	*6.48E+01*	5.80E+01	5.83E+00	0.00E+00	9.53E-01
Nuclear Energy	MJ	*2.72E+00*	2.60E+00	9.46E-02	0.00E+00	2.36E-02
Bio-Energy	MJ	*2.68E-04*	2.55E-04	1.03E-05	0.00E+00	2.86E-06
Other Energy	MJ	*1.44E+00*	1.22E+00	1.62E-01	0.00E+00	5.55E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.24E-02*	1.24E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 13. *Key life cycle inventory parameters for SPARTAWALL – Low Sheen. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*1.07E+02*	9.76E+01	8.26E+00	0.00E+00	1.35E+00
Depletion of Non-renewable Material Resources	kg	*9.11E+00*	8.54E+00	1.03E-01	0.00E+00	4.69E-01
Use of Renewable Primary Energy	MJ	*4.09E+00*	3.71E+00	2.78E-01	0.00E+00	1.02E-01
Use of Renewable Material Resources	kg	*3.07E+01*	2.91E+01	1.35E+00	0.00E+00	2.16E-01
Consumption of Freshwater	m^3	*3.59E-02*	3.35E-02	2.25E-03	0.00E+00	1.61E-04
Hydro/Wind Power	MJ	*1.97E+00*	1.89E+00	5.33E-02	0.00E+00	2.49E-02
Fossil Energy	MJ	*1.03E+02*	9.32E+01	8.13E+00	0.00E+00	1.32E+00
Nuclear Energy	MJ	*4.58E+00*	4.42E+00	1.32E-01	0.00E+00	3.28E-02
Bio-Energy	MJ	*3.81E-04*	3.63E-04	1.44E-05	0.00E+00	3.96E-06
Other Energy	MJ	*2.12E+00*	1.82E+00	2.24E-01	0.00E+00	7.70E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.72E-02*	1.72E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 14. *Key life cycle inventory parameters for SPARTAWALL – Low Sheen. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 15-year design lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*3.57E+01*	3.25E+01	2.75E+00	0.00E+00	4.51E-01
Depletion of Non-renewable Material Resources	kg	*3.04E+00*	2.85E+00	3.42E-02	0.00E+00	1.56E-01
Use of Renewable Primary Energy	MJ	*1.36E+00*	1.24E+00	9.25E-02	0.00E+00	3.40E-02
Use of Renewable Material Resources	kg	*1.02E+01*	9.71E+00	4.51E-01	0.00E+00	7.19E-02
Consumption of Freshwater	m^3	*1.17E-02*	1.09E-02	7.51E-04	0.00E+00	5.36E-05
Hydro/Wind Power	MJ	*6.56E-01*	6.30E-01	1.78E-02	0.00E+00	8.31E-03
Fossil Energy	MJ	*3.42E+01*	3.11E+01	2.71E+00	0.00E+00	4.40E-01
Nuclear Energy	MJ	*1.53E+00*	1.47E+00	4.41E-02	0.00E+00	1.09E-02
Bio-Energy	MJ	*1.27E-04*	1.21E-04	4.79E-06	0.00E+00	1.32E-06
Other Energy	MJ	*7.07E-01*	6.06E-01	7.48E-02	0.00E+00	2.57E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*5.72E-03*	5.72E-03	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 15. *Key life cycle inventory parameters for SPARTAWALL – Semi-gloss. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*1.13E+02*	1.03E+02	8.29E+00	0.00E+00	1.37E+00
Depletion of Non-renewable Material Resources	kg	*9.66E+00*	9.09E+00	1.03E-01	0.00E+00	4.73E-01
Use of Renewable Primary Energy	MJ	*4.23E+00*	3.85E+00	2.79E-01	0.00E+00	1.03E-01
Use of Renewable Material Resources	kg	*3.19E+01*	3.04E+01	1.36E+00	0.00E+00	2.18E-01
Consumption of Freshwater	m^3	*3.72E-02*	3.47E-02	2.26E-03	0.00E+00	1.62E-04
Hydro/Wind Power	MJ	*2.04E+00*	1.97E+00	5.34E-02	0.00E+00	2.51E-02
Fossil Energy	MJ	*1.08E+02*	9.86E+01	8.16E+00	0.00E+00	1.33E+00
Nuclear Energy	MJ	*4.78E+00*	4.61E+00	1.32E-01	0.00E+00	3.30E-02
Bio-Energy	MJ	*4.04E-04*	3.85E-04	1.44E-05	0.00E+00	4.00E-06
Other Energy	MJ	*2.19E+00*	1.88E+00	2.26E-01	0.00E+00	7.77E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.73E-02*	1.73E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 16. *Key life cycle inventory parameters for SPARTAWALL – Semi-gloss. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 7-year design lifetime as Interior Coating.*

Parameter	Unit	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Depletion of Non-renewable Energy Resources	MJ	*8.06E+01*	7.37E+01	5.92E+00	0.00E+00	9.75E-01
Depletion of Non-renewable Material Resources	kg	*6.90E+00*	6.49E+00	7.36E-02	0.00E+00	3.38E-01
Use of Renewable Primary Energy	MJ	*3.02E+00*	2.75E+00	2.00E-01	0.00E+00	7.34E-02
Use of Renewable Material Resources	kg	*2.28E+01*	2.17E+01	9.68E-01	0.00E+00	1.55E-01
Consumption of Freshwater	m^3	*2.59E-02*	2.42E-02	1.62E-03	0.00E+00	1.16E-04
Hydro/Wind Power	MJ	*1.46E+00*	1.40E+00	3.81E-02	0.00E+00	1.79E-02
Fossil Energy	MJ	*7.72E+01*	7.04E+01	5.83E+00	0.00E+00	9.52E-01
Nuclear Energy	MJ	*3.41E+00*	3.29E+00	9.46E-02	0.00E+00	2.36E-02
Bio-Energy	MJ	*2.88E-04*	2.75E-04	1.03E-05	0.00E+00	2.86E-06
Other Energy	MJ	*1.56E+00*	1.35E+00	1.61E-01	0.00E+00	5.55E-02
Secondary Fuels	MJ	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recycled Materials	kg	*1.24E-02*	1.24E-02	0.00E+00	0.00E+00	0.00E+00
Secondary Raw Materials	kg	*0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00

LIFE CYCLE STAGES AND SYSTEM BOUNDARY

The system under study includes the extraction of raw materials and processing, manufacturing, delivery and installation, use, and disposal (end-of-life). The cradle-to-grave system boundary includes all unit processes contributing measurably to the category indicator results. The life cycle stages specified by the PCR are described relative to the LCA study below, as well as above in Figure 1 and Figure 2.

Stage 1 – Product Stage

The product stage begins when raw materials are extracted from nature and includes pre-processing of materials, intermediate processing, transportation to the Dunn-Edwards production facility, and the paint production process itself. This stage ends when the final product is packaged for shipping. The treatment of any wastes formed during production are included in this stage.

Stage 2 – Design and Construction Stage

The design and construction phase begins with the packaged and finished paint product leaving the production site and ends with the coating being delivered to the point of application. Within this stage, a paint product may go through several facilities including distribution warehousing, as well as storage at the point of sale. This stage also includes the addition of colorant at the point of sale, per the PCR.

Stage 3 – Use and Maintenance Stage

The use stage begins when the user applies the product to a substrate and ends with any leftover coating and discarded packaging going to end-of-life stage. A 10% loss rate was included per the PCR. This stage does not require any energy or additional cleaning inputs, but includes the VOCs emitted over the course of the paint's lifetime. Potential environmental burdens associated with repaints needed to fulfill the service life are attributed to the original stage in which they occurred (e.g. production of the coating for the repaint is attributed to Stage 1 – Product Stage).

Stage 4 – End-of-Life Stage

The end-of-life stage begins when any applied or unused paint and primary packaging is ready for disposal or recycling and ends when these products are landfilled or transformed as part of the recycling process.

LIFE CYCLE IMPACT ASSESSMENT

The impact assessment for the EPD is conducted in accordance with requirements of the PCR. Impact category indicators are estimated using the TRACI 2.1 characterization method. The results are presented below and are rounded to three significant figures.

Table 17. *Key life cycle inventory parameters for SPARTAZERO - Flat. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*4.18E+00*	3.64E+00	4.48E-01	0.00E+00	9.34E-02
Acidification Potential	kg SO_2 eq	*6.71E-02*	6.57E-02	9.95E-04	0.00E+00	4.13E-04
Eutrophication Potential	kg N eq	*8.90E-04*	7.73E-04	9.55E-05	0.00E+00	2.14E-05
Smog Creation Potential	kg O_3 eq	*2.13E-01*	1.75E-01	1.55E-02	1.26E-02	9.55E-03
Ozone Depletion Potential	kg CFC-11 eq	*1.94E-10*	1.83E-10	1.16E-11	0.00E+00	0.00E+00

Table 18. *Key life cycle inventory parameters for SPARTAZERO - Flat. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 3-year design lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*6.45E+00*	5.55E+00	7.46E-01	0.00E+00	1.56E-01
Acidification Potential	kg SO_2 eq	*1.12E-01*	1.08E-01	1.66E-03	0.00E+00	2.34E-03
Eutrophication Potential	kg N eq	*2.26E-03*	1.20E-03	1.59E-04	0.00E+00	8.93E-04
Smog Creation Potential	kg O_3 eq	*3.42E-01*	2.73E-01	2.58E-02	2.09E-02	2.19E-02
Ozone Depletion Potential	kg CFC-11 eq	*8.39E-10*	8.20E-10	1.93E-11	0.00E+00	0.00E+00

Table 19. *Key life cycle inventory parameters for SPARTAWALL - Flat. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*4.30E+00*	3.76E+00	4.48E-01	0.00E+00	9.22E-02
Acidification Potential	kg SO_2 eq	*7.05E-02*	6.91E-02	9.96E-04	0.00E+00	4.08E-04
Eutrophication Potential	kg N eq	*9.66E-04*	8.50E-04	9.52E-05	0.00E+00	2.11E-05
Smog Creation Potential	kg O_3 eq	*2.58E-01*	1.75E-01	1.55E-02	5.43E-02	1.36E-02
Ozone Depletion Potential	kg CFC-11 eq	*-3.26E-11*	-4.42E-11	1.17E-11	0.00E+00	0.00E+00

Table 20. *Key life cycle inventory parameters for SPARTAWALL - Flat. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 3-year design lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*6.66E+00*	5.76E+00	7.46E-01	0.00E+00	1.54E-01
Acidification Potential	kg SO_2 eq	*1.18E-01*	1.14E-01	1.66E-03	0.00E+00	2.31E-03
Eutrophication Potential	kg N eq	*2.37E-03*	1.33E-03	1.59E-04	0.00E+00	8.82E-04
Smog Creation Potential	kg O_3 eq	*4.17E-01*	2.72E-01	2.58E-02	9.06E-02	2.87E-02
Ozone Depletion Potential	kg CFC-11 eq	*4.58E-10*	4.39E-10	1.95E-11	0.00E+00	0.00E+00

Table 21. *Key life cycle inventory parameters for Spartawall - Velvet. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*3.98E+00*	3.47E+00	4.25E-01	0.00E+00	8.57E-02
Acidification Potential	kg SO_2 eq	*5.61E-02*	5.47E-02	9.54E-04	0.00E+00	3.79E-04
Eutrophication Potential	kg N eq	*8.78E-04*	7.69E-04	8.88E-05	0.00E+00	1.96E-05
Smog Creation Potential	kg O_3 eq	*1.80E-01*	1.50E-01	1.46E-02	6.78E-03	8.29E-03
Ozone Depletion Potential	kg CFC-11 eq	*-3.11E-10*	-3.23E-10	1.16E-11	0.00E+00	0.00E+00

Table 22. *Key life cycle inventory parameters for SPARTAWALL - Velvet. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 7-year design lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*2.64E+00*	2.28E+00	3.03E-01	0.00E+00	6.12E-02
Acidification Potential	kg SO_2 eq	*4.03E-02*	3.87E-02	6.81E-04	0.00E+00	9.22E-04
Eutrophication Potential	kg N eq	*9.31E-04*	5.16E-04	6.34E-05	0.00E+00	3.51E-04
Smog Creation Potential	kg O_3 eq	*1.23E-01*	9.99E-02	1.04E-02	4.84E-03	8.29E-03
Ozone Depletion Potential	kg CFC-11 eq	*-2.02E-11*	-2.84E-11	8.25E-12	0.00E+00	0.00E+00

Table 23. *Key life cycle inventory parameters for SPARTAWALL - Eggshell. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*4.48E+00*	3.95E+00	4.44E-01	0.00E+00	8.82E-02
Acidification Potential	kg SO_2 eq	*5.69E-02*	5.55E-02	1.00E-03	0.00E+00	3.90E-04
Eutrophication Potential	kg N eq	*8.85E-04*	7.73E-04	9.21E-05	0.00E+00	2.02E-05
Smog Creation Potential	kg O_3 eq	*1.97E-01*	1.66E-01	1.52E-02	7.19E-03	8.55E-03
Ozone Depletion Potential	kg CFC-11 eq	*-3.16E-10*	-3.29E-10	1.24E-11	0.00E+00	0.00E+00

Table 24. *Key life cycle inventory parameters for SPARTAWALL - Eggshell. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 7-year design lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*2.99E+00*	2.61E+00	3.17E-01	0.00E+00	6.30E-02
Acidification Potential	kg SO_2 eq	*4.09E-02*	3.92E-02	7.16E-04	0.00E+00	9.48E-04
Eutrophication Potential	kg N eq	*9.46E-04*	5.18E-04	6.58E-05	0.00E+00	3.62E-04
Smog Creation Potential	kg O_3 eq	*1.35E-01*	1.11E-01	1.08E-02	5.13E-03	8.55E-03
Ozone Depletion Potential	kg CFC-11 eq	*-1.83E-11*	-2.72E-11	8.83E-12	0.00E+00	0.00E+00

Table 25. *Key life cycle inventory parameters for SPARTAWALL – Low-sheen. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*4.85E+00*	4.32E+00	4.42E-01	0.00E+00	8.74E-02
Acidification Potential	kg SO_2 eq	*6.11E-02*	5.97E-02	9.98E-04	0.00E+00	3.87E-04
Eutrophication Potential	kg N eq	*8.96E-04*	7.85E-04	9.13E-05	0.00E+00	2.00E-05
Smog Creation Potential	kg O_3 eq	*2.13E-01*	1.83E-01	1.51E-02	7.06E-03	8.46E-03
Ozone Depletion Potential	kg CFC-11 eq	*-3.15E-10*	-3.27E-10	1.24E-11	0.00E+00	0.00E+00

Table 26. *Key life cycle inventory parameters for SPARTAWALL – Low-sheen. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 15-year design lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*1.52E+00*	1.35E+00	1.47E-01	0.00E+00	2.91E-02
Acidification Potential	kg SO_2 eq	*2.05E-02*	1.97E-02	3.33E-04	0.00E+00	4.38E-04
Eutrophication Potential	kg N eq	*4.44E-04*	2.46E-04	3.04E-05	0.00E+00	1.67E-04
Smog Creation Potential	kg O_3 eq	*6.87E-02*	5.74E-02	5.02E-03	2.35E-03	3.95E-03
Ozone Depletion Potential	kg CFC-11 eq	*-9.06E-12*	-1.32E-11	4.12E-12	0.00E+00	0.00E+00

Table 27. *Key life cycle inventory parameters for SPARTAWALL – Semi-gloss. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 5-year market-based lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*5.10E+00*	4.57E+00	4.44E-01	0.00E+00	8.81E-02
Acidification Potential	kg SO_2 eq	*6.16E-02*	6.02E-02	1.00E-03	0.00E+00	3.90E-04
Eutrophication Potential	kg N eq	*9.26E-04*	8.14E-04	9.19E-05	0.00E+00	2.02E-05
Smog Creation Potential	kg O_3 eq	*2.19E-01*	1.88E-01	1.51E-02	7.11E-03	8.53E-03
Ozone Depletion Potential	kg CFC-11 eq	*-3.11E-10*	-3.24E-10	1.24E-11	0.00E+00	0.00E+00

Table 28. *Key life cycle inventory parameters for SPARTAWALL – Semi-gloss. Results are shown for 1 m^2 of covered and protected substrate for a period of 60 years exhibiting 97% opacity after drying. Based on a 7-year design lifetime as Interior Coating.*

Impact Category	Units	Total	Product Stage	Design & Construction Stage	Use & Maintenance Stage	End-of-Life Stage
Global Warming Potential	kg CO_2 eq	*3.44E+00*	3.06E+00	3.17E-01	0.00E+00	6.29E-02
Acidification Potential	kg SO_2 eq	*4.42E-02*	4.25E-02	7.16E-04	0.00E+00	9.47E-04
Eutrophication Potential	kg N eq	*9.74E-04*	5.47E-04	6.57E-05	0.00E+00	3.61E-04
Smog Creation Potential	kg O_3 eq	*1.51E-01*	1.27E-01	1.08E-02	5.08E-03	8.53E-03
Ozone Depletion Potential	kg CFC-11 eq	*-1.51E-11*	-2.39E-11	8.83E-12	0.00E+00	0.00E+00

SUPPORTING TECHNICAL INFORMATION

Manufacturing energy datasets were modeled with the regional energy life cycle inventories (LCIs). Electricity generation for U.S. manufacturing is modeled using regional, consumption-based power mix based upon the EPA's eGRID data, which have been adapted to account for power trade between regions. Proxy datasets were used in some cases for raw material inputs to address the lack of U.S. regional data on some materials. These proxy datasets were chosen for their

technological representativeness of the actual materials and typically represent global or European production. More detail on proxy datasets can be found below in Table 29.

Table 29. *Data sources used for the LCA study.*

Location	Dataset	Data provider	Reference year	Proxy
Materials				
US	Aluminium silicate (zeolite type A)	thinkstep	2018	No
US	Barium sulphate (BaSO4)	thinkstep	2016	No
US	Carbon black (furnace black; general purpose)	thinkstep	2015	No
US	Ethylene glycol butyl ether (butoxyethanol)	thinkstep	2015	No
US	Ethylene Vinylacetate Copolymer (E/VA) (72% Ethylene, 28% Vinylacetate)	thinkstep	2018	No
DE	Fungicide unspecific	thinkstep	2018	Geo
US	Kaolin (mining and processing)	thinkstep	2018	No
US	Methyl methacrylate (MMA) from acetone and hydrogen cyanide	thinkstep	2018	No
US	Nepheline Production	thinkstep	2015	No
US	Polymethyl Methacrylate Granulate (PMMA) (estimation)	thinkstep	2016	No
US	Polystyrene Granulate (PS) (estimation)	thinkstep	2016	No
EU-28	Polyvinyl acetate (PVAC) (estimation)	thinkstep	2018	Geo
US	Silica sand (flour)	thinkstep	2018	No
DE	Silicate	thinkstep	2015	Geo
US	Sodium carboxymethylcellulose (from cotton/cellulose)	thinkstep	2018	No
EU-28	Talcum powder (filler)	thinkstep	2018	Geo
US	Tap water from groundwater	thinkstep	2015	No
US	Titanium dioxide pigment (chloride process)	thinkstep	2018	No
DE	Triethylene glycol dimethacrylate (estimation)	thinkstep	2015	Geo
Manufacturing				
US	Electricity grid mix – AZNM	thinkstep	2016	No
US	Tap water from groundwater	thinkstep	2015	No
Packaging				
GLO	Compressed air 7 bar (medium power consumption)	thinkstep	2016	No
EU-28	Kraftliner (2015) - for use in cut-off EoL scenario cases	thinkstep / FEFCO	2018	Geo
US	Lubricants at refinery	thinkstep	2016	No
DE	Plastic injection moulding part (unspecific)	thinkstep	2017	Geo
US	Polyethylene High Density Granulate (HDPE/PE-HD)	thinkstep	2018	No
US	Polypropylene granulate (PP)	thinkstep	2018	No
GLO	Steel sheet stamping and bending (5% loss)	thinkstep	2018	No
GLO	Steel tinplated	thinkstep	2014	No
EU-27	Wooden pallets (EURO, 40% moisture)	thinkstep	2015	Geo
Transportation and road fuel				
US	Truck - Trailer, basic enclosed / 45,000 lb payload - 8b	thinkstep	2018	No
GLO	Rail transport cargo-Diesel, extra-large train, gross tonne weight 2,000t / 1,452t payload capacity	thinkstep	2018	Geo
US	Truck - Dump Truck / 52,000 lb payload - 8b	thinkstep	2018	No
US	Diesel mix at filling station	thinkstep	2016	No
End-of-life treatment				
US	Glass/inert on landfill	thinkstep	2018	No
US	Paper waste in waste incineration plant	thinkstep	2018	No
US	Paper waste on landfill, post-consumer	thinkstep	2018	No
GLO	Hazardous waste (non-specific) (no C, worst case scenario incl. landfill)	thinkstep	2015	No
US	Electricity grid mix (eGRID)	thinkstep	2016	No
US	Process steam from natural gas 90%	thinkstep	2016	No
GLO	Value of scrap	worldsteel	2014	No
US	Recycling of polyethylene terephthalate (PET) plastic	thinkstep	2018	No

Allocation

Multi-output allocation generally follows the requirements of the PCR. When allocation becomes necessary during the data collection phase, the allocation rule most suitable for the respective process step is applied and documented along with the process in Section 3. In this study, manufacturing inputs and outputs among the respective were allocated based on volume.

Allocation of background data (energy and materials) taken from the GaBi 2019 database is documented online at http://www.gabi-software.com/support/gabi/gabi-database-2019-lci-documentation/.

Assumptions and Limitations

The described modeling approach makes assumptions in order to represent the cradle-to-grave environmental performance of Dunn-Edwards interior paint products.

This study assumes manufacturing burdens associated with packaging, utility usage, and waste are allocated by the volumetric output of the different paint lines. This may not be fully representative of what occurs in the actual operation, all paint lines may not have uniform resource utilization.

These assumptions include those that are prescribed by the PCR, such as in packaging disposal and recovery treatment rates as well as transportation distances all along the life cycle.

Cut-off Criteria

No cut-off criteria are defined for this study.

Data Quality

Data quality used in this study is considered to be very good.

Table 30. *Data quality assessment*

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	All primary data were collected for the 2018 calendar year. All secondary data come from the GaBi ts databases and are representative of the years 2014-2018. As the study intended to compare the product systems for the reference year 2018, temporal representativeness is considered to be high.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	All primary and secondary data were collected specific to the countries or regions under study. Where country-specific or region-specific data were unavailable, proxy data were used from either European or global datasets. Geographical representativeness is considered to be high.
Technology Coverage: Specific technology or technology mix	All primary and secondary data were modeled to be specific to the technologies or technology mixes under study. Since there are only slight variations in the exact materials used, a dataset reflecting a representative material was chosen for each chemical class in the product composition. However, technological proxies represent a minor fraction of product composition, and the influence on overall results is negligible. Where technology-specific data were unavailable, proxy data were used. In general, technological representativeness is considered to be high. Titanium dioxide was modeled as titanium dioxide via the chloride process, which is representative of the material used by Dunn-Edwards.
Precision: Measure of the variability of the data values for each data expressed	As the majority of the relevant foreground data are measured data or calculated based on primary information sources of the owner of the technology, precision is considered to be high. Seasonal variations were balanced out by using yearly averages. All background data are sourced from GaBi ts databases with the documented precision.
Completeness: Percentage of flow that is measured or estimated	Each foreground process was checked for mass balance and completeness of the emissions inventory. No data were knowingly omitted. Completeness of foreground unit process data is considered to be high. All background data are sourced from GaBi ts databases with the documented completeness.
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	Data used in this study is considered to be temporally, geographically, and technologically representative of the product system under study.
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	To ensure data consistency, all primary data were collected with the same level of detail, while all background data were sourced from the GaBi ts databases.
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Reproducibility is supported as much as possible through the disclosure of dataset choices and modeling approaches in this report. Based on this information, any third party should be able to approximate the results of this study using the same data and modeling approaches.
Sources of the Data: Description of all primary and secondary data sources	All primary data were collected from Dunn-Edwards using customized data collection questionnaires. Additionally, first-hand industry data in combination with consistent background LCA information from the GaBi ts database were used. The LCI datasets from the GaBi ts database are widely distributed and used with the GaBi Professional Software. The datasets have been used in LCA models worldwide in industrial and scientific applications in internal as well as in many critically reviewed and published studies. In the process of providing these datasets they are cross-checked with other databases and values from industry and science.
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	No uncertainty analyses were conducted as a part of this study.

ADDITIONAL ENVIRONMENTAL INFORMATION

All products covered by this EPD comply with VOC limits and other requirements of all applicable architectural coatings rules, including: U.S. EPA National Volatile Organic Compound Emission Standards for Architectural Coatings; California ARB 2019 Suggested Control Measure for Architectural Coatings; CALGreen 2016 VOC Limits for Architectural Coatings; and South Coast Air Quality Management District Rule 1113: Architectural Coatings.

Additionally, all products covered by this EPD have been tested and certified in accordance with CDPH/EHLB Standard Method for The Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.2 (2017). Individual products hold the following certifications:

SZRO10 SPARTAZERO Low Odor/Zero VOC Interior Flat Paint: MPI Approved Product #53, #143; CRGI Green Wise Certified Gold.

SWLL10 SPARTAWALL Interior Flat Paint: MPI Approved Product #53; CRGI Green Wise Certified.

SWLL20 SPARTAWALL Low Odor/Zero VOC Interior Velvet Paint: MPI Approved Product #44; CRGI Green Wise Certified Gold.

SWLL30 SPARTAWALL Low Odor/Zero VOC Interior Eggshell Paint: MPI Approved Product #52; CRGI Green Wise Certified Gold; FDA Guidelines for Resinous & Polymeric Coatings.

SWLL40 SPARTAWALL Low Odor/Zero VOC Interior Low Sheen Paint: MPI Approved Product #43; CRGI Green Wise Certified Gold; FDA Guidelines for Resinous & Polymeric Coatings.

SWLL50 SPARTAWALL Low Odor/Zero VOC Interior Semi-Gloss Paint: CRGI Green Wise Certified Gold; FDA Guidelines for Resinous & Polymeric Coatings.

REFERENCES

1. Bare, J. (2012). Tool for the Reduction and Assessment of Chemical and other Environmental Impacts (TRACI) - Software Name and Version Number: TRACI version 2.1 - User's Manual. Washington, D.C.: U.S. EPA.
2. Guinée, J. B., Gorrée, M., Heijungs, R., Huppes, G., Kleijn, R., de Koning, A., et al. Huijbregts, M. (2002). Handbook on life cycle assessment. Operational guide to the ISO standards. Dordrecht: Kluwer.
3. IPCC. (2013). Climate Change 2013: The Physical Science Basis. Genf, Schweiz: IPCC.
4. ISO. (2006). ISO 14040: Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.
5. ISO. (2006). ISO 14044: Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.
6. ISO. (2007). ISO 21930 Sustainability in building construction - Environmental declaration of building products.
7. ISO. (2011). ISO 14025: Environmental labels and declarations - Type III environmental declarations - principles and procedures.
8. NSF. (2015). Product Category Rule (PCR) for Architectural Coatings. USA: NSF.
9. thinkstep. (2016). GaBi LCA Database Documentation. Retrieved from thinkstep AG: http://www.gabi-software.com/international/databases/gabi-databases/
10. US Environmental Protection Agency. (2012). Tool for the Reduction and Assessment of Chemical and other Environmental Impacts (TRACI) – User's Manual. Washington, D.C.: U.S. EPA.
11. US Environmental Protection Agency. (2015, June). Advancing Sustainable Materials Management: 2013 Fact Sheet. Assessing Trends in Material Generation, Recycling and Disposal in the United States. Retrieved from US EPA: https://www.epa.gov/sites/production/files/2015-09/documents/2013_advncng_smm_fs.pdf

For more information contact:

Dunn-Edwards Corporation
4885 E. 52nd Place
Los Angeles, 90058-5507
United States
(888) 337-2468 | dunnedwards.com

SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA
Main +1.50.452.8000 | fax +1.510.452.8001