

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

SmartEPD-2024-039-0177-01

Polymer Alloy 2000SD



Date of Issue:
Oct 15, 2024

Expiration:
Oct 15, 2029

Last updated:
Oct 21, 2024

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General Information

Dudick Inc.
 1818 Miller Parkway, Streetsboro, OH 44241
 800-322-1970
 sales@dudick.com  dudick.com



Product Name:	Polymer Alloy 2000SD
Functional Unit:	1 m2 of covered and protected flooring surface for a period of 60 years
Declaration Number:	SmartEPD-2024-039-0177-01
Date of Issue:	October 15, 2024
Expiration:	October 15, 2029
Last updated:	October 21, 2024
EPD Scope:	Cradle to grave A1 – A3, A4, A5, B1 - B7, C1 - C4
Market(s) of Applicability:	North America

Reference Standards

Standard(s):	ISO 14025 and ISO 21930:2017
PCR:	NSF PCR for Resinous Floor Coatings v.1e Date of issue: December 17, 2018 Valid until: December 17, 2024
PCR review panel:	 Contact Smart EPD for more information.
General Program Instructions:	 Smart EPD General Program Instructions v.1.0, November 2022

Verification Information

LCA Author/Creator:

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EPD Program Operator:

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 585 Grove St., Ste. 145 PMB 966, Herndon, VA 20170, USA

Verification:

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

External

 Ranjani Theregowda |  Smart EPD LLC |  ranjani.theregowda@smarteprd.com

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

External

 Ranjani Theregowda |  Smart EPD LLC |  ranjani.theregowda@smarteprd.com

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.

Organization Information

For over fifty years, Dudick has been at the forefront of delivering cutting-edge product development alongside a wealth of technical expertise and experience, offering unparalleled chemical resistant coating solutions on a global scale. As a notable manufacturer of high performance resinous flooring and other coating products, Dudick is dedicated to showcasing its sustainability leadership while recognizing the business value in transparently reporting the comprehensive environmental impacts of its products, spanning from cradle to grave. For additional details on Dudick's product range, visit their website at <https://www.dudick.com>.

Further information can be found at: www.dudick.com

Product Description

A static dissipative, semi self-leveling novolac epoxy floor topping engineered to instill electrostatic control characteristics. This product uses a moisture-tolerant primer to achieve a strongly bonded monolithic topping with moderate chemical resistance to splash and spillage, and good physical and mechanical properties.

Further information can be found at: <https://www.dudick.com/products/polymer-alloy/>

Product Information

Functional Unit:

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

Mass:

1.64 kg

Reference Service Life:	60 Years
Product Specificity:	✗ Product Average ✓ Product Specific

Plants



Dudick - Streetsboro, OH
1818 Miller Parkway, Streetsboro, OH, USA

Product Specifications

Product SKU(s):	260D0766ABXD
Product Classification Codes:	Masterformat - 09 67 00 EC3 - Finishes -> Flooring -> OtherFlooring

Material Composition

Material/Component Category	Origin	% Mass
Conductive Pigment	USA	20-40%
Curing agent	USA	10-30%
Defoamer	USA	<10%
Dispersing agent	USA	<10%
Epoxy resin	USA	20-40%
Pigment	USA	<10%
Reactive Diluent	USA	0-20%

Packaging Material	Origin	kg Mass
Steel Pail	USA	0.041
Plastic Pail	USA	0.21

Hazardous Materials

Polyoxypropylene-2, 10-diamine (9046-10-0)

4-tert-Butylphenol (98-54-4)

Benzyl alcohol (100-51-6)

Isophoronediamine (2855-13-2)

Epoxy phenol novolac resin (28064-14-4)

Neopentyl diglycidyl ether (17557-23-2)

EPD Data Specificity

Primary Data Year:

2022-2023

Manufacturing Specificity:

- ☐ Industry Average
- ☐ Manufacturer Average
- ☒ Facility Specific

Averaging:

Averaging was not conducted for this EPD

Software and LCI Data Sources

LCA Software:

 SimaPro v. 9.5

LCI Foreground Database(s):

 Ecoinvent v. 3.9.1

LCI Background Database(s):

 Ecoinvent v. 3.9.1

Renewable Electricity

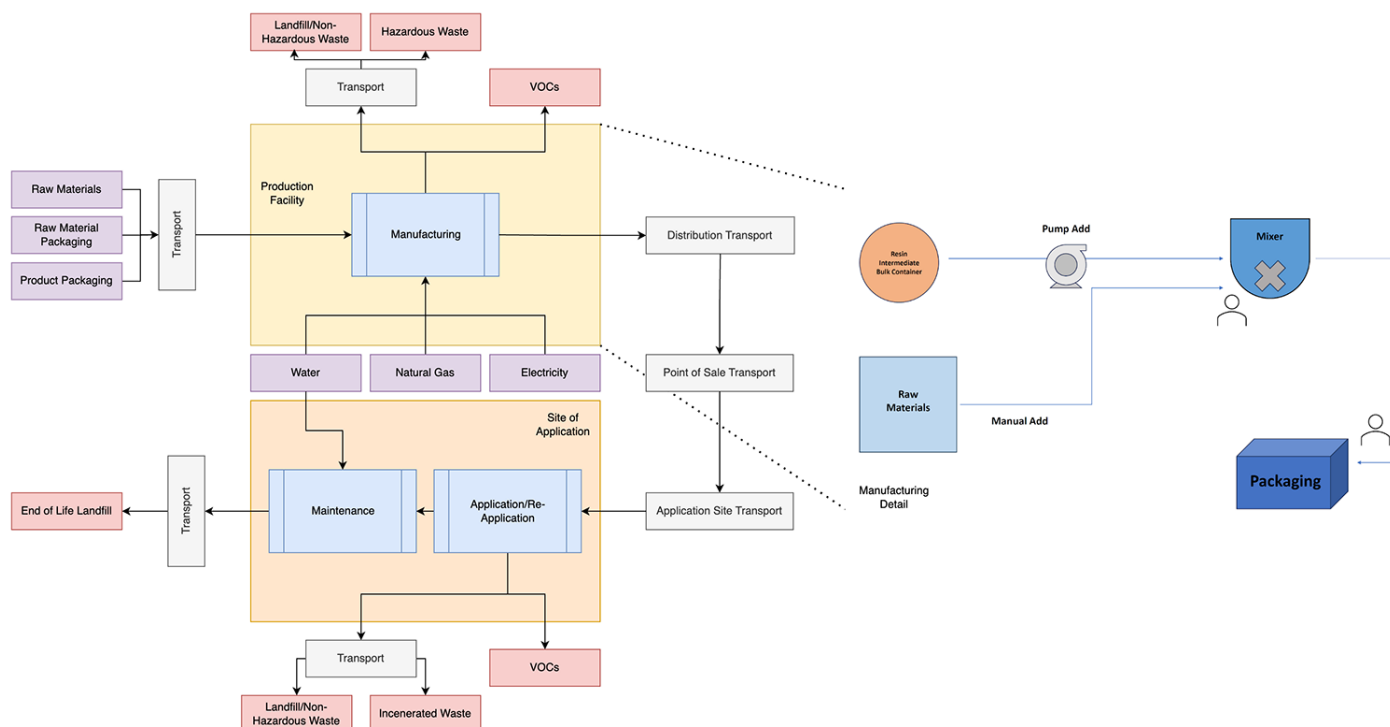
Renewable electricity is used:

No

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	ND

Product Flow Diagram



Life Cycle Module Descriptions

Primary data were collected for the 12 month period starting October 2022 and ending September 2023 to ensure technical, geographical and temporal the representativeness. The products in this study are manufactured at Dudick's production facilities. The manufacturing process entails the addition of pre-weighted ingredients, followed by mixing in the correct sequence to create the desired products. Subsequently, Dudick packages and distributes the finished products to various distribution centers. The process involves the use of grid electricity, heat from natural gas combustion, an process water. Non hazardous waste consisting mainly of packaging material is sent to disposal or recycling.

LCA Discussion

Allocation Procedure

Product packaging was allocated by mass. 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 and section 5 of the NSF International PCR for Resinous Floor Coatings. Volumetric allocation was applied to energy and water use at the facility level, as it represents the partition among selling units (using mass or volume production, where appropriate). Dudick, Inc. provided the total volume or mass produced at each facility.

Cut-off Procedure

No cut-off criteria are defined for this study. The system boundary was defined based on relevance to the goal of the study. For the processes within the system boundary, all available energy and material flow data have been included in the model. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts.

Data Quality Discussion

The quality of inventory data is evaluated based on several criteria, including precision, completeness, consistency, and representativeness.

Precision and Completeness

- Precision: 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: 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: Primary data were collected with a similar level of detail, while background data came from the ecoinvent v3.9.1 database. The modeling approach and other methodological choices were applied consistently throughout the model. Default values from the PCR were considered where there was unavailability of primary data.

- Reproducibility: 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

- Temporal: Primary data were collected for the one-year period of October 2022 to September 2023 to ensure the representativeness of post-consumer content.

Secondary data from the ecoinvent v3.9.1 database is typically representative of recent years.

- Geographical: Primary data represent Dudick's production facilities. Where applicable, differences in electric grid mix were considered using appropriate secondary data. The use of country-specific data ensures high geographical representativeness, and proxy data were only used when country-specific data were unavailable.

- Technological: Both primary and secondary data were tailored to the specific technologies studied, ensuring high technological representativeness. Where no direct raw material information was available in the ecoinvent 3.9.1 database, proxies were identified and used.

Results

Environmental Impact Assessment Results

TRACI 2.1

per 1 m2.

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

Market

Impact Category	Method	Unit	A1A2A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
GWP-total	TRACI 2.1	kg CO2e	10.4	0.571	0.257	ND	0.901	ND	55.9	ND	ND	ND	ND	0.0599	0.713	6.04
ODP	TRACI 2.1	kg CFC11 eq	0.0000419	9.42e-9	1.94e-10	ND	7.36e-8	ND	0.000209	ND	ND	ND	ND	9.9e-10	4.87e-9	4.02e-9
AP	TRACI 2.1	kg SO2 eq	0.0725	0.00306	0.0000778	ND	0.00489	ND	0.378	ND	ND	ND	ND	0.000321	0.000467	0.00166
EP	TRACI 2.1	kg N eq	0.0228	0.000581	0.00277	ND	0.00362	ND	0.131	ND	ND	ND	ND	0.0000611	0.000302	0.0653
POCP	TRACI 2.1	kg O3 eq	1.19	0.0855	0.00132	ND	0.0541	ND	6.38	ND	ND	ND	ND	0.00899	0.00615	0.0261

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.

per 1 m2.

Tech

Impact Category	Method	Unit	A1A2A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
GWP-total	TRACI 2.1	kg CO2e	10.4	0.571	0.257	ND	0.901	ND	33.5	ND	ND	ND	ND	0.04	0.475	4.03
ODP	TRACI 2.1	kg CFC11 eq	0.0000419	9.42e-9	1.94e-10	ND	7.36e-8	ND	0.000126	ND	ND	ND	ND	6.6e-10	3.25e-9	2.68e-9
AP	TRACI 2.1	kg SO2 eq	0.0725	0.00306	0.0000778	ND	0.00489	ND	0.227	ND	ND	ND	ND	0.000214	0.000311	0.00111
EP	TRACI 2.1	kg N eq	0.0228	0.000581	0.00277	ND	0.00362	ND	0.0784	ND	ND	ND	ND	0.0000407	0.000201	0.0435
POCP	TRACI 2.1	kg O3 eq	1.19	0.0855	0.00132	ND	0.0541	ND	3.83	ND	ND	ND	ND	0.00599	0.0041	0.0174

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.

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 Indicators
per 1 m2.

Market

Indicator	Unit	A1A2A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
RPRE	MJ	3.69	0.0734	0.00566	ND	0.544	ND	18.9	ND	ND	ND	ND	0.00771	0.015	0.129
RPRM	MJ	1.91	0.0287	0.00121	ND	4.46	ND	9.68	ND	ND	ND	ND	0.00301	0.00381	0.0269
RPRT	MJ	5.6	0.102	0.00686	ND	5	ND	28.5	ND	ND	ND	ND	0.0107	0.0188	0.156
NRPRE	MJ	180	8.06	0.16	ND	13.8	ND	939	ND	ND	ND	ND	0.847	3.19	3.31
NRPRM	MJ	0.00992	0.000116	0.0000114	ND	0.00189	ND	0.0502	ND	ND	ND	ND	0.0000122	0.0000124	0.000261
NRPRT	MJ	180	8.06	0.16	ND	13.8	ND	939	ND	ND	ND	ND	0.847	3.19	3.31
ADPF	MJ	22.6	1.13	0.0193	ND	1.49	ND	119	ND	ND	ND	ND	0.119	0.476	0.389
FW	m3	0.113	0.000909	0.000127	ND	0.0362	ND	0.571	ND	ND	ND	ND	0.0000955	0.000316	0.00293

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.

per 1 m2.

Tech

Indicator	Unit	A1A2A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
RPRE	MJ	3.69	0.0734	0.00566	ND	0.544	ND	11.3	ND	ND	ND	ND	0.00514	0.00997	0.0861
RPRM	MJ	1.91	0.0287	0.00121	ND	4.46	ND	5.81	ND	ND	ND	ND	0.00201	0.00254	0.0179
RPRT	MJ	5.6	0.102	0.00686	ND	5	ND	17.1	ND	ND	ND	ND	0.00715	0.0125	0.104
NRPRE	MJ	180	8.06	0.16	ND	13.8	ND	564	ND	ND	ND	ND	0.565	2.13	2.21
NRPRM	MJ	0.00992	0.000116	0.0000114	ND	0.00189	ND	0.0301	ND	ND	ND	ND	0.00000813	0.00000828	0.000174
NRPRT	MJ	180	8.06	0.16	ND	13.8	ND	564	ND	ND	ND	ND	0.565	2.13	2.21
ADPF	MJ	22.6	1.13	0.0193	ND	1.49	ND	71.1	ND	ND	ND	ND	0.0792	0.317	0.26
FW	m3	0.113	0.000909	0.000127	ND	0.0362	ND	0.343	ND	ND	ND	ND	0.0000637	0.00021	0.00196

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.

Waste and Output Flow Indicators
per 1 m2.

Market

Indicator	Unit	A1A2A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
HWD	kg	0.00627	ND	ND	ND	ND	ND	0.0314	ND	ND	ND	ND	ND	ND	ND
NHWD	kg	0.113	ND	0.408	ND	ND	ND	2.61	ND	ND	ND	ND	ND	ND	9.64

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.

per 1 m2.

Tech

Indicator	Unit	A1A2A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
HWD	kg	0.00627	ND	ND	ND	ND	ND	0.0188	ND	ND	ND	ND	ND	ND	ND
NHWD	kg	0.113	ND	0.408	ND	ND	ND	1.56	ND	ND	ND	ND	ND	ND	6.43

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.

Carbon Emissions and Removals
per 1 m2.

Market

Indicator	Unit	A1A2A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
BCRP	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BCEP	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BCRK	kg CO2	0.000868	ND	ND	ND	ND	ND	0.00434	ND	ND	ND	ND	ND	ND	ND
BCEK	kg CO2	-0.000868	ND	ND	ND	ND	ND	-0.00434	ND	ND	ND	ND	ND	ND	ND
BCEW	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CCE	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CCR	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CWNR	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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.

per 1 m2.

Tech

Indicator	Unit	A1A2A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
BCRP	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BCEP	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BCRK	kg CO2	0.000868	ND	ND	ND	ND	ND	0.0026	ND	ND	ND	ND	ND	ND	ND
BCEK	kg CO2	-0.000868	ND	ND	ND	ND	ND	-0.0026	ND	ND	ND	ND	ND	ND	ND
BCEW	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CCE	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CCR	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CWNR	kg CO2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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.

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Vehicle Type:	Truck and Trailer
Transport Distance:	1.560e+03 km
Capacity Utilization:	33 %
Packaging Mass:	2.505e-01 kg
Gross density of products transported:	1.319e+03 kg/m ³
Weight of products transported:	1.640e+00 kg
Volume of products transported:	1.243e-03 m ³
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

Product Lost per Functional Unit:	0.164 kg
Mass of Packaging Waste Specified by Type:	0.2505 kg
VOC Emissions:	8496000000 ug/m ³
Assumptions for scenario development:	
VOC Test Method:	ASTM D-2369

Reference Service Life

B1 Module

RSL:	60 Years
Outdoor Environment:	
Indoor Environment:	
Use Conditions:	
Maintenance:	

Replacement (B4)

B4 Module

Reference Service Life:	60 Years
Replacement Cycle:	5 (ESL/RSL)-1
Further assumptions for scenario development:	Product is assumed to be applied in an industrial environment. A market service lifetime and a technical service lifetime was adopted in the LCA model (see product specifications). Number of recoats is obtained by dividing the service lifetime. One initial coating application and subsequent recoats are required to maintain the average lifespan of a building, assumed to be 60 years.

End of Life

C1 - C4 Modules

Collection Process

Collected with Mixed Construction Waste:	1.64 kg
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Recovery

Landfill:	1.476 kg
Incineration:	0.164 kg

Assumptions for scenario development:

Interpretation

Manufacturing of Dudick Inc.'s products involves the direct procurement of raw materials from suppliers. These materials are then transported to Dudick Inc.'s manufacturing facilities where they are stored and mixed to produce the coatings. Notably, the product stage (stage 1) has the highest impact contribution, mainly attributed to the environmental impacts associated with raw material manufacturing.

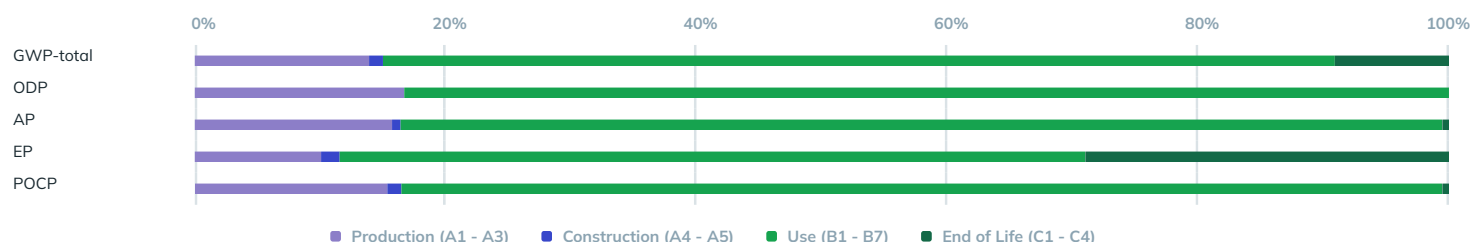
At the application site, coatings are spray or brush applied to various structural components to add a protective barrier to the concrete substrate. The use stage (stage 3) has a smaller contribution to the overall life cycle performance.

For the analysis, It was assumed that Dudick's coatings require one initial coating application and multiple recoats to achieve the recommended service life of 60 years, aligning with the building's life cycle. The results were presented per one square meter of covered and protected substrate at a recommended coating thickness.

The greatest contribution can be found in the use and maintenance stage due to the effect of the required repaints that will multiply the contribution of the product and design & construction stages together with the product application by the required number of recoats.

For one single recoat, production stage, has the highest impact across all impact categories due mainly to the manufacture and transport of raw material, with some contribution of the manufacturing stage. At the application site, coatings are spray or brush applied to various exterior steel structural components to add a protective barrier to the steel substrate. This activity has a smaller contribution to the overall life cycle performance. End-of-life impacts are generally limited because most of the product is assumed to be landfilled, although impacts accumulate at each successive recoating.

Given that the raw materials used in product manufacturing have the most significant impact, there are opportunities to substitute these materials with alternatives that have a lower environmental impact or to work with supplies in order to reduce impact along the supply chain.



Additional Environmental Information

Before using this product, it is recommended that the operator read and follow all caution statements on the product data sheet and on the SDS for this product, and personal protective equipment must be used as directed.

References

- ISO 14044, "Environmental management - Life cycle assessment - Requirements and guidelines", ISO14044:2006.
- ISO 21930, "Sustainability in buildings and civil engineering works Core rules for environmental product declarations of construction products and services", ISO 21930:2017.
- NSF International, Product Category Rule for Environmental Product Declarations for Resinous Floor Coatings, December 2018.
- Bare, J. 2014. Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI) TRACI version 2.1 User's Guide. US EPA Office of Research and Development, Washington, DC, EPA/600/R-12/554, <http://nepis.epa.gov/Adobe/PDF/P100HN53.pdf>
- ISO 14025, "Environmental labels and declarations, Type III environmental declarations, Principles and procedures", ISO14025:2006
- US Environmental Protection Agency. Waste Reduction Model (WARM). <https://www3.epa.gov/epawaste/conserve/tools/warm/SWMGHGreport.html>
- Ryberg, M., Vieira, M.D.M., Zgola, M. et al. (2014). 'Updated US and Canadian normalization factors for TRACI 2.1.' Clean Technologies and Environmental Policy 16: 329. doi:10.1007/s10098-013-0629-z
- IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp, doi:10.1017/CBO9781107415324
- Ecoinvent v3.9.1, December 2022. The ecoinvent database: Overview and methodology, Data quality guideline for the ecoinvent database version 3, www.ecoinvent.org