Metal Master DTM Paints

Rodda Paint

ENVIRONMENTAL PRODUCT DECLARATION

ISO 14025:2006 and ISO 21930:2017

Rodda Paint is pleased to present this Environmental Product Declaration (EPD) for their Metal Master DTM Paints. This EPD was developed in compliance with ISO 14025 and ISO 21930 and has been verified by Lindita Bushi, Ph.D., from Athena Institute.

The LCA and the EPD were prepared by Vertima Inc. The EPD includes cradle-to-grave life cycle assessment (LCA) results.

For more information about Rodda Paint, visit https://www.roddapaint.com.

For any explanatory material regarding this EPD, please contact the program operator.

1. GENERAL INFORMATION

PCR GENERAL INFORMATION			
Reference PCR	Product Category Rule for Environmental Product Declarations in Architectural Coatings. NSF International, PCR extended through June 30, 2026.		
The PCR review was conducted by:	*Thomas P. Gloria, Ph.D.* *Industrial Ecology Consultants* *35 Bracebridge Rd.* *Newton, MA 02459-1728* *t.gloria@industrial-ecology.com*	*Mr. Bill Stough* *Sustainable Research Group* *PO Box 1684* *Grand Rapids, MI 49501-1684* *bstough@sustainablere-searchgroup*	*Dr. Michael Overcash* *Environmental Clarity* *2908 Chipmunk Lane* *Raleigh, NC 27607-3117* *mrovercash@earthlink.net*

EPD GENERAL INFORMATION		
Program Operator	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428 USA www.astm.org	
Declared Product	**Metal Master DTM Paints**	
EPD Registration Number #1193	**EPD Date of Issue** May 2026	**EPD Period of Validity** May 2026 - May 2031
EPD Recipient Organization	Rodda Paint Rivergate Manufacturing, 6123 N. Marine Drive Portland, OR 97203 USA https://www.roddapaint.com	

EPD Type/Scope and Functional Unit Product-specific type III; cradle-to-grave EPD with functional unit of 1 m^2 of covered and protected substrate for a period of 60 years.	**Year of Reported Manufacturer Primary Data** 2023

Geographical Scope North America	**LCA Software** OpenLCA v.1.11.0	**LCI Databases** Ecoinvent 3.9.1 and US LCI	**LCIA Methodology** TRACI v2.1

This LCA and EPD were prepared by:	Vertima Inc. www.vertima.ca
This EPD and LCA were independently verified in accordance with ISO 14025:2006, ISO 14040:2006 and ISO 14044:2006, as well as the NSF International PCR for Architectural Coatings, which is based on ISO 21930. ☐ Internal ☒ External	Lindita Bushi Lindita Bushi, Ph.D. Athena Sustainable Materials Institute

The owner of the declaration shall be liable for the underlying information and evidence; ASTM, or its affiliates, shall not be liable with respect to manufacturer information, life cycle assessment data, or evidence.

LIMITATIONS

Environmental declarations from different programs (ISO 14025) may not be comparable. 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-by-case basis.

2 PRODUCT DEFINITION AND INFORMATION

2.1 DESCRIPTION OF THE COMPANY

Founded in 1932, Rodda Paint Co. manufactures and distributes quality Paints, high-performance industrial coatings, and professional painting supplies demanded by the industry's various customer segments through 200 retail locations, including 110+ full-service company stores across the Northwest and 90 dealer locations. We are a service-oriented company that has been building lasting relationships with customers, partners, and vendors for more than 90 years.

2.2 PRODUCT DESCRIPTION

Metal Master DTM is a high performance, single component, low-VOC, waterborne acrylic, direct-to-metal coating with exceptional adhesion and toughness that is complimented with a quality self-priming finish. Metal Master DTM is designed for both interior and exterior applications affording stellar gloss and color retention properties. This universal DTM coating provides both functionality and aesthetic value in a low odor, nonflammable, fast-drying, washable, scrub-resistant formulation. It is easy to apply and forms a tough film that provides outstanding resistance to weathering and UV exposure. Formulated with excellent resistance to humidity and corrosion and offering early moisture resistance with superior flow and leveling, Metal Master DTM delivers an exceptionally hard-wearing finish with great block resistance for commercial and industrial applications. It is suitable for use in USDA inspected facilities.

Table 1 presents each paint included in the Metal Master DTM Series.

Rodda Paint Branded	SKU
Metal Master DTM Satin/Eggshell	438701
Metal Master DTM Semi-Gloss	458701

Table 1: Metal Master DTM paint.

Satin/Eggshell (SKU 438701) and Semi-Gloss (SKU 458701)

Sold in gallons or liters, Rodda Paint products come in wide range of colors. The primary United Nations Standard Products and Services Code (UNSPSC) code for paint products is 3511 and the Construction Specifications Institute (CSI) code is 09 96 00.

Figure 1: Representation of a Rodda Paint room scene.

2.2.1 Product Average

The weighted average profile of each paint is calculated based on 2023 annual production data (on mass).

2.2.1.1 *Product-Specific EPD*

In the context of the growing popularity of sustainable building and LEED v4 and v4.1 Rating Systems, developing Type III Environmental Product Declarations (EPDs) would allow Rodda Paint to increase visibility for its series. The EPD for the Metal Master DTM series has been developed according to the PCR for Architectural Coatings from NSF International developed in accordance with ISO 14025, ISO 21930 – 2017 and ISO 14044 [1, 2, 3, 4].

2.3 APPLICATION

Rodda Paint products' ease of use makes them the ideal material for commercial, hospitality, and institutional projects. Rodda Paint products have good chemical resistance, abrasion resistance, and substrate penetration in

addition to their easy application to concrete, wood, masonry, steel, and aluminum substrates. The Metal Master DTM paints presented in this EPD are for interior and exterior use.

2.4 DECLARATION OF METHODOLOGICAL FRAMEWORK

This LCA is a cradle-to-grave study. For this analysis, the attributional approach was followed and impacts of infrastructure have been excluded.

Life cycle stages included in the analysis are production, construction, use and end-of-life. According to the NSF International PCR [1] for architectural coatings (Table 1 and Table 2), there are two (2) lifetime scenarios for paint products. The first scenario is a design life, and the second scenario is market-based lifetime. The Metal Master DTM series had a low level of quality. For scenario 1, the RSL is 15 years for all paint. For scenario 2, the RSL is 5 years for all paint products.

According to the PCR allocation procedure, mass should be used as the primary basis for co-product allocation. OpenLCA software v1.11 [5], an open-source software, was used to calculate the inventory and to assess potential environmental impacts associated with the inventoried emissions.

2.5 TECHNICAL DATA

For specific properties and performance data for Rodda Paint, please consult the following link: https://www.roddapaint.com/ . Table 2 presents the technical data for the products under study.

Table 2: Technical Details

Acrylic Dryfall Finish	Surface covered (m^2)	Amounts (kg)
Metal Master DTM Satin/Eggshell	1	8.82E-02
Metal Master DTM Semi-Gloss	1	8.39E-02

2.6 PRODUCT COMPOSITION

The composition of each paint included in the Metal Master DTM series is presented in Table 3. The composition is similar but the rates are different based on each paint.

Table 3: Material composition for each paint in the Metal Master DTM series.

Paint series	Paint product	Components	Rate (%)
Metal Master DTM	Metal Master DTM Satin/Eggshell	Additives	3.78%
		Glycol, esters and ethers	2.35%
		Fillers	7.66%
		Pigment	18.79%
		Binders	48.83%
		Preservative	0.51%
		Water	18.07%

Paint series	Paint product	Components	Rate (%)
		Total	**100.00%**
	Metal Master DTM Semi-Gloss	Additives	3.84%
		Glycol, esters and ethers	2.95%
		Fillers	0.58%
		Pigment	19.74%
		Binders	52.74%
		Preservative	0.53%
		Water	19.61%
		Total	**100.00%**

2.7 MANUFACTURING

Overall, the paint manufacturing process involves several critical steps to produce premium quality paint products that meet various specifications and requirements. Quality control at each step of the process is critical to ensuring that the final product meets customer expectations. Figure 2 shows the flow diagram for the manufacturing stage.

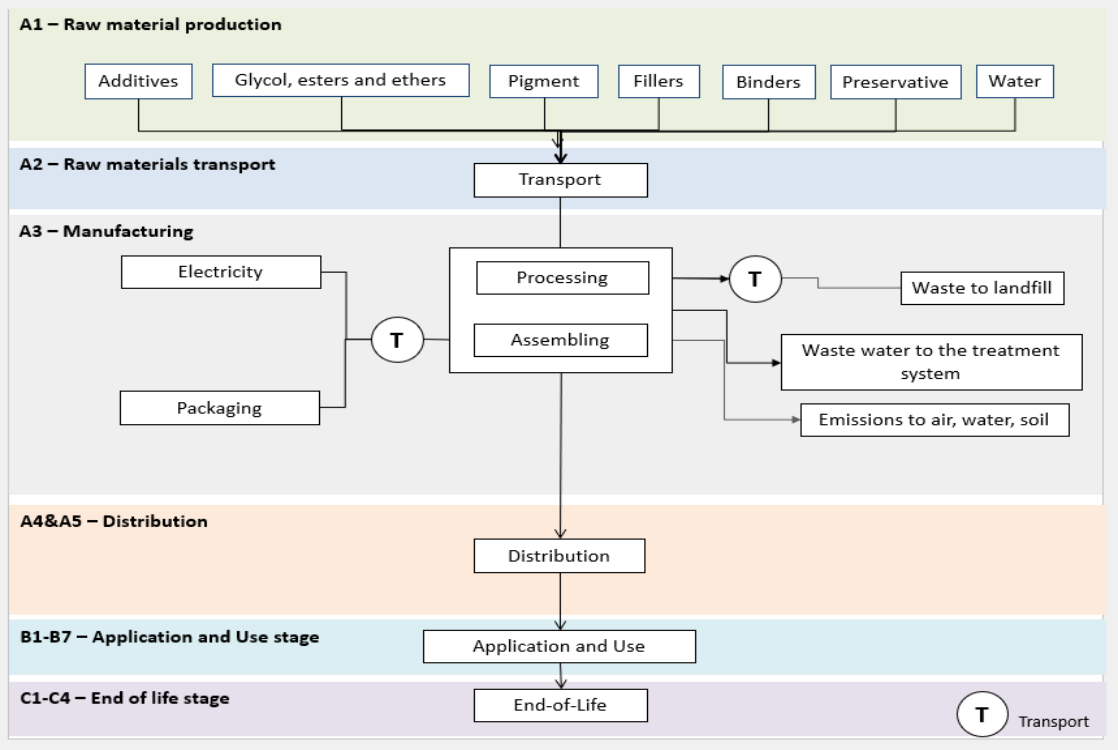


Figure 2: Flow diagram for the Rodda Paint manufacturing process.

2.8 PACKAGING

The paint products are packaged in steel or plastic gallon or liter containers. Containers are placed in corrugated cardboard and then placed on wood pallets, wrapped with low-density polyethylene (LDPE) and tied with polyethylene strapping. The materials used are presented in Table 4.

Table 4: Packaging materials used per each FU per Metal Master DTM finish.

Rodda Paint Branded	SKU	Polyethylene film (kg)	PET (kg)	Wood Pallet (item)
Metal Master DTM Satin/Eggshell	438701	2.28E-05	2.21E-02	2.14E-06
Metal Master DTM Semi-Gloss	458701	2.28E-05	2.21E-02	2.14E-06

2.9 PRODUCT DISTRIBUTION

Rodda Paint products are distributed throughout North America. Distribution modules represent the transport of products from the manufacturing gate to the application sites. Table 5 presents the ton-kilometer (tkm) per paint series manufactured. As the distances are more than 322 km (200 miles) and since 99% of the products are sold in North America, the USLCI dataset "Transport, single unit truck, long-haul, diesel powered/tkm/RNA" was used.

Table 5: Distribution of Rodda Paint products per FU

Rodda Paint Branded	SKU	Long-Haul Transport (tkm)
Metal Master DTM Satin/Eggshell	438701	1.17E-01
Metal Master DTM Semi-Gloss	458701	1.11E-01

2.10 PRODUCT APPLICATION

According to information received from Rodda Paint, no energy is needed to apply the paint product on the substrate. The percentage of unused paints is 10%. The environmental impacts of the production stage and design and construction stage are accounted for in this module, as well as the environmental impacts of carbon black chemicals used as colorant. The drying VOC emissions were also accounted for. The manufacturer's installation instructions should be followed [6]. See Table 6 below.

Table 6: Installation inputs per FU

Rodda Paint Branded	SKU	Carbon Black (kg)	VOC emissions	10% Unused paints
Metal Master DTM Satin/Eggshell	438701	2.95E-03	between 0g/l and 150 g/l	10% *(A1+A2+A3+A4/A5 modules)
Metal Master DTM Semi-Gloss	458701	2.48E-03		

2.11 USE CONDITIONS

After paint is applied on a substrate, the manufacturer does not have specific recommendations on use conditions except those indicated on the TDS sheet. As paint is washable, it is possible to clean and to remove any dust that may settle on any surface.

2.12 REFERENCE SERVICE LIFE AND ESTIMATED BUILDING SERVICE LIFE

According to the NSF International PCR, the estimated service life (ESL) is 60 years. [1]

2.13 REUSE, RECYCLING, AND ENERGY RECOVERY

There is no re-use or energy recovery but waste paint is landfilled.

2.14 DISPOSAL

At the end-of-life, 10% of unused paint and waste dried paint are landfilled (based on the weight, 35% of dried paint remains on the substrate and 65% evaporates). For packaging waste, plastic materials are 100% landfilled.

2.15 FURTHER INFORMATION

Further information about Rodda Paint products is available at https://www.roddapaint.com/

Rodda Paint is committed to making products that contribute to a healthy living environment. This is evidenced by the fact that the Metal Master DTM series is tested for VOC and formaldehyde emissions by a third-party laboratory (less than 150 g/l). Rodda Paint also has Health Product Declarations (HPD), in the process of being certified by a third party (Green Seal).

3 LIFE CYCLE ASSESSMENT CALCULATION RULES

3.1 FUNCTIONAL UNIT

The functional unit (FU) analyzed is 1 m^2 of covered and protected substrate for a period of 60 years (the assumed average lifetime of a building) with an opacity of 97% after drying. Table 7 presents all products covered by this report and their respective functional unit (FU).

Table 7: Functional unit of assessed products.

Items	Metal Master DTM Satin/Eggshell	Metal Master DTM Semi-Gloss	Units
Functional Unit (FU)	1	1	m^2
Weight	8.82E-02	8.39E-02	kg

3.2 SYSTEM BOUNDARIES

According to the NSF International PCR, the LCA is cradle-to-grave (A + B + C). All life cycle stages are included in the analysis: Production, Construction, Use and End-of-life (**Figure 3**). The production stage includes the following modules: A1) Extraction and upstream production; A2) Raw materials transportation to the manufacturing site; and A3) Manufacturing. The Construction stage includes the following modules: A4 and A5) Transportation of Rodda Paint products from the manufacturing site to the application site in North America. The Use stage includes modules B1 to B7. The End-of-Life (EoL) stage includes modules C1 to C4.

Module B1 corresponds to the application of the paint product on the substrate. Paint is applied manually with no energy consumption. During the use stage, the resources used on rare occasions, if necessary, are negligible for module B3. For cleaning purposes, based on manufacturer recommendations, there are no resources needed for maintenance (module B2). Based on the PCR, two scenarios were analyzed: design life and market-based lifetime. During the ESL of the building (60 years), the replacement (module B4) of each paint is analyzed based on both scenarios (**Figure 3**). **Figure 3: presents the life cycle stages, and their modules, included in the system boundaries** [1]

Table 8 below presents both scenarios. There is no refurbishment (B5) during the estimated service life of the building. During the ESL of the building, the product does not require operational energy (B6) or water use (B7). In this analysis, the environmental impacts of these modules (B2, B3, B5, B6 and B7) are therefore considered nil.

For the end of the life (EoL) stage, there is no energy consumption for the deconstruction module (C1) because, in the building demolition activities, there is no demolition of the paint layer. For module C3, the waste goes directly from the building site to the landfill site without any energy consumption at a sorting plant. The EoL modules included in this analysis are the C2 and C4 modules for transportation from building sites to the landfill site and landfill, respectively. The distance for module C2 was assumed to be 11.27 km (7 miles).

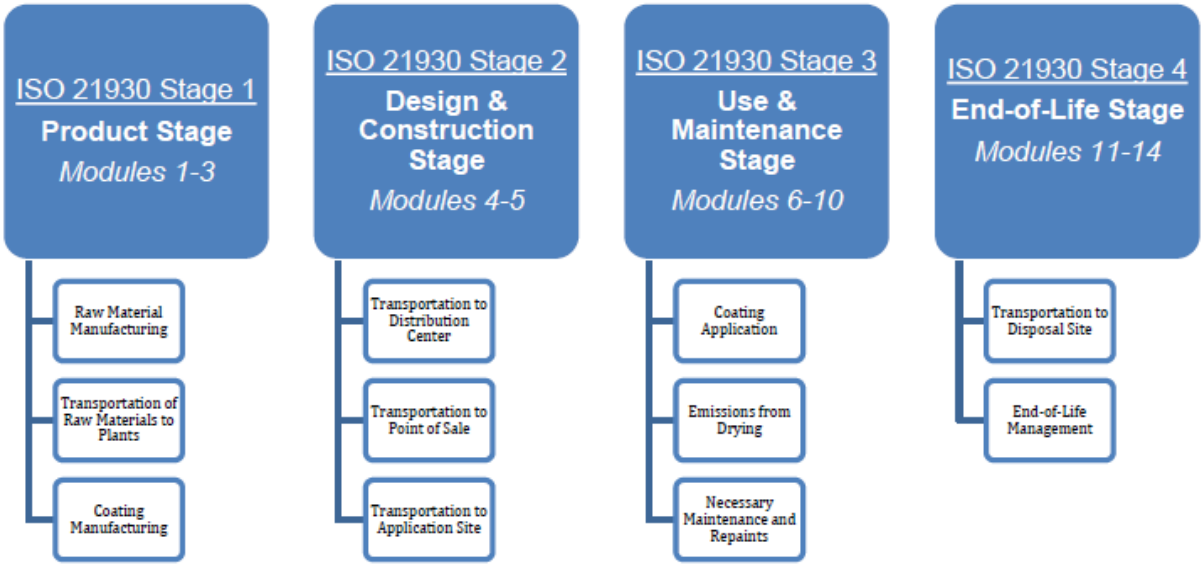


Figure 3: presents the life cycle stages, and their modules, included in the system boundaries [1]

Table 8: Lifetime scenario of paint products studied.

Master Painter Interior Series Finish	Quality Level	Design life (scenario 1)	No. of replacements for scenario 1 based on building ESL	Market-based lifetime (scenario 2)	No. of replacements for scenario 2 based on building ESL
Metal Master DTM Satin/Eggshell	HQ	15	3	5	11
Metal Master DTM Semi-Gloss	HQ	15	3	5	11

Extraction and upstream production (module A1): This stage includes the extraction and manufacturing of raw materials needed to produce the paint products.

Raw materials transportation to manufacturing site (module A2): This stage includes the transportation of raw materials from suppliers to the Rodda Paint manufacturing site at Rivergate Manufacturing, 6123 N. Marine Drive, Portland (OR) USA 97203.

Manufacturing (module A3): This stage includes water and energy (electricity) consumption during the manufacturing processes, chemicals used in the process as well as their transport to the site. Hazardous waste treatment has been counted as well. Finally, packaging materials to make products ready for shipment are covered by this stage. At the manufacturing stage, it was assumed that there is a 7% manufacturing product loss.

Design and construction stage (modules A4 - A5): The design and construction process starts with the packaged and finished coating leaving the production site and ends with the finished coating being delivered to the application site. Products are transported and distributed by truck across Canada and the USA.

Use and maintenance stage (B1 to B7): As mentioned in the PCR, "The use stage begins when the user applies the product to a substrate and ends with any leftover coating and discarded packaging entering the end-of-life stage." It was assumed that 10% of the wet paint is unused and it was also assumed it was 100% landfilled. No energy for paint application or VOC emissions from the drying of paint were accounted for. The replacement module (B4) includes modules A1 to A5, and modules B1, C2 and C4. As mentioned above, paint products are applied different times during the ESL of the building (60 years).

End-of-life stage (C1 to C4) Transport to waste processing and/or disposal (module C2): As mentioned in the PCR, "The end-of-life stage begins when any applied or unused coating and primary packaging is ready for disposal, recycling, reuse, etc. and ends when these products are landfilled, returned to nature (deterioration), or transformed to be recycled or reused"[1]. Based on the PCR, section 4.4, it was assumed that the distance to the landfill site was 11.27 km (7 miles) and 100% of the water-based paint was landfilled [1].

3.3 CUT-OFF CRITERIA

According to section 6.3.3 of ISO 21930 [3], if a mass flow or energy flow represents less than 1% of the cumulative mass or energy flows of the system, it may be excluded from the system boundaries. However, these flows should not have a relevant environmental contribution. Moreover, at least 95% of the total energy and mass flows shall be included, and the cumulative mass or environmental impacts of the excluded flows shall not exceed 5% of the total mass and energy flows or potential environmental impacts.

In this study, no primary data (input material, energy consumption) was excluded from the system boundaries. Water consumption was assumed to be 100% dedicated to employees. Therefore, this water consumption was estimated negligible by the manufacturer. No primary data on the construction, maintenance, or dismantling of the company's capital assets was included in the model. In addition, primary data on the daily transport of employees, office work, business trips, and other activities from the manufacturer's employees was not included in the model.

3.4 DATA SOURCES

Inventory data was collected from the manufacturing site located at Rivergate Manufacturing, 6123 N. Marine Drive, Portland (OR) USA 97203 using a life cycle inventory (LCI) questionnaire. Data was collected via the Technical Manager and the manufacturing team. The Technical Manager and Production Manager were responsible for filling out the questionnaire. Further telephone, email, and meeting discussions took place to determine certain aspects of the questionnaire, to collect additional information, or to seek clarifications.

When primary data was not available, unit processes were selected from the ecoinvent database v3.9.1 or from the US LCI database, the most comprehensive LCI databases currently available. [7, 8]

3.5 DATA QUALITY

Data Quality Parameter	Data Quality Discussion
Source of manufacturing data: Description sources of data	Manufacturing data was collected from the Rodda Paint manufacturing site located at Rivergate Manufacturing, 6123 N. Marine Drive, Portland (OR) USA 97203 for the 2023 production year. Data included the total production mass of products produced at the manufacturing plant, as well as the total annual units in kg and total production mass of products under study; raw materials entering the production of the products under study; losses of materials; transport modes and distance of materials; energy consumption; water consumption; emissions to the environment at the manufacturing plant; waste treatment; packaging material and paint products distribution.
Source of secondary data: Description sources of raw material, energy source, transport, waste and packaging data	When appropriate, the grid mix was changed for the grid mix of the province or country where the process takes place. Otherwise, ecoinvent datasets representative of the global market or "rest-of-the-world" were mainly selected as proxies.

Data Quality Parameter	Data Quality Discussion
Geographical representativeness	The manufacturing site is located at Rivergate Manufacturing, 6123 N. Marine Drive, Portland (OR) USA 97203; hence, electricity consumption is based on the US grid mix. Geographical correlation of the material supply and the selected datasets are representative of each specific area or a larger area.
Temporal representativeness	Primary data were collected to be representative of the full year 2023, while this was not always the case for ecoinvent and US LCI datasets. Nevertheless, ecoinvent and US LCI remain the reference LCI databases used in this study.
Technological representativeness	Primary data obtained from the manufacturer are representative of the current technologies and materials used by the company.
Completeness	All relevant process steps were considered and modelled to satisfy the goal and scope. Cut-off criteria were respected.

3.6 PERIOD UNDER REVIEW

The period under review is the year 2023.

3.7 ALLOCATION

According to the PCR [1], the allocation approach used as the primary basis for co-product allocation is mass allocation. In this study, mass allocation was used for the manufacturing input and output flow and the yearly production mass of each product under study was used as a basis. Data related to material and energy consumption were provided for all co-products by the manufacturer.

Materials undergoing recycling/reuse processes are excluded from the system boundary. A cut-off approach was used because recycled/reused material is part of raw material preparation for another product system.

4 LIFE CYCLE ASSESSMENT RESULTS

4.1 RESULTS TABLES

The life cycle assessment results are presented per FU. According to the PCR requirements, the results presented derive from the life cycle impact assessment (LCIA) and the life cycle inventory (LCI). LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks.

According to the NSF International PCR standard, Table 3, the life cycle impact assessment shall, at a minimum, report the set of impact categories. These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, EPD users shall not use additional measures for comparative purposes.

The LCA results are presented from Table 9 to Table 12 for the Rodda Paint Metal Master DTM series of products.

Table 9: Scenario 1: Metal Master DTM Satin/Eggshell (SKU 438701) paint from the Metal Master DTM series, Life Cycle Impact Assessment Results per FU

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification[1]	kg SO2 eq	1.93E-03	8.27E-04	4.00E-04	3.61E-04	3.75E-04	0.00E+00	0.00E+00	1.17E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E-06	0.00E+00	1.67E-05
Eutrophication[1]	kg N eq	2.82E-03	5.44E-05	3.41E-04	2.37E-05	3.29E-04	0.00E+00	0.00E+00	1.40E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-07	0.00E+00	1.11E-03
Global Warming[2,3]	kg CO2 eq	2.38E-01	9.02E-02	9.02E-02	3.94E-02	5.24E-02	0.00E+00	0.00E+00	1.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.60E-04	0.00E+00	8.54E-03
Ozone Depletion[1]	kg CFC-11 eq	1.63E-06	6.05E-11	2.98E-07	2.64E-11	1.93E-07	0.00E+00	0.00E+00	6.36E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.52E-13	0.00E+00	2.92E-11
Photochemical ozone formation[1]	kg O3 eq	1.43E-02	2.32E-02	6.87E-03	1.01E-02	5.70E-03	0.00E+00	0.00E+00	1.81E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.02E-05	0.00E+00	2.29E-04
Resource depletion - fossil fuels[1]	MJ surplus	2.18E-01	3.44E-02	1.16E-01	1.50E-02	6.84E-02	0.00E+00	0.00E+00	1.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.14E-04	0.00E+00	3.05E-03

Table 10: Scenario 2: Metal Master DTM Satin/Eggshell (SKU 438701) paint from the Metal Master DTM series, Life Cycle Impact Assessment Results per FU

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification1	kg SO2 eq	1.93E-03	8.27E-04	4.00E-04	3.61E-04	3.75E-04	0.00E+00	0.00E+00	4.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E-06	0.00E+00	1.67E-05
Eutrophication1	kg N eq	2.82E-03	5.44E-05	3.41E-04	2.37E-05	3.29E-04	0.00E+00	0.00E+00	5.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-07	0.00E+00	1.11E-03
Global Warming2,3	kg CO2 eq	2.38E-01	9.02E-02	9.02E-02	3.94E-02	5.24E-02	0.00E+00	0.00E+00	5.71E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.60E-04	0.00E+00	8.54E-03
Ozone Depletion1	kg CFC-11 eq	1.63E-06	6.05E-11	2.98E-07	2.64E-11	1.93E-07	0.00E+00	0.00E+00	2.33E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.52E-13	0.00E+00	2.92E-11
Photochemical ozone formation1	kg O3 eq	1.43E-02	2.32E-02	6.87E-03	1.01E-02	5.70E-03	0.00E+00	0.00E+00	6.64E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.02E-05	0.00E+00	2.29E-04
Resource depletion - fossil fuels1	MJ surplus	2.18E-01	3.44E-02	1.16E-01	1.50E-02	6.84E-02	0.00E+00	0.00E+00	5.01E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.14E-04	0.00E+00	3.05E-03

Table 11: Scenario 1: Metal Master DTM Semi-Gloss (SKU 458701) paint from the Metal Master DTM series, Life Cycle Impact Assessment Results per FU

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification[1]	kg SO2 eq	1.45E-03	8.49E-04	3.99E-04	3.39E-04	3.23E-04	0.00E+00	0.00E+00	1.01E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-06	0.00E+00	1.65E-05
Eutrophication[1]	kg N eq	4.03E-04	5.58E-05	3.50E-04	2.23E-05	8.73E-05	0.00E+00	0.00E+00	5.99E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E-07	0.00E+00	1.08E-03
Global Warming[2,3]	kg CO2 eq	1.15E-01	9.26E-02	8.99E-02	3.70E-02	3.90E-02	0.00E+00	0.00E+00	1.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-04	0.00E+00	8.30E-03
Ozone Depletion[1]	kg CFC-11 eq	2.89E-09	6.20E-11	2.98E-07	2.48E-11	3.04E-08	0.00E+00	0.00E+00	9.95E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-13	0.00E+00	2.84E-11
Photochemical ozone formation[1]	kg O3 eq	7.43E-03	2.38E-02	6.87E-03	9.51E-03	4.97E-03	0.00E+00	0.00E+00	1.58E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.82E-05	0.00E+00	2.24E-04
Resource depletion - fossil fuels[1]	MJ surplus	6.11E-02	3.53E-02	1.16E-02	1.41E-02	3.75E-02	0.00E+00	0.00E+00	4.89E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.98E-04	0.00E+00	2.97E-03

Table 12: Scenario 2: Metal Master DTM Semi-Gloss (SKU 458701) paint from the Metal Master DTM series, Life Cycle Impact Assessment Results per FU

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification1	kg SO2 eq	1.45E-03	8.49E-04	3.99E-04	3.39E-04	3.23E-04	0.00E+00	0.00E+00	3.72E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-06	0.00E+00	1.65E-05
Eutrophication1	kg N eq	4.03E-04	5.58E-05	3.50E-04	2.23E-05	8.73E-05	0.00E+00	0.00E+00	2.20E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E-07	0.00E+00	1.08E-03
Global Warming2,3	kg CO2 eq	1.15E-01	9.26E-02	8.99E-02	3.70E-02	3.90E-02	0.00E+00	0.00E+00	4.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-04	0.00E+00	8.30E-03
Ozone Depletion1	kg CFC-11 eq	2.89E-09	6.20E-11	2.98E-07	2.48E-11	3.04E-08	0.00E+00	0.00E+00	3.65E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-13	0.00E+00	2.84E-11
Photochemical ozone formation1	kg O3 eq	7.43E-03	2.38E-02	6.87E-03	9.51E-03	4.97E-03	0.00E+00	0.00E+00	5.81E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.82E-05	0.00E+00	2.24E-04
Resource depletion - fossil fuels1	MJ surplus	6.11E-02	3.53E-02	1.16E-02	1.41E-02	3.75E-02	0.00E+00	0.00E+00	1.79E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.98E-04	0.00E+00	2.97E-03

(1): Calculated as per Traci v.2.1 methodology and OpenLCA v 1.11.
(2): GWP 100a, excludes biogenic CO_2 removals and emissions associated with biobased products and packaging.
(3): Global warming potential without biogenic carbon.

According to the PCR, the life cycle inventory (LCI) shall be presented for resources used and output flows, waste categories and carbon removals and emissions.[1] The environmental parameters used for inventory analysis describe the use of renewable and non-renewable material resources, and renewable and non-renewable primary energy and water.

The LCI results are presented from Table 13 to Table 16 for the Rodda Paint Metal Master DTM series of products.

Table 13: Scenario 1: Metal Master DTM Satin/Eggshell (SKU 438701) paint from the Metal Master DTM series, Life Cycle Inventory Impact Results per FU

Parameter	Unit	Resource use														
		Production stage			Design and construction stage	Use and maintenance stage							End-of-Life stage			
		A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
RPR_E (4)	MJ, LHV	5.44E-01	4.60E-04	1.07E-01	2.01E-04	6.61E-02	0.00E+00	0.00E+00	2.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.19E-06	0.00E+00	4.58E-04
RPR_M (5)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT (6)	MJ, LHV	5.44E-01	4.60E-04	1.07E-01	2.01E-04	6.61E-02	0.00E+00	0.00E+00	2.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.19E-06	0.00E+00	4.58E-04
$NRPR_E$ (7)	MJ, LHV	2.62E+00	2.48E-01	1.14E+00	1.08E-01	6.24E-01	0.00E+00	0.00E+00	1.43E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.26E-03	0.00E+00	2.38E-02
$NRPR_M$ (8)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT (9)	MJ, LHV	2.62E+00	2.48E-01	1.14E+00	1.08E-01	6.24E-01	0.00E+00	0.00E+00	1.43E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.26E-03	0.00E+00	2.38E-02
SM (10)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF (11)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF (12)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (13)	m^3	6.32E-03	0.00E+00	3.87E-04	0.00E+00	6.71E-04	0.00E+00	0.00E+00	2.21E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Output Flows and Waste																
HWD (14)	kg	4.95E-01	1.54E-04	1.18E-01	6.73E-05	6.32E-02	0.00E+00	0.00E+00	2.03E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.59E-09	0.00E+00	7.73E-04
NHWD (15)	kg	1.28E-01	2.30E-04	1.88E-02	1.00E-04	1.48E-02	0.00E+00	0.00E+00	7.63E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-06	0.00E+00	9.27E-02
HLRW (16)	m^3	1.57E-10	1.78E-14	5.83E-11	7.74E-15	2.24E-11	0.00E+00	0.00E+00	7.15E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-16	0.00E+00	4.32E-13
ILLRW (17)	m^3	8.05E-10	1.05E-13	3.42E-10	4.59E-14	1.19E-10	0.00E+00	0.00E+00	3.81E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.60E-16	0.00E+00	2.35E-12
CRU (18)	kg	0.00E+00	0.00E+00	6.83E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.10E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-05
MR (18)	kg	0.00E+00	0.00E+00	6.83E-05	0.00E+00	7.52E-05	0.00E+00	0.00E+00	6.36E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-05
MER (18)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE_r (18)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 14: Scenario 2: Metal Master DTM Satin/Eggshell (SKU 438701) paint from the Metal Master DTM series, Life Cycle Inventory Impact Results per FU

Parameter	Unit	Resource use														
		Production stage			Design and construction stage	Use and maintenance stage							End-of-Life stage			
		A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
RPR_E (4)	MJ, LHV	5.44E-01	4.60E-04	1.07E-01	2.01E-04	6.61E-02	0.00E+00	0.00E+00	7.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.19E-06	0.00E+00	4.58E-04
RPR_M (5)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT (6)	MJ, LHV	5.44E-01	4.60E-04	1.07E-01	2.01E-04	6.61E-02	0.00E+00	0.00E+00	7.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.19E-06	0.00E+00	4.58E-04
$NRPR_E$ (7)	MJ, LHV	2.62E+00	2.48E-01	1.14E+00	1.08E-01	6.24E-01	0.00E+00	0.00E+00	5.24E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.26E-03	0.00E+00	2.38E-02
$NRPR_M$ (8)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT (9)	MJ, LHV	2.62E+00	2.48E-01	1.14E+00	1.08E-01	6.24E-01	0.00E+00	0.00E+00	5.24E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.26E-03	0.00E+00	2.38E-02
SM (10)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF (11)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF (12)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (13)	m^3	6.32E-03	0.00E+00	3.87E-04	0.00E+00	6.71E-04	0.00E+00	0.00E+00	8.12E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Output Flows and Waste																
HWD (14)	kg	4.95E-01	1.54E-04	1.18E-01	6.73E-05	6.32E-02	0.00E+00	0.00E+00	7.45E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.59E-09	0.00E+00	7.73E-04
NHWD (15)	kg	1.28E-01	2.30E-04	1.88E-02	1.00E-04	1.48E-02	0.00E+00	0.00E+00	2.80E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-06	0.00E+00	9.27E-02
HLRW (16)	m^3	1.57E-10	1.78E-14	5.83E-11	7.74E-15	2.24E-11	0.00E+00	0.00E+00	2.62E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-16	0.00E+00	4.32E-13
ILLRW (17)	m^3	8.05E-10	1.05E-13	3.42E-10	4.59E-14	1.19E-10	0.00E+00	0.00E+00	1.40E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.60E-16	0.00E+00	2.35E-12
CRU (18)	kg	0.00E+00	0.00E+00	6.83E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-05
MR (18)	kg	0.00E+00	0.00E+00	6.83E-05	0.00E+00	7.52E-05	0.00E+00	0.00E+00	2.33E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-05
MER (18)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE_r (18)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 15: Scenario 1: Metal Master DTM Semi-Gloss (SKU 458701) paint from the Metal Master DTM series, Life Cycle Inventory Impact Results per FU

Parameter	Unit	Resource use														
		Production stage			Design and construction stage	Use and maintenance stage							End-of-Life stage			
		A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
RPR_E (4)	MJ, LHV	1.27E-01	4.72E-04	1.05E-01	1.89E-04	2.41E-02	0.00E+00	0.00E+00	7.72E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.98E-06	0.00E+00	4.46E-04
RPR_M (5)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT (6)	MJ, LHV	1.27E-01	4.72E-04	1.05E-01	1.89E-04	2.41E-02	0.00E+00	0.00E+00	7.72E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.98E-06	0.00E+00	4.46E-04
$NRPR_E$ (7)	MJ, LHV	9.43E-01	2.54E-01	1.13E+00	1.02E-01	4.22E-01	0.00E+00	0.00E+00	8.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-03	0.00E+00	2.32E-02
$NRPR_M$ (8)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT (9)	MJ, LHV	9.43E-01	2.54E-01	1.13E+00	1.02E-01	4.22E-01	0.00E+00	0.00E+00	8.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-03	0.00E+00	2.32E-02
SM (10)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF (11)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF (12)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (13)	m^3	3.81E-03	0.00E+00	3.86E-04	0.00E+00	4.20E-04	0.00E+00	0.00E+00	1.39E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Output Flows and Waste																
HWD (14)	kg	3.20E-01	1.58E-04	1.16E-01	6.32E-05	4.53E-02	0.00E+00	0.00E+00	1.45E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.41E-09	0.00E+00	7.53E-04
NHWD (15)	kg	7.70E-02	2.36E-04	1.99E-02	9.42E-05	9.83E-03	0.00E+00	0.00E+00	5.91E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-06	0.00E+00	9.01E-02
HLRW (16)	m^3	5.64E-11	1.82E-14	5.76E-11	7.28E-15	1.21E-11	0.00E+00	0.00E+00	3.80E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-16	0.00E+00	4.21E-13
ILLRW (17)	m^3	2.55E-10	1.08E-13	3.36E-10	4.32E-14	6.29E-11	0.00E+00	0.00E+00	1.97E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.12E-16	0.00E+00	2.29E-12
CRU (18)	kg	0.00E+00	0.00E+00	6.83E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.10E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-05
MR (18)	kg	0.00E+00	0.00E+00	6.83E-05	0.00E+00	7.52E-05	0.00E+00	0.00E+00	6.36E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-05
MER (18)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE_r (18)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 16: Scenario 2: **Metal Master DTM Semi-Gloss (SKU 458701)** paint from the Metal Master DTM series, Life Cycle Inventory Impact Results per FU

Parameter	Unit	Resource use														
		Production stage			Design and construction stage	Use and maintenance stage							End-of-Life stage			
		A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
RPR_E (4)	MJ, LHV	1.27E-01	4.72E-04	1.05E-01	1.89E-04	2.41E-02	0.00E+00	0.00E+00	2.83E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.98E-06	0.00E+00	4.46E-04
RPR_M (5)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT (6)	MJ, LHV	1.27E-01	4.72E-04	1.05E-01	1.89E-04	2.41E-02	0.00E+00	0.00E+00	2.83E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.98E-06	0.00E+00	4.46E-04
$NRPR_E$ (7)	MJ, LHV	9.43E-01	2.54E-01	1.13E+00	1.02E-01	4.22E-01	0.00E+00	0.00E+00	3.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-03	0.00E+00	2.32E-02
$NRPR_M$ (8)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT (9)	MJ, LHV	9.43E-01	2.54E-01	1.13E+00	1.02E-01	4.22E-01	0.00E+00	0.00E+00	3.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-03	0.00E+00	2.32E-02
SM (10)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF (11)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF (12)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (13)	m^3	3.81E-03	0.00E+00	3.86E-04	0.00E+00	4.20E-04	0.00E+00	0.00E+00	5.08E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Output Flows and Waste																
HWD (14)	kg	3.20E-01	1.58E-04	1.16E-01	6.32E-05	4.53E-02	0.00E+00	0.00E+00	5.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.41E-09	0.00E+00	7.53E-04
NHWD (15)	kg	7.70E-02	2.36E-04	1.99E-02	9.42E-05	9.83E-03	0.00E+00	0.00E+00	2.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-06	0.00E+00	9.01E-02
HLRW (16)	m^3	5.64E-11	1.82E-14	5.76E-11	7.28E-15	1.21E-11	0.00E+00	0.00E+00	1.39E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-16	0.00E+00	4.21E-13
ILLRW (17)	m^3	2.55E-10	1.08E-13	3.36E-10	4.32E-14	6.29E-11	0.00E+00	0.00E+00	7.23E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.12E-16	0.00E+00	2.29E-12
CRU (18)	kg	0.00E+00	0.00E+00	6.83E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-05
MR (18)	kg	0.00E+00	0.00E+00	6.83E-05	0.00E+00	7.52E-05	0.00E+00	0.00E+00	2.33E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-05
MER (18)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE, (18)	MJ, LHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

(4): **RPR_E** = RPRT - RPR_M, where RPRT(6) is equal to the value for renewable energy obtained using the CED LHV methodology.

(5): RPR_M is calculated by multiplying the mass (kg) of the material input (or its components) by the net calorific value (lower heating value) (MJ/kg) of this input as per ACLCA ISO 21930 Guidance [3]. In the calculation of RPR_M, packaging materials were excluded.

(7): **$NRPR_E$** = NRPRT - $NRPR_M$, where NRPRT(9) is equal to the value for non-renewable energy obtained using the CED LHV methodology (both non-renewable fossil fuel and nuclear).

(8): $NRPR_M$ is calculated by multiplying the mass (kg) of the material input (or its components) by the net calorific value (lower heating value) (MJ/kg) of this input as per ACLCA ISO 21930 Guidance [3]. In the calculation of $NRPR_M$, packaging materials were excluded.

(10): Calculated as per ACLCA ISO 21930 Guidance [3], 6.5 Secondary material, SM: There is no SM involved in the Rodda Paint manufacturing process.

(11): Calculated as per ACLCA ISO 21930 Guidance [3], 6.6 Renewable secondary fuels, RSF: There is no RSF involved in the Rodda Paint manufacturing process.

(12): Calculated as per ACLCA ISO 21930 Guidance [3], 6.7 Non-renewable secondary fuels, NRSF: There is no NRSF involved in the Rodda Paint manufacturing process.

(13): There is water used in the Rodda Paint manufacturing process.

(14): Calculated from life cycle inventory results, based on datasets marked as "hazardous."

(15): Calculated from life cycle inventory results, based on "non-hazardous" waste.

(16): Calculated as per ACLCA ISO 21930 Guidance [3], 10.3 High-level radioactive waste (HLRW), conditioned, to final repository. It should be noted that the Rodda Paint manufacturing process does not generate any HLRW, e.g., when generated by electricity production, consists mostly of spent fuel from reactors. (ISO 21930:2017, clause 7.2.14).

(17): Calculated as per ACLCA ISO 21930 Guidance [3], 10.4 Intermediate- and low-level radioactive waste (ILLRW), conditioned, to final repository. It should be noted that the Rodda Paint manufacturing process does not generate any ILLRW, e.g., when generated by electricity production, arise mainly from routine facility maintenance and operations (ISO 21930:2017, clause 7.2.14).

(18): Reused components (CRU), materials for energy recovery (MER), exported energy (EE) are nil in this analysis. Materials for recycling (MR) were accounted for.

5 LCA: INTERPRETATION

The aim of this section is to present more details on the contribution to the impacts and resource use of the different life cycle modules of the Rodda Paint Metal Master DTM series of products studied.

The Metal Master DTM Satin/Eggshell (SKU 438701) and Metal Master DTM Semi-Gloss (SKU 458701) paint products present the replacement module (B4) as a major contributor for all impact categories and for both scenarios due to the number of paint replacements on the substrate during the estimated service life (ESL) of the building. For scenario 1, the relative impact of B4 represents 75% of the total impacts for all impact categories. In scenario 2, the relative impact of B4 represents 92% of the total impacts for all impact categories. The extraction of raw material and upstream production module (A1) is the second contributor and the relative impacts are less than 19% of the total impacts for all impact categories. Figure 4 and Figure 5 below present the paint group trend.

Figure 4: Scenario 1: Contribution of each life cycle stage of the Metal Master DTM Satin/Eggshell (SKU 438701) paint from the Metal Master DTM series.

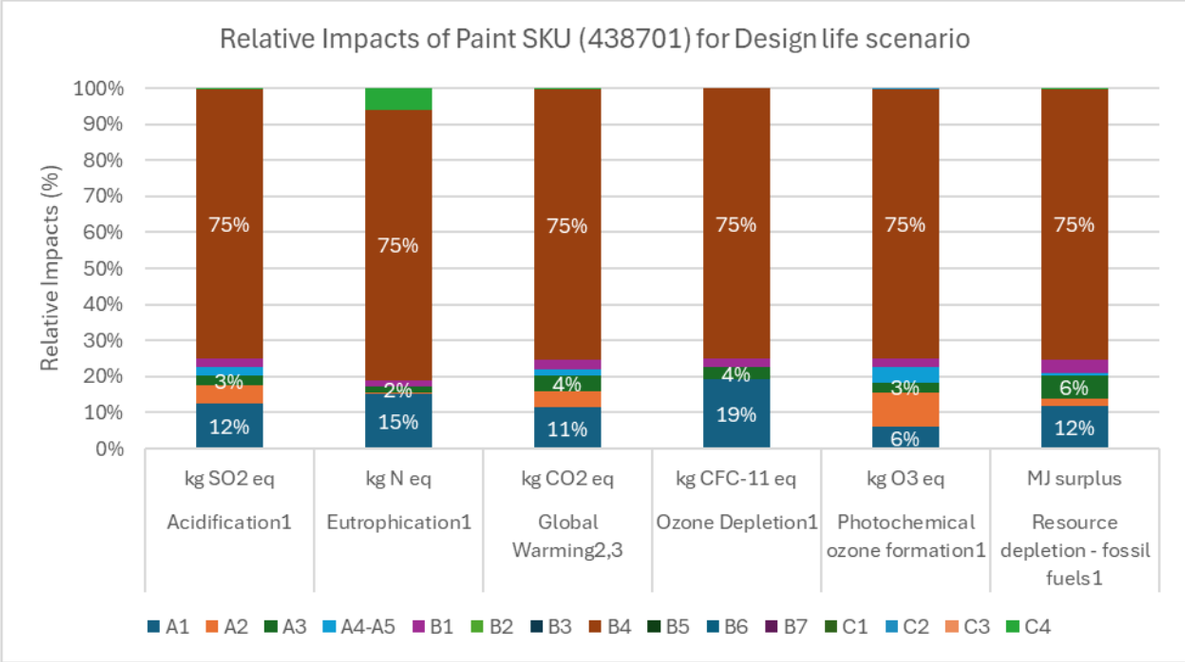
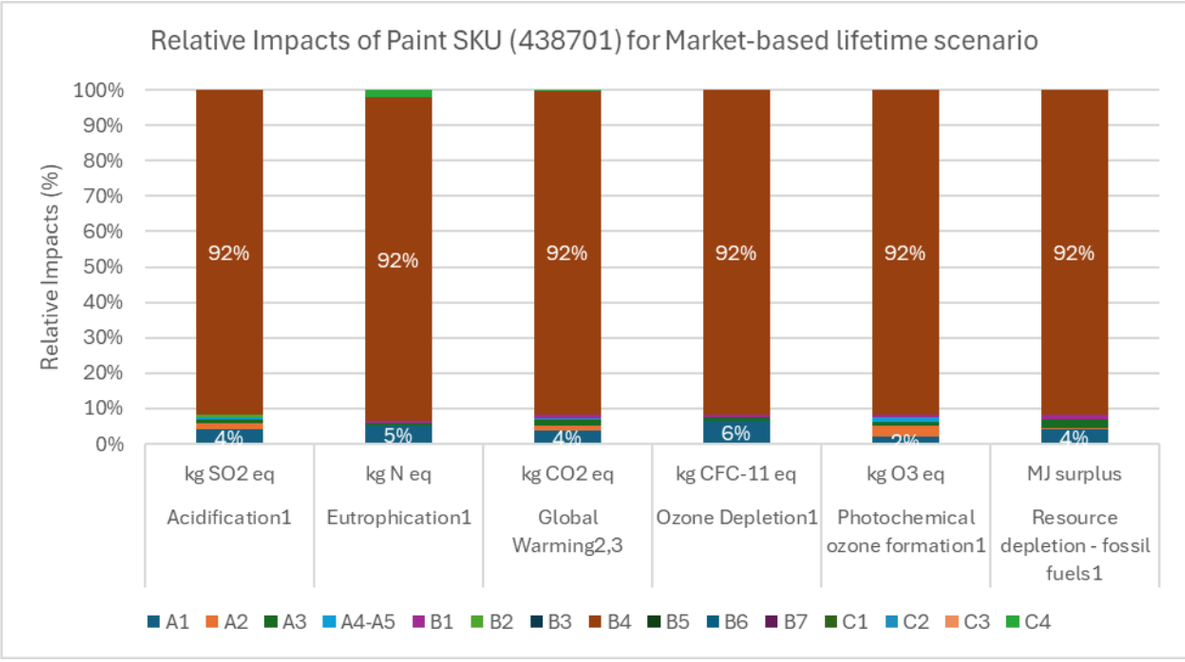


Figure 5: Scenario 2: Contribution of each life cycle stage of the Metal Master DTM Satin/Eggshell (SKU 438701) paint from the Metal Master DTM series.



6 ADDITIONAL ENVIRONMENTAL INFORMATION

6.1 ENVIRONMENTAL ACTIVITIES AND CERTIFICATION

In addition, Rodda Paint has engaged a third-party preparer (Green Seal) to prepare the Health Product Declaration (HPD) for their paint products.

6.2 EXTRAORDINARY EFFECTS

There are no extraordinary effects for Rodda Paint products.

7 REFERENCES

[1] NSF International, Product Category Rule for Environmental Product Declarations: Architectural Coatings. NAICS 325510, Extended 12 months per PCR Ext 2025-108 through June 30, 2026.

[2] ISO 14025, “Environmental labels and declarations - Type III environmental declarations - Principles and procedures.” 2006.

[3] ISO 21930:2017 (E), “Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services.” 2017.

[4] ISO 14044/Amd1 2017/Amd2 2020 “Environmental management - Life cycle assessment - Requirements and guidelines.” 46 pp, 2006.

[5] OpenLCA, “https://www.openlca.org/?s=version+1.11,” [Online]. [Accessed 8/18/2023].

[6] Rodda Paint, “https://www.roddapaint.com/ [Online]. [Accessed 3/18/2024].

[7] Frischknecht R, “Overview and Methodology. ecoinvent report No. 1.,” Swiss Centre for Life Cycle Inventories, Dübendorf, (2007).

[8] U.S. Life Cycle Inventory Database, “https://www.lcacommons.gov/nrel/search,” National Renewable Energy Laboratory (2012). [Online]. [Accessed 2/16/2021].

[9] American Center for Life Cycle Assessment (ACLCA), “ACLCA Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930;2017.” American Center for Life Cycle Assessment, 2019.

[10] ASTM Program Operator Rules. Version: 8.0, Revised 04/29/2020.

Rodda Paint

Rivergate Manufacturing, 6123 N. Marine Drive

Portland, OR 97203

USA

https://www.roddapaint.com/

EPD

This LCA and EPD were prepared by Vertima Inc.

604 Saint Viateur Street,
Quebec, QC
(418) 990-2800
G2L 2K8 CANADA

vertima
Environmental certification experts