

Environmental Product Declaration

FORM RELEASE AGENTS



KAUFMAN

Concrete Treatments

Environmental Product Declaration for all Form Release Agents
manufactured by Kaufman Products, Inc. in Baltimore, Maryland USA.



ADMINISTRATIVE INFORMATION

International Certified Environmental Product Declaration



Declared Product:	This Environmental Product Declaration (EPD) covers form release agent products produced by Kaufman Products Inc. Declared unit: 1 kg of release agent	
Declaration Owner:	Kaufman Products Inc. 3811 Curtis Avenue Baltimore, Maryland www.kaufmanproducts.net	
Program Operator:	Labeling Sustainability 11670 W Sunset Blvd. Los Angeles, CA 90049 www.labelingsustainability.com	
Product Category Rule:	ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services PCR Program Operator: International Organization for Standardization PCR review was conducted by: Technical Committee: ISO/TC 59/SC 17 Sustainability in buildings and civil engineering works	
Independent LCA Reviewer and EPD Verifier:	This declaration was independently verified in accordance with ISO 14025:2006 Independent verification of the declaration, according to ISO 14025:2006 Internal <input type="checkbox"/> ; External <input checked="" type="checkbox"/> X Third Party Verifier Geoffrey Guest, Certified 3rd Party Verifier under Labeling Sustainability Program (www.labelingsustainability.com), CSA Group (www.csaregistry.ca)	
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COMPANY DESCRIPTION

Kaufman Products is a family-owned manufacturer of nationally specified and state-approved concrete treatments. Among the more than two-hundred products in the product line are epoxy resin systems, concrete repair mortars, concrete curing compounds and curing & sealing compounds, non-shrink grouts, liquid chemical hardeners, form release agents, silanes sealers, shake-on hardeners, and many other chemistries for both new concrete placement and repair & restoration of concrete.

Kaufman Products is specified throughout North America through our long-time business partnerships with the two leading specification programs, SpecLink and MasterSpec. As a result, our brand name is called for routinely on both commercial and residential construction projects. In addition, Kaufman Products actively participates in the National Transportation Product Evaluation Program (NTPEP) through the American Association of State Highway Transportation Officials (AASHTO). As a result, many of our epoxies, repair mortars, grouts, and curing compounds were tested and are approved throughout the United States for use on roadways, bridges, sidewalks, and manufactured concrete products. At present, Kaufman Products has more than six-hundred approvals on these products from the many states and local authorities and is considered to be among the leaders in DOT approved materials throughout the United States.

Founded in 1963, Kaufman Products continues to adhere to their founding principles of producing high-quality materials at a reasonable price, while providing the best possible customer service and general caring that our customers, the contractors, engineers, specifiers, building owners, and architects deserve. In addition, our commitment to a greener industry is evident every day in our use of recycled packaging, the use of recycled raw materials, using Type IL cement and slag, and as the original inventor of water-based curing compounds and curing & sealing compounds. Contact us today to learn more about Kaufman Products.

STUDY GOAL

The intended application of this life cycle assessment (LCA) is to comply with the procedures for creating a Type III environmental product declaration (EPD) and publish the EPD for public review on the website, www.labelingsustainability.com. This level of study is in accordance with EPD Product Category Rule (PCR) for release agent products published by; International Standards Organization (ISO) 14025:2006 Environmental labels and declarations, Type III environmental declarations-Principles and procedures; ISO 14044:2006 Environmental management, Life cycle assessment- Requirements and guidelines; and ISO 14040:2006 Environmental management, Life cycle assessment-Principles and framework. The performance of this study and its subsequent publishing is in alignment with the business-to-business (B2B) communication requirements for the environmental assessment of building products. The study does not intend to support comparative assertions and is intended to be disclosed to the public.

This project report was commissioned to differentiate Kaufman Products Inc. from their competition for the following reasons: generate an advantage for the organization; offer customers information to help them make informed product decisions; improve the environmental performance of Kaufman Products Inc. by continuously measuring, controlling and reducing the environmental impacts of their products; help project facilitators working on Leadership in Energy and Environmental Design (LEED) projects achieve their credit goal; and to strengthen Kaufman Products Inc.'s license to operate in the



community. The intended audience for this LCA report is Kaufman Products Inc.'s employees, their suppliers, project specifiers of their products, architects, and engineers. The EPD report is also available for policy makers, government officials interested in sustainability, academic professors, and LCA professionals. This LCA report does not include product comparisons from other facilities.

DESCRIPTION OF PRODUCT AND SCOPE

Form release agents ease formwork removal, extending the useful life of a form and improving the smoothness and texture of concrete surfaces. Two main types are available: barrier and chemically active. This EPD covers form release agents manufactured by Kaufman products.

This LCA assumes the impacts from products manufactured in accordance with the standards outlined in this report. This LCA is a cradle-to-gate study, and therefore, stages extending beyond the plant gate are not included in this LCA. Excluded stages include transportation of the manufactured material to the construction site; on-site construction processes and components; building (infrastructure) use and maintenance; and "end-of-life" effects.

FORM RELEASE AGENT DESIGN SUMMARY

The following tables provide a list of the form release agent products considered in this EPD.

Table 1: **Declared products with form release agent products considered in this environmental product declaration.**

Prod#	Unique name/ID	Short description	Product type
1	FormKote OTC 5 Gal	FormKote OTC is an oil-based, chemically-reactive form release agent that is formulated to meet all VOC Content regulations.	Release Agent
2	FormKote OTC 275 Gal	FormKote OTC is an oil-based, chemically-reactive form release agent that is formulated to meet all VOC Content regulations.	Release Agent
3	FormKote OTC 55 Gal	FormKote OTC is an oil-based, chemically-reactive form release agent that is formulated to meet all VOC Content regulations.	Release Agent
4	FormKote Emulsion 5 Gal	FormKote Emulsion is a water-based, chemically-reactive form release agent that is formulated to meet all VOC Content regulations.	Release Agent
5	FormKote Emulsion 55 Gal	FormKote Emulsion is a water-based, chemically-reactive form release agent that is formulated to meet all VOC Content regulations.	Release Agent
6	KleenLease 28 OTC 5 Gal	KleenLease 28 is an oil-based, chemically-reactive form release agent that is formulated to meet only the Federal VOC Content regulations from the EPA.	Release Agent
7	SureForm 20 5 Gal	SureForm 20 OTC is an oil-based, chemically-reactive form release agent that is formulated to meet all VOC Content regulations.	Release Agent
8	SureForm 20 55 Gals	SureForm 20 OTC is an oil-based, chemically-reactive form release agent that is formulated to meet all VOC Content regulations.	Release Agent
9	SeasonAL 5 Gal	SeasonAL is a water-based, highly alkaline, chemically reactive and ready-to-use aluminum form seasoning agent.	Release Agent



FORM RELEASE AGENT DESIGN COMPOSITION

The following table provides the breakdown (kg per functional unit) of the material composition of each form release agent design considered. All proprietary information has been withheld.

Table 2: **Material composition - All declared products per 1 kg of release agent**

Prod#	Product Name	Ingredients in Descending Order
1	FormKote Emulsion	Water MINERAL OIL Proprietary admixture
2	FormKote OTC	MINERAL OIL Proprietary admixture
3	FormKote Concentrate	MINERAL OIL Proprietary admixture
6	KleenLease 28 OTC	Mineral OIL Proprietary Oil Blend Proprietary admixture
7	KleenLease 28	MINERAL OIL Proprietary Solvent Blend Proprietary Oil Blend
8	SureForm 20 OTC	MINERAL OIL Proprietary Oil Blend
9	SeasonAL	Water Proprietary admixture

A1 RAW MATERIAL RECYCLED CONTENT AND MATERIAL LOSSES –

Kaufman Products is committed to using as much not linear inflows to their products as possible. Recycled content in their products includes the reuse of steel barrels and totes (table 2) as well as proprietary ingredients. All recycled material in this study followed the "Polluter Pays" principle. A standard 2% material loss was used across all categories.



SYSTEM BOUNDARIES

The following figure depicts the cradle-to-gate system boundary considered in this study:

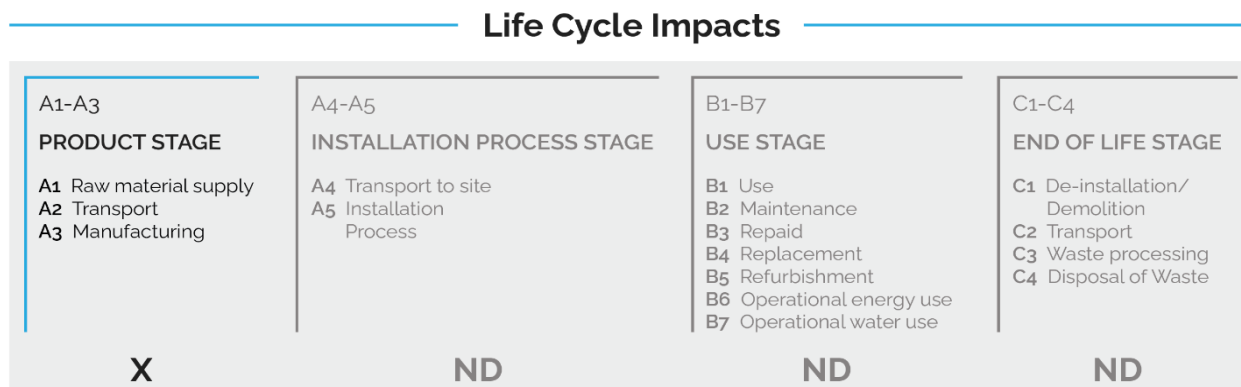


Figure 1: **General life cycle phases for consideration in a construction works system**

This is a Cradle-to-gate life cycle assessment and the following life cycle stages are included in the study:

- A1: Raw material supply (upstream processes) - Extraction, handling, and processing of the materials used in manufacturing the declared products in this LCA.
- A2: Transportation - Transportation of A1 materials from the supplier to the "gate" of the manufacturing facility (i.e. A3).
- A3: Manufacturing (core processes)- The energy and other utility inputs used to store, move, and manufacture the declared products and to operate the facility.

As according to the PCR, the following figure illustrates the general activities and input requirements for producing form release agent products and is not necessarily exhaustive.

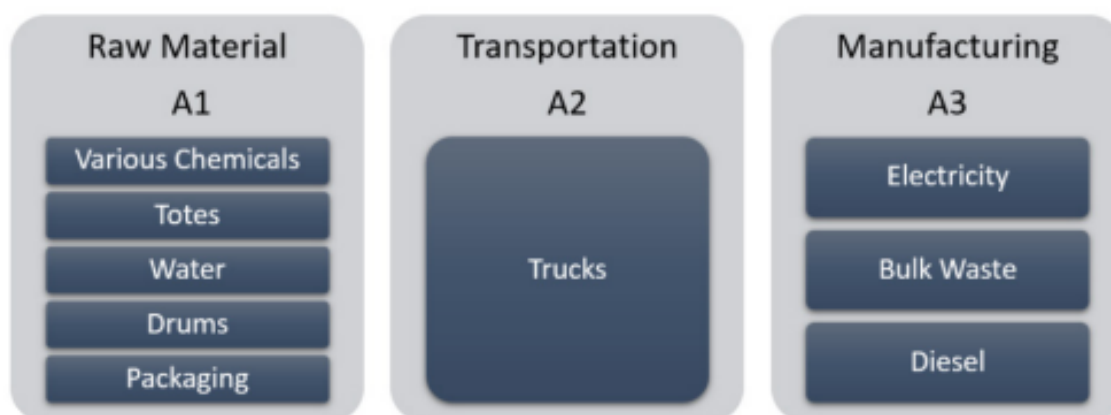


Figure 2: **General system inputs considered in the product system and categorized by modules in scope**

In addition, as according to the relevant PCR, the following requirements are excluded from this study:

- Production, manufacture and construction of A3 building/capital goods and infrastructure.
- Production and manufacture of steel production equipment, steel delivery vehicles, earth-moving equipment, and laboratory equipment.
- Personnel-related activities (travel, furniture, office supplies).
- Energy use related to company management and sales activities.

For this LCA the manufacturing plant, owned and operated by Kaufman Products Inc., is located at their Kaufman Products facility in Northeast United States. All operating data is formulated using the actual data from Kaufman Products Inc.'s plant at the above location, including water, energy consumption and waste generation. All inputs for this system boundary are calculated for the plant.

This life cycle inventory was organized in a spreadsheet and was then input into an RStudio environment where pre-calculated LCIA results for relevant products/activities stemming from the ecoinvent v3.10 database and a local EPD database in combination with primary data from Kaufman Products Inc. were utilized. Explanations of the contribution of each data source to this study are outlined in the section 'Data Sources and Quality'. Further LCI details for each declared product are provided in the sections 'Detailed LCI tables' and 'Transport tables' of the detailed LCA report. A parameter uncertainty analysis was also performed where key statistical results (e.g. min/mean/max etc.) are provided in the detailed LCA report.

No known flows are deliberately excluded from this EPD.

CUT-OFF CRITERIA

ISO 14044:2006 and the focus PCR requires the LCA model to contain a minimum of 95% of the total inflows (mass and energy) to the upstream and core modules be included in this study. The cut-off criteria were applied to all other processes unless otherwise noted above as follows. A 1% cut-off is considered for all renewable and non-renewable primary energy consumption and the total mass of inputs within a unit process where the total of the neglected inputs does not exceed 5%.

DATA SOURCES AND DATA QUALITY ASSESSMENT

No recovered on-site energy occurs at this facility.

Table 3: Reused or recycled components/materials at the A3 facility site

	Component/material for re-use/recycling	Value	Units	Re-used/recycled on-site or off-site
1	Plastic packaging	99,302.74	kg	Off-site
2	Plastic components	1,900,108.92	kg	Off-site
3	Steel components	194,225.75	kg	Off-site
4	Pallets	799,573.08	kg	Off-site

The following statements explain how the above facility requirements/generation were derived:

Raw material transport: All raw material and transportation data used in this study was primary reported Kaufman Products' data for the reference year, 2022.



Electricity: Electricity usage for the study was based on primary consumption data reported on the utility bills for the property.

Process/space heating: This facility does not use natural gas on-site.

Fuel required for machinery: Machinery at this facility uses either electricity, reported in the utility bills, or diesel, which was also calculated from direct purchases records for the 2022 reference year.

Waste generation: All waste generation values were taken from primary waste hauling records and then confirmed by Kaufman personnel.

Recovered energy: No on-site energy is recovered on site.

Recycled/reused material/components: Kaufman purchases recycled drums and totes for their products. They also use plastic pails made from 100% recycled content. Lastly, all pallets are purchased as used pallets.

Module A1 material losses: Default material losses, 2%, were used.

Direct A3 emissions accounting: NA

The following tables depict a list of assumed life cycle inventory utilized in the LCA modeling to generate the impact results across the life cycle modules in scope. An assessment of the quality of each LCI activities utilized from various sources is also provided.

Table 4: LCI inputs assumed for module A1 (i.e. raw material supply)

Input	LCI.activity	Data.source	Geo	Year	Technology	Time	Geography	Reliability	Completeness
Proprietary	kraft paper production/tall oil, crude/RoW/kg	ecoinvent v3.10	Ohio	v3.10 in 2024	2	3	2	3	3
Recycled PET Bucket	market for polyethylene terephthalate, granulate, bottle grade, recycled/polyethylene terephthalate, granulate, bottle grade, recycled/CH/kg	ecoinvent v3.10	Delaware Maryland	v3.10 in 2024	1	3	1	3	3
Plastic Wrap (LDPE)	packaging film production, low density polyethylene/package	ecoinvent v3.10	Multiple Regions	v3.10 in 2024	1	3	1	3	3



	ng film, low density polyethylene/RoW/kg								
Proprietary	Withheld	ecoinvent v3.10	Ohio	v3.10 in 2024	2	3	2	3	3
Water	tap water production, conventional treatment/tap water/RoW/kg	ecoinvent v3.10	Maryland	v3.10 in 2024	2	3	2	3	3
Proprietary	Withheld	ecoinvent v3.10	Maryland	v3.10 in 2024	2	3	2	3	3
Proprietary	Withheld	ecoinvent v3.10	Georgia	v3.10 in 2024	2	3	2	3	3
tertiary butyl acetate	isobutyl acetate production/isobutyl acetate/RoW/kg	ecoinvent v3.10	Ohio	v3.8 in 2024	2	3	2	3	3
Proprietary	Withheld	ecoinvent v3.10	Ohio	v3.8 in 2024	2	3	2	3	3
Proprietary	Withheld	ecoinvent v3.10	New York	v3.10 in 2024	2	3	2	3	3
Reclaimed Pallets	Waste Produced offsite	See A3 inputs	Maryland	See A3 inputs	1	A3	1	A3	A3

Table 5: LCI inputs assumed for module A2 (i.e. transport of A1 inputs)

Input	LCI.activity	Data.source	Geo	Year	Technology	Time	Geography	Reliability	Completeness
50% Solution Sodium Hydroxide-freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Bulk Waste-freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Diesel-freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3



	metric ton, EURO6/RoW/tkm								
lard oil- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Methanol- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Mineral Spirits- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Plastic Wrap (LDPE)- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Reclaimed HDPE Totes- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Reclaimed Pallets- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Reclaimed Steel Drums- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3



Reclaimed Steel Totes- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Recycled PET Bucket- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
SYLFAT FA- 1- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
tertiary butyl acetate- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3
Waste Mineral Oil- freight transport via Truck	market for transport, freight, lorry 7.5-16 metric ton, EURO6/transport, freight, lorry 7.5-16 metric ton, EURO6/RoW/tkm	ecoinvent v3.10	RoW	v3.10 in 2024	2	3	1	3	3

Table 6: LCI inputs assumed for module A3

Input	LCI.activity	Data.source	Geo	Year	Technology	Time	Geography	Reliability	Completeness
Bulk Waste	process-specific burdens, residual material landfill/process- specific burdens, residual material landfill/RoW/kg	ecoinvent v3.10	Maryland	v3.10 in 2024	2	3	2	3	3



Diesel	diesel, burned in building machine/diesel, burned in building machine/GLO/MJ	ecoinvent v3.10	Maryland	v3.10 in 2024	2	3	2	3	3
Electricity	market for electricity, medium voltage/electricity, medium voltage/US-SERC/kWh	ecoinvent v3.10	Maryland	v3.10 in 2024	2	3	2	3	3

DATA QUALITY ASSESSMENT

Data quality/variability requirements, as specified in the PCR, are applied. This section describes the achieved data quality relative to the ISO 14044:2006 requirements. Data quality is judged based on its precision (measured, calculated or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied within a study serving as a data source) and representativeness (geographical, temporal, and technological).

Precision: Through measurement and calculation, the manufacturers collected and provided primary data on their annual production. For accuracy, the LCA practitioner and 3rd Party Verifier validated the plant gate-to-gate data.

Completeness: All relevant specific processes, including inputs (raw materials, energy and ancillary materials) and outputs (emissions and production volume) were considered and modeled to represent the specified and declared products. The majority of relevant background materials and processes were taken from ecoinvent v3.10 LCI datasets where relatively recent region-specific electricity inputs were utilized. The most relevant EPDs requiring key A1 inputs were also utilized where readily available.

Consistency: To ensure consistency, the same modeling structure across the respective product systems was utilized for all inputs, which consisted of raw material inputs and ancillary material, energy flows, water resource inputs, product and co-products outputs, returned and recovered Form release agent materials, emissions to air, water and soil, and waste recycling and treatment. The same background LCI datasets from the ecoinvent v3.10 database were used across all product systems. Crosschecks concerning the plausibility of mass and energy flows were continuously conducted. The LCA team conducted mass and energy balances at the plant and selected process level to maintain a high level of consistency.

Reproducibility: Internal reproducibility is possible since the data and the models are stored and available in a machine-readable project file for all foreground and background processes, and in Labeling Sustainability's proprietary Form release agent LCA calculator* for all production facility and product-specific calculations. A considerable level of transparency is provided throughout the detailed LCA report as the specifications and material quantity make-up for the declared products are presented and key primary and secondary LCI data sources are summarized. The provision of more detailed publicly accessible data to allow full external reproducibility was not possible due to reasons of confidentiality.



*Labeling Sustainability has developed a proprietary tool that allows the calculation of PCR-compliant LCA results for Form release agent product designs. The tool auto-calculates results by scaling base-unit technosphere inputs (i.e. 1 kg sand, 1 kWh electricity, etc.) to replicate the reference flow conversions that take place in any typical LCA software like openLCA or SimaPro. The tool was tested against several LCAs performed in openLCA and the tool generated identical results to those realized in openLCA across every impact category and inventory metric (where comparisons could be readily made).

Representativeness: The representativeness of the data is summarized as follows.

- Time related coverage of the manufacturing processes' primary collected data from 2022-01-01 to 2022-12-31.
- Upstream (background) LCI data was either the PCR specified default (if applicable) or more appropriate LCI datasets as found in the country-adjusted ecoinvent v3.10 database.
- Geographical coverage for inputs required by the A3 facility(ies) is representative of its region of focus; other upstream and background processes are based on US, North American, or global average data and adjusted to regional electricity mixes when relevant.
- Technological coverage is typical or average and specific to the participating facilities for all primary data.

ENVIRONMENTAL INDICATORS AND INVENTORY METRICS

Per the PCR, this EPD supports the life cycle impact assessment indicators and inventory metrics as listed in the tables below. As specified in the PCR, the most recent US EPA Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI), impact categories were utilized as they provide a North American context for the mandatory category indicators to be included in the EPD. Additionally, the PCR requires a set of inventory metrics to be reported with the LCIA indicators (see tables below).

Table 7: **Life cycle impact categories and life cycle inventory metrics**

ID	LCIA.indicators	Abbreviations	Units
1	Environmental impact: acidification	AP	moles of H ⁺ -Eq
2	Environmental impact: eutrophication	EP	kg N
3	Environmental impact: global warming	GWP	kg CO ₂ -Eq
4	Environmental impact: ozone depletion	ODP	kg CFC-11-Eq
5	Environmental impact: photochemical oxidation	PCOP	kg NO _x -Eq
6	Material resources: metals/minerals: abiotic depletion potential (ADP): elements (ultimate reserves)	ADPe	kg Sb-Eq
7	Energy resources: non-renewable: abiotic depletion potential (ADP): fossil fuels	ADPf	MJ, net calorific value
Inventory metrics			
8	Total primary energy	TPE	MJ-Eq
9	Renewable energy	RE	MJ-Eq
10	Non-renewable energy	NRE	MJ-Eq
11	Non-renewable resources	NRR	kg
12	Renewable resources	RR	m3
13	Water Depletion: WDP	WDP	m3



14	Land filling: bulk waste	LFW	kg waste
15	Land filling: hazardous waste	LFHW	kg waste

It should be noted that emerging LCA impact categories and inventory items are still under development and can have high levels of uncertainty that preclude international acceptance pending further development. Use caution when interpreting data in any of the following categories.

- Renewable primary energy resources as energy (fuel);
- Renewable primary resources as material;
- Non-renewable primary resources as energy (fuel);
- Non-renewable primary resources as material;
- Secondary Materials;
- Renewable secondary fuels;
- Non-renewable secondary fuels;
- Recovered energy;
- Abiotic depletion potential for non-fossil mineral resources.
- Land use related impacts, for example on biodiversity and/or soil fertility;
- Toxicological aspects;
- Emissions from land use change [GWP 100 (land-use change)];
- Hazardous waste disposed;
- Non-hazardous waste disposed;
- High-level radioactive waste;
- Intermediate and low-level radioactive waste;
- Components for reuse;
- Materials for recycling;
- Materials for energy recovery;
- Recovered energy exported from the product system.

TOTAL IMPACT SUMMARY

The following table reports the total LCA results for each product produced at the given form release agent facility on a per 1 kg of release agent basis.

Table 8: **Total life cycle (across modules in scope) impact results for All declared products, assuming the geometric mean point values on a per 1 kg of release agent basis**

a) Midpoint Impact Categories:

Indicator/LCI Metric	AP	EP	GWP	ODP	PCOP	ADPe	ADPf
Unit	moles of H ⁺ -Eq	kg N	kg CO ₂ -Eq	kg CFC-11-Eq	kg NO _x -Eq	kg Sb-Eq	MJ, net calorific value
Minimum	0.0219	5.37e-05	0.116	1.59e-08	0.000253	5.28e-07	2.11
Maximum	0.529	0.00105	2.35	4.03e-07	0.00568	1.63e-05	56.1
Mean	0.0889	0.000183	0.429	7.52e-08	0.000962	2.97e-06	8.99
Median	0.0348	7.52e-05	0.205	3.13e-08	0.000391	1.04e-06	3.29
FormKote OTC 5 Gal	0.0348	8.76e-05	0.205	3.13e-08	0.000391	1.14e-06	3.29



FormKote OTC 275 Gal	0.0296	7.36e-05	0.177	2.83e-08	0.000338	8.84e-07	2.71
FormKote OTC 55 Gal	0.0307	7.52e-05	0.183	2.91e-08	0.00035	9.17e-07	2.84
FormKote Emulsion 5 Gal	0.0247	7.32e-05	0.127	1.72e-08	0.000283	7.32e-07	2.38
FormKote Emulsion 55 Gal	0.0219	6.17e-05	0.116	1.59e-08	0.000253	5.28e-07	2.11
KleenLease 28 OTC 5 Gal	0.529	0.00105	2.35	4.03e-07	0.00568	1.63e-05	56.1
SureForm 20 5 Gal	0.0394	9.16e-05	0.236	3.41e-08	0.000436	1.21e-06	3.87
SureForm 20 55 Gals	0.0393	8.2e-05	0.244	3.42e-08	0.000432	1.04e-06	3.96
SeasonAL 5 Gal	0.0507	5.37e-05	0.224	8.35e-08	0.000496	4e-06	3.62

b) Inventory Metrics:

Indicator/LCI Metric	TPE	RE	NRE	NRR	RR	WDP	LFW	LFHW
Unit	MJ-Eq	MJ-Eq	MJ-Eq	kg	m3	m3	kg waste	kg waste
Minimum	3.21	0.333	2.21	0.0593	9.53e-06	0.000459	0.0874	3.47e-06
Maximum	61	2.53	58.3	1.57	0.000164	0.00867	1.39	4.42e-05
Mean	10.3	0.962	9.34	0.253	8.15e-05	0.00182	0.278	1.03e-05
Median	4.03	0.774	3.43	0.0913	7.24e-05	0.000765	0.134	6.99e-06
FormKote OTC 5 Gal	4.21	0.774	3.43	0.0913	7.1e-05	0.000601	0.151	7.16e-06
FormKote OTC 275 Gal	3.56	0.695	2.84	0.0769	6.92e-05	0.000459	0.128	6.84e-06
FormKote OTC 55 Gal	3.67	0.7	2.99	0.0801	6.93e-05	0.000478	0.134	6.99e-06
FormKote Emulsion 5 Gal	3.55	1.07	2.48	0.0657	0.000103	0.00137	0.0909	4.94e-06
FormKote Emulsion 55 Gal	3.21	1	2.21	0.0593	0.000102	0.0013	0.0874	4.79e-06
KleenLease 28 OTC 5 Gal	61	2.53	58.3	1.57	0.000164	0.00867	1.39	4.42e-05
SureForm 20 5 Gal	4.81	0.801	4	0.107	7.24e-05	0.000743	0.187	7.38e-06
SureForm 20 55 Gals	4.84	0.754	4.11	0.111	7.28e-05	0.000765	0.204	7.29e-06
SeasonAL 5 Gal	4.03	0.333	3.73	0.115	9.53e-06	0.002	0.127	3.47e-06

ADDITIONAL ENVIRONMENTAL INFO

No regulated substances of very high concern are utilized on site.



REFERENCES

ISO Standards:

- ISO 6707-1: 2014 Buildings and Civil Engineering Works - Vocabulary - Part 1: General Terms
- ISO 14021:1999 Environmental Labels and Declarations - Self-declared Environmental Claims (Type II Environmental Labeling)
- ISO 14025:2006 Environmental Labels and Declarations - Type III Environmental Declarations - Principles and Procedures
- ISO 14040:2006 Environmental Management - Life Cycle Assessment - Principles and Framework
- ISO 14044:2006 Environmental Management - Life Cycle Assessment - Requirements and Guidelines
- ISO 14067:2018 Greenhouse Gases – Carbon Footprint of Products – Requirements and Guidelines for Quantification
- ISO 14050:2009 Environmental Management - Vocabulary
- ISO 21930:2017 Sustainability in Building Construction - Environmental Declaration of Building Products

EN Standards:

- EN 16757 Sustainability of construction works - Environmental product declarations – Product Category Rules for concrete and concrete elements.
- EN 15804 Sustainability of construction works - Environmental product declarations -Core rules for the product category of construction products.

Other References:

- USGBC LEED v4 for Building Design and Construction, 11 Jan 2019 available at <https://www.usgbc.org/resources/pcr-committee-process-resources-part-b>
- USGBC PCR Committee Process & Resources: Part B, USGBC, 7 July 2017 available at <https://www.usgbc.org/resources/pcr-committee-process-resources-part-b>.
- US EPA (2020) Advancing Sustainable Materials Management: 2018 Fact Sheet, https://www.epa.gov/sites/production/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf

