Environmental Product Declaration

IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

Series N224 Deco-Fleck (Part A, B, & C)

Program Operator: Smart EPD®
www.smartepd.com



SmartEPD-2025-068-0497-01.3

Date of Issue	Expiration Date	Last Updated
Jun 20, 2025	Jun 20, 2030	Sep 14, 2026

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

General Information



Tnemec

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www.tnemec.com

Product Name:	Series N224 Deco-Fleck (Part A, B, & C)
Functional Unit:	1 m2
Declaration Number:	SmartEPD-2025-068-0497-01.3
Date of Issue:	June 20, 2025
Expiration:	June 20, 2030
Last updated:	September 14, 2026
EPD Scope:	Cradle to grave A1 - A3, A4, A5, B1 - B7, C1 - C4, D
Market(s) of Applicability:	North America

General Organization Information

Tnemec Company, Inc. specializes in protecting surfaces and structures from corrosion with high-performance coatings and linings. However, we know our customers equally value the protection our coatings and linings provide to their investments, their reputation, and their clients. Founded in 1921, Tnemec is one of the largest privately held protective coatings manufacturers in North America. Our coatings protect surfaces from Los Angeles to Philadelphia, Shanghai to San Juan, and every order we make is delivered with the expertise of our veteran team and the history they carry with them. Tnemec is headquartered in North Kansas City, Mo., and manufactures a full range of protective coating products at facilities in North Kansas City, Mo., Baltimore, Md., and Shanghai, China. Tnemec's North American customers are serviced by distribution facilities in Atlanta, Dallas, Indianapolis, New Orleans, Seattle and Compton, Calif. Our independent representatives help with the specification and application of our coatings worldwide.

Further information can be found at: https://tnemec.com/about/

Limitations, Liability and Ownership

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared. The EPD owner has sole ownership, liability, and responsibility for the EPD.

Reference Standards

Standard(s):	ISO 14025:2006 and ISO 21930:2017
PCR:	NSF PCR for Resinous Floor Coatings v.1e

Date of issue: December 17, 2018

Valid until: December 31, 2025

PCR review panel: Contact Smart EPD for more information.

General Program Instructions: Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

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EPD Program Operator:
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585 Grove St., Ste. 145, Herndon, VA 20170, USA

Verification:

Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071: External
Rifat Karim | Independent Consultant | rifat.chimique@gmail.com

Independent external verification of EPD, according to ISO 14025 and reference PCR(s): External
Rifat Karim | Independent Consultant | rifat.chimique@gmail.com

Product Information

Functional Unit: 1 m2
Mass: 1.7214 kg
Reference Service Life: 60 Years
Product Specificity:
✗ Product Average
✓ Product Specific
✗ Representative Product EPD

Product Description

A low ambering, multi-purpose epoxy coating with enhanced UV stability and resistance to yellowing. Series N224 is a customized decorative floor topping utilizing colored flake broadcast either at random or refusal. It protects concrete surfaces from impact and abrasion and has excellent chemical resistance with an aesthetically pleasing appearance.

Further information can be found at: https://www.tnemec.com/products/series-n224-deco-fleck/

Product Specifications

Product Classification Codes: EC3 - Finishes -> Flooring -> OtherFlooring

Material Composition

Material/Component Category	Origin	% Mass
Flake	None	30 - 60
Additive	None	0 - 10
Resin	None	30 - 60
Solvent	None	0 - 10

Packaging Material	Origin	kg Mass
Plastic bag		0
Steel pail packaging		0.45

Hazardous Materials
EPOXY RESIN (LER) (25085-99-8)
BENZYL ALCOHOL (100-51-6)
EPOXY RESIN (30499-70-8)
AMINE-TERMINATED CYCLOALIPHATIC PROPOXYLATE (1220986-58-2)
CYCLOHEX-1,4-YLENEBIS(METHYLAMINE) (2549-93-1)
N,N-DIMETHYLCYCLOHEXYLAMINE (98-94-2)
CYCLOHEXANEDIMETHANAMINE, N-[[(AMINOMETHYL)CYCLOHEXL]METHYL] (42775-14-4)

EPD Data Specificity

Primary Data Year: January 1st 2024 to December 31st 2024

Manufacturing Specificity:

- ✗ Industry Average
- ✗ Manufacturer Average
- ✓ Facility Specific

Averaging:

Averaging was not conducted for this EPD

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	✓

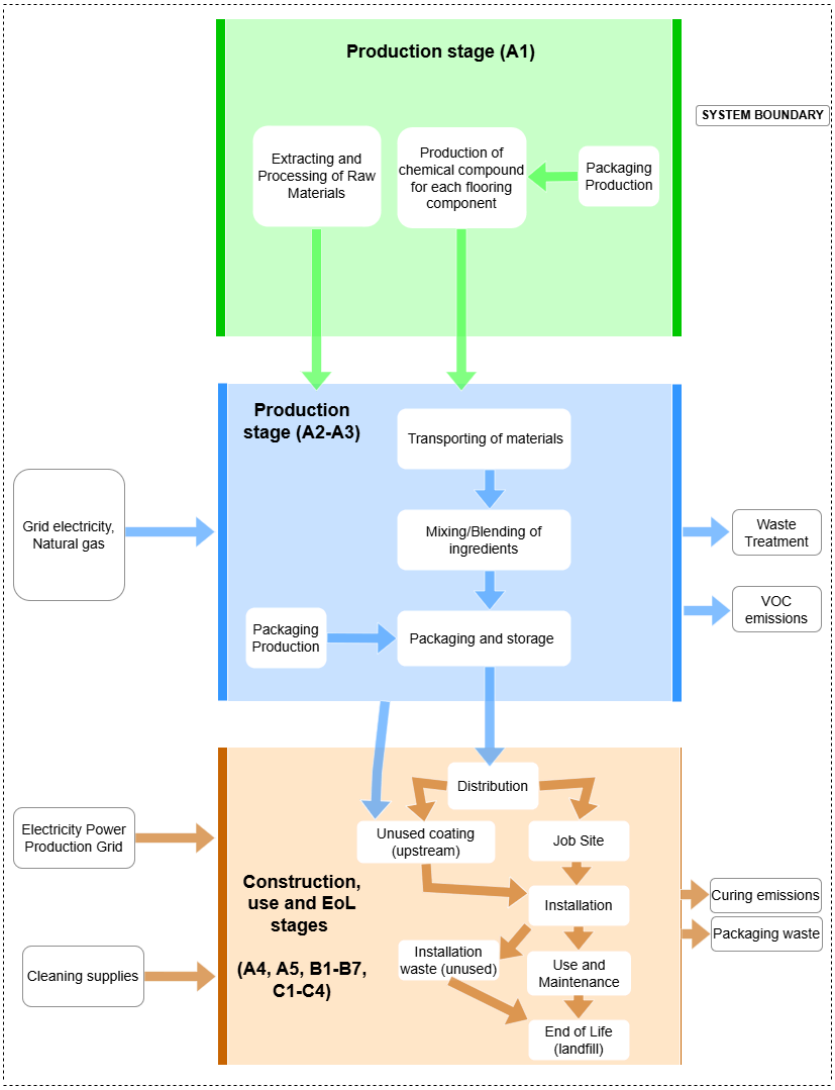
Note:

ND = Module not declared

Plants

Tnemec 123 West 23rd Avenue, North Kansas City, Missouri 64116, USA

Product Flow Diagram



Software And Database

LCA Software:	SimaPro v. 9.5
LCI Foreground Database(s):	Ecoinvent v. 3.9.1
LCI Background Database(s):	Ecoinvent v. 3.9.1

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. 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 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 12 month period of the 2024 calendar year to ensure the representativeness of post-consumer content. Secondary data from the ecoinvent v3 database is typically representative of recent years.
- Geographical: Primary data represents Tnemec's production facilities in North Kansas City, MO, and Baltimore, MD. We considered regional differences in electric grid mix 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 (solvent-based coatings are incinerated for energy recovery and water-based coatings are sent to landfill).

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, 4.3., in ISO 21930:2017. Energy use and VOC emissions at the North Kansas City, MO, factory were allocated by mass. Overhead burdens (building heating and corporate use consumption) were excluded using a square footage factor, that benchmarked and validated with process engineering models of resinous floor coatings production. The process do not consume process water or generate wastewater. 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, as well as overhead burdens such as building heating and corporate office consumption.

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:	1214 km
Capacity Utilization:	33 %
Packaging Mass:	0.4571 kg
Weight of products transported:	2.179 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:	0.03443 kg

Mass of Packaging Waste Specified by Type:	0.4571 kg
Assumptions for scenario development:	Impacts from 2% of unused product, product curing and packaging waste disposal

Use (B1)

B1 Module

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

Maintenance (B2)

B2 Module

Maintenance Cycle:	220 Cycles/RSL 18 Cycles/ESL
Net Fresh Water Consumption Specified by Water Source and Fate:	0.83 m3
Ancillary Materials Specified by Type:	1.32 kg
Maintenance Process Information:	As per the PCR, "220 cleaning events shall be reported in module B2 of the LCA and subsequent EPD." The cleaning solution contains 2.5% of a nonionic surfactant.

Repair (B3)

B3 Module

Repair Process Information:	No repair impacts assumed as per PCR guidance

Replacement (B4)

B4 Module

Reference Service Life:	5 Years
Replacement Cycle:	11 (ESL/RSL)-1
Replacement of Worn Parts:	18.94 kg
Further assumptions for scenario development:	Values assume market service life

Refurbishment (B5)

B5 Module

Refurbishment Process Description:	No refurbishment impacts assumed as per PCR guidance

Operational Energy Use (B6) & Operational Water Use (B7)

B6 & B7 Modules

Further assumptions for scenario development:
No operational energy and water use as per PCR guidance

End of Life (C1 - C4)

C1 - C4 Modules

Collection Process

Collected Separately:	0.41 kg
Collected with Mixed Construction Waste:	20.66 kg

Recovery

Landfill:	20.66 kg
Incineration:	0.41 kg

Assumptions for scenario development:
End-of-life (C1-C4) was modeled according to PCR descriptions. The applied product is assumed to be landfilled with building demolition waste. Unused coatings are managed as follows: solvent-based coatings are incinerated for energy recovery, and water-based coatings are sent to landfill.

Reuse, Recovery and / or Recycling Potentials & Relevant Scenario Information (D)

D Module

Net Energy Benefit from Energy Recovery from Waste Treatment Declared as Export Energy in C3:	7.59 MJ
Process and Conversion Efficiencies:	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.

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	7.75e+0	1.28e-1	1.60e-1	0	6.14e+0	0	8.85e+1	0	0	0	0	0	1.50e+0	4.19e+0	-7.43e+0
ODP	kg CFC-11 eq	TRACI 2.1	1.48e-5	2.20e-9	2.97e-7	0	1.85e-7	0	1.66e-4	0	0	0	0	0	1.02e-8	1.15e-7	-1.82e-7
AP	kg SO2 eq	TRACI 2.1	3.43e-2	4.09e-4	7.00e-4	0	2.34e-2	0	3.90e-1	0	0	0	0	0	9.81e-4	1.45e-2	-2.77e-2
EP	kg N eq	TRACI 2.1	2.43e-2	1.13e-4	4.90e-4	0	2.87e-2	0	2.74e-1	0	0	0	0	0	6.34e-4	1.45e-2	-2.79e-2
POCP	kg O3 eq	TRACI 2.1	5.04e-1	9.38e-3	1.04e-2	0	3.24e-1	0	5.76e+0	0	0	0	0	0	1.29e-2	2.36e-1	-4.10e-1

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 5.0 years.

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	7.75e+0	1.28e-1	1.60e-1	0	6.14e+0	0	8.85e+1	0	0	0	0	0	1.50e+0	4.19e+0	-7.43e+0
ODP	kg CFC-11 eq	TRACI 2.1	1.48e-5	2.20e-9	2.97e-7	0	1.85e-7	0	1.66e-4	0	0	0	0	0	1.02e-8	1.15e-7	-1.82e-7
AP	kg SO2 eq	TRACI 2.1	3.43e-2	4.09e-4	7.00e-4	0	2.34e-2	0	3.90e-1	0	0	0	0	0	9.81e-4	1.45e-2	-2.77e-2
EP	kg N eq	TRACI 2.1	2.43e-2	1.13e-4	4.90e-4	0	2.87e-2	0	2.74e-1	0	0	0	0	0	6.34e-4	1.45e-2	-2.79e-2
POCP	kg O3 eq	TRACI 2.1	5.04e-1	9.38e-3	1.04e-2	0	3.24e-1	0	5.76e+0	0	0	0	0	0	1.29e-2	2.36e-1	-4.10e-1

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 5.0 years.

Resource Use Indicator

per 1 m2 of product.

Market service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
RPRE	MJ	5.12e+0	1.78e-2	1.03e-1	0	3.05e+0	0	5.77e+1	0	0	0	0	0	3.14e-2	1.07e+0	-5.65e+0
RPRM	MJ	2.19e+0	5.87e-3	4.39e-2	0	5.03e+1	0	2.46e+1	0	0	0	0	0	8.00e-3	1.53e+1	-1.41e+0
RPRT	MJ	7.31e+0	2.36e-2	1.47e-1	0	5.33e+1	0	8.23e+1	0	0	0	0	0	3.94e-2	1.64e+1	-7.06e+0
NRPRE	MJ	1.40e+2	1.86e+0	2.84e+0	0	8.81e+1	0	1.59e+3	0	0	0	0	0	6.71e+0	4.69e+1	-8.15e+1
NRPRM	MJ	2.23e-2	3.21e-5	4.47e-4	0	1.13e-2	0	2.51e-1	0	0	0	0	0	2.61e-5	2.22e-3	-5.73e-3
NRPRT	MJ	1.40e+2	1.86e+0	2.84e+0	0	8.81e+1	0	1.59e+3	0	0	0	0	0	6.71e+0	4.69e+1	-8.15e+1
ADPF	MJ	1.59e+1	2.62e-1	3.25e-1	0	1.03e+1	0	1.82e+2	0	0	0	0	0	9.99e-1	2.88e+0	-4.59e+0
FW	m3	1.10e-1	2.44e-4	2.21e-3	0	1.07e+0	0	1.24e+0	0	0	0	0	0	6.63e-4	2.02e-2	-3.65e-2
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 5.0 years.

Technical service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
RPRE	MJ	5.12e+0	1.78e-2	1.03e-1	0	3.05e+0	0	5.77e+1	0	0	0	0	0	3.14e-2	1.07e+0	-5.65e+0
RPRM	MJ	2.19e+0	5.87e-3	4.39e-2	0	5.03e+1	0	2.46e+1	0	0	0	0	0	8.00e-3	1.53e+1	-1.41e+0
RPRT	MJ	7.31e+0	2.36e-2	1.47e-1	0	5.33e+1	0	8.23e+1	0	0	0	0	0	3.94e-2	1.64e+1	-7.06e+0
NRPRE	MJ	1.40e+2	1.86e+0	2.84e+0	0	8.81e+1	0	1.59e+3	0	0	0	0	0	6.71e+0	4.69e+1	-8.15e+1
NRPRM	MJ	2.23e-2	3.21e-5	4.47e-4	0	1.13e-2	0	2.51e-1	0	0	0	0	0	2.61e-5	2.22e-3	-5.73e-3
NRPRT	MJ	1.40e+2	1.86e+0	2.84e+0	0	8.81e+1	0	1.59e+3	0	0	0	0	0	6.71e+0	4.69e+1	-8.15e+1
ADPF	MJ	1.59e+1	2.62e-1	3.25e-1	0	1.03e+1	0	1.82e+2	0	0	0	0	0	9.99e-1	2.88e+0	-4.59e+0
FW	m3	1.10e-1	2.44e-4	2.21e-3	0	1.07e+0	0	1.24e+0	0	0	0	0	0	6.63e-4	2.02e-2	-3.65e-2
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 5.0 years.

Waste and Output Flow Indicators

per 1 m2 of product.

Market service lifetime

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	3.44e-2	0	6.89e-4	0	0	0	3.86e-1	0	0	0	0	0	4.13e-1	2.07e+1	0
NHWD	kg	7.27e-2	0	2.00e-1	0	0	0	3.00e+0	0	0	0	0	0	0	0	0
MR	kg	2.57e-2	0	2.59e-1	0	0	0	3.13e+0	0	0	0	0	0	0	0	-3.41e+0
MER	kg	0	0	0	0	0	0	0	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

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 5.0 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-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	3.44e-2	0	6.89e-4	0	0	0	3.86e-1	0	0	0	0	0	4.13e-1	2.07e+1	0
NHWD	kg	7.27e-2	0	2.00e-1	0	0	0	3.00e+0	0	0	0	0	0	0	0	0
MR	kg	2.57e-2	0	2.59e-1	0	0	0	3.13e+0	0	0	0	0	0	0	0	-3.41e+0
MER	kg	0	0	0	0	0	0	0	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

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 5.0 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-grave waste performance between products should be derived from these reported values

Carbon Emissions and Removals

per 1 m2 of product.

Tech

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Removal from Packaging	kg C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg C	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 C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg C	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 C	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, 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 5.0 years.

Market

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Bio Carbon Removal from Product	kg C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Emission from Product	kg C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Removal from Packaging	kg C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio Carbon Emission from Packaging	kg C	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 C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calcination Carbon Removal	kg C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbonation Carbon Emission	kg C	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 C	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.

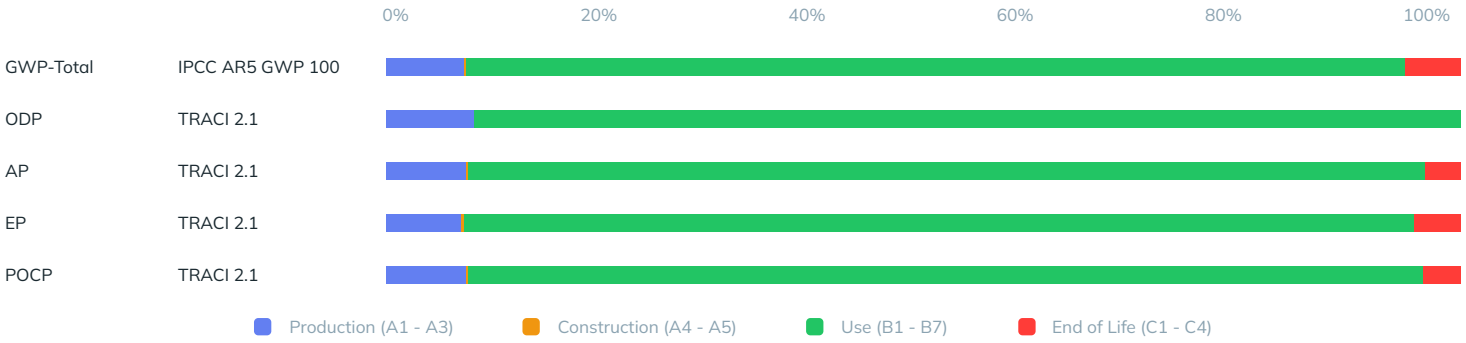
Abbreviations:

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, 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 5.0 years.

Interpretation

Raw materials are sourced from suppliers, transported to manufacturing facilities, and mixed to produce products. The product stage (A1-A3) has the highest environmental impact, especially due to raw material production and energy use, impact amplified in the use phase (B4) from recoatings. The Market scenario shows higher use-phase impacts due to a shorter estimated service life (ESL).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

None

References

ISO 14025, “Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures”, ISO14025:2006
ISO 21930, Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services. ISO21930:2017
NSF International, Product Category Rules for Environmental Product Declarations for Resinous Floor Coatings, NSF International:2023.
ISO 14044, “Environmental management - Life cycle assessment - Requirements and guidelines”, ISO14044:2006.
Ecoinvent v3.9.1, December 2022. The ecoinvent database: Overview and methodology, Data quality guideline for the ecoinvent database version 3, www.ecoinvent.org
Bare, J. C. TRACI 2.0 - The Tool for the Reduction and Assessment of Chemical and other environmental Impacts. CLEAN TECHNOLOGIES AND ENVIRONMENTAL POLICY. Springer-Verlag, New York, NY.