KOROSEAL

VERIFIED by SCS Global Services ENVIRONMENTAL PRODUCT DECLARATION BASED ON LCA

Declaration Owner

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Product
Non-Woven Backed Type II PVC-Free Wallcovering

(UNSPSC Class Code 30161510; CSI Code 09 72 00)

EPD represents delivery of product to North America.

Functional Unit
The functional unit is one square meter of wallcovering installed and maintained for use over a 75-year period

EPD Number and Period of Validity
SCS-EPD-10324
EPD Valid February 18, 2025 through February 17, 2030

Product Category Rule

Product Category Rule (PCR) Guidance for Building-Related Products and Services, Part A: LCA Calculation Rules and Report Requirements, UL 10010, UL v.4.0, March 2022.

Product Category Rule (PCR) Guidance for Building-Related Products and Services, Part B: Wall and Door Protection EPD Requirements. UL 10010-10 May 2019

Program Operator
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SCSglobal SERVICES

Declaration Owner:	Koroseal Interior Products
Address:	3875 Embassy Parkway, Suite 110, Fairlawn, Ohio 44333
Declaration Number:	SCS-EPD-10324
Declaration Validity Period:	February 18, 2025 through February 17, 2030
Program Operator:	SCS Global Services
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide
LCA Practitioner:	Gerard Mansell, Ph.D., SCS Global Services
LCA Software and LCI database:	OpenLCA 2.1 software and the Ecoinvent v3.10 database
Product RSL:	15 years
Markets of Applicability:	North America
EPD Type:	Product-Specific
EPD Scope:	Cradle-to-Grave
LCIA Method and Version:	CML-IA and TRACI 2.1
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	☐ internal ☒ external
LCA Reviewer:	Thomas Gloria, Ph.D., Industrial Ecology Consultants
Part A Product Category Rule:	Product Category Rule (PCR) Guidance for Building-Related Products and Services, Part A: LCA Calculation Rules and Report Requirements, UL 10010, UL v.4.0, March 2022.
Part A PCR Review conducted by:	Lindita Bushi, PhD (Chair); Hugues Imbeault-Tétreault, ing., M.Sc.A.; Jack Geibig
Part B Product Category Rule:	Product Category Rule (PCR) Guidance for Building-Related Products and Services, Part B: Wall and Door Protection EPD Requirements. UL 10010-10 May 2019
Part B PCR Review conducted by:	Lindita Bushi, PhD, Lisa Lauren, and Jim Mellentine
Independent verification of the declaration and data, according to ISO 14025 and the PCR	☐ internal ☒ external
EPD Verifier:	Thomas Gloria, Ph.D., Industrial Ecology Consultants
Declaration Contents:	

Disclaimers: *This EPD conforms to ISO 14025, 14040, 14044, and 21930.*

Scope of Results Reported: *The PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social performance benchmarks and thresholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean impacts related to greenhouse gas emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions.*

Accuracy of Results: *Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.*

Comparability: *The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.*

In accordance with ISO 21930:2017, EPDs are comparable only if they comply with the core PCR, use the same sub-category PCR where applicable, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works. The owner of the declaration shall be liable for the underlying information and evidence; SCS shall not be liable with respect to manufacturer information, life cycle assessment data, and evidence supplied or made available to SCS.

1. Koroseal Interior Products

Koroseal Interior Products, referred to here on out as Koroseal, is a commercially distributed wallcovering and wall protection company providing services to largely hospitality industries, schools, and hospitals

Koroseal doesn't just create interior solutions; they craft experiences. Demonstrating their commitment to customer satisfaction, they showcase a legacy of investment and innovation alongside a dedicated global service organization. With unparalleled expertise, they empower designers, architects, and specifiers to bring their visions to life. From functional spaces to breathtaking luxurious interiors, their market-driven designs redefine what's possible. Welcome to the world of limitless possibilities with Koroseal

2. Product

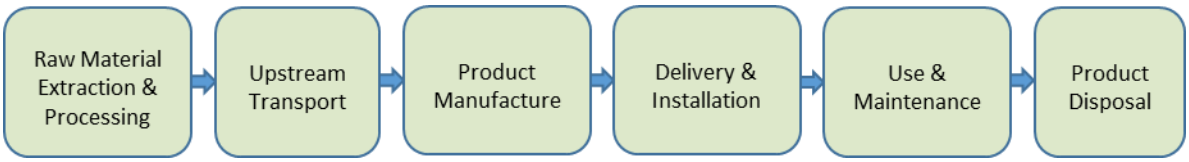
2.1 PRODUCT DESCRIPTION

Non-Woven Backed PVC-Free Type II Wallcovering

Koroseal PVC-Free Type II Wallcoverings are made by laminating a Thermo Polymer Olefin (TPO) film to cellulose polyester fiber blend backing. The film is embossed and printed with water-based inks and a protective top coating is applied to the wallcovering.

2.2 PRODUCT FLOW DIAGRAM

A flow diagram illustrating the production processes and life cycle phases included in the scope of the EPD is provided below.



2.3 APPLICATION

The products provide the primary function of decorative wallcovering for interior applications. The products are used in various commercial applications including retail, healthcare, education, and hospitality.

2.4 DECLARATION OF METHODOLOGICAL FRAMEWORK

The scope of the EPD is cradle-to-grave, including raw material extraction and processing, transportation, product manufacture, product delivery, installation and use, and product disposal. The life cycle phases included in the product system boundary are shown below.

Cut-off and allocation procedures are described below and conform to the PCR and ISO standards. The assessment follows the attributional LCA approach.

Table 1. *Life cycle phases included in the wallcovering product system boundary.*

Product			Construction Process		Use							End-of-life				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	B1	B1	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material extraction and processing	Transport to manufacturer	Manufacturing	Transport	Construction - installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery and/or recycling potential
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND

X = Module Included | MND = Module Not Declared

2.5 TECHNICAL DATA

Technical specifications for the product are summarized in Table 2.

Table 2. *The product technical characteristics and the Construction Specification Institute (CSI) Master format codes and the UNSPSC Code.*

Technical Characteristic and Test	Value
VOC – CA Specification 01350, Standard Classroom and Office Space (Pass/Fail for Individual VOCs of Concern and Formaldehyde)	Pass
Fire Performance – ASTM E84-17 (Flame Spread Index / Smoke Developed Index)	Class A
UNSPSC Class Code/CSI Code	30161510/ 09 72 00

2.6 MARKET PLACEMENT/APPLICATION RULES

Technical specifications and product performance results can be found on the manufacturer's website https://koroseal.com/.

2.7 PROPERTIES OF DECLARED PRODUCT AS DELIVERED

The products are delivered for installation in the form of sheets and rolls of various dimensions.

2.8 MATERIAL COMPOSITION

The primary materials include a thermoplastic olefin composite, a non-woven polyester and cellulose backing, and various fillers, additives and pigments.

Table 3. *Material content for the wallcovering products in kg per square meter and percent of total mass.*

Component	Koroseal Wallcovering	
	kg/m²	% of Total mass
TPO	***0.358***	***79%***
Filler	$2.86x10^{-2}$	6.3%
Plastic	0.165	36%
Other	$8.23x10^{-2}$	18%
Glass (recycled)	$5.01x10^{-2}$	11%
Pigment	$3.22x10^{-2}$	7.1%
Backing	***$9.13x10^{-2}$***	***20%***
Other	$9.13x10^{-4}$	0.2%
Cellulose	$4.02x10^{-2}$	8.9%
PET	$3.29x10^{-2}$	7.3%
Binder	$1.73x10^{-2}$	3.8%
Ink	***$2.81x10^{-3}$***	***0.62%***
Pigment	$3.79x10^{-5}$	0.0084%
Resin	$6.85x10^{-4}$	0.15%
Water	$2.08x10^{-3}$	0.46%
Product Total	***0.452***	***100%***
Biogenic carbon (kg CO_2e/m^2)	***0.064***	

In conformance with the PCR, product materials were reviewed for the presence of any toxic or hazardous chemicals. Based on a review of the product components provided by the manufacturer, no substances required to be reported as hazardous are associated with the production of this product and no chemicals regulated by the Resource Conservation and Recovery Act (RCRA) were identified in the product or product components. Additionally, there are no releases of such dangerous substances associated with the production, use or maintenance of the products.

2.9 MANUFACTURING

The Koroseal wallcovering is produced at a manufacturing facility in Louisville, Kentucky. The manufacturer provided primary data for their 2023 annual production, resource use and electricity consumption and waste generation at the facility. Electricity consumption is modeled using Ecoinvent v3.10 datasets for the EPA eGRID SRTV subregion electricity grid resource mix for 2022. No green power sources or CO_2 certificates are included in the present study.

Material-specific scrap rates associated with product manufacture were provided and accounted for within the raw material extraction and processing and upstream transport phases of the assessment. Disposal of manufacturing scrap, via landfilling, is accounted for in the manufacturing stage.

2.10 PACKAGING

The products are packaged for shipment using cardboard and plastic wrap.

Table 4. *Material content for the product packaging, in kg per square meter and percent of total mass.*

Component	Koroseal Wallcovering	
	kg/m²	% of Total mass
Corrugate	0.318	82%
Plastic	$6.80x10^{-2}$	18%
Total Packaging	***0.386***	***100%***
Biogenic carbon (kg CO_2e/m^2)	***0.583***	

2.11 PRODUCT INSTALLATION

Installation of the product is accomplished using hand tools with negligible impacts and waste. For the current assessment, 4% of the product mass is assumed lost as waste during product installation which is assumed landfilled. Impacts associate with the production, transport, waste processing, and disposal of installation wastage are included in this life cycle phase. The impacts associated with packaging disposal are included with the installation phase as per PCR requirements. The release of the biogenic carbon contained within the product packaging is also included in this phase.

2.12 USE CONDITIONS

No special conditions of use are noted.

2.13 PRODUCT REFERENCE SERVICE LIFE AND BUILDING ESTIMATED SERVICE LIFE

The Reference Service Life (RSL) of the wallcovering product is based on the PCR guidance and is summarized in Table 5 below. The building Estimated Service Life (ESL) is 75 years, consistent with the PCR.

2.14 RE-USE PHASE

The products are not reused at end-of-life.

2.15 DISPOSAL

At end-of-life, the products are disposed of in a landfill. The release of the biogenic carbon contained within the product is included in this life cycle phase. It is assumed that no components of the product are recycled at end-of-life.

2.16 FURTHER INFORMATION

Further information on the product can be found on the manufacturers' website at https://koroseal.com/.

3. LCA: Calculation Rules

3.1 FUNCTIONAL UNIT

The functional unit used in the study is defined as 1 m^2 of wallcovering installed and maintained for use over a 75-year period. The corresponding reference flow for the product system is presented in Table 5. For the present assessment, a reference service lifetime (RSL) corresponding to the PCR default value of 15 years is assumed. The total number of required product lifecycles during the 75-year period over which the product system is modeled is also summarized for the product in Table 5.

Table 5. *The functional unit properties, reference flow, product reference service life, and building estimated service life used within this EPD.*

Parameter	Value	Unit
Functional Unit	1 m^2 of product installed and maintained for a 75 year ESL	-
Reference Flow	1.0	m^2
Mass of Product	0.452	kg/m^2
Product Thickness	0.533	mm
Reference Service Life (RSL)	15	Years
Building Estimated Service Life (ESL)	75	Years
Required Product Lifecycles over the ESL	5	Product Lifecycles

3.2 SYSTEM BOUNDARY

The scope of the EPD is cradle-to-grave, including raw material extraction and processing, transportation, product manufacture, product delivery, installation and use, and product disposal. The life cycle phases included in the EPD scope are described in Table 6 and illustrated in Figure 1.

Table 6. *The modules and unit processes included in the scope for the wallcovering products.*

Module	Module Description	Unit Processes Included in Scope
A1	Extraction and processing of raw materials; any reuse of products or materials from previous product systems; processing of secondary materials; generation of electricity from primary energy resources; energy, or other recovery processes from secondary fuels	Extraction and processing of raw materials for the product components.
A2	Transport (to the manufacturer)	Transport of component materials to the manufacturing facility
A3	Manufacturing, including ancillary material production	Manufacturing of the wallcovering products and packaging (incl. upstream unit processes*)
A4	Transport (to the building site)	Transport of product (including packaging) to the building site
A5	Construction-installation process	Impacts from the installation of the product are assumed negligible. Impacts from the production, transport and disposal of waste material associated with installation are included in this phase in addition to impacts from packaging disposal.
B1	Product use	Use of the product in a commercial building setting. There are no associated emissions or impacts from the use of the product
B2	Product maintenance	Maintenance of products over the 75-year ESL, including periodic cleaning.
B3	Product repair	The wallcovering is not expected to require repair over its lifetime
B4	Product replacement	The materials and energy required for replacement of the product over the 75-year ESL of the assessment are included in this phase
B5	Product refurbishment	The wallcovering is not expected to require refurbishment over its lifetime
B6	Operational energy use by technical building systems	There is no operational energy use associated with the use of the product
B7	Operational water uses by technical building systems	There is no operational water use associated with the use of the product
C1	Deconstruction, demolition	Demolition of the product is accomplished using hand tools with no associated emissions and negligible impacts
C2	Transport (to waste processing)	Transport of product to waste treatment at end-of-life
C3	Waste processing for reuse, recovery and/or recycling	The products are disposed of by recycling, landfilling or incineration which require no waste processing
C4	Disposal	Disposal of wallcovering product
D	Reuse-recovery-recycling potential	Module Not Declared

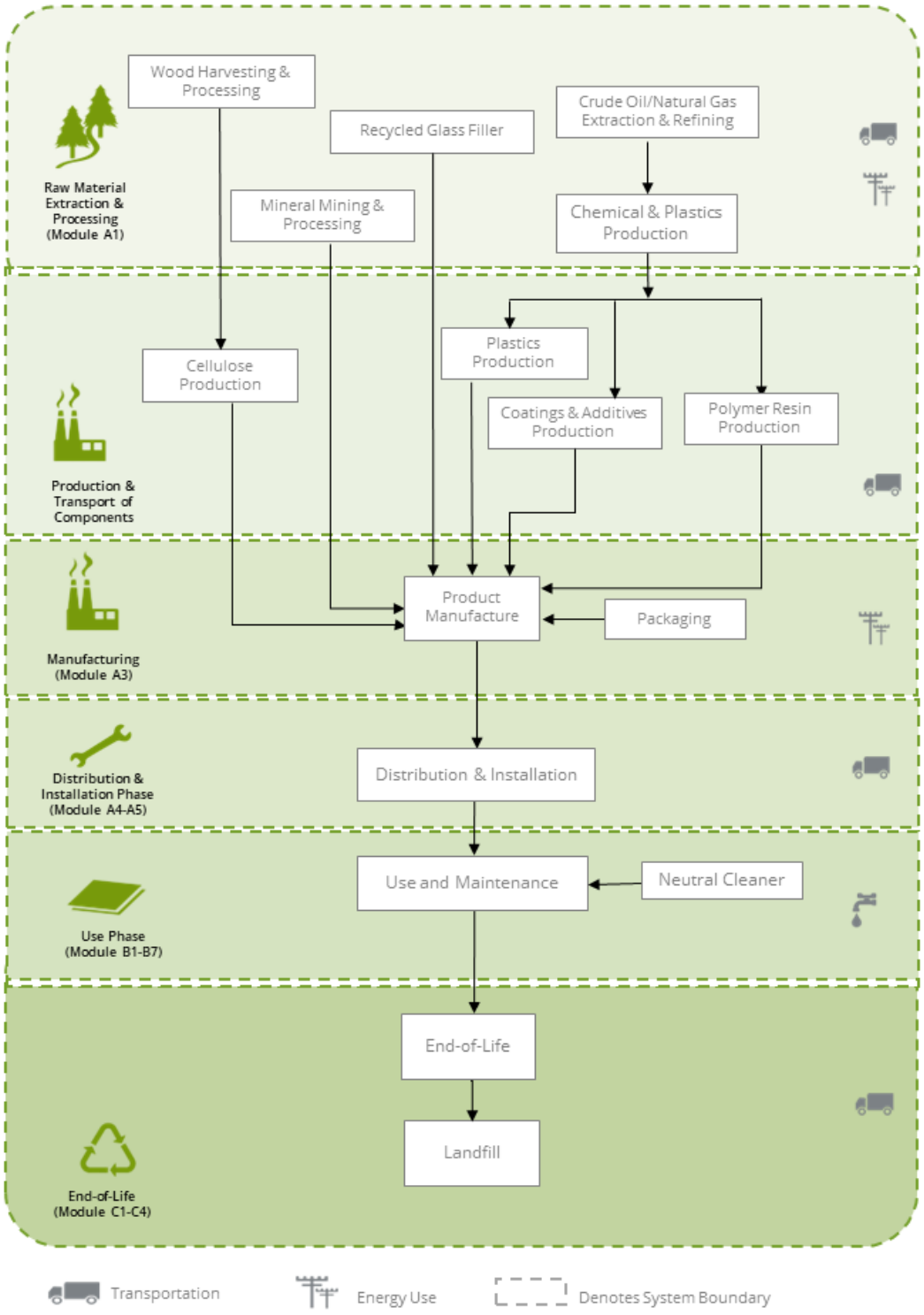


Figure 1. *Flow Diagram for the life cycle of the wallcovering product system.*

3.3 PRODUCT SPECIFIC CALCULATION FOR USE PHASE

Routine maintenance required for the product includes periodic surface cleaning with a mild detergent. For the present assessment monthly cleaning with 50mL of a 10% neutral detergent solution is assumed.

3.4 UNITS

All data and results are presented using SI units.

3.5 ESTIMATES AND ASSUMPTIONS

- Electricity use at the manufacturing facility was allocated to the products based on the product area as a fraction of the total production.
- The Koroseal production facility is located in the SRTV eGRID EPA NERC subregion. An Ecoinvent inventory dataset was modified to reflect the eGRID energy mix for the SRTV region to estimate resource use and emissions from electricity use at the manufacturing facility.
- Inventory data for some material components were unavailable and modeled using proxy datasets from the Ecoinvent LCI databases. These include primarily the fire retardant (ATH) and various additives which are not expected to significantly affect the modeling results. The GWP impacts associated with these minor material inputs account for less than ~0.5% of the total cradle-to-grave impacts for the product system.
- Downstream transport was modeled based on information provided by the manufacturer representing transport for global product distribution.
- The Reference Service Life (RSL) of the products was modeled based the PCR guidance using the default value of 15 years assuming their products are installed and maintained as recommended and used for the specific application noted.
- The maintenance phase of the product life cycle was modeled based on information provided by the manufacturer including recommended installation and cleaning methods, as well as cleaning frequency.
- For the product end-of-life, disposal of product packaging is modeled based on the PCR guidance regarding recycling rates of packaging materials.
- For final disposal of the product and packaging at end-of-life, all materials are assumed to be transported 100 miles (161 km) by diesel truck to either a landfill or material reclamation facility (for recycling). Datasets representing disposal in a landfill and waste incineration are from Ecoinvent.
- Modeling of recycled materials follows the recycled content method (also known as 100-0 method or cut-off method) whereby only the burdens of reprocessing the waste material are allocated to the system from the use of the recycled material.

The PCR requires the results for several inventory flows related to construction products to be reported including energy and resource use and waste and outflows. These are aggregated inventory flows, and do not characterize any potential impact; results should be interpreted considering this limitation.

3.6 CUT-OFF RULES

According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results. No known flows are deliberately excluded from this EPD.

3.7 DATA SOURCES

Primary data were provided by the manufacturer for their production facility for the year 2023. The sources of secondary LCI data are the Ecoinvent v3.10 database.

Table 7. *Data sources for the product system.*

Component	Dataset	Data Source	Publication Date
PRODUCT			
Plastics			
Polypropylene	polypropylene production, granulate | polypropylene, granulate | Cutoff, S/RoW	EI v3.10	2023
Polyethylene	polyethylene production, low density, granulate | steam, in chemical industry | Cutoff, S/RoW	EI v3.10	2023
Polyester fabric	polyester fibre production, 55% recycled, finished | fibre, polyester | Cutoff, U/RoW	EI v3.10	2023
Filler			
Calcium Carbonate	limestone production, crushed, washed | limestone, crushed, washed | Cutoff, S/RoW	EI v3.10	2023
Glass (recycled)	market for glass cullet, sorted | glass cullet, sorted | Cutoff, S/RoW	EI v3.10	2023
Cellulose			
	cellulose fibre production | cellulose fibre | Cutoff, S/RoW	EI v3.10	2023
Fire retardant			
	aluminium hydroxide production | aluminium hydroxide | Cutoff, S/RoW	EI v3.10	2023
Binder			
Acrylic binder	acrylic binder production, with water, in 54% solution state | acrylic binder, with water, in 54% solution state | Cutoff, S/RoW	EI v3.10	2023
Pigments			
TiO_2	market for titanium dioxide | titanium dioxide | Cutoff, S/RoW	EI v3.10	2023
Carbon black	carbon black production | carbon black | Cutoff, S/GLO	EI v3.10	2023
Other			
Additives	chemical production, organic | chemical, organic | Cutoff, S/GLO	EI v3.10	2023
	stearic acid production | stearic acid | Cutoff, S/GLO	EI v3.10	2023
PACKAGING			
Cardboard	containerboard production, linerboard, kraftliner | containerboard, linerboard | Cutoff, S/RoW	EI v3.10	2023
Plastic	packaging film production, low density polyethylene | packaging film, low density polyethylene | Cutoff, S/RoW	EI v3.10	2023
TRANSPORT			
Road transport	market for transport, freight, lorry 16-32 metric ton, EURO4 | transport, freight, lorry 16-32 metric ton, EURO4 | Cutoff, S/RoW	EI v3.10	2023
MAINTENACE			
Neutral cleaner	ethoxylated alcohol (AE7) production, petrochemical | ethoxylated alcohol (AE7) | Cutoff, S/RoW; tap water production, conventional treatment | tap water | Cutoff, S/RoW	EI v3.10	2023
Water	tap water production, conventional treatment | tap water | Cutoff, S/RoW	EI v3.10	2023
WASTE DESPOSAL			
Landfill	treatment of municipal solid waste, sanitary landfill | municipal solid waste | Cutoff, S/RoW	EI v3.10	2023
Incineration	treatment of municipal solid waste, incineration | municipal solid waste | Cutoff, S/RoW	EI v3.10	2023
RESOURCES			
Grid electricity	market for electricity, medium voltage | electricity, medium voltage | Cutoff, U - SRTV/US-SERC	EI v3.10	2023
Heat – natural gas	market group for heat, district or industrial, natural gas | heat, district or industrial, natural gas | Cutoff, S/GLO	EI v3.10	2023
Water	tap water production, conventional treatment | tap water | Cutoff, S/RoW	EI v3.10	2023

3.8 DATA QUALITY

The data quality assessment addressed the following parameters: time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty.

Table 8. *Data quality assessment for the product system.*

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	The most recent available data are used, based on other considerations such as data quality and similarity to the actual operations. Typically, these data are less than 5 years old. All of the data used represented an average of at least one year's worth of data collection, and up to three years in some cases. Manufacturer-supplied data (primary data) are based on annual production for 2023.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provide the best possible representation available with current data. Electricity use for product manufacture is modeled using representative data for the applicable eGRID subregion for 2022. Surrogate data used in the assessment are representative of global or European operations. Data representative of European or global operations are considered sufficiently similar to actual processes.
Technology Coverage: Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations. Representative fabrication datasets, specific to the type of material, are used to represent the actual processes, as appropriate. For some minor component materials, inventory data were unavailable and proxy datasets were used to represent their production.
Precision: Measure of the variability of the data values for each data expressed	Precision of results are not quantified due to a lack of data. Data collected for operations were typically averaged for one or more years and over multiple operations, which is expected to reduce the variability of results.
Completeness: Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of the products. In some instances, surrogate data used to represent upstream operations may be missing some data which is propagated in the model. Additionally, proxy datasets were utilized for materials lacking specific inventory data. No known processes or activities contributing to more than 1% of the total environmental impact for each indicator are excluded.
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	Data used in the assessment represent typical or average processes as currently reported from multiple data sources and are therefore generally representative of the range of actual processes and technologies for production of these materials. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction. Proxy datasets used for some component materials were considered sufficiently representative of the actual materials and are not expected to significantly affect the overall assessment results.
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	The consistency of the assessment is considered to be high. Data sources of similar quality and age are used; with a bias towards Ecoinvent v3.10 data where available. Different portions of the product life cycle are equally considered.
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documented.
Sources of the Data: Description of all primary and secondary data sources	Data representing energy use at the manufacturing facility represents an annual average and are considered of high quality due to the length of time over which these data are collected, as compared to a snapshot that may not accurately reflect fluctuations in production. For secondary LCI data, Ecoinvent v3.10 LCI data are used.

Data Quality Parameter	Data Quality Discussion
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	Uncertainty related to materials in the products and packaging is low. Actual supplier data for upstream operations were not available and the study relied upon the use of existing representative datasets. These datasets contained relatively recent data (<10 years) but lacked geographical representativeness. Uncertainty related to the impact assessment methods used in the study are high. The impact assessment method required by the PCR includes impact potentials, which lack characterization of providing and receiving environments or tipping points.

3.9 PERIOD UNDER REVIEW

The period of review is the calendar year 2023.

3.10 ALLOCATION

Manufacturing resource use was allocated to the products based on surface area of the products. Area-based allocation was deemed most appropriate for the products as total facility production was available as total square meters of product produced. Impacts from transportation were allocated based on the mass of material and distance transported.

3.11 COMPARABILITY

The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.

4. LCA: Scenarios and Additional Technical Information

Delivery and Installation stage (A4 - A5)

Distribution of the wallcovering products to the point of installation is included in the assessment. Transportation parameters for modeling product distribution are summarized in Table 9. Average transport distances for product distribution to North America were estimated by the manufacturer and used for the assessment

Table 9. *Distribution parameters for the wallcovering products.*

Parameter	Unit	Value
Ground transport		
Fuel type	-	Diesel
Liters of fuel	L/100km	18.7
Vehicle type	-	Diesel truck
Capacity utilization	%	76
Gross mass transported[1]	kg	0.838
Transport distance	km	1,759

[1] Including packaging.

Installation of the product and periodic cleaning are included in the life cycle use phase. The manufacturer provided installation and maintenance guidelines detailing the recommended installation methods and maintenance routine. For the current assessment, 4% of the product mass is assumed lost as waste during product installation which is assumed landfilled. Impacts associated with the production, transport, waste processing, and disposal of installation wastage are included in this life cycle phase. The VOC emissions associated with the installation, use and maintenance of the product are negligible.

The impacts associated with packaging disposal are included with the installation phase as per PCR requirements, which includes the release of the biogenic carbon contained within the product packaging (see Table 11). The recycling rates used for the product packaging are based on the US EPA's disposal statistics for municipal solid waste (MSW) for 2018. The relevant disposal statistics used for the packaging are summarized in Table 10. For material not recycled, 80% are assumed landfilled and 20% incinerated.

Modeling parameters for product installation are summarized in Table 11.

Table 10. *Recycling rates for packaging materials at end-of-life.*

Material	Recycling rate (%)
Recycling Rates	
Plastics	15%
Paper & Pulp	75%
Wood	0%
Disposal of Non-recyclables	
Landfill	80%
Incineration	20%

Table 11. *Installation parameters for the products, per 1 m^2.*

Parameter		Value
Ancillary materials		negligible
Net freshwater consumption (m^3)		0.00
Electricity consumption (kWh)		0.00
Product loss per functional unit (kg)		$1.81x10^{-2}$
Waste materials generated by product installation (kg)		0.404
Output materials resulting from on-site waste processing (kg)		n/a
Mass of packaging waste (kg)	Corrugate	0.318
	Plastic	$6.80x10^{-2}$
Biogenic carbon contained in packaging (kg CO_2 eq.)		0.583
Direct emissions (kg)		0.00

Use stage (B1)

No impacts are associated with the use of the product over the Reference Service Lifetime.

Maintenance stage (B2)

According to the manufacturer, typical maintenance involves regular surface cleaning with a mild, neutral detergent. The present assessment is based on a monthly cleaning schedule.

Table 12. *Maintenance parameters for the wallcovering products, per 1 m^2.*

Parameter	Unit	Value
Maintenance process	-	Surface cleaning
Maintenance cycle	Cycles / RSL	180
Maintenance cycle	Cycles / ESL	900
Net freshwater consumption	$m^3/m^2/yr$	0.540
Cleaning agent	$kg/m^2/yr$	0.060
Further assumptions	-	Monthly maintenance

Repair/Refurbishment stage (B3; B5)

Product repair and refurbishment are not relevant during the lifetime of the product.

Replacement stage (B4)

The materials and energy required for replacement of the product over the 75-year estimated service lifetime of the assessment are included in this stage. Modeling parameters for the product replacement stage are summarized in Table 13. Impacts associated with the production, transport, waste processing, and disposal of all materials required for the replacement of the product over the 75-year assessment period are included in this life cycle phase.

Table 13. *Product replacement parameters for the products, per 1 m^2.*

Parameter	Unit	Value
Reference service life	Years	15
Replacement cycle	-	4.0
Energy input	kWh	0.00
Freshwater consumption	m^3	0.00
Ancillary materials	kg	Negligible
Replacement parts, including packaging	kg	3.35
Direct emissions	kg	0.00

Building operation stage (B6 – B7)

There is no operational energy or water use associated with the use of the product.

Disposal stage (C1 - C4)

The disposal stage includes removal of the products (C1); transport of the products to waste treatment facilities (C2); waste processing (C3); and associated emissions as the product degrades in a landfill or is burned in an incinerator (C4). For the wallcovering products, no emissions are generated during demolition (C1) while no waste processing (C3) is required for incineration or landfill disposal.

Transportation of waste materials at end-of-life (C2) assumes a 100 mile (~161 km) average distance to disposal, consistent with the PCR. No recycling of the product materials is assumed at end-of-life. End-of-life modeling parameters are summarized in Table 14.

Table 14. *End-of-life disposal scenario parameters for the wallcovering products.*

Parameter		Value	Units
Scenario assumptions		Landfill	-
Collection process	Collected separately	0	kg
	Collected with mixed waste	0.452	kg
Recovery		n/a	
Disposal	Recycling	0	kg
	Landfill	0.452	kg
	Incineration	0	kg
Removals of biogenic carbon (excluding packaging)		0.064	kg CO_2e

5. LCA: Results

Results of the Life Cycle Assessment are presented below. It is noted that LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. All LCA results are stated to three significant figures in agreement with the PCR for this product and therefore the sum of the total values may not exactly equal 100%.

The following environmental impact category indicators are reported using characterization factors based on the U.S. EPA's Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts – TRACI 2.1 and CML-IA.

CMLI-A Impact Category	Unit	TRACI 2.1 Impact Category	Unit
Global Warming Potential (GWP)	kg CO_2 eq	Global Warming Potential (GWP)	kg CO_2 eq
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq	Ozone Depletion Potential (ODP)	kg CFC 11 eq
Acidification Potential of soil and water (AP)	kg SO_2 eq	Acidification Potential (AP)	kg SO_2 eq
Eutrophication Potential (EP)	kg $(PO_4)^{3-}$ eq	Eutrophication Potential (EP)	kg N eq
Photochemical Oxidant Creation Potential (POCP)	kg C_2H_4 eq	Smog Formation Potential (SFP)	kg O_3 eq
Abiotic depletion potential for non-fossil resources (ADPE)	kg Sb eq	Fossil Fuel Depletion Potential (FFD)	MJ Surplus, LHV
Abiotic depletion potential for fossil resources (ADPF)	MJ, LHV	-	-

These 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, the EPD users shall not use additional measures for comparative purposes.

The following inventory parameters, specified by the PCR, are also reported.

Resources	Unit	Waste and Outflows	Unit
RPR_E: Renewable primary resources used as energy carrier (fuel)	MJ, LHV	**HWD:** Hazardous waste disposed	kg
RPR_M: Renewable primary resources with energy content used as material	MJ, LHV	**NHWD:** Non-hazardous waste disposed	kg
$NRPR_E$: Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	**HLRW:** High-level radioactive waste, conditioned, to final repository	kg
$NRPR_M$: Non-renewable primary resources with energy content used as material	MJ, LHV	**ILLRW:** Intermediate- and low-level radioactive waste, conditioned, to final repository	kg
SM: Secondary materials	kg	**CRU:** Components for re-use	kg
RSF: Renewable secondary fuels	MJ, LHV	**MR:** Materials for recycling	kg
NRSF: Non-renewable secondary fuels	MJ, LHV	**MER:** Materials for energy recovery	kg
RE: Recovered energy	MJ, LHV	**EE:** Recovered energy exported from the product system	MJ, LHV
FW: Use of net freshwater resources	m^3	-	-

Modules B1, B3, B5, B6, and B7 are not associated with any impact and are therefore declared as zero. In addition, module C1 is likewise not associated with any impact as the product is manually deconstructed. Module D is not declared. In the interest of space and table readability, these modules are not included in the results presented below. Additionally, biogenic carbon contained in the product and packaging (biogenic carbon removals), 0.064 kg CO_2e and 0.583 kg CO_2e, respectively, is assumed released at end-of-life (biogenic carbon emissions)

The results of the assessment are presented below. Table 17 and Table 18 present the life cycle impact assessment and life cycle inventory results, respectively, for the product system from cradle-to-grave over the 75-year ESL of the assessment.

Table 15. *Life Cycle Impact Assessment (LCIA) results for the **Koroseal PVC-Free Wallcovering** product over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Impact Category	A1	A2	A3	A4	A5	B2	B4	C2	C4
CML									
GWP (kg CO_2 eq)	1.15	$6.60x10^{-2}$	1.18	0.284	0.319	1.56	13.1	0.101	0.165
	6.5%	0.37%	6.6%	1.6%	1.8%	8.7%	73%	0.57%	0.92%
AP (kg SO_2 eq)	$4.63x10^{-3}$	$2.07x10^{-4}$	$3.51x10^{-3}$	$8.93x10^{-4}$	$7.47x10^{-4}$	$5.38x10^{-3}$	$4.17x10^{-2}$	$3.84x10^{-4}$	$4.47x10^{-5}$
	8.1%	0.36%	6.1%	1.6%	1.3%	9.4%	73%	0.67%	0.078%
EP (kg $(PO_4)^{3-}$ eq)	$2.15x10^{-3}$	$5.70x10^{-5}$	$3.80x10^{-3}$	$2.46x10^{-4}$	$1.83x10^{-3}$	$1.94x10^{-3}$	$5.17x10^{-2}$	$8.81x10^{-5}$	$4.75x10^{-3}$
	3.2%	0.086%	5.7%	0.37%	2.8%	2.9%	78%	0.13%	7.1%
POCP (kg C_2H_4 eq)	$3.78x10^{-4}$	$1.01x10^{-5}$	$2.96x10^{-4}$	$4.37x10^{-5}$	$6.26x10^{-5}$	$3.73x10^{-4}$	$3.37x10^{-3}$	$1.71x10^{-5}$	$3.48x10^{-5}$
	8.3%	0.22%	6.5%	0.95%	1.4%	8.1%	73%	0.37%	0.76%
ODP (kg CFC-11 eq)	$1.99x10^{-7}$	$7.87x10^{-10}$	$1.18x10^{-8}$	$3.40x10^{-9}$	$9.79x10^{-9}$	$2.55x10^{-8}$	$9.04x10^{-7}$	$1.24x10^{-9}$	$1.15x10^{-10}$
	17%	0.068%	1%	0.29%	0.85%	2.2%	78%	0.11%	0.0099%
ADPF (MJ eq)	21.2	0.917	15.8	3.96	2.93	32.1	185	1.30	0.125
	8.1%	0.35%	6%	1.5%	1.1%	12%	70%	0.49%	0.047%
ADPE (kg Sb eq)	$5.97x10^{-6}$	$9.41x10^{-8}$	$1.26x10^{-6}$	$4.06x10^{-7}$	$3.41x10^{-7}$	$3.90x10^{-6}$	$3.24x10^{-5}$	$3.11x10^{-8}$	$5.64x10^{-9}$
	13%	0.21%	2.8%	0.91%	0.77%	8.8%	73%	0.07%	0.013%
TRACI									
GWP (kg CO_2 eq)	1.15	$6.60x10^{-2}$	1.16	0.284	0.303	1.56	12.8	0.101	0.136
	6.6%	0.38%	6.6%	1.6%	1.7%	8.9%	73%	0.58%	0.78%
AP (kg SO_2 eq)	$5.31x10^{-3}$	$2.49x10^{-4}$	$3.85x10^{-3}$	$1.07x10^{-3}$	$9.02x10^{-4}$	$5.91x10^{-3}$	$4.77x10^{-2}$	$4.90x10^{-4}$	$5.83x10^{-5}$
	8.1%	0.38%	5.9%	1.6%	1.4%	9%	73%	0.75%	0.089%
EP (kg N eq)	$4.63x10^{-3}$	$6.79x10^{-5}$	$8.87x10^{-3}$	$2.93x10^{-4}$	$4.78x10^{-3}$	$3.89x10^{-3}$	0.127	$5.00x10^{-5}$	$1.31x10^{-2}$
	2.8%	0.042%	5.4%	0.18%	2.9%	2.4%	78%	0.031%	8.1%
SFP (kg O_3 eq)	$5.67x10^{-2}$	$6.34x10^{-3}$	$7.07x10^{-2}$	$2.73x10^{-2}$	$2.07x10^{-2}$	$7.00x10^{-2}$	0.790	$1.48x10^{-2}$	$9.73x10^{-4}$
	5.4%	0.6%	6.7%	2.6%	2%	6.6%	75%	1.4%	0.092%
ODP (kg CFC-11 eq)	$2.65x10^{-7}$	$1.07x10^{-9}$	$2.09x10^{-8}$	$4.62x10^{-9}$	$1.33x10^{-8}$	$3.59x10^{-8}$	$1.23x10^{-6}$	$1.65x10^{-9}$	$1.59x10^{-10}$
	17%	0.068%	1.3%	0.29%	0.85%	2.3%	78%	0.11%	0.01%
FFD (MJ surplus)	2.63	0.130	1.73	0.560	0.390	4.21	22.6	0.196	$1.71x10^{-2}$
	8.1%	0.4%	5.3%	1.7%	1.2%	13%	70%	0.6%	0.053%

Table 16. *Resource use and waste flows for the **Koroseal PVC-Free Wallcovering** product over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Parameter	A1	A2	A3	A4	A5	B2	B4	C2	C4
Resources									
RPR_E (MJ)	$8.14x10^{-2}$	$1.23x10^{-2}$	3.95	$5.30x10^{-2}$	0.414	1.12	18.1	$5.68x10^{-3}$	$3.19x10^{-3}$
	0.34%	0.052%	17%	0.22%	1.7%	4.7%	76%	0.024%	0.013%
RPR_M (MJ)	0.683	0.00	5.41	0.00	0.00	0.00	24.4	0.00	0.00
	2.2%	0%	18%	0%	0%	0%	80%	0%	0%
$NRPR_E$ (MJ)	15.9	0.930	17.6	4.01	3.14	33.1	172	1.31	0.129
	6.4%	0.37%	7.1%	1.6%	1.3%	13%	69%	0.53%	0.052%
$NRPR_M$ (MJ)	6.12	0.00	2.52	0.00	0.00	0.00	34.5	0.00	0.00
	14%	0%	5.8%	0%	0%	0%	80%	0%	0%
SM (kg)	$9.03x10^{-4}$	0.00	0.00	0.00	0.00	0.00	$3.61x10^{-3}$	0.00	0.00
	20%	0%	0%	0%	0%	0%	80%	0%	0%
RSF/NRSF (MJ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RE (MJ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW (m^3)	$7.14x10^{-2}$	$7.46x10^{-4}$	$9.09x10^{-2}$	$3.22x10^{-3}$	$7.21x10^{-3}$	0.157	0.696	$4.89x10^{-4}$	$1.94x10^{-4}$
	6.9%	0.073%	8.8%	0.31%	0.7%	15%	68%	0.048%	0.019%
Wastes									
HWD (kg)	$4.49x10^{-4}$	$6.47x10^{-6}$	$1.48x10^{-4}$	$2.79x10^{-5}$	$3.41x10^{-5}$	$4.77x10^{-4}$	$2.70x10^{-3}$	$9.17x10^{-6}$	$8.45x10^{-7}$
	12%	0.17%	3.8%	0.72%	0.88%	12%	70%	0.24%	0.022%
NHWD (kg)	0.160	$4.41x10^{-2}$	0.278	0.190	0.147	$6.68x10^{-2}$	5.12	$6.22x10^{-3}$	0.453
	2.5%	0.68%	4.3%	2.9%	2.3%	1%	79%	0.096%	7%
HLRW (kg)	$3.32x10^{-6}$	$5.60x10^{-8}$	$1.31x10^{-5}$	$2.42x10^{-7}$	$7.01x10^{-7}$	$4.82x10^{-6}$	$6.97x10^{-5}$	$2.96x10^{-8}$	$1.70x10^{-8}$
	3.6%	0.061%	14%	0.26%	0.76%	5.2%	76%	0.032%	0.018%
ILLRW (kg)	$8.96x10^{-6}$	$1.32x10^{-7}$	$5.00x10^{-5}$	$5.69x10^{-7}$	$2.47x10^{-6}$	$1.11x10^{-5}$	$2.49x10^{-4}$	$6.95x10^{-8}$	$4.26x10^{-8}$
	2.8%	0.041%	16%	0.18%	0.77%	3.4%	77%	0.022%	0.013%
CRU (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MR (kg)	0.00	0.00	0.00	0.00	0.267	0.00	1.07	0.00	0.00
	0%	0%	0%	0%	20%	0%	80%	0%	0%
MER (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EE (MJ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

6. LCA: Interpretation

When considering the product's life cycle over the 75-year ESL, the contributions to total impact indicator results are dominated by the product replacement phase (B4) of the assessment. Of the remaining life cycle phases, with few exceptions, the product maintenance phase (B2) is generally the largest contributor to the overall impacts, followed by the raw material extraction and processing (A1) and product manufacturing phases (A3).

Table 17 and Table 18 present the assessment results for the PVC-Free wallcovering from cradle-to-grave over the 15-year RSL of the product (i.e., one product life cycle). Figure 2 presents these results graphically by impact category indicator and life cycle stage. With the exception of the Eutrophication and Ozone Depletion Potential indicators, impacts over a single product life cycle are dominated by the raw material extraction and processing (A1) and the product manufacturing (A3)

stages. Manufacturing stage impacts are primarily due to electricity use at the production facility as well as the extraction and processing of the corrugate packaging while the plastics (primarily polypropylene) used in the product are the main contributors to the raw material extraction stage impacts. The product maintenance stage (B2) and product installation (A5) are generally the next highest contributors to the cradle-to-grave impacts over a single product life cycle followed by product distribution (A4) and disposal (C2/C4).

Contributions to the Ozone Depletion potential indicator are dominated by the impacts associated with extraction and processing of plastic component materials while the product disposal stage dominates the Eutrophication potential indicator results due to landfilling of the components of the product and packaging/

Table 17. *Life Cycle Impact Assessment results for the **Koroseal PVC-Free Wallcovering** product from cradle-to-grave over the 15-year RSL of the product (i.e., one complete product life cycle). Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Impact Category	A1	A2	A3	A4	A5	B2	C2	C4
CML								
GWP (kg CO_2 eq)	1.15	$6.60x10^{-2}$	1.18	0.284	0.319	0.311	0.101	0.165
	32%	1.8%	33%	8%	8.9%	8.7%	2.8%	4.6%
AP (kg SO_2 eq)	$4.63x10^{-3}$	$2.07x10^{-4}$	$3.51x10^{-3}$	$8.93x10^{-4}$	$7.47x10^{-4}$	$1.08x10^{-3}$	$3.84x10^{-4}$	$4.47x10^{-5}$
	40%	1.8%	31%	7.8%	6.5%	9.4%	3.3%	0.39%
EP (kg $(PO_4)^{3-}$ eq)	$2.15x10^{-3}$	$5.70x10^{-5}$	$3.80x10^{-3}$	$2.46x10^{-4}$	$1.83x10^{-3}$	$3.88x10^{-4}$	$8.81x10^{-5}$	$4.75x10^{-3}$
	16%	0.43%	29%	1.8%	14%	2.9%	0.66%	36%
POCP (kg C_2H_4 eq)	$3.78x10^{-4}$	$1.01x10^{-5}$	$2.96x10^{-4}$	$4.37x10^{-5}$	$6.26x10^{-5}$	$7.47x10^{-5}$	$1.71x10^{-5}$	$3.48x10^{-5}$
	41%	1.1%	32%	4.8%	6.8%	8.1%	1.9%	3.8%
ODP (kg CFC-11 eq)	$1.99x10^{-7}$	$7.87x10^{-10}$	$1.18x10^{-8}$	$3.40x10^{-9}$	$9.79x10^{-9}$	$5.11x10^{-9}$	$1.24x10^{-9}$	$1.15x10^{-10}$
	86%	0.34%	5.1%	1.5%	4.2%	2.2%	0.53%	0.05%
ADPF (MJ eq)	21.2	0.917	15.8	3.96	2.93	6.41	1.30	0.125
	40%	1.7%	30%	7.5%	5.6%	12%	2.5%	0.24%
ADPE (kg Sb eq)	$5.97x10^{-6}$	$9.41x10^{-8}$	$1.26x10^{-6}$	$4.06x10^{-7}$	$3.41x10^{-7}$	$7.81x10^{-7}$	$3.11x10^{-8}$	$5.64x10^{-9}$
	67%	1.1%	14%	4.6%	3.8%	8.8%	0.35%	0.063%
TRACI								
GWP (kg CO_2 eq)	1.15	$6.60x10^{-2}$	1.16	0.284	0.303	0.311	0.101	0.136
	33%	1.9%	33%	8.1%	8.6%	8.9%	2.9%	3.9%
AP (kg SO_2 eq)	$5.31x10^{-3}$	$2.49x10^{-4}$	$3.85x10^{-3}$	$1.07x10^{-3}$	$9.02x10^{-4}$	$1.18x10^{-3}$	$4.90x10^{-4}$	$5.83x10^{-5}$
	40%	1.9%	29%	8.2%	6.9%	9%	3.7%	0.44%
EP (kg N eq)	$4.63x10^{-3}$	$6.79x10^{-5}$	$8.87x10^{-3}$	$2.93x10^{-4}$	$4.78x10^{-3}$	$7.78x10^{-4}$	$5.00x10^{-5}$	$1.31x10^{-2}$
	14%	0.21%	27%	0.9%	15%	2.4%	0.15%	40%
SFP (kg O_3 eq)	$5.67x10^{-2}$	$6.34x10^{-3}$	$7.07x10^{-2}$	$2.73x10^{-2}$	$2.07x10^{-2}$	$1.40x10^{-2}$	$1.48x10^{-2}$	$9.73x10^{-4}$
	27%	3%	33%	13%	9.8%	6.6%	7%	0.46%
ODP (kg CFC-11 eq)	$2.65x10^{-7}$	$1.07x10^{-9}$	$2.09x10^{-8}$	$4.62x10^{-9}$	$1.33x10^{-8}$	$7.18x10^{-9}$	$1.65x10^{-9}$	$1.59x10^{-10}$
	84%	0.34%	6.7%	1.5%	4.2%	2.3%	0.53%	0.051%
FFD (MJ surplus)	2.63	0.130	1.73	0.560	0.390	0.843	0.196	$1.71x10^{-2}$
	40%	2%	27%	8.6%	6%	13%	3%	0.26%

Table 19. *Resource use and waste flows for the **Koroseal PVC-Free Wallcovering** product from cradle-to-grave over the 15-year RSL of the product (i.e., one complete product life cycle). Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.*

Parameter	A1	A2	A3	A4	A5	B2	C2	C4
Resources								
RPRE (MJ)	$8.14x10^{-2}$	$1.23x10^{-2}$	3.95	$5.30x10^{-2}$	0.414	0.224	$5.68x10^{-3}$	$3.19x10^{-3}$
	1.7%	0.26%	83%	1.1%	8.7%	4.7%	0.12%	0.067%
RPRM (MJ)	0.683	0.00	5.41	0.00	0.00	0.00	0.00	0.00
	11%	0%	89%	0%	0%	0%	0%	0%
NRPRE (MJ)	15.9	0.930	17.6	4.01	3.14	6.62	1.31	0.129
	32%	1.9%	36%	8.1%	6.3%	13%	2.6%	0.26%
NRPRM (MJ)	6.12	0.00	2.52	0.00	0.00	0.00	0.00	0.00
	71%	0%	29%	0%	0%	0%	0%	0%
SM (kg)	$9.03x10^{-4}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	100%	0%	0%	0%	0%	0%	0%	0%
RSF/NRSF (MJ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RE (MJ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW (m^3)	$7.14x10^{-2}$	$7.46x10^{-4}$	$9.09x10^{-2}$	$3.22x10^{-3}$	$7.21x10^{-3}$	$3.14x10^{-2}$	$4.89x10^{-4}$	$1.94x10^{-4}$
	35%	0.36%	44%	1.6%	3.5%	15%	0.24%	0.094%
Wastes								
HWD (kg)	$4.49x10^{-4}$	$6.47x10^{-6}$	$1.48x10^{-4}$	$2.79x10^{-5}$	$3.41x10^{-5}$	$9.54x10^{-5}$	$9.17x10^{-6}$	$8.45x10^{-7}$
	58%	0.84%	19%	3.6%	4.4%	12%	1.2%	0.11%
NHWD (kg)	0.160	$4.41x10^{-2}$	0.278	0.190	0.147	$1.34x10^{-2}$	$6.22x10^{-3}$	0.453
	12%	3.4%	21%	15%	11%	1%	0.48%	35%
HLRW (kg)	$3.32x10^{-6}$	$5.60x10^{-8}$	$1.31x10^{-5}$	$2.42x10^{-7}$	$7.01x10^{-7}$	$9.65x10^{-7}$	$2.96x10^{-8}$	$1.70x10^{-8}$
	18%	0.3%	71%	1.3%	3.8%	5.2%	0.16%	0.092%
ILLRW (kg)	$8.96x10^{-6}$	$1.32x10^{-7}$	$5.00x10^{-5}$	$5.69x10^{-7}$	$2.47x10^{-6}$	$2.22x10^{-6}$	$6.95x10^{-8}$	$4.26x10^{-8}$
	14%	0.2%	78%	0.88%	3.8%	3.4%	0.11%	0.066%
CRU (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MR (kg)	0.00	0.00	0.00	0.00	0.267	0.00	0.00	0.00
	0%	0%	0%	0%	100%	0%	0%	0%
MER (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EE (MJ)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

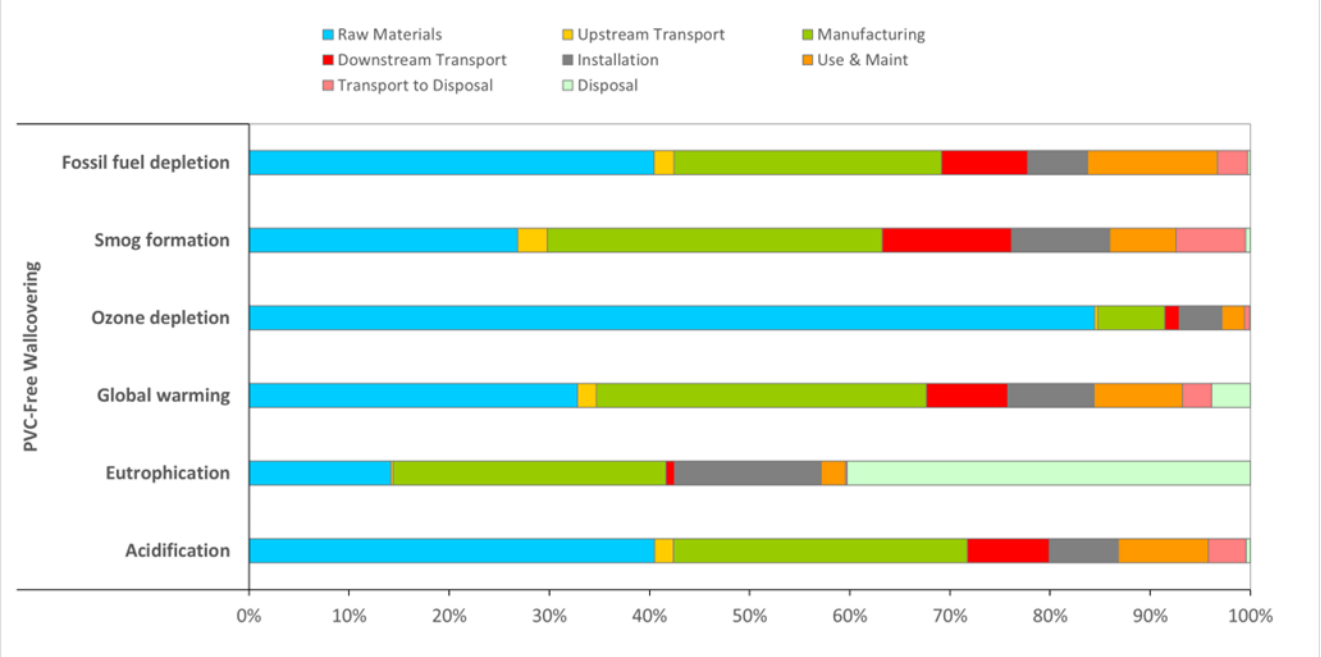


Figure 2. *Contribution analysis for the Koroseal Wallcovering product over the 15-year RSL of the product – TRACI v2.1.*

7. References

- Life Cycle Assessment of Koroseal Wallcovering. SCS Global Services Report. Prepared for client. January 2025.
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