Proline 100% Acrylic Paints

MF Paints Inc.

ENVIRONMENTAL PRODUCT DECLARATION

ISO 14025:2006 and ISO 21930:2017

ASTM INTERNATIONAL

MF Paints Inc. is pleased to present this Environmental Product Declaration (EPD) for Proline 100% Acrylic Paints. This EPD was developed in compliance with ISO 14025 and has been verified by Lindita Bushi from Athena Sustainable Materials 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 MF Paints Inc., visit https://www.peinturesmf.com/en/about/ .

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 for Architectural Coatings. NSF International, PCR extended through June 30, 2024.		
The PCR review was conducted by:	*Dr. Thomas Gloria (chair)* *Industrial Ecology Consultants* *t.gloria@industrial-ecology.com*	*Mr. Bill Stough* *Sustainable Research Group* *bstough@ sustainableresear-chgroup.com*	*Dr. Michael Overcash* *Environmental Clarity* *mrovercash@earthlink.net*

EPD GENERAL INFORMATION		
Program Operator	ASTM Program Operator 100 Barr Harbor Drive West Conshohocken (PA) 19428-2959 USA www.astm.org	
Declared Product	**Proline 100% Acrylic Paints**	
EPD Registration Number **674**	**EPD Date of Issue** June 2024	**EPD Period of Validity** June 2024 - June 2029
EPD Recipient Organization	MF Paints Inc. 1605, Dagenais West Blvd. Laval (Quebec) H7L 5A3 Canada www.peinturesmf.com	

EPD Type/Scope and Functional Unit Product-specific 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** 2022
Geographical Scope North America	**LCA Software** Open LCA version 1.11.0	**LCI Databases** Ecoinvent 3.9.1 and US LCI	**LCIA Methodology** TRACI v2

This LCA and EPD were prepared by:	Gatien Geraud Essoua Essoua, Ph.D., Eng. Forestry. 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

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

At MF Paints, we work together to formulate paints and stains that are adapted to the Canadian climate. For more than 50 years, we have distinguished ourselves by offering premium quality and environmentally friendly products. It is thanks to our vision, values, and attention to quality that MF Paints has risen to the top of the paint and stain industry in Quebec and Canada over the last 50 years. Focused on research, development, and personalized customer service, MF Paints has succeeded in formulating premium products adapted to the needs of residential, commercial and industrial projects.

2.2 PRODUCT DESCRIPTION

Proline 100% Acrylic Series Paints are a professional paint. The Proline Series is designed for new or existing buildings. These paints are recommended for drywall, concrete, galvanized metal, aluminum, masonry, cement and wood. Our professional paints and coatings meet the needs of painters, designers, and architects. The Proline 100% Acrylic Series falls into the interior subcategory and can be used for commercial, industrial, and residential projects.

Table 1 presents each paint included in the Proline 100% Acrylic series.

Product Series	Code number	Description	Gloss finish
Proline	7040	100% Acrylic Paint	Satin
Proline	7044	100% Acrylic Paint	Satin
Proline	8040	100% Acrylic Paint	Satin/Eggshell
Proline	8044	100% Acrylic Paint	Satin/Eggshell
Proline	8075	100% Acrylic Paint	Velvet
Proline	8041	100% Acrylic Paint	Velvet
Proline	7025	100% Acrylic Paint	Pearl
Proline	7030	100% Acrylic Paint	Pearl
Proline	8030	100% Acrylic Paint	Pearl/Melamine
Proline	8031	100% Acrylic Paint	Pearl/Melamine
Proline	8050	100% Acrylic Paint	Matte design
Proline	7090	Undercoat primer	Flat

Product Series	Code number	Description	Gloss finish
Proline	8090	Undercoat primer	Flat
Proline	8095	Undercoat primer	Flat
Proline	8020	100% Acrylic Paint	Semi-gloss
Proline	7020	100% Acrylic Paint	Semi-gloss

Table 1: Paints included in the Proline 100% Acrylic series.

Semi-Gloss   Pearl Melamine   Satin/Eggshell   Velvet   Flat   Undercoat

Sold in gallons or liters, MF Paints' products come in a 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 MF Paints room scene.

2.2.1 Product Average

The weighted average profile of each paint is calculated based on 2022 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 MF Paints to increase visibility for its Proline 100% Acrylic series. The EPD for the Proline 100% Acrylic series of products 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

MF Paints products' ease of use makes it the ideal material for commercial, hospitality and institutional projects. MF Paints products have good chemical resistance, abrasion resistance, and substrate penetration in addition to their easy application to concrete, wood, masonry, steel, aluminum substrates. The Proline 100% Acrylic paints presented in this EPD are for interior 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 market-based lifetime and the second scenario is design life. The Proline 100% Acrylic series had different levels of quality (Low, Mid and High). For scenario 1, the RSL are 3, 7 and 15 for the low, mid and high quality, respectively. For scenario 2, the RSL is five years for all paint products. For more information, please see Table 7 below.

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 MF Paints, please consult the following link: https://www.peinturesmf.com/en/product-categories/. Table 2 presents the technical data for the products under study.

Table 2:Technical Details

Gloss finish paints	Surface covered (m^2)	Amounts (kg)
Velvet	1	1.18E-01
Satin/Eggshell	1	1.18E-01

Gloss finish paints	Surface covered (m^2)	Amounts (kg)
Pearl Melamine	1	1.18E-01
Flat	1	1.18E-01
Undercoat	1	1.18E-01
Semi-Gloss	1	1.18E-01

2.6 PRODUCT COMPOSITION

The composition of each paint included in the Proline 100% Acrylic 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 Proline 100% Acrylic series

Series	Gloss finish paints	Components	Rate (%)
Proline 100% Acrylic	Satin/Eggshell	Additives	5.35%
		Glycol, esters and ethers	4.25%
		Fillers	18.70%
		Pigment	6.85%
		Binders	32.19%
		Titanium dioxide	14.66%
		Preservative	0.21%
		Water	17.81%
	Velvet	Additives	5.06%
		Glycol, esters and ethers	2.86%
		Fillers	21.22%
		Pigment	6.14%
		Binders	34.29%
		Titanium dioxide	12.86%
		Preservative	0.14%
		Water	17.43%
	Pearl Melamine	Additives	5.77%
		Glycol, esters and ethers	3.42%
		Fillers	7.82%
		Pigment	5.44%
		Binders	37.30%
		Titanium dioxide	18.18%
		Preservative	0.31%
		Water	21.76%
	Flat	Additives	6.27%
		Glycol, esters and ethers	3.17%
		Fillers	20.26%

Series	Gloss finish paints	Components	Rate (%)
		Binders	32.59%
		Titanium dioxide	23.08%
		Preservative	0.18%
		Water	14.45%
	Undercoat	Additives	5.99%
		Glycol, esters and ethers	2.70%
		Fillers	27.67%
		Binders	29.75%
		Titanium dioxide	11.62%
		Preservative	0.14%
		Water	22.14%
	Semi-Gloss	Additives	7.59%
		Glycol, esters and ethers	3.63%
		Fillers	0.42%
		Binders	43.04%
		Titanium dioxide	23.21%
		Preservative	0.17%
		Water	21.94%

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.

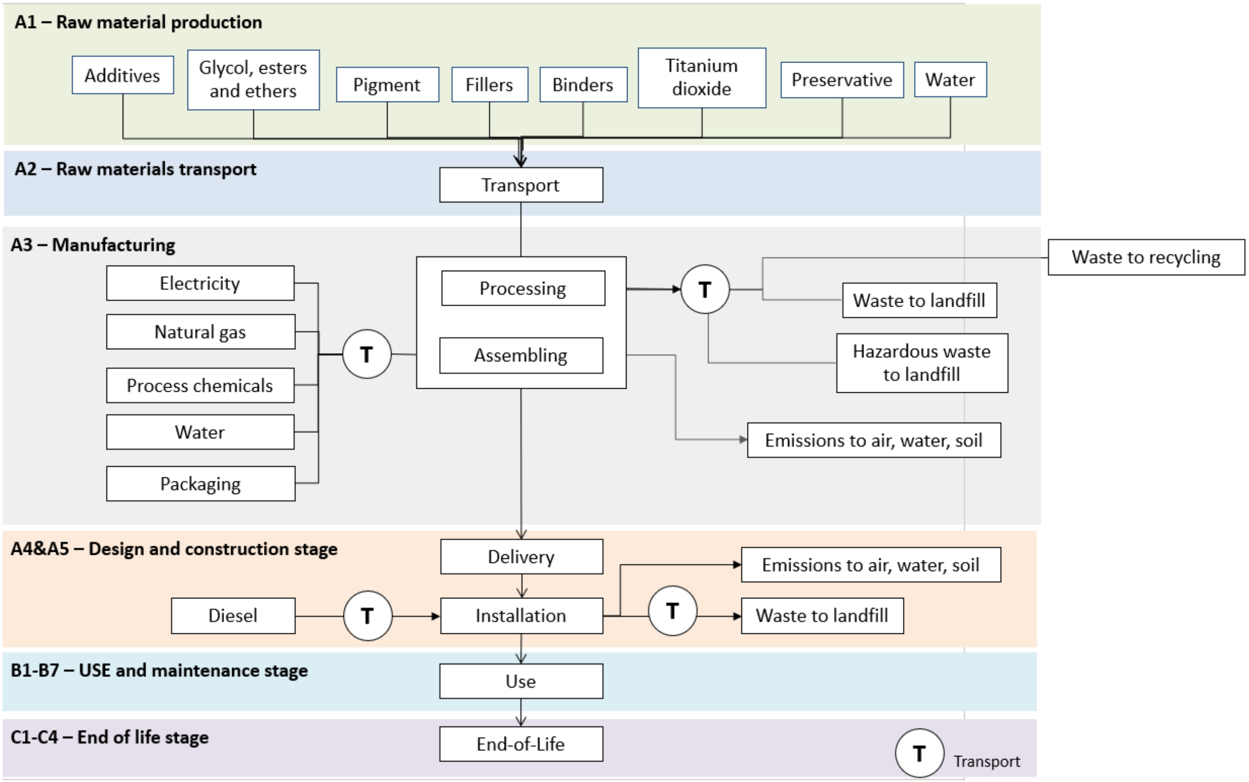

Figure 2: Flow diagram for MF Paints manufacturing process.

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 Proline 100% Acrylic series.

Materials	Proline 100% Acrylic Gloss Finish						
	Satin/Eggshell	Velvet	Pearl Melamine	Flat	Undercoat	Semi-Gloss	Units
Pallet	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	2.71E-08	items
Cardboard	7.04E-10	7.04E-10	7.04E-10	7.04E-10	7.04E-10	7.04E-10	ton
Plastic	5.02E-09	5.02E-09	5.02E-09	5.02E-09	5.02E-09	5.02E-09	ton
Metal	7.14E-10	7.14E-10	7.14E-10	7.14E-10	7.14E-10	7.14E-10	ton
Polyethylene	1.91E-10	1.91E-10	1.91E-10	1.91E-10	1.91E-10	1.91E-10	ton

2.9 DISTRIBUTION OF THE PRODUCT

The distribution of MF Paint products is 85% in Quebec, 4% in Ontario, 4% in the western Canadian provinces, 4% in the Maritime provinces and the remaining 3% in the USA and the rest of the world.

2.10 PRODUCT APPLICATION

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

Table 5: Installation inputs per FU

Items	Proline 100% Acrylic Series	Units	Datasets
Carbon black	8.19E-06	kg	market for carbon black | carbon black | Cutoff, U - GLO
VOC emissions	4.06E-03	gr COV/m2	-
10% of un-used paint	(A1 to A5)*10%	-	-

2.11 USE CONDITIONS

After paint application on a substrate, the manufacturer does not have specific recommendations for use conditions except those indicated on the TDS sheet. As paint is washable, it is possible to clean and 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 recycled.

2.14 DISPOSAL

This LCA study assumes that packaging materials such as cardboard and plastic are 100% landfilled. For metal packaging material, 100% is recycled. In landfills, based on a conservative timeline of 100 years and on the ecoinvent dataset "treatment of waste paperboard, sanitary landfill | waste paperboard | Cutoff, U - RoW" and "treatment of waste plastic, mixture, sanitary landfill | waste plastic, mixture | Cutoff, U – RoW," the degradation of paperboard is 32% over 100 years. Waste plastic degradation represents less than 1% (negligible). In this LCA, a rate of zero degradation was considered at landfill sites.

2.15 FURTHER INFORMATION

Further information about MF Paint products is available at https://www.peinturesmf.com/en/data-sheets/

MF Paints is committed to making products that contribute to a healthy living environment. This is evidenced by the fact that MF Paints are tested for VOC and formaldehyde emissions by a third-party laboratory (less than 50 g/l). MF Paints also has Health Product Declarations (HPD), in the process of being certified by a third party (Green Seal company).

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 6 presents all products covered by this report and their respective functional unit (FU).

Table 6: Functional Unit of assessed products.

Items	Proline 100% Acrylic Series	Units
Functional Unit (FU)	1	m^2
Weight	1.02E-01	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 MF Paint products from manufacturing sites to the wholesaler 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**).

Table 7 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 doesn't 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 as nil.

For the end of the life (EoL) stage, there is no energy consumption for the deconstruction module (C1) because, in 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.

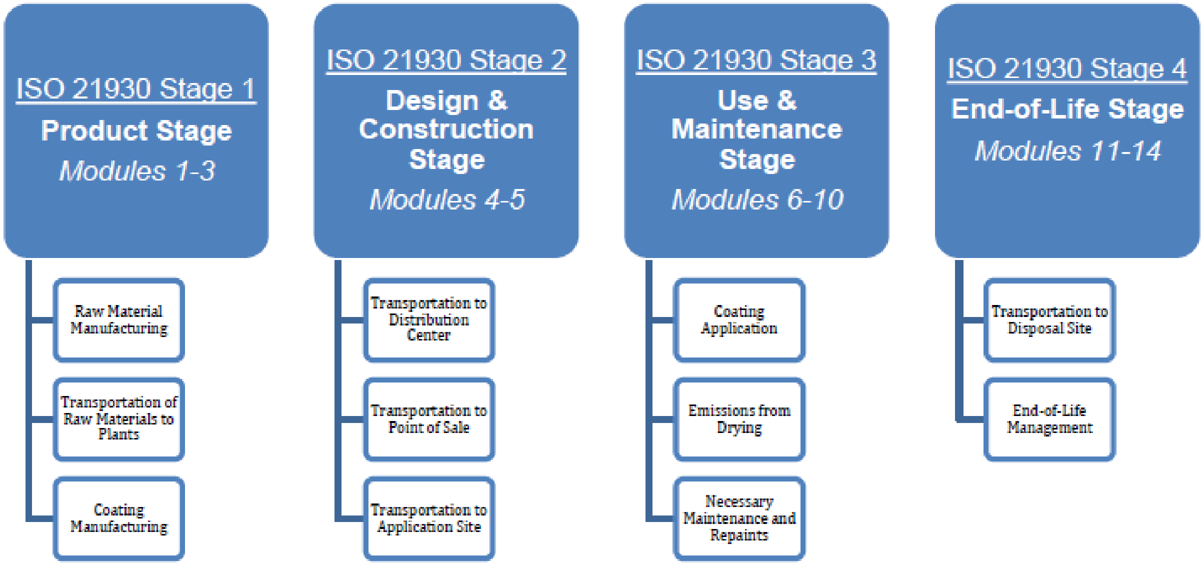

Figure 3: presents the life cycle stages, and their modules, included in the system boundaries [1]

Table 7: Lifetime scenario of paints products studied.

Proline 100% Acrylic Series Interior subcategory	Quality Level	Design life (scenario 1)	No. of replacement for scenario 1 based on building ESL	Market-based lifetime (scenario 2)	No. of replacement for scenario 2 based on building ESL
Satin / Eggshell	Mid Level	7	8	5	11
Velvet	High Level	15	3	5	11
Pearl melamine	High Level	15	3	5	11
Flat	Low Level	3	19	5	11
Undercoat	Low Level	3	19	5	11
Semi-Gloss	High Level	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 MF Paints' manufacturing site at 1605 Dagenais Boulevard West, Laval (Quebec).

Manufacturing (module A3): This stage includes water and energy (electricity, diesel and propane) consumption for 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.

Design and construction stage (modules A4 - A5): The design and construction process start 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 in Canada (97%), mainly in the province of Quebec (85%).

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 that 100% was landfilled. No energy for paint application and VOC emissions from the drying of paint were accounted for. The replacement module (B4) includes the modules A1 to A5, and modules B1, C2 and C4.

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 7 miles (11.27 Km) and that 100% of the water-based paint is landfilled [1].

3.3 CUT-OFF CRITERIA

According to section 6.3.3 of the 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. In addition, 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, 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 the employees, office work, business trips and other activities from manufacturer employees was not included in the model.

3.4 DATA SOURCES

Inventory data was collected from the manufacturing site located at 1605 Dagenais Boulevard West, Laval (Quebec) 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 MF Paints manufacturing site located at 1605 Dagenais Boulevard West, Laval (Quebec) for the 2022 production year. Data included 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	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

Data Quality Parameter	Data Quality Discussion
packaging data	as proxies.
Geographical representativeness	The manufacturing site is located 1605 Dagenais Boulevard West, Laval (Quebec); hence electricity consumption is based on the Quebec 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 was collected to be representative of the full year 2022, while this was not always the case for ecoinvent and US LCI datasets. Nevertheless, ecoinvent and US LCI remain reference LCI databases used in this study.
Technological representativeness	Primary data, obtained from the manufacturer, is 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 2022.

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. The yearly production mass of each product under study was used as a basis. Data relative to material and energy consumption was 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 8 to Table 19 for MS Paints' Proline 100% Acrylic Series products.

Table 8: Scenario 1: Satin/Eggshell paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification [1]	kg SO2 eq	8.96E-04	2.25E-05	2.24E-06	1.48E-04	1.07E-04	0.00E+00	0.00E+00	9.43E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication [1]	kg N eq	3.53E-04	1.64E-06	5.87E-07	1.06E-05	3.66E-05	0.00E+00	0.00E+00	7.35E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming [2,3]	kg CO2 eq	1.17E-01	2.09E-03	1.56E-03	1.21E-02	1.33E-02	0.00E+00	0.00E+00	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion [1]	kg CFC-11 eq	2.93E-09	7.21E-12	9.57E-11	4.16E-11	3.08E-10	0.00E+00	0.00E+00	2.71E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation [1]	kg O3 eq	6.95E-03	6.11E-04	5.24E-05	4.04E-03	1.17E-03	0.00E+00	0.00E+00	1.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels [1]	MJ surplus	1.18E-01	4.11E-03	1.80E-04	2.37E-02	1.47E-02	0.00E+00	0.00E+00	1.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 9: Scenario 2: Satin/Eggshell paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification [1]	kg SO2 eq	8.96E-04	2.25E-05	2.24E-06	1.48E-04	1.07E-04	0.00E+00	0.00E+00	1.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication [1]	kg N eq	3.53E-04	1.64E-06	5.87E-07	1.06E-05	3.66E-05	0.00E+00	0.00E+00	1.01E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming [2,3]	kg CO2 eq	1.17E-01	2.09E-03	1.56E-03	1.21E-02	1.33E-02	0.00E+00	0.00E+00	1.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion [1]	kg CFC-11 eq	2.93E-09	7.21E-12	9.57E-11	4.16E-11	3.08E-10	0.00E+00	0.00E+00	3.73E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation [1]	kg O3 eq	6.95E-03	6.11E-04	5.24E-05	4.04E-03	1.17E-03	0.00E+00	0.00E+00	1.42E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels [1]	MJ surplus	1.18E-01	4.11E-03	1.80E-04	2.37E-02	1.47E-02	0.00E+00	0.00E+00	1.79E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 10: Scenario 1: Velvet paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification [1]	kg SO2 eq	1.62E-03	2.25E-05	2.24E-06	1.48E-04	1.79E-04	0.00E+00	0.00E+00	5.92E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication [1]	kg N eq	5.49E-04	1.64E-06	5.87E-07	1.06E-05	5.62E-05	0.00E+00	0.00E+00	3.40E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming [2,3]	kg CO2 eq	1.70E-01	2.09E-03	1.56E-03	1.21E-02	1.86E-02	0.00E+00	0.00E+00	6.26E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion [1]	kg CFC-11 eq	3.73E-09	7.21E-12	9.57E-11	4.16E-11	3.88E-10	0.00E+00	0.00E+00	1.28E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation [1]	kg O3 eq	1.05E-02	6.11E-04	5.24E-05	4.04E-03	1.52E-03	0.00E+00	0.00E+00	5.05E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels [1]	MJ surplus	1.44E-01	4.11E-03	1.80E-04	2.37E-02	1.73E-02	0.00E+00	0.00E+00	5.73E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 11: Scenario 2: Velvet paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification [1]	kg SO2 eq	1.62E-03	2.25E-05	2.24E-06	1.48E-04	1.79E-04	0.00E+00	0.00E+00	2.17E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication [1]	kg N eq	5.49E-04	1.64E-06	5.87E-07	1.06E-05	5.62E-05	0.00E+00	0.00E+00	1.25E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming [2,3]	kg CO2 eq	1.70E-01	2.09E-03	1.56E-03	1.21E-02	1.86E-02	0.00E+00	0.00E+00	2.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion [1]	kg CFC-11 eq	3.73E-09	7.21E-12	9.57E-11	4.16E-11	3.88E-10	0.00E+00	0.00E+00	4.70E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation [1]	kg O3 eq	1.05E-02	6.11E-04	5.24E-05	4.04E-03	1.52E-03	0.00E+00	0.00E+00	1.85E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels [1]	MJ surplus	1.44E-01	4.11E-03	1.80E-04	2.37E-02	1.73E-02	0.00E+00	0.00E+00	2.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 12: Scenario 1: Undercoat paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification [1]	kg SO2 eq	1.38E-03	2.15E-05	2.24E-06	1.48E-04	1.55E-04	0.00E+00	0.00E+00	3.25E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication [1]	kg N eq	5.98E-04	1.57E-06	5.87E-07	1.06E-05	6.10E-05	0.00E+00	0.00E+00	2.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming [2,3]	kg CO2 eq	1.68E-01	2.00E-03	1.56E-03	1.21E-02	1.84E-02	0.00E+00	0.00E+00	3.91E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion [1]	kg CFC-11 eq	1.23E-08	6.91E-12	9.57E-11	4.16E-11	1.25E-09	0.00E+00	0.00E+00	2.61E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation [1]	kg O3 eq	1.04E-02	5.85E-04	5.24E-05	4.04E-03	1.51E-03	0.00E+00	0.00E+00	3.17E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels [1]	MJ surplus	1.53E-01	3.93E-03	1.80E-04	2.37E-02	1.81E-02	0.00E+00	0.00E+00	3.80E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 13: Scenario 2: Undercoat paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification [1]	kg SO2 eq	1.38E-03	2.15E-05	2.24E-06	1.48E-04	1.55E-04	0.00E+00	0.00E+00	1.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication [1]	kg N eq	5.98E-04	1.57E-06	5.87E-07	1.06E-05	6.10E-05	0.00E+00	0.00E+00	1.31E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming [2,3]	kg CO2 eq	1.68E-01	2.00E-03	1.56E-03	1.21E-02	1.84E-02	0.00E+00	0.00E+00	2.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion [1]	kg CFC-11 eq	1.23E-08	6.91E-12	9.57E-11	4.16E-11	1.25E-09	0.00E+00	0.00E+00	1.51E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation [1]	kg O3 eq	1.04E-02	5.85E-04	5.24E-05	4.04E-03	1.51E-03	0.00E+00	0.00E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels [1]	MJ surplus	1.53E-01	3.93E-03	1.80E-04	2.37E-02	1.81E-02	0.00E+00	0.00E+00	2.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 14: Scenario 1: Semi-Gloss paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification (1)	kg SO2 eq	2.22E-03	1.67E-05	2.24E-06	1.48E-04	2.39E-04	0.00E+00	0.00E+00	7.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication (1)	kg N eq	7.27E-04	1.22E-06	5.87E-07	1.06E-05	7.40E-05	0.00E+00	0.00E+00	3.99E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming (2,3)	kg CO2 eq	2.22E-01	1.55E-03	1.56E-03	1.21E-02	2.38E-02	0.00E+00	0.00E+00	7.97E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion (1)	kg CFC-11 eq	4.86E-09	5.36E-12	9.57E-11	4.16E-11	5.01E-10	0.00E+00	0.00E+00	1.65E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation (1)	kg O3 eq	1.38E-02	4.54E-04	5.24E-05	4.04E-03	1.83E-03	0.00E+00	0.00E+00	6.07E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels (1)	MJ surplus	1.87E-01	3.06E-03	1.80E-04	2.37E-02	2.15E-02	0.00E+00	0.00E+00	7.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 15: Scenario 2: Semi-Gloss paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification (1)	kg SO2 eq	2.22E-03	1.67E-05	2.24E-06	1.48E-04	2.39E-04	0.00E+00	0.00E+00	2.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication (1)	kg N eq	7.27E-04	1.22E-06	5.87E-07	1.06E-05	7.40E-05	0.00E+00	0.00E+00	1.46E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming (2,3)	kg CO2 eq	2.22E-01	1.55E-03	1.56E-03	1.21E-02	2.38E-02	0.00E+00	0.00E+00	2.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion (1)	kg CFC-11 eq	4.86E-09	5.36E-12	9.57E-11	4.16E-11	5.01E-10	0.00E+00	0.00E+00	6.07E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation (1)	kg O3 eq	1.38E-02	4.54E-04	5.24E-05	4.04E-03	1.83E-03	0.00E+00	0.00E+00	2.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels (1)	MJ surplus	1.87E-01	3.06E-03	1.80E-04	2.37E-02	2.15E-02	0.00E+00	0.00E+00	2.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 16: Scenario 1: Pearl Melamine paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification (1)	kg SO2 eq	2.40E-03	3.60E-05	2.24E-06	1.48E-04	2.59E-04	0.00E+00	0.00E+00	8.54E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication (1)	kg N eq	8.34E-04	2.63E-06	5.87E-07	1.06E-05	8.48E-05	0.00E+00	0.00E+00	2.80E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming (2,3)	kg CO2 eq	2.41E-01	3.35E-03	1.56E-03	1.21E-02	2.58E-02	0.00E+00	0.00E+00	8.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion (1)	kg CFC-11 eq	5.77E-09	1.16E-11	9.57E-11	4.16E-11	5.92E-10	0.00E+00	0.00E+00	1.95E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation (1)	kg O3 eq	1.49E-02	9.80E-04	5.24E-05	4.04E-03	1.99E-03	0.00E+00	0.00E+00	6.58E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels (1)	MJ surplus	1.93E-01	6.59E-03	1.80E-04	2.37E-02	2.24E-02	0.00E+00	0.00E+00	7.38E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 17: Scenario 2: Pearl Melamine paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification (1)	kg SO2 eq	2.40E-03	3.60E-05	2.24E-06	1.48E-04	2.59E-04	0.00E+00	0.00E+00	3.13E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication (1)	kg N eq	8.34E-04	2.63E-06	5.87E-07	1.06E-05	8.48E-05	0.00E+00	0.00E+00	1.03E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming (2,3)	kg CO2 eq	2.41E-01	3.35E-03	1.56E-03	1.21E-02	2.58E-02	0.00E+00	0.00E+00	3.12E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion (1)	kg CFC-11 eq	5.77E-09	1.16E-11	9.57E-11	4.16E-11	5.92E-10	0.00E+00	0.00E+00	7.16E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation (1)	kg O3 eq	1.49E-02	9.80E-04	5.24E-05	4.04E-03	1.99E-03	0.00E+00	0.00E+00	2.41E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels (1)	MJ surplus	1.93E-01	6.59E-03	1.80E-04	2.37E-02	2.24E-02	0.00E+00	0.00E+00	2.71E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 18: Scenario 1: Flat paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification (1)	kg SO2 eq	2.21E-03	1.75E-05	2.24E-06	1.48E-04	2.37E-04	0.00E+00	0.00E+00	4.97E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication (1)	kg N eq	7.15E-04	1.28E-06	5.87E-07	1.06E-05	7.27E-05	0.00E+00	0.00E+00	2.50E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming (2,3)	kg CO2 eq	2.13E-01	1.63E-03	1.56E-03	1.21E-02	2.29E-02	0.00E+00	0.00E+00	4.86E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion (1)	kg CFC-11 eq	4.82E-09	5.63E-12	9.57E-11	4.16E-11	4.97E-10	0.00E+00	0.00E+00	1.04E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation (1)	kg O3 eq	1.32E-02	4.77E-04	5.24E-05	4.04E-03	1.78E-03	0.00E+00	0.00E+00	3.74E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels (1)	MJ surplus	1.60E-01	3.21E-03	1.80E-04	2.37E-02	1.88E-02	0.00E+00	0.00E+00	3.95E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

Table 19: Scenario 2: Flat paint from the Proline 100% Acrylic series, Life Cycle Impact Assessment Results

Impacts Categories	Units	A1	A2	A3	A4-A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Acidification (1)	kg SO2 eq	2.21E-03	1.75E-05	2.24E-06	1.48E-04	2.37E-04	0.00E+00	0.00E+00	2.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-07	0.00E+00	3.52E-06
Eutrophication (1)	kg N eq	7.15E-04	1.28E-06	5.87E-07	1.06E-05	7.27E-05	0.00E+00	0.00E+00	1.45E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-08	0.00E+00	5.16E-04
Global Warming (2,3)	kg CO2 eq	2.13E-01	1.63E-03	1.56E-03	1.21E-02	2.29E-02	0.00E+00	0.00E+00	2.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-05	0.00E+00	4.23E-03
Ozone Depletion (1)	kg CFC-11 eq	4.82E-09	5.63E-12	9.57E-11	4.16E-11	4.97E-10	0.00E+00	0.00E+00	6.02E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-14	0.00E+00	1.41E-11
Photochemical ozone formation (1)	kg O3 eq	1.32E-02	4.77E-04	5.24E-05	4.04E-03	1.78E-03	0.00E+00	0.00E+00	2.17E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-06	0.00E+00	9.09E-05
Resource depletion - fossil fuels (1)	MJ surplus	1.60E-01	3.21E-03	1.80E-04	2.37E-02	1.88E-02	0.00E+00	0.00E+00	2.28E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-05	0.00E+00	1.34E-03

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, renewable and non-renewable primary energy and water.

The LCI results are presented from Table 20 to Table 31 for MF Paints' Proline 100% Acrylic Series products.

Table 20: Scenario 1: Satin/Eggshell paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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	1.23E-01	5.49E-05	3.27E-02	3.16E-04	1.56E-02	0.00E+00	0.00E+00	1.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-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	1.23E-01	5.49E-05	3.27E-02	3.16E-04	1.56E-02	0.00E+00	0.00E+00	1.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
$NRPR_E^{(7)}$	MJ, LHV	1.39E+00	2.96E-02	3.31E-03	1.71E-01	1.60E-01	0.00E+00	0.00E+00	1.41E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	1.39E+00	2.96E-02	3.31E-03	1.71E-01	1.60E-01	0.00E+00	0.00E+00	1.41E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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
$FW^{(13)}$	m³	2.54E-02	0.00E+00	1.32E-04	0.00E+00	2.55E-03	0.00E+00	0.00E+00	2.25E-01	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	2.42E-01	1.84E-05	3.18E-04	1.06E-04	2.42E-02	1.37E+00	0.00E+00	2.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
$NHWD^{(15)}$	kg	3.56E-02	2.74E-05	1.12E-04	1.58E-04	3.59E-03	0.00E+00	0.00E+00	6.85E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
$HLRW^{(16)}$	m³	8.31E-11	2.12E-15	5.60E-12	1.22E-14	8.87E-12	0.00E+00	0.00E+00	7.82E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
$ILLRW^{(17)}$	m³	4.23E-10	1.26E-14	4.38E-12	7.25E-14	4.27E-11	0.00E+00	0.00E+00	3.77E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
$CRU^{(18)}$	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
$MR^{(18)}$	kg	0.00E+00	0.00E+00	1.12E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.98E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$MER^{(18)}$	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

Table 21: Scenario 2: Satin/Eggshell paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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
RPRE(4)	MJ, LHV	1.23E-01	5.49E-05	3.27E-02	3.16E-04	1.56E-02	0.00E+00	0.00E+00	1.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
RPRM(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	1.23E-01	5.49E-05	3.27E-02	3.16E-04	1.56E-02	0.00E+00	0.00E+00	1.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
NRPRE(7)	MJ, LHV	1.39E+00	2.96E-02	3.31E-03	1.71E-01	1.60E-01	0.00E+00	0.00E+00	1.94E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-02
NRPRM(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	1.39E+00	2.96E-02	3.31E-03	1.71E-01	1.60E-01	0.00E+00	0.00E+00	1.94E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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)	m³	2.54E-02	0.00E+00	1.32E-04	0.00E+00	2.55E-03	0.00E+00	0.00E+00	3.09E-01	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	2.42E-01	1.84E-05	3.18E-04	1.06E-04	2.42E-02	1.37E+00	0.00E+00	2.93E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.1422E-07	0.00E+00	3.59E-04
NHWD(15)	kg	3.56E-02	2.74E-05	1.12E-04	1.58E-04	3.59E-03	0.00E+00	0.00E+00	9.42E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.7019E-07	0.00E+00	4.61E-02
HLRW(16)	m³	8.31E-11	2.12E-15	5.60E-12	1.22E-14	8.87E-12	0.00E+00	0.00E+00	1.08E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.3146E-17	0.00E+00	1.9609E-13
ILLRW(17)	m³	4.23E-10	1.26E-14	4.38E-12	7.25E-14	4.27E-11	0.00E+00	0.00E+00	5.18E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.797E-17	0.00E+00	1.0592E-12
CRU(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
MR(18)	kg	0.00E+00	0.00E+00	1.12E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Table 22: Scenario 1: Velvet paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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	1.83E-01	5.49E-05	3.27E-02	3.16E-04	2.16E-02	0.00E+00	0.00E+00	7.14E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-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	1.83E-01	5.49E-05	3.27E-02	3.16E-04	2.16E-02	0.00E+00	0.00E+00	7.14E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
$NRPR_E^{(7)}$	MJ, LHV	1.81E+00	2.96E-02	3.31E-03	1.71E-01	2.02E-01	0.00E+00	0.00E+00	6.67E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	1.81E+00	2.96E-02	3.31E-03	1.71E-01	2.02E-01	0.00E+00	0.00E+00	6.67E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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
$FW^{(13)}$	m³	1.79E-02	0.00E+00	1.14E-07	0.00E+00	1.79E-03	0.00E+00	0.00E+00	5.90E-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	3.99E-01	1.84E-05	3.18E-04	1.06E-04	3.99E-02	0.00E+00	0.00E+00	1.32E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
$NHWD^{(15)}$	kg	7.43E-02	2.74E-05	1.12E-04	1.58E-04	7.46E-03	0.00E+00	0.00E+00	3.85E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
$HLRW^{(16)}$	m³	1.10E-10	2.12E-15	5.60E-12	1.22E-14	1.15E-11	0.00E+00	0.00E+00	3.81E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
$ILLRW^{(17)}$	m³	5.41E-10	1.26E-14	4.38E-12	7.25E-14	5.46E-11	0.00E+00	0.00E+00	1.80E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
$CRU^{(18)}$	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
$MR^{(18)}$	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.91E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$MER^{(18)}$	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

Table 23: Scenario 2: Velvet paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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
RPRE(4)	MJ, LHV	1.83E-01	5.49E-05	3.27E-02	3.16E-04	2.16E-02	0.00E+00	0.00E+00	2.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
RPRM(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	1.83E-01	5.49E-05	3.27E-02	3.16E-04	2.16E-02	0.00E+00	0.00E+00	2.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
NRPRE(7)	MJ, LHV	1.81E+00	2.96E-02	3.31E-03	1.71E-01	2.02E-01	0.00E+00	0.00E+00	2.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-02
NRPRM(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	1.81E+00	2.96E-02	3.31E-03	1.71E-01	2.02E-01	0.00E+00	0.00E+00	2.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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)	m³	1.79E-02	0.00E+00	1.14E-07	0.00E+00	1.79E-03	0.00E+00	0.00E+00	2.17E-01	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	3.99E-01	1.84E-05	3.18E-04	1.06E-04	3.99E-02	0.00E+00	0.00E+00	4.83E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
NHWD(15)	kg	7.43E-02	2.74E-05	1.12E-04	1.58E-04	7.46E-03	0.00E+00	0.00E+00	1.41E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
HLRW(16)	m³	1.10E-10	2.12E-15	5.60E-12	1.22E-14	1.15E-11	0.00E+00	0.00E+00	1.40E-09	1.31E-17	1.96E-13	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
ILLRW(17)	m³	5.41E-10	1.26E-14	4.38E-12	7.25E-14	5.46E-11	0.00E+00	0.00E+00	6.62E-09	7.80E-17	1.06E-12	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
CRU(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
MR(18)	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Table 24: Scenario 1: Pearl Melamine paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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	3.76E-01	8.81E-05	3.27E-02	3.16E-04	4.09E-02	0.00E+00	0.00E+00	1.35E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-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	3.76E-01	8.81E-05	3.27E-02	3.16E-04	4.09E-02	0.00E+00	0.00E+00	1.35E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
NRPR$_E$(7)	MJ, LHV	2.47E+00	4.74E-02	3.31E-03	1.71E-01	2.69E-01	0.00E+00	0.00E+00	8.87E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	2.47E+00	4.74E-02	3.31E-03	1.71E-01	2.69E-01	0.00E+00	0.00E+00	8.87E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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)	m³	1.94E-02	0.00E+00	1.14E-07	0.00E+00	1.94E-03	0.00E+00	0.00E+00	6.39E-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	5.76E-01	2.95E-05	3.18E-04	1.06E-04	5.77E-02	0.00E+00	0.00E+00	1.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
NHWD(15)	kg	1.13E-01	4.40E-05	1.12E-04	1.58E-04	1.13E-02	0.00E+00	0.00E+00	3.73E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
HLRW(16)	m³	1.48E-10	3.40E-15	5.60E-12	1.22E-14	1.54E-11	0.00E+00	0.00E+00	5.06E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
ILLRW(17)	m³	7.30E-10	2.02E-14	4.38E-12	7.25E-14	7.34E-11	0.00E+00	0.00E+00	2.42E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
CRU(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
MR(18)	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.91E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Table 25:Scenario 2: Pearl Melamine paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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
RPRE(4)	MJ, LHV	3.76E-01	8.81E-05	3.27E-02	3.16E-04	4.09E-02	0.00E+00	0.00E+00	4.95E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
RPRM(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	3.76E-01	8.81E-05	3.27E-02	3.16E-04	4.09E-02	0.00E+00	0.00E+00	4.95E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
NRPRE(7)	MJ, LHV	2.47E+00	4.74E-02	3.31E-03	1.71E-01	2.69E-01	0.00E+00	0.00E+00	3.25E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-02
NRPRM(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	2.47E+00	4.74E-02	3.31E-03	1.71E-01	2.69E-01	0.00E+00	0.00E+00	3.25E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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)	m³	1.94E-02	0.00E+00	1.14E-07	0.00E+00	1.94E-03	0.00E+00	0.00E+00	2.34E-01	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	5.76E-01	2.95E-05	3.18E-04	1.06E-04	5.77E-02	0.00E+00	0.00E+00	6.98E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
NHWD(15)	kg	1.13E-01	4.40E-05	1.12E-04	1.58E-04	1.13E-02	0.00E+00	0.00E+00	1.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
HLRW(16)	m³	1.48E-10	3.40E-15	5.60E-12	1.22E-14	1.54E-11	0.00E+00	0.00E+00	1.86E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
ILLRW(17)	m³	7.30E-10	2.02E-14	4.38E-12	7.25E-14	7.34E-11	0.00E+00	0.00E+00	8.89E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
CRU(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
MR(18)	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Table 26: Scenario 1: Semi-Gloss paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																		
Parameter	Unit	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
RPRE(4)	MJ, LHV	2.38E-01	4.08E-05	3.27E-02	3.16E-04	2.71E-02	0.00E+00	0.00E+00	3.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
RPRM(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	2.38E-01	4.08E-05	3.27E-02	3.16E-04	2.71E-02	0.00E+00	0.00E+00	3.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
NRPRE(7)	MJ, LHV	2.34E+00	2.20E-02	3.31E-03	1.71E-01	2.55E-01	0.00E+00	0.00E+00	3.09E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-02
NRPRM(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	2.34E+00	2.20E-02	3.31E-03	1.71E-01	2.55E-01	0.00E+00	0.00E+00	3.09E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	2.25E-02	0.00E+00	1.14E-07	0.00E+00	2.25E-03	0.00E+00	0.00E+00	2.72E-01	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	5.36E-01	1.37E-05	3.18E-04	1.06E-04	5.36E-02	0.00E+00	0.00E+00	6.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
NHWD(15)	kg	1.05E-01	2.04E-05	1.12E-04	1.58E-04	1.05E-02	0.00E+00	0.00E+00	1.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
HLRW(16)	m^3	1.38E-10	1.58E-15	5.60E-12	1.22E-14	1.44E-11	0.00E+00	0.00E+00	1.74E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
ILLRW(17)	m^3	6.76E-10	9.34E-15	4.38E-12	7.25E-14	6.81E-11	0.00E+00	0.00E+00	8.25E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
CRU(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
MR(18)	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Table 27: Scenario 2: Semi-Gloss paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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	2.38E-01	4.08E-05	3.27E-02	3.16E-04	2.71E-02	0.00E+00	0.00E+00	8.96E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-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	2.38E-01	4.08E-05	3.27E-02	3.16E-04	2.71E-02	0.00E+00	0.00E+00	8.96E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
$NRPR_E$[7]	MJ, LHV	2.34E+00	2.20E-02	3.31E-03	1.71E-01	2.55E-01	0.00E+00	0.00E+00	8.42E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	2.34E+00	2.20E-02	3.31E-03	1.71E-01	2.55E-01	0.00E+00	0.00E+00	8.42E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	2.25E-02	0.00E+00	1.14E-07	0.00E+00	2.25E-03	0.00E+00	0.00E+00	7.42E-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	5.36E-01	1.37E-05	3.18E-04	1.06E-04	5.36E-02	0.00E+00	0.00E+00	1.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
NHWD[15]	kg	1.05E-01	2.04E-05	1.12E-04	1.58E-04	1.05E-02	0.00E+00	0.00E+00	4.86E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
HLRW[16]	m^3	1.38E-10	1.58E-15	5.60E-12	1.22E-14	1.44E-11	0.00E+00	0.00E+00	4.75E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
ILLRW[17]	m^3	6.76E-10	9.34E-15	4.38E-12	7.25E-14	6.81E-11	0.00E+00	0.00E+00	2.25E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
CRU[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
MR[18]	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.91E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Table 28: Scenario 1: Undercoat paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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	1.89E-01	5.25E-05	3.27E-02	3.16E-04	2.22E-02	0.00E+00	0.00E+00	4.64E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-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	1.89E-01	5.25E-05	3.27E-02	3.16E-04	2.22E-02	0.00E+00	0.00E+00	4.64E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
$NRPR_E$[7]	MJ, LHV	1.91E+00	2.83E-02	3.31E-03	1.71E-01	2.12E-01	0.00E+00	0.00E+00	4.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	1.91E+00	2.83E-02	3.31E-03	1.71E-01	2.12E-01	0.00E+00	0.00E+00	4.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	2.18E-02	0.00E+00	1.14E-07	0.00E+00	2.18E-03	0.00E+00	0.00E+00	4.57E-01	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	3.74E-01	1.76E-05	3.18E-04	1.06E-04	3.75E-02	0.00E+00	0.00E+00	7.84E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
NHWD[15]	kg	5.78E-02	2.63E-05	1.12E-04	1.58E-04	5.81E-03	0.00E+00	0.00E+00	2.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
HLRW[16]	m^3	1.31E-10	2.03E-15	5.60E-12	1.22E-14	1.36E-11	0.00E+00	0.00E+00	2.86E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
ILLRW[17]	m^3	6.92E-10	1.20E-14	4.38E-12	7.25E-14	6.96E-11	0.00E+00	0.00E+00	1.46E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
CRU[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
MR[18]	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Table 29: Scenario 2: Undercoat paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																	
Parameter	Unit	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
RPRE(4)	MJ, LHV	1.89E-01	5.25E-05	3.27E-02	3.16E-04	2.22E-02	0.00E+00	0.00E+00	2.69E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
RPRM(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	1.89E-01	5.25E-05	3.27E-02	3.16E-04	2.22E-02	0.00E+00	0.00E+00	2.69E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
NRPRE(7)	MJ, LHV	1.91E+00	2.83E-02	3.31E-03	1.71E-01	2.12E-01	0.00E+00	0.00E+00	2.57E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-02
NRPRM(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	1.91E+00	2.83E-02	3.31E-03	1.71E-01	2.12E-01	0.00E+00	0.00E+00	2.57E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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)	m³	2.18E-02	0.00E+00	1.14E-07	0.00E+00	2.18E-03	0.00E+00	0.00E+00	2.64E-01	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	3.74E-01	1.76E-05	3.18E-04	1.06E-04	3.75E-02	0.00E+00	0.00E+00	4.54E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
NHWD(15)	kg	5.78E-02	2.63E-05	1.12E-04	1.58E-04	5.81E-03	0.00E+00	0.00E+00	1.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
HLRW(16)	m³	1.31E-10	2.03E-15	5.60E-12	1.22E-14	1.36E-11	0.00E+00	0.00E+00	1.65E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
ILLRW(17)	m³	6.92E-10	1.20E-14	4.38E-12	7.25E-14	6.96E-11	0.00E+00	0.00E+00	8.44E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
CRU(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
MR(18)	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Table 30: Scenario 1: Flat paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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	2.43E-01	4.29E-05	3.27E-02	3.16E-04	2.77E-02	0.00E+00	0.00E+00	5.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-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	2.43E-01	4.29E-05	3.27E-02	3.16E-04	2.77E-02	0.00E+00	0.00E+00	5.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
$NRPR_E^{(7)}$	MJ, LHV	2.11E+00	2.31E-02	3.31E-03	1.71E-01	2.31E-01	0.00E+00	0.00E+00	4.84E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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	2.11E+00	2.31E-02	3.31E-03	1.71E-01	2.31E-01	0.00E+00	0.00E+00	4.84E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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
$FW^{(13)}$	m³	1.48E-02	0.00E+00	1.14E-07	0.00E+00	1.48E-03	0.00E+00	0.00E+00	3.09E-01	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	5.26E-01	1.44E-05	3.18E-04	1.06E-04	5.26E-02	0.00E+00	0.00E+00	1.10E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
$NHWD^{(15)}$	kg	1.04E-01	2.14E-05	1.12E-04	1.58E-04	1.04E-02	0.00E+00	0.00E+00	3.06E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
$HLRW^{(16)}$	m³	1.29E-10	1.65E-15	5.60E-12	1.22E-14	1.35E-11	0.00E+00	0.00E+00	2.82E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
$ILLRW^{(17)}$	m³	6.26E-10	9.81E-15	4.38E-12	7.25E-14	6.30E-11	0.00E+00	0.00E+00	1.32E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
$CRU^{(18)}$	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
$MR^{(18)}$	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$MER^{(18)}$	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

Table 31: Scenario 2: Flat paint from the Proline 100% Acrylic series, Life Cycle Inventory Impact Results

Resource use																
Parameter	Unit	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
RPRE(4)	MJ, LHV	2.43E-01	4.29E-05	3.27E-02	3.16E-04	2.77E-02	0.00E+00	0.00E+00	3.35E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
RPRM(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	2.43E-01	4.29E-05	3.27E-02	3.16E-04	2.77E-02	0.00E+00	0.00E+00	3.35E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-07	0.00E+00	2.07E-04
NRPRE(7)	MJ, LHV	2.11E+00	2.31E-02	3.31E-03	1.71E-01	2.31E-01	0.00E+00	0.00E+00	2.80E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-02
NRPRM(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	2.11E+00	2.31E-02	3.31E-03	1.71E-01	2.31E-01	0.00E+00	0.00E+00	2.80E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-04	0.00E+00	1.05E-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)	m³	1.48E-02	0.00E+00	1.14E-07	0.00E+00	1.48E-03	0.00E+00	0.00E+00	1.79E-01	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	5.26E-01	1.44E-05	3.18E-04	1.06E-04	5.26E-02	0.00E+00	0.00E+00	6.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-07	0.00E+00	3.59E-04
NHWD(15)	kg	1.04E-01	2.14E-05	1.12E-04	1.58E-04	1.04E-02	0.00E+00	0.00E+00	1.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	0.00E+00	4.61E-02
HLRW(16)	m³	1.29E-10	1.65E-15	5.60E-12	1.22E-14	1.35E-11	0.00E+00	0.00E+00	1.63E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-17	0.00E+00	1.96E-13
ILLRW(17)	m³	6.26E-10	9.81E-15	4.38E-12	7.25E-14	6.30E-11	0.00E+00	0.00E+00	7.63E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.80E-17	0.00E+00	1.06E-12
CRU(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
MR(18)	kg	0.00E+00	0.00E+00	9.71E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

(1): Calculated as per Traci v.2 methodology and OpenLCA v 1.11.

(2): GWP 100a, excludes biogenic CO_2 removals and emissions associated with biobased products and packaging; 100-year time horizon GWP factors are provided by the IPCC 2013 Fifth Assessment Report (AR5). Results of biogenic carbon are presented in a separate line.

(3): Global warming potential without biogenic carbon.

(4): $\mathbf{RPR_E}$ = RPRT - RPR_M, where $RPRT^{(6)}$ is equal to the value for renewable energy obtained using the CED LHV.

(5): RPR_M, is calculated 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 [9]. In the calculation of RPR_M, packaging materials were included.

(7): $\mathbf{NRPR_E}$ = NRPRT - $NRPR_M$, where $NRPRT^{(9)}$ is equal to the value for non-renewable energy obtained using the CED LHV methodology.

(8): $NRPR_M$, is calculated by multiplication of the mass (kg) of the material input (or its components) with the net calorific value (lower heating value) (MJ/kg) of this input as per ACLCA ISO 21930 Guidance [9]. In the calculation of $NRPR_M$, packaging materials were included.

(10): Calculated as per ACLCA ISO 21930 Guidance [9], 6.5 Secondary material, SM: There is SM involved in the MF Paints manufacturing process.

(11): Calculated as per ACLCA ISO 21930 Guidance [9], 6.6 Renewable secondary fuels, RSF: There is no RSF involved in the MF Paints manufacturing process.

(12): Calculated as per ACLCA ISO 21930 Guidance [9], 6.7 Non-renewable secondary fuels, NRSF: There is no NRSF involved in the MF Paints manufacturing process.

(13): There is no water used in the MF Paints manufacturing process. Water mentioned comes from the upstream process.

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

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

(16): Calculated as per ACLCA ISO 21930 Guidance [9], 10.3 High-level radioactive waste, conditioned, to final repository. It should be noted that the MF Paints manufacturing process does not generate any HLRW (High-level radioactive waste), 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 [9], 10.4 Intermediate- and low-level radioactive waste, conditioned, to final repository. It should be noted that the MF Paints manufacturing process does not generate any ILLRW (Low- and intermediate-level radioactive wastes), 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) was 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 MF Paints' Proline Latex Acrylic Series products studied.

The contribution trend of each paint included in the Proline 100% acrylic series is similar. The extraction of raw materials and upstream production module (A1) and replacement module (B4) are the major contributors of the environmental impacts for all impact categories. For scenario 1 of the Proline 100% acrylic series, the impact of A1 modules is between 3% to 22% of the total impacts while the impacts of the replacement module represent 75% to 95% of the total impacts for all impact categories. This variation represents the variation of the number of replacements during the building ESL. Figure 4, Figure 5 and Figure 6 present Proline 100% acrylic series products with 3, 8 and 19 replacements as high, mid and low-quality paints, respectively. In the case of scenario 2, the impact of module A1 is between 3% to 7% of the total impacts while the impacts of the replacement module (B4) represent 92% of the total impacts for all impact categories as all paint products were replaced 11 times in 60 years (Figure 7).

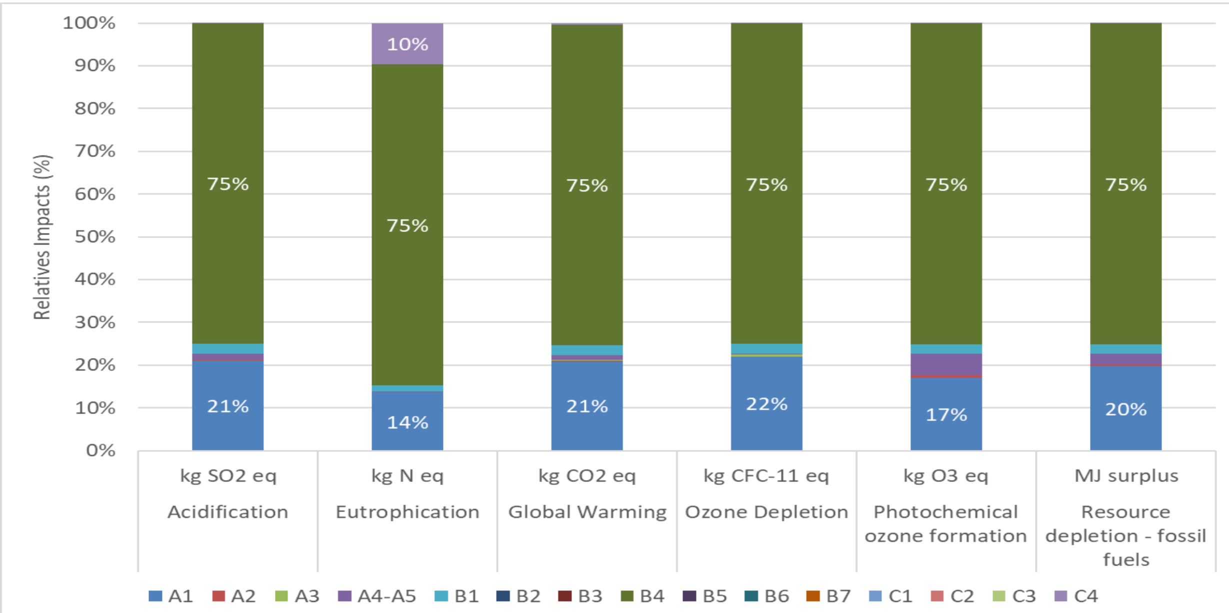

Figure 4: Scenario 1: Contribution of each life cycle stage of Semi-Gloss paint product from the Proline 100% Acrylic series.

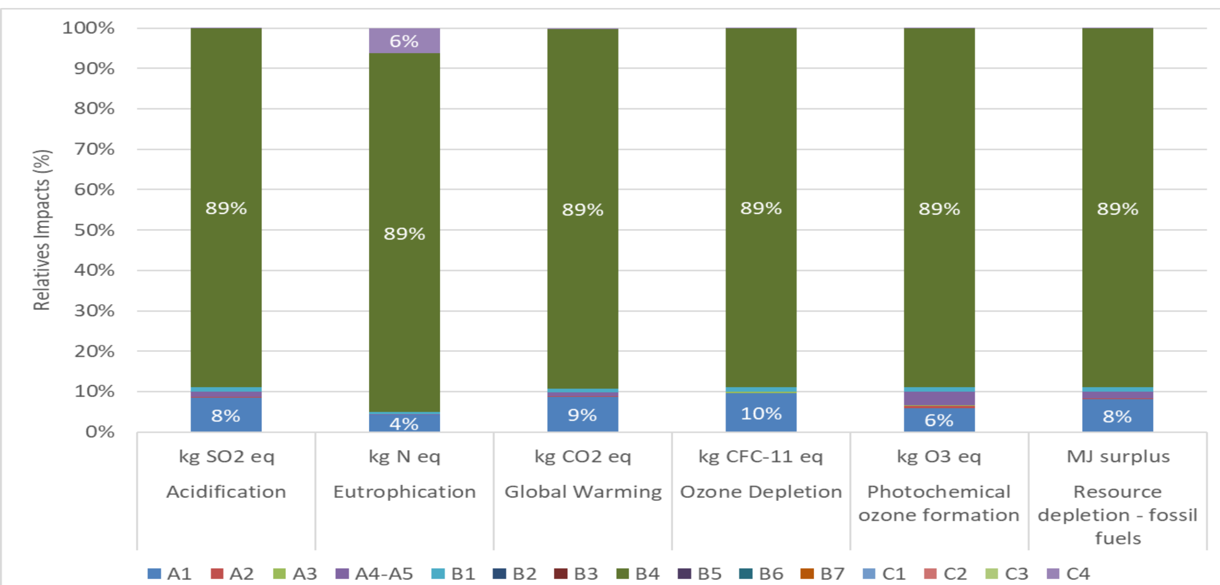

Figure 5: Scenario 1: Contribution of each life cycle stage of Satin Eggshell paint product from the Proline 100% Acrylic series.

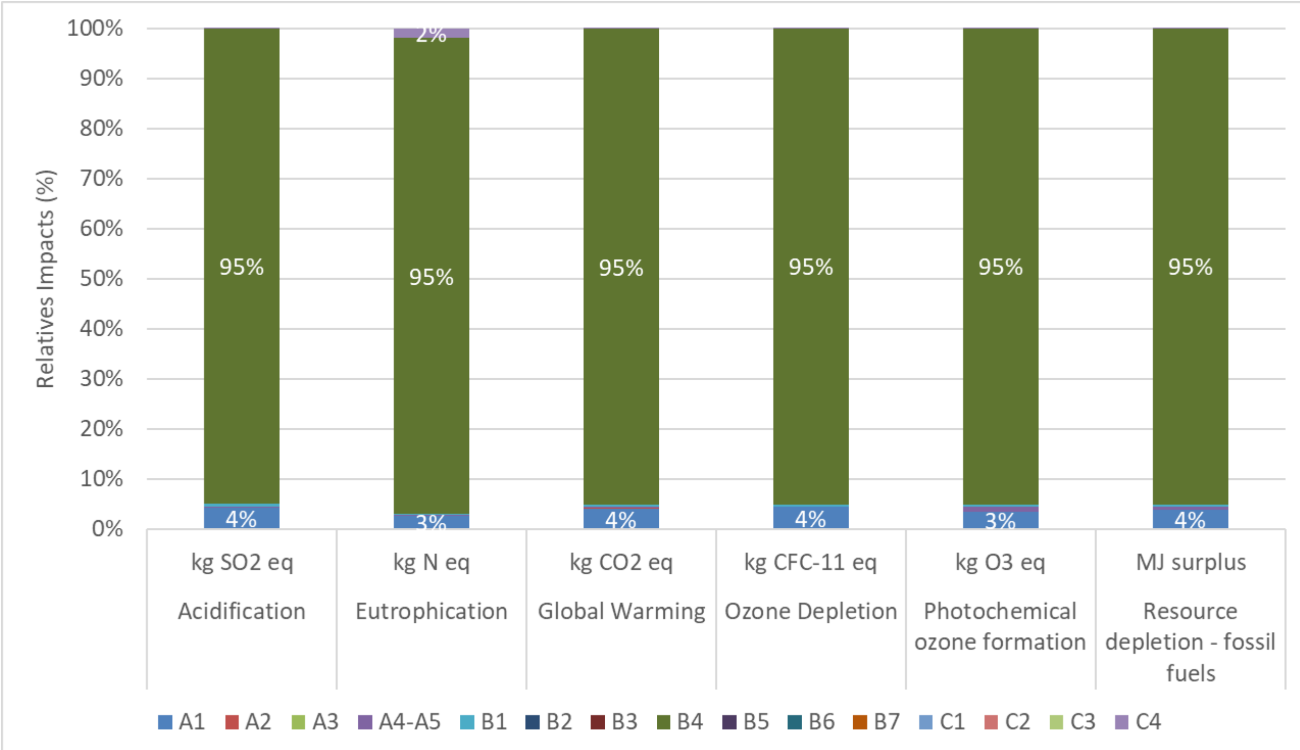

Figure 6: Scenario 1: Contribution of each life cycle stage of Flat paint product from the Proline 100% Acrylic series.

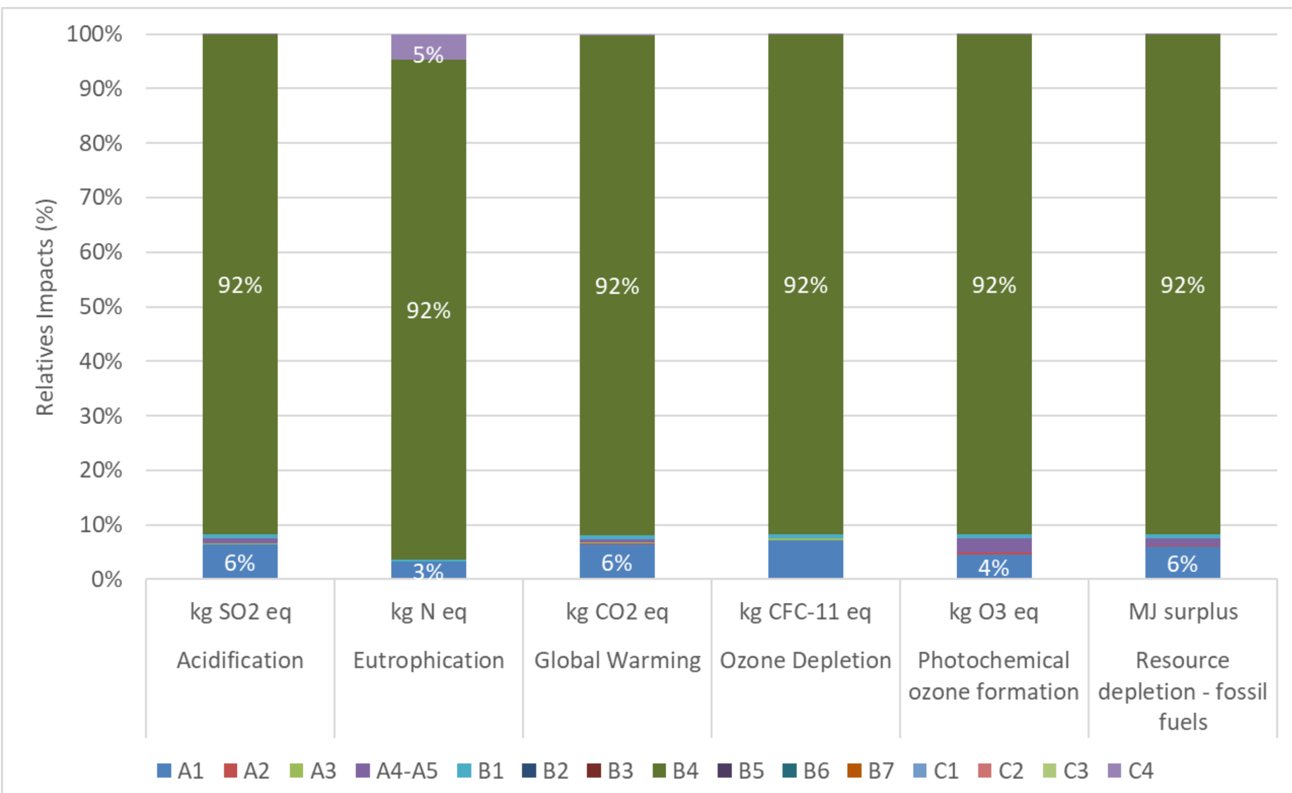

Figure 7: Scenario 2: Contribution of each life cycle stage of Satin/Eggshell paint product from the Proline 100% Acrylic series.

6 ADDITIONAL ENVIRONMENTAL INFORMATION

6.1 ENVIRONMENTAL ACTIVITIES AND CERTIFICATION

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

6.2 EXTRAORDINARY EFFECTS

There are no extraordinary effects for MF Paints products.

7 REFERENCES

[1] NSF International, Product Category Rule for Enviromental Product Declaration: Architectural Coatings. Extended 12 months per PCRExt 2023-105 through June 30, 2024.

[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 18 08 2023].

[6] MF Paints, “https://www.peinturesmf.com/en/data-sheets/.” [Online]. [Accessed 18 03 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., (2012).. [Online]. [Accessed 16 02 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 04/29/20

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