

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

Key #421-OP Polyurethane Topcoat



SmartEPD-2026-096-0826-01

Date of Issue
Apr 14, 2026

Expiration Date
Apr 14, 2031

Last Updated
Apr 14, 2026

Refer to the EPD Library at www.smartepd.com for the latest EPD listing information



General Information

Key Resin Company

4050 Clough Woods Dr, Batavia, OH 45103

(513) 943-4225

sales@keyresin.com

www.keyresin.com



Product Name:	Key #421 OP Polyurethane Topcoat
Functional Unit:	1 m2 of covered and protected flooring surface for a period of 60 years
Declaration Number:	SmartEPD-2026-096-0826-01
Date of Issue:	April 14, 2026
Expiration:	April 14, 2031
Last updated:	April 14, 2026
EPD Scope:	Cradle to grave A1, A2, A3, A4, A5, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4, D
Market(s) of Applicability:	North America

General Organization Information

Key Resin Company is a well-known manufacturer, specialized on resinous flooring and high-performance wall coatings. Key Resin Company serves a diverse client base across various industries, including industrial, manufacturing, food and beverage processing, healthcare and pharmaceutical, education, government, institutions, public spaces, and commercial and hospitality.

Further information can be found at: <https://www.keyresin.com/>

Limitations, Liability and Ownership

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 or programs, as the EPD results may not be entirely comparable. Any EPD comparison must be carried out at the construction works level per ISO 21930:2017 guidelines. The results of this EPD reflect an average performance by the product and its actual impacts may vary on a case-to-case basis.

Reference Standards

Standard(s):	ISO 14025 and ISO 21930:2017
PCR:	NSF PCR for Resinous Floor Coatings Date of issue: December 17, 2018 Valid until: June 30, 2026
PCR review panel:	Contact Smart EPD for more information.
General Program Instructions:	Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

LCA Author/Creator:

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Verification:

Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071:

🌐 Mari Kirss | ✉ mari.kirss@meetripuu.ee

External

Independent external verification of EPD, according to ISO 14025 and reference PCR(s):

🌐 Mari Kirss | ✉ mari.kirss@meetripuu.ee

External

Product Information

Functional Unit:

1 m2 of covered and protected flooring surface for a period of 60 years

Mass:

0.12 kg

Reference Service Life:

10 Years

Product Specificity:

✗ Product Average
✓ Product Specific

Product Description

KEY #421-OP is a 100% solids, pigmented two component aliphatic polyurethane topcoat with a gloss orange peel finish. KEY #421-OP is designed to provide high gloss, UV stability (non-yellowing), good chemical, stain and mar resistant protection. KEY #421-OP is essentially odorless and free of the health and environmental problems normally found in solvent-based urethanes. In addition, it's easy to clean and has excellent color retention. Key #421-OP is a high performance coating for use in a variety of Key Resin seamless flooring systems.

Further information can be found at: https://www.keyresin.com/media/3338/pds-key-468-hs-urethane-sealer-v17.pdf?utm_source=chatgpt.com

Product Specifications

Product SKU(s):

Key #421-OP

Product Classification Codes:

EC3 - Finishes -> Flooring -> OtherFlooring

Coating Type:

Thin mil floor coating

Options:

✓ Commercial

Estimated market service life:

10 years

Estimated technical service life:

15 years

Material Composition

Material/Component Category	Origin	% Mass
Catalyst	US	< 10
additives	US	< 10
filler	US	14 - 21
moisture scavenger	US	< 10
pigment	US	14 - 21
resin-binder	US	43 - 64
solvent	US	< 10
viscosity modifier	US	< 10

Packaging Material	Origin	kg Mass
Plastic pail product		0.01
Steel pail packaging		0.02

Hazardous Materials
Talc (14807-96-6)
Titanium dioxide (13463-67-7)
Zeolite (1318-02-1)
Castor oil (8001-79-4)
Crystalline Silica (Quartz)/ Silica Sand (14808-60-7)
Homopolymer of HDI (28182-81-2)
Hexamethylene diisocyanate (HDI) (822-06-0)

EPD Data Specificity

Primary Data Year:

Jun 1, 2024 - May 31, 2025

Manufacturing Specificity:

✗ Industry Average

✓ Manufacturer Average

✗ Facility Specific

Averaging:

Products of the same composition and properties are manufactured at different facilities. A weighted average of production volume at each facility has been utilized for calculation purposes.

System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	✓
	B2	Maintenance	✓
	B3	Repair	✓
	B4	Replacement	✓
	B5	Refurbishment	✓
	B6	Operational Energy Use	✓
	B7	Operational Water Use	✓
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	✓

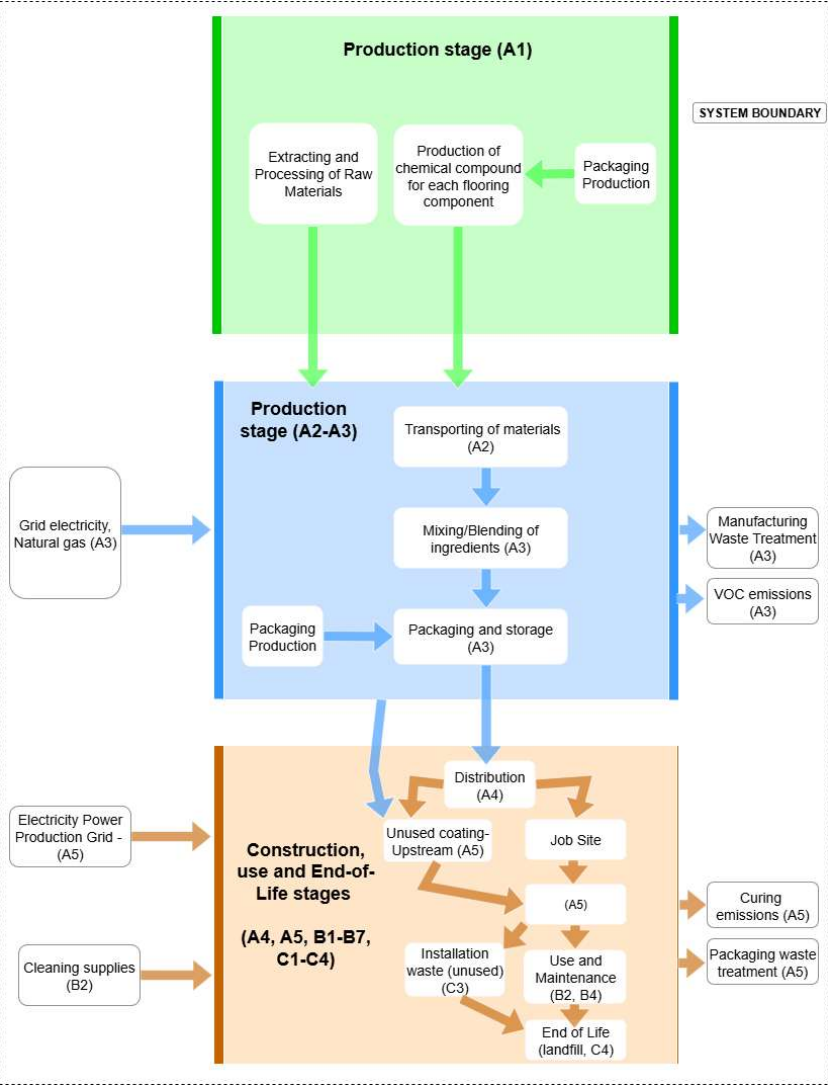
Note:

ND = Module not declared

Plants

-  Key Resin, Batavia, OH 4050 Clough Woods Drive, Batavia, OH 45103, USA
-  Key Resin Phoenix 4330 N 43rd Ave, Phoenix, AZ 85031, USA

Product Flow Diagram



Software And Database

- LCA Software:  SimaPro v. 10.2
- LCI Foreground Database(s):  Ecoinvent v. 3.9.1 |  Cut-off by Classification
- LCI Background Database(s):  Ecoinvent v. 3.9.1 |  Cut-off by Classification

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

The quality of inventory data is evaluated based on several criteria, including precision, completeness, consistency, and representativeness. The analysis follows the data quality level and criteria of the UN Environment Global Guidance on LCA database development. Based on these factors, the overall data quality is rated as "Good".

Precision and completeness:

- Precision (Very Good): The inventory data used in this study were either directly measured, calculated, or estimated based on primary data sources, ensuring high precision. Background data from Ecoinvent v3.9.1 database also has documented precision to the extent available.
- Completeness (Very Good): The product system's mass balance and inventory completeness were thoroughly checked. Some exclusions were made in line with the PCR requirements, such as personnel impacts, R&D activities, business travel, secondary packaging, point of sale infrastructure, and the coating applicator. However, no data was intentionally omitted.

Consistency and reproducibility:

- Consistency (Good): Primary data were collected with a similar level of detail, while background data primarily came from the Ecoinvent database, with other databases used only if necessary or more representative. The modeling approach and other methodological choices were applied consistently throughout the model.
- Reproducibility (Very Good): This study ensures reproducibility by providing comprehensive disclosure of input-output data, dataset choices, and modeling approaches. A knowledgeable third party should be able to approximate the results using the same data and modeling methods.

Representativeness (Good):

- Temporal: Primary data were collected for the totality of the reference study period to ensure the representativeness. Secondary data from the ecoinvent v3.9.1 database is typically representative of recent years, a detailed data quality analysis following ISO 21930 was performed on the background database and is available at request.
- Geographical: Primary data represents Key Resin's production facilities in Batavia, OH, and Phoenix, AZ. Regional differences in electric grid mix were considered using appropriate secondary data. Country-specific data ensures high geographical representativeness, with proxy data used only when necessary.
- Technological (Good): Both primary and secondary data were tailored to the specific technologies studied, ensuring high technological representativeness.

Life Cycle Module Description

The production stage (A1-A3) starts with the reception of raw materials, typically in the form of chemical packages (cans, plastic pails, plastic drums, supersacks, bags, etc). Next, the raw materials are mixed to form resins and additives. Non-hazardous waste, consisting mainly of packaging waste materials, is sent for disposal, incineration, and/or recycling. Hazardous waste consists of manufacturing product losses. The construction stage (A4-A5) starts with the packaged and finished coating leaving the production site and ends with the finished coating being installed/applied and cured onto the flooring substrate at the site. Impacts include VOC emissions from curing, product packaging disposal, and upstream production stage impacts associated with the ~2% of the wet mass of the coating that remains unused. The use stage (B1-B7) begins after the resinous floor coating has fully cured after installation and continues until the product reaches its end-of-life stage. Impacts include all cleaning and necessary recoating events during the service lifetime. End-of-life (C1-C4) was modeled according to PCR descriptions. Product at the end of life is sent to landfill. Unused solvent-based coatings are incinerated for energy recovery and water-based coatings are sent to landfill. Finally, impacts beyond system boundaries (Module D) include energy recovered from unused product incineration (C3) and the recycling of packaging materials (A5). Modules B3, B5, B6, and B7 are assumed to have zero impact for this product.

Service Lifetime

Regarding the Service Lifetime listed under the sections of Product Information, Production Specification and Replacement (B4), please be aware that this product is not applied as a stand-alone flooring product. It is a part of a multi-component resinous flooring system. The service life is based on typical flooring systems selected from several general categories by referring to the PCR, including the following examples: thin-film coating, slurry, or mortar. Service life is also based on the flooring application type, e.g., commercial versus industrial.

LCA Discussion

Allocation Procedure

Allocation of co-products was avoided, to the extent it was possible, based on the guidance given in ISO 14044:2006 and ISO 21930:2017. Energy use, water consumption, and VOC emissions at the Batavia, OH and Phoenix, AZ facilities were allocated by mass. Solid waste was estimated using packaging masses and material losses, and allocated following the polluter pays principle.

Cut-off Procedure

The system boundary was defined based on relevance to the goal of the study. For the raw material (A1) and process related inputs (A3), all available energy and material flow data have been included in the model. Exclusions allowed by the PCR such as secondary and tertiary packaging, were implemented.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results: ✗ No

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Vehicle Type:	Truck and Trailer
Transport Distance:	1600 km
Capacity Utilization:	33 %
Packaging Mass:	0.02536 kg
Weight of products transported:	0.1454 kg
Capacity utilization volume factor:	1
Assumptions for scenario development:	Transport distance includes finished product to distribution center and distribution center to point of sale.

Installation in to the building/construction site (A5)

A5 Module

Installation Scrap Rate Assumed:	2 %
Product Lost per Declared/Functional Unit:	0.0024 kg
Mass of Packaging Waste Specified by Type:	0.02536 kg
Assumptions for scenario development:	

Use (B1)

B1 Module

Use Conditions:

Once the product is cured, the use stage starts. No impacts associated with this module have been calculated.

Maintenance (B2)

B2 Module

Maintenance Cycle:	36.67 Cycles/RSL
	220 Cycles/ESL
Net Fresh Water Consumption Specified by Water Source and Fate:	0.83 m3
Ancillary Materials Specified by Type:	1.32 kg

Replacement (B4)

B4 Module

Reference Service Life:	10 Years
Replacement Cycle:	5 (ESL/RSL)-1
Replacement of Worn Parts:	0.6 kg
Further assumptions for scenario development:	Values assume market service life

End of Life (C1 - C4)

C1 - C4 Modules

Recovery

Landfill:	0.72 kg
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Assumptions for scenario development:

According to the ecoinvent 3.9.1 process "treatment of waste paint," the incineration of unused product at installation achieves a gross thermal efficiency of 74.4% and a gross electrical efficiency of 10%.

Results

Environmental Impact Assessment Results

IPCC AR5 GWP 100, TRACI 2.1

per 1 m2 of product of covered and protected flooring surface for a period of 60 years.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Market service lifetime

Impact Category	Unit	Method	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2-eq	IPCC AR5 GWP 100	6.46e-1	2.46e-2	1.28e-1	0	6.14e+0	0	3.99e+0	0	0	0	0	2.48e-3	5.22e-2	1.46e-1	-1.98e-1
ODP	kg CFC-11 eq	TRACI 2.1	3.59e-6	4.22e-10	7.20e-8	0	1.85e-7	0	1.83e-5	0	0	0	0	4.26e-11	3.57e-10	4.00e-9	-4.09e-9
AP	kg SO2 eq	TRACI 2.1	2.96e-3	7.84e-5	8.57e-5	0	2.34e-2	0	1.56e-2	0	0	0	0	7.93e-6	3.42e-5	5.06e-4	-6.73e-4
EP	kg N eq	TRACI 2.1	2.76e-3	2.17e-5	8.20e-5	0	2.87e-2	0	1.43e-2	0	0	0	0	2.19e-6	2.21e-5	5.04e-4	-6.14e-4
POCP	kg O3 eq	TRACI 2.1	3.91e-2	1.80e-3	1.56e-3	0	3.24e-1	0	2.12e-1	0	0	0	0	1.82e-4	4.50e-4	8.21e-3	-1.06e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

The estimated service life under this scenario is 10.0 years.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Key #421 OP Polyurethane Topcoat

Key Resin Company



Technical service lifetime

Impact Category	Unit	Method	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2-eq	IPCC AR5 GWP 100	6.46e-1	2.46e-2	1.28e-1	0	6.14e+0	0	2.39e+0	0	0	0	0	1.66e-3	3.48e-2	9.75e-2	-1.32e-1
ODP	kg CFC-11 eq	TRACI 2.1	3.59e-6	4.22e-10	7.20e-8	0	1.85e-7	0	1.10e-5	0	0	0	0	2.84e-11	2.38e-10	2.67e-9	-2.73e-9
AP	kg SO2 eq	TRACI 2.1	2.96e-3	7.84e-5	8.57e-5	0	2.34e-2	0	9.38e-3	0	0	0	0	5.28e-6	2.28e-5	3.37e-4	-4.49e-4
EP	kg N eq	TRACI 2.1	2.76e-3	2.17e-5	8.20e-5	0	2.87e-2	0	8.58e-3	0	0	0	0	1.46e-6	1.47e-5	3.36e-4	-4.09e-4
POCP	kg O3 eq	TRACI 2.1	3.91e-2	1.80e-3	1.56e-3	0	3.24e-1	0	1.27e-1	0	0	0	0	1.21e-4	3.00e-4	5.48e-3	-7.09e-3

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

The estimated service life under this scenario is 15.0 years.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicator

per 1 m2 of product of covered and protected flooring surface for a period of 60 years.

Market service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
RPRE	MJ	1.35e+0	4.53e-3	2.80e-2	0	5.33e+1	0	6.92e+0	0	0	0	0	4.57e-4	1.37e-3	5.70e-1	-1.57e-1
RPRM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPRT	MJ	1.35e+0	4.53e-3	2.80e-2	0	5.33e+1	0	6.92e+0	0	0	0	0	4.57e-4	1.37e-3	5.70e-1	-1.57e-1
NRPRE	MJ	9.61e+0	3.57e-1	2.22e-1	0	8.81e+1	0	5.10e+1	0	0	0	0	3.61e-2	2.34e-1	1.63e+0	-2.35e+0
NRPRM	MJ	8.48e-1	0	1.70e-2	0	0	0	4.33e+0	0	0	0	0	0	0	0	-1.67e-1
NRPRT	MJ	1.13e+1	3.57e-1	2.56e-1	0	8.81e+1	0	5.96e+1	0	0	0	0	3.61e-2	2.34e-1	1.63e+0	-2.69e+0
ADPF	MJ	1.19e+0	5.02e-2	2.77e-2	0	1.03e+1	0	6.32e+0	0	0	0	0	5.07e-3	3.48e-2	1.01e-1	-2.10e-1
FW	m3	9.16e-3	4.67e-5	3.48e-4	0	1.07e+0	0	4.78e-2	0	0	0	0	4.71e-6	2.31e-5	7.03e-4	-8.29e-4
RE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

The estimated service life under this scenario is 10.0 years.

Technical service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
RPRE	MJ	1.35e+0	4.53e-3	2.80e-2	0	5.33e+1	0	4.15e+0	0	0	0	0	3.05e-4	9.15e-4	3.80e-1	-1.05e-1
RPRM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPRT	MJ	1.35e+0	4.53e-3	2.80e-2	0	5.33e+1	0	4.15e+0	0	0	0	0	3.05e-4	9.15e-4	3.80e-1	-1.05e-1
NRPRE	MJ	9.61e+0	3.57e-1	2.22e-1	0	8.81e+1	0	3.06e+1	0	0	0	0	2.41e-2	1.56e-1	1.09e+0	-1.57e+0
NRPRM	MJ	8.48e-1	0	1.70e-2	0	0	0	2.60e+0	0	0	0	0	0	0	0	-1.11e-1
NRPRT	MJ	1.13e+1	3.57e-1	2.56e-1	0	8.81e+1	0	3.58e+1	0	0	0	0	2.41e-2	1.56e-1	1.09e+0	-1.79e+0
ADPF	MJ	1.19e+0	5.02e-2	2.77e-2	0	1.03e+1	0	3.79e+0	0	0	0	0	3.38e-3	2.32e-2	6.70e-2	-1.40e-1
FW	m3	9.16e-3	4.67e-5	3.48e-4	0	1.07e+0	0	2.87e-2	0	0	0	0	3.14e-6	1.54e-5	4.68e-4	-5.53e-4
RE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

The estimated service life under this scenario is 15.0 years.

Waste and Output Flow Indicators

per 1 m2 of product of covered and protected flooring surface for a period of 60 years.

Market service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	2.12e-4	0	4.25e-6	0	0	0	1.08e-3	0	0	0	0	0	1.44e-2	7.20e-1	0
NHWD	kg	4.40e-3	0	1.43e-2	0	0	0	9.33e-2	0	0	0	0	0	0	0	0
MR	kg	5.00e-3	0	9.72e-3	0	0	0	7.36e-2	0	0	0	0	0	0	0	0
MER	kg	1.40e-4	0	1.56e-3	0	0	0	8.51e-3	0	0	0	0	0	0	0	0
ILLRW	m3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HLRW	m3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE	MJ	4.32e-3	0	4.81e-2	0	0	0	2.62e-1	0	0	0	0	0	4.43e-1	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

The estimated service life under this scenario is 10.0 years.

Significant data limitations currently exist within the LCI data used to generate waste metrics for Life Cycle Assessments and Environmental Product Declarations. The waste metrics were calculated in a way conformant with the requirements of ISO 21930:2017, but these values represent rough estimates and are for informational purposes only. As such, no decisions regarding actual cradle-to-grave waste performance between products should be derived from these reported values.

Technical service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	2.12e-4	0	4.25e-6	0	0	0	6.50e-4	0	0	0	0	0	9.60e-3	4.80e-1	0
NHWD	kg	4.40e-3	0	1.43e-2	0	0	0	5.60e-2	0	0	0	0	0	0	0	0
MR	kg	5.00e-3	0	9.72e-3	0	0	0	4.42e-2	0	0	0	0	0	0	0	0
MER	kg	1.40e-4	0	1.56e-3	0	0	0	5.11e-3	0	0	0	0	0	0	0	0
ILLRW	m3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HLLRW	m3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE	MJ	4.32e-3	0	4.81e-2	0	0	0	1.57e-1	0	0	0	0	0	2.96e-1	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

The estimated service life under this scenario is 15.0 years.

Significant data limitations currently exist within the LCI data used to generate waste metrics for Life Cycle Assessments and Environmental Product Declarations. The waste metrics were calculated in a way conformant with the requirements of ISO 21930:2017, but these values represent rough estimates and are for informational purposes only. As such, no decisions regarding actual cradle-to-grave waste performance between products should be derived from these reported values.

Carbon Emissions and Removals

per 1 m2 of product of covered and protected flooring surface for a period of 60 years.

Market service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO2	-5.21e-2	0	-1.04e-3	0	0	0	-2.65e-1	0	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO2	9.20e-5	0	0	0	0	0	0	0	0	0	0	0	6.24e-3	3.12e-1	0
Bio Carbon Removal from Packaging	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWINR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

The estimated service life under this scenario is 10.0 years.

Key #421 OP Polyurethane Topcoat

Key Resin Company



Technical service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg CO2	-5.21e-2	0	-1.04e-3	0	0	0	-1.59e-1	0	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg CO2	9.20e-5	0	0	0	0	0	0	0	0	0	0	0	4.16e-3	2.08e-1	0
Bio Carbon Removal from Packaging	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Emission from Waste during Manufacturing (renewable source)	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbon Emission from Waste during Manufacturing (non-renewable source)	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

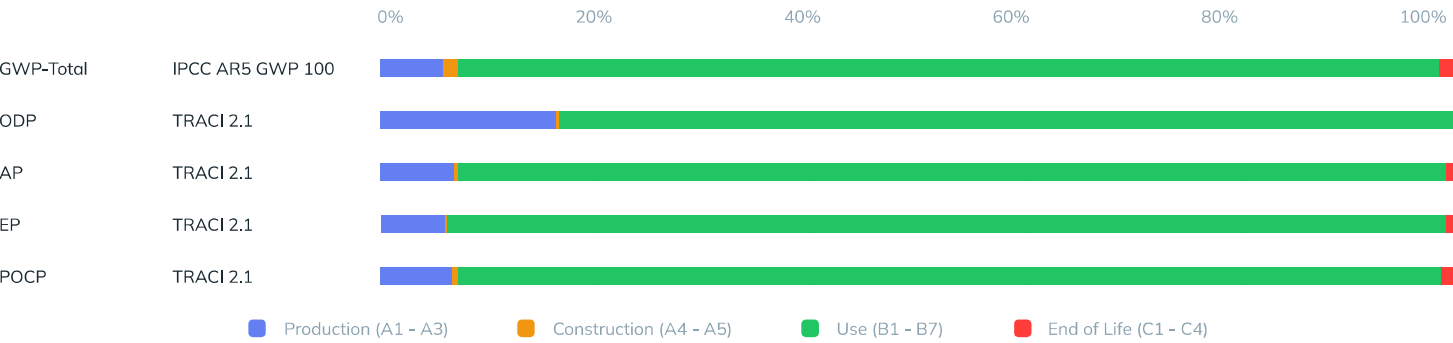
Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCKE = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

The estimated service life under this scenario is 15.0 years.

Interpretation

Raw materials are sourced from suppliers, transported to manufacturing facilities, and mixed to produce products. The product stage (A1-A3) drives the environmental impact, due to raw material production and energy use. These impacts are amplified in the use phase due to recoatings, making B4 the largest contributor to the overall impact. Market and Technical service life scenarios differ depending on assumed estimated service life (ESL), with lower impacts for longer-lived products. Those scenarios are constructed using PCR prescriptions that are highly conservative, as they assume the replacement of the full coating system. End-of-life impacts are relatively low, as products are assumed to be landfilled with building demolition waste. Switching to renewable energy is advised for products with high manufacturing energy demands. The manufacturer should explore lower-impact raw materials and work with suppliers using sustainable methods or renewable energy to enhance product sustainability.\



Additional Environmental Information

Key Resin is a proud member of the U.S. Green Building Council and adhere to its LEED Standards.

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