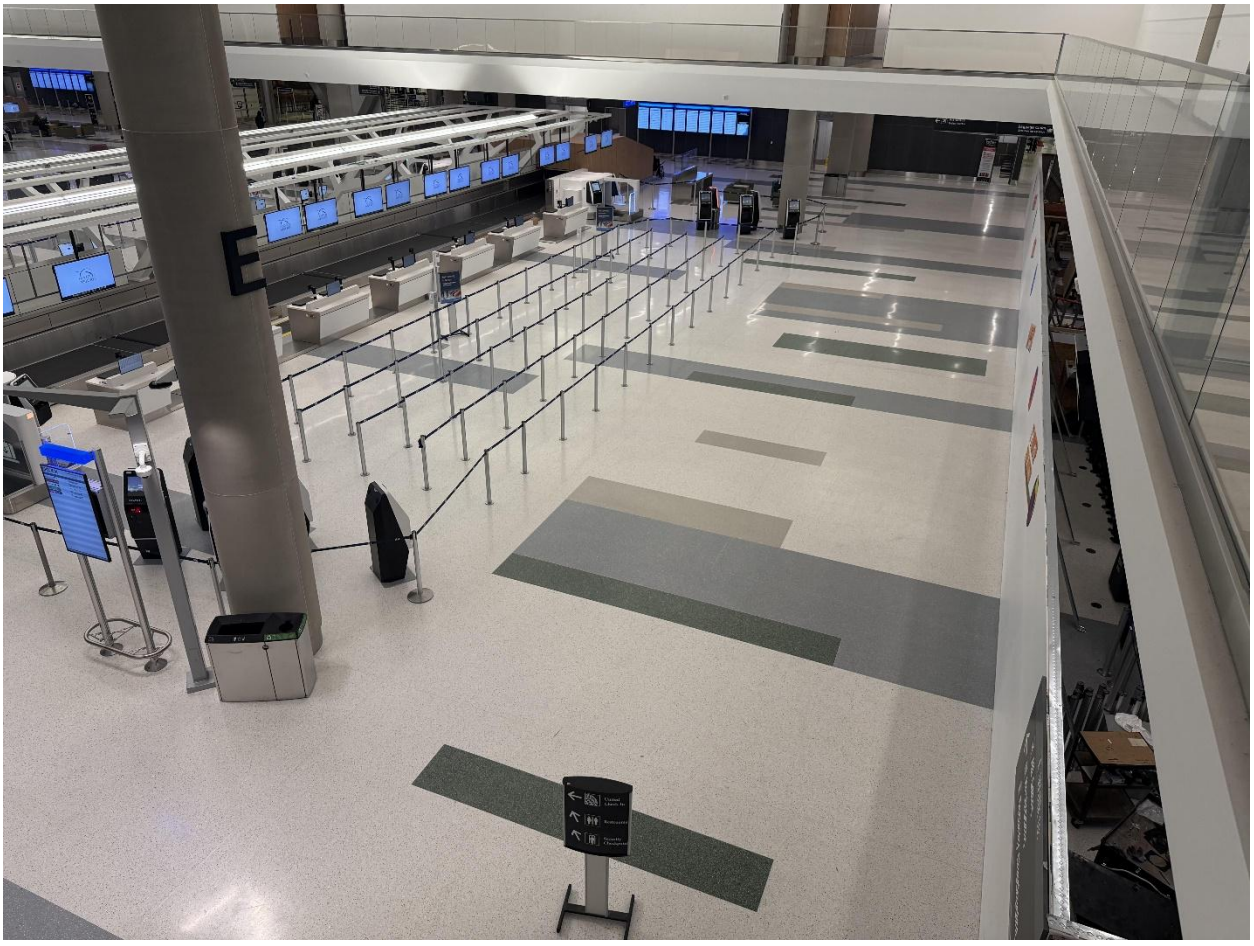
Environmental Product Declaration

In accordance with ISO 14025:2006 and ISO 21930:2017



Environmental Product Declaration for Single-layer Resinous Floor Coating products manufactured by Crown Polymers at their facility in Bedford, Texas

ADMINISTRATIVE INFORMATION

Declaration Owner:	Crown Polymers 14722 Spring Ave, Santa Fe Springs, CA 90670, USA (847) 659-0300 https://crownpolymers.com
EPD Declaration Information:	Declared unit: 1 m^2 of covered and protected flooring surface Declaration number: CP-1479737-25032026 Date of issue: 25.03.2026 Date of expiration: 5 years: valid until 25.03.2031 Market of applicability: North America EPD type: Manufacturer-specific EPD scope: cradle-to-gate (A1-A3) CSI MasterFormat # 09 96 56 Epoxy coatings Year of reported manufacturer primary data: 2024
LCA/LCI Information:	LCA software & version: lca.tools version EPD2022.03 LCI databases & version: Ecoinvent 3.10.1 LCIA method & version: TRACI 2.2, IPCC (AR6), CML 4.8 (2016)
EPD Program Operator:	Labeling Sustainability 200 S. Rosemary Ave., West Palm Beach, FL 33401 (561) 312-2664 https://www.labelingsustainability.com
Product Category Rule:	Sustainable Minds Part A PCR: LCA Calculation Rules and Report Requirements, Version December 2025 Sustainable Minds Part B PCR: Product Group Definition for Resinous Floor Coatings, Part B #25-007, Version 2.0, February 2025 PCR Program Operator: Sustainable Minds
Independent LCA Reviewer and EPD Verifier:	The life cycle assessment was independently verified in accordance with ISO 14040/44 This EPD was independently verified in accordance with ISO 14025, ISO 21930 and the reference PCR Internal: ☐ External: ☒ Hammad Ur Rehman, Certified 3rd Party Verifier under Labeling Sustainability info@lcaconsultant.com

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ORGANIZATION DESCRIPTION

Crown Polymers is a leading manufacturer with over 30 years of expertise in high-performance industrial floor coatings, decorative floors, and concrete repair systems. Crown Polymers is dedicated to offering top-quality products, exceptional customer service, and ongoing innovation.

STUDY GOAL

The intended application of the background life cycle assessment (LCA) study was to comply with the procedures for creating a Type III environmental product declaration (EPD) and publish the EPD for public review on the website, https://www.labelingsustainability.com/. This level of study is in accordance with the Product Category Rule (PCR) Part B: Product group definition for resinous floor coatings, Part B #25-007, ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services, 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. This study does not intend to support comparative assertions and is intended to be disclosed to the public.

The project report was commissioned to differentiate Crown Polymers members from their competition for the following reasons: generate an advantage for the organization, offer customers information to help them make informed product decisions, and identify and quantify the environmental impacts associated with resinous floor coating products to support future strategies for impact reduction based on measurable data. The intended audience for this EPD report is Crown Polymers members, their customers, their suppliers, project specifiers of resinous floor coating products, architects, and engineers. The EPD report is also available for policymakers, government officials interested in sustainability, academic professors, and LCA professionals.

Limitations

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of building envelope thermal insulation 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 building energy use phase as instructed under this PCR. Caution must be used when comparing EPDs, as variations and deviations are possible, e.g., different LCA software and background LCI datasets may lead to differences in calculated and reported results.

PRODUCT DESCRIPTION

Crown Polymers offers a diverse range of epoxy floor coating products, including epoxy primers, moisture mitigation coatings, flexible membranes, thin-set epoxy terrazzo binders, and other related materials, designed for use as part of multi-layer flooring systems applied to prepared concrete substrates. These products are intended to serve a wide array of industrial and commercial applications. These coatings are engineered with advanced features to meet specific performance needs.

DECLARED PRODUCT

Declared unit

One square meter (1 m^2) of covered and protected flooring surface.

DESIGN COMPOSITION

The following table provides an approximate composition breakdown of the declared products.

Materials	Value	Unit
Epoxy resin/polymer	35 – 55	%
Pigment	0 – 12	%
Filler	0 -20	%
Solvent/diluent	10 - 25	%
Curing agent	15 – 30	%
Additives	0 - 5	%
Others	1 - 10	%

Table 1: **Material composition – all declared products**

The following table provides a list of all declared products considered in this EPD, along with key performance parameters.

unique ID/name	short description	product type	declared, dry film thickness (DFT)	coverage rate, ft2/gal	mixed density, lb/gal	coating weight, kg /DU
8370 TerraCrown	Thin-set epoxy terrazzo binder used to create the most decorative and distinct flooring in the construction industry.	Basecoat	3/8"	10	10.84	5.287
8371 TerraCrown	8371 is a 100% solids, two-component epoxy primer for terracrown thin-set epoxy.	Primer	16 mils	160	8.93	0.272
8372 TerraCrown	8372 terracrown flex membrane is a 100% solids, two-component, epoxy-based flexible membrane.	Primer	16 mils	80	8.84	0.539
8303 TerraCrown	Two-component epoxy moisture vapor barrier coating for properly prepared substrates.	Primer	16 mils	100	9	0.439
8377 TerraCrown	Specially formulated thin-set epoxy terrazzo for the pre-cast industry.	Basecoat	3/8"	10	10.99	5.360

Table 2: **Mass and thickness**

Technical data

Parameter	8370 TerraCrown	8371 TerraCrown	8372 TerraCrown	8303 TerraCrown	8377 TerraCrown
Compressive strength (ASTM D695)	10,000 psi	-	2,500 psi	10,000 psi	no data available
Tear strength (ASTM D634)	-	565 psi	-	-	no data available
Tensile strength (ASTM D638)	4,500 psi	3,500 psi	863 psi	7,500 psi	no data available
Elongation (ASTM D638)	<3%	20%	121%	1.5-2%	no data available
Adhesion to concrete (ASTM D7234)	>400 psi	>400 psi	>400 psi	>400 psi	no data available
Water absorption (ASTM D570)	-	0.15%	0.5%	0.10%	no data available
Shore D hardness (ASTM D2240)	83	70-75	75	75-85	no data available
Permeance (ASTM E96)	-	-	-	0.022 g/ft/hr	no data available
Hydrostatic pressure Resistance (ASTM D7088)	-	-	-	25 lbs	no data available
Abrasion resistance (ASTM D4060)	0.98 g	0.026 g	-	-	no data available
Coefficient of thermal Expansion (ASTM C531)	0.000016 in/(in °F) -12°F to 75°F 0.000024 in/(in °F) 75°F to 140°F	-	-	-	no data available
Chemical resistance (ASTM D1308)	meets	-	-	-	no data available

Resistance to fungi (ASTM C21)	no growth	-	-	-	no data available
VOC content (As per TDS)	0 g/L	0 g/L	0 g/L	0 g/L	No data available

Table 3: **Functional performance**

Reference service life, product

Not declared.

Reference service life, building, or construction works

75 years.

SYSTEM BOUNDARIES

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

Product stage			Construction stage		Use stage							End-of life stage				Beyond the system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	Manufacturing	Transport to site	Installation of product	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction and demolition	Waste transport	Waste processing	Disposal	Reuse recovery - recycling potential
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Figure 1: **General life cycle phases for consideration in a construction works system. (X = declared module, MND = module not declared).**

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

- Production, manufacture, and construction of A3 building/capital goods and infrastructure.
- Personnel-related activities (travel, furniture, office supplies).
- Energy use related to company management and sales activities.
- Packaging of incoming raw materials (e.g., plastic bags, pallets, etc.) is excluded as it accounts for less than 1% of the product's mass.
- Research and development activities.
- Long-term emissions.

The following figure illustrates the production of resinous coating products at Crown Polymers' manufacturing facility in Bedford, Texas.

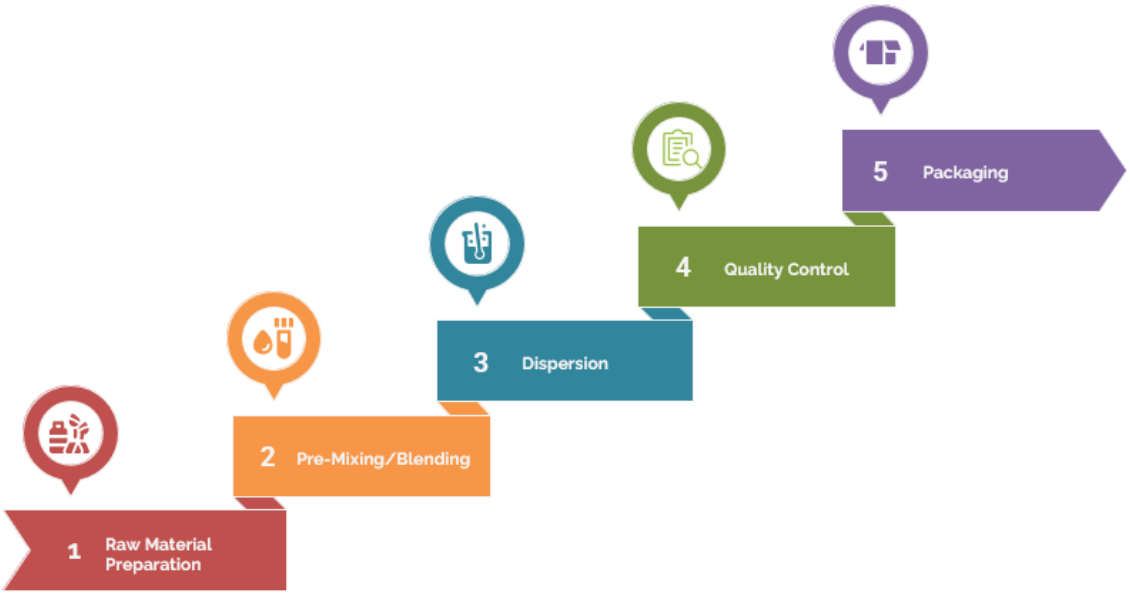

Figure 2: **Product flow diagram.**

REPORTING PERIOD

This study represents the production data for 12 months from January 1, 2024, to December 31, 2024, for the Crown Polymers manufacturing facility located in Bedford, Texas.

CUT-OFF CRITERIA

ISO 14044:2006 and the PCR require 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% cutoff 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%. This cut-off criterion does not apply to hazardous substances.

No known flows are deliberately excluded from this EPD.

ALLOCATION

This EPD follows the allocation guidelines of ISO 14044 and ISO 21930. As resinous coatings are the sole product manufactured at the given facility, no co-products are generated. Thus, no allocation principles and procedures were applied in this study. Secondary material inputs adhere to the polluter pays principle. Accordingly, the environmental impacts attributed to these materials are limited to the treatment and transportation required to use them as a material input. As a default, secondary Ecoinvent datasets apply allocation on a physical mass basis. The system boundary of this study is determined in accordance with the modularity principle as outlined in ISO 21930. All environmental impacts are assigned to the life cycle stages in which they occur, without allocation to other stages.

DATA SOURCES AND DATA QUALITY ASSESSMENT

The manufacturers provided specific data on the product composition, representing the production of the declared product. This data was collected for the development of the EPD during the study year. Background data was sourced from the Ecoinvent database. The quality of the raw material data in stage A1 is presented in the table below. There are no data gaps in the study; should any data gaps be identified, they are handled on an individual case basis.

Materials	Source	Data Quality	Year
Binder and Resins	Ecoinvent 3.10.1	Database	2023
Chemicals	Ecoinvent 3.10.1	Database	2023
Additives	Ecoinvent 3.10.1	Database	2024

Table 4: **LCI inputs assumed**

Data quality/variability requirements, as specified in the PCR, and relative to ISO 14044:2006 requirements, are applied. 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).

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. Climate change impact categories were calculated using the IPCC AR6 methodology.

Impact Category	Unit	Methodology
Total global warming potential (GWP-total)	kg CO_2 eq	IPCC AR6
Global warming potential from fossil fuels (GWP-fossil)	kg CO_2 eq	IPCC AR6
Global warming potential from biogenic (GWP-biogenic)	kg CO_2 eq	IPCC AR6
Global warming potential from land use and land use change (GWP-luluc)	kg CO_2 eq	IPCC AR6
Acidification (AP)	kg SO_2 eq	TRACI 2.2
Eutrophication: freshwater (EP-freshwater)	kg P eq	TRACI 2.2
Eutrophication: marine (EP-marine)	kg N eq	TRACI 2.2
Ozone depletion potential (ODP)	kg CFC-11 eq	TRACI 2.2
Smog formation potential (SFP)	kg O_3 eq	TRACI 2.2
Abiotic depletion potential for fossil resources (ADPfossil)	MJ	CML-IA

Table 5: **Mid point impact categories**

Indicator	Acronym	Unit
Resource use indicators		
Renewable primary resources used as an energy carrier (fuel)	RPRE	MJ
Renewable primary resources with energy content used as a material	RPRM	MJ
Total use of renewable primary resources with energy content	PERT	MJ
Non-renewable primary resources used as an energy carrier (fuel)	NRPRE	MJ
Non-renewable primary resources with energy content used as a material	NRPRM	MJ
Total use of non-renewable primary resources with energy content	PENRT	MJ
Secondary materials	SM	kg

Renewable secondary fuels	RSF	MJ
Non-renewable secondary fuels	NRSF	MJ
Recovered energy	RE	MJ
Consumption of freshwater	FW	m3
Output flow and waste indicators		
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive waste disposed	RWD	kg
Components for re-use	CRU	kg
Materials for recycling	MR	kg
Materials for energy recovery	MER	kg
Exported energy electrical	EEE	MJ
Exported energy thermal	EET	MJ
Carbon emissions and removals indicators		
Biogenic carbon removals from product	BCRP	kg CO_2
Biogenic carbon emissions from product	BCEP	kg CO_2
Biogenic carbon removals from packaging	BCRK	kg CO_2
Biogenic carbon emissions from packaging	BCEK	kg CO_2
Carbon emissions from calcination	CCE	kg CO_2
Carbon removals from carbonation	CCR	kg CO_2
Carbon emissions from combustion of waste from renewable sources used in production process	CBCEW	kg CO_2
Carbon emissions from combustion of waste from non-renewable sources used in production processes	CWNR	kg CO_2

Table 6: **LCI indicator/metric**

TOTAL IMPACT SUMMARY

The following table reports the total LCA results for each declared product produced at a given facility, reported per declared unit.

These impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined, and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.

a) Midpoint Impact Categories

Indicator/LCI Metric	GWP-total (kg CO_2 eq)			
Product	**Life cycle stage**			
	A1	**A2**	**A3**	**Total (A1-A3)**
8370 TerraCrown	2.42E+01	9.10E-01	6.74E-02	2.51E+01
8371 TerraCrown	1.50E+00	2.28E-02	6.52E-02	1.59E+00
8372 TerraCrown	2.70E+00	6.77E-02	6.52E-02	2.83E+00
8303 TerraCrown	2.35E+00	6.43E-02	6.52E-02	2.48E+00
8377 TerraCrown	2.35E+01	7.91E-01	6.53E-02	2.44E+01
GWP-fossil (kg CO_2 eq)				
8370 TerraCrown	2.40E+01	9.09E-01	6.72E-02	2.50E+01
8371 TerraCrown	1.50E+00	2.28E-02	6.50E-02	1.59E+00
8372 TerraCrown	2.69E+00	6.77E-02	6.50E-02	2.83E+00
8303 TerraCrown	2.35E+00	6.43E-02	6.50E-02	2.48E+00
8377 TerraCrown	2.35E+01	7.90E-01	6.51E-02	2.43E+01
GWP-biogenic (kg CO_2 eq)				
8370 TerraCrown	9.28E-02	5.23E-04	1.93E-04	9.35E-02
8371 TerraCrown	2.55E-03	1.48E-05	1.91E-04	2.76E-03
8372 TerraCrown	2.89E-03	3.92E-05	1.91E-04	3.12E-03
8303 TerraCrown	4.07E-03	3.63E-05	1.91E-04	4.30E-03
8377 TerraCrown	5.29E-02	4.40E-04	1.91E-04	5.36E-02
GWP-luluc (kg CO_2 eq)				
8370 TerraCrown	1.88E-02	3.75E-04	1.57E-05	1.92E-02
8371 TerraCrown	1.23E-03	8.87E-06	1.55E-05	1.25E-03
8372 TerraCrown	2.15E-03	2.78E-05	1.55E-05	2.20E-03
8303 TerraCrown	1.90E-03	2.68E-05	1.55E-05	1.94E-03
8377 TerraCrown	1.94E-02	3.30E-04	1.55E-05	1.97E-02
AP (kg SO_2 eq)				
8370 TerraCrown	1.17E-01	5.04E-03	1.12E-04	1.22E-01
8371 TerraCrown	5.56E-03	4.63E-05	1.08E-04	5.71E-03
8372 TerraCrown	1.02E-02	3.62E-04	1.08E-04	1.07E-02
8303 TerraCrown	8.78E-03	3.91E-04	1.08E-04	9.28E-03
8377 TerraCrown	9.66E-02	5.06E-03	1.08E-04	1.02E-01
EP-freshwater (kg P eq)				
8370 TerraCrown	7.04E-03	5.82E-05	3.14E-05	7.13E-03
8371 TerraCrown	3.83E-04	1.59E-06	2.98E-05	4.15E-04
8372 TerraCrown	6.87E-04	4.35E-06	2.98E-05	7.21E-04
8303 TerraCrown	5.96E-04	4.05E-06	2.98E-05	6.30E-04
8377 TerraCrown	6.34E-03	4.94E-05	2.98E-05	6.42E-03
EP-marine (kg N eq)				
8370 TerraCrown	2.51E-02	1.50E-03	3.09E-05	2.67E-02
8371 TerraCrown	1.53E-03	1.41E-05	2.99E-05	1.58E-03
8372 TerraCrown	2.04E-03	1.08E-04	2.99E-05	2.18E-03
8303 TerraCrown	2.21E-03	1.16E-04	2.99E-05	2.35E-03
8377 TerraCrown	2.61E-02	1.50E-03	2.99E-05	2.76E-02
ODP (kg CFC-11 eq)				
8370 TerraCrown	1.91E-05	1.49E-08	7.55E-10	1.91E-05
8371 TerraCrown	5.22E-08	4.40E-10	7.40E-10	5.34E-08

8372 TerraCrown	1.02E-07	1.12E-09	7.40E-10	1.04E-07
8303 TerraCrown	8.12E-08	1.02E-09	7.40E-10	8.30E-08
8377 TerraCrown	1.46E-05	1.24E-08	7.41E-10	1.46E-05
SFP (kg O_3 eq)				
8370 TerraCrown	1.31E+00	1.02E-01	1.77E-03	1.41E+00
8371 TerraCrown	7.93E-02	1.06E-03	1.72E-03	8.21E-02
8372 TerraCrown	1.44E-01	7.33E-03	1.72E-03	1.53E-01
8303 TerraCrown	1.28E-01	7.85E-03	1.72E-03	1.38E-01
8377 TerraCrown	1.24E+00	1.01E-01	1.73E-03	1.35E+00
ADPfossil (MJ)				
8370 TerraCrown	4.00E+02	1.33E+01	1.08E+00	4.14E+02
8371 TerraCrown	2.74E+01	3.42E-01	1.04E+00	2.88E+01
8372 TerraCrown	5.23E+01	9.89E-01	1.04E+00	5.44E+01
8303 TerraCrown	4.37E+01	9.34E-01	1.04E+00	4.57E+01
8377 TerraCrown	4.12E+02	1.14E+01	1.04E+00	4.24E+02

b) Resource Use Indicators

Indicator/LCI Metric	RPRE (MJ)			
Product	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
8370 TerraCrown	2.02E+01	2.01E-01	8.75E-02	2.04E+01
8371 TerraCrown	1.25E+00	5.57E-03	8.36E-02	1.34E+00
8372 TerraCrown	2.12E+00	1.51E-02	8.36E-02	2.22E+00
8303 TerraCrown	1.91E+00	1.40E-02	8.36E-02	2.00E+00
8377 TerraCrown	1.99E+01	1.70E-01	8.36E-02	2.02E+01
RPRM (MJ)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RPRT (MJ)				
8370 TerraCrown	2.02E+01	2.01E-01	8.75E-02	2.04E+01
8371 TerraCrown	1.25E+00	5.57E-03	8.36E-02	1.34E+00
8372 TerraCrown	2.12E+00	1.51E-02	8.36E-02	2.22E+00
8303 TerraCrown	1.91E+00	1.40E-02	8.36E-02	2.00E+00
8377 TerraCrown	1.99E+01	1.70E-01	8.36E-02	2.02E+01
NRPRE (MJ)				
8370 TerraCrown	3.33E+02	1.33E+01	9.89E-01	3.47E+02
8371 TerraCrown	2.25E+01	3.42E-01	9.53E-01	2.38E+01
8372 TerraCrown	4.04E+01	9.89E-01	9.53E-01	4.23E+01
8303 TerraCrown	3.51E+01	9.34E-01	9.53E-01	3.70E+01
8377 TerraCrown	3.41E+02	1.14E+01	9.54E-01	3.53E+02
NRPRM (MJ)				
8370 TerraCrown	6.69E+01	0.00E+00	8.94E-02	6.70E+01
8371 TerraCrown	4.93E+00	0.00E+00	8.94E-02	5.02E+00
8372 TerraCrown	1.20E+01	0.00E+00	8.94E-02	1.21E+01
8303 TerraCrown	8.59E+00	0.00E+00	8.94E-02	8.68E+00
8377 TerraCrown	7.09E+01	0.00E+00	8.94E-02	7.10E+01
NRPRT (MJ)				
8370 TerraCrown	4.00E+02	1.33E+01	1.08E+00	4.14E+02
8371 TerraCrown	2.74E+01	3.42E-01	1.04E+00	2.88E+01
8372 TerraCrown	5.23E+01	9.89E-01	1.04E+00	5.44E+01
8303 TerraCrown	4.37E+01	9.34E-01	1.04E+00	4.57E+01
8377 TerraCrown	4.12E+02	1.14E+01	1.04E+00	4.24E+02
SM (kg)				
8370 TerraCrown	1.02E-01	0.00E+00	2.32E-03	1.05E-01
8371 TerraCrown	0.00E+00	0.00E+00	2.31E-03	2.31E-03
8372 TerraCrown	1.54E-03	0.00E+00	2.31E-03	3.85E-03
8303 TerraCrown	7.58E-04	0.00E+00	2.31E-03	3.07E-03
8377 TerraCrown	3.84E-02	0.00E+00	2.31E-03	4.07E-02
RSF (MJ)				
8370 TerraCrown	4.57E-03	6.48E-05	7.36E-06	4.64E-03
8371 TerraCrown	1.79E-04	1.87E-06	7.35E-06	1.88E-04

8372 TerraCrown	2.08E-04	4.86E-06	7.35E-06	2.20E-04
8303 TerraCrown	2.63E-04	4.48E-06	7.35E-06	2.75E-04
8377 TerraCrown	3.19E-03	5.43E-05	7.35E-06	3.25E-03
NRSF (MJ)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE (MJ)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW (m3)				
8370 TerraCrown	2.31E-01	1.82E-03	1.80E-04	2.33E-01
8371 TerraCrown	1.11E-02	5.05E-05	1.74E-04	1.13E-02
8372 TerraCrown	1.93E-02	1.36E-04	1.74E-04	1.96E-02
8303 TerraCrown	1.78E-02	1.27E-04	1.74E-04	1.81E-02
8377 TerraCrown	1.89E-01	1.54E-03	1.74E-04	1.90E-01

c) Waste/Output flow Indicators

Indicator/LCI Metric	HWD (kg)			
Product	Life cycle stage			
	A1	A2	A3	Total (A1-A3)
8370 TerraCrown	2.29E+00	1.90E-02	2.24E-03	2.31E+00
8371 TerraCrown	1.01E-01	4.95E-04	2.14E-03	1.04E-01
8372 TerraCrown	1.94E-01	1.42E-03	2.14E-03	1.97E-01
8303 TerraCrown	1.59E-01	1.33E-03	2.14E-03	1.63E-01
8377 TerraCrown	1.88E+00	1.63E-02	2.15E-03	1.90E+00
NHWD (kg)				
8370 TerraCrown	6.41E+01	3.65E-01	1.56E-01	6.46E+01
8371 TerraCrown	2.35E+00	9.91E-03	1.48E-01	2.51E+00
8372 TerraCrown	4.62E+00	2.73E-02	1.48E-01	4.79E+00
8303 TerraCrown	3.64E+00	2.55E-02	1.48E-01	3.81E+00
8377 TerraCrown	4.64E+01	3.11E-01	1.48E-01	4.69E+01
RWD (kg)				
8370 TerraCrown	2.77E-04	3.45E-06	1.81E-06	2.83E-04
8371 TerraCrown	1.94E-05	1.02E-07	1.72E-06	2.12E-05
8372 TerraCrown	3.06E-05	2.59E-07	1.72E-06	3.26E-05
8303 TerraCrown	2.90E-05	2.37E-07	1.72E-06	3.10E-05
8377 TerraCrown	2.98E-04	2.86E-06	1.72E-06	3.02E-04
CRU (kg)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR (kg)				
8370 TerraCrown	5.56E-07	0.00E+00	2.37E-05	2.42E-05
8371 TerraCrown	0.00E+00	0.00E+00	2.24E-05	2.24E-05
8372 TerraCrown	0.00E+00	0.00E+00	2.24E-05	2.24E-05
8303 TerraCrown	0.00E+00	0.00E+00	2.24E-05	2.24E-05
8377 TerraCrown	8.63E-06	0.00E+00	2.24E-05	3.11E-05
MER (kg)				
8370 TerraCrown	4.87E-08	0.00E+00	6.68E-09	5.54E-08
8371 TerraCrown	0.00E+00	0.00E+00	6.36E-09	6.36E-09
8372 TerraCrown	0.00E+00	0.00E+00	6.36E-09	6.36E-09
8303 TerraCrown	0.00E+00	0.00E+00	6.36E-09	6.36E-09
8377 TerraCrown	1.03E-07	0.00E+00	6.36E-09	1.09E-07
EEE (MJ)				
8370 TerraCrown	3.54E-06	0.00E+00	1.62E-05	1.97E-05
8371 TerraCrown	0.00E+00	0.00E+00	1.55E-05	1.55E-05
8372 TerraCrown	0.00E+00	0.00E+00	1.55E-05	1.55E-05
8303 TerraCrown	0.00E+00	0.00E+00	1.55E-05	1.55E-05
8377 TerraCrown	6.89E-05	0.00E+00	1.55E-05	8.44E-05
EET (MJ)				
8370 TerraCrown	3.77E-05	0.00E+00	1.73E-05	5.49E-05
8371 TerraCrown	0.00E+00	0.00E+00	1.64E-05	1.64E-05

8372 TerraCrown	0.00E+00	0.00E+00	1.64E-05	1.64E-05
8303 TerraCrown	0.00E+00	0.00E+00	1.64E-05	1.64E-05
8377 TerraCrown	8.77E-05	0.00E+00	1.64E-05	1.04E-04

d) Carbon Emissions and Removals Indicators

Indicator/LCI Metric	BCRP (kg CO_2)			
Product	**Life cycle stage**			
	A1	**A2**	**A3**	**Total (A1-A3)**
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP (kg CO_2)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK (kg CO_2)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK (kg CO_2)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE (kg CO_2)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR (kg CO_2)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CBCEW (kg CO_2)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00

8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR (kg CO_2)				
8370 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Information on biogenic carbon at factory gate:

Product	Biogenic carbon content in product (kg C)	Biogenic carbon content in packaging (kg C)
8370 TerraCrown	0.00E+00	0.00E+00
8371 TerraCrown	0.00E+00	0.00E+00
8372 TerraCrown	0.00E+00	0.00E+00
8303 TerraCrown	0.00E+00	0.00E+00
8377 TerraCrown	0.00E+00	0.00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2

Interpretation:

The results indicate that the raw material extraction/processing (Module A1) is the dominant contributor to the overall environmental impacts, particularly for Global Warming Potential (GWP, kg CO_2-eq). The study focuses on two product categories: Epoxy Basecoat and Epoxy Primer.

Epoxy Basecoat:

The main contributors to the GWP emissions within Module A1 include:

- Epoxy resin production: 57% – 64%
- Titanium dioxide production: 5% - 15%
- Amines production: 6% – 13%
- Ethylhexyl glycidyl ether production: 6% - 7%

Epoxy Primer:

The main contributors to the GWP emissions within Module A1 include:

- Epoxy resin production: 36% – 61%
- Benzyl alcohol production: 9% – 13%
- 4-Nonylphenol production: 6% - 27%

These results highlight that epoxy resin production is the dominant contributor in both product categories. The contribution of other chemical inputs (titanium dioxide, amines, benzyl alcohol, and 4-nonylphenol) depends on the quantities used in the formulation, which directly influences the overall GWP of the product.

ADDITIONAL ENVIRONMENTAL INFORMATION

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Source	Amount	Unit
Market for electricity, medium voltage (kWh) – US-TRE	Ecoinvent 3.10.1	476.44	g CO_2-eq/kWh

Dangerous substances

The following products contain substance(s) listed in the REACH Candidate List of Substances of Very High Concern (SVHCs).

Product name	Substance	CAS RN
8370 TerraCrown	4-Nonylphenol (branched) Octamethylcyclotetrasiloxane	84852-15-3 556-67-2
8371 TerraCrown	4-Nonylphenol (branched) Ethylenediamine	84852-15-3 107-15-3
8372 TerraCrown	4-Nonylphenol (branched)	84852-15-3
8303 TerraCrown	4-Nonylphenol (branched) Octamethylcyclotetrasiloxane p-tert-butylphenol	84852-15-3 556-67-2 98-54-4
8377 TerraCrown	4-Nonylphenol (branched) Octamethylcyclotetrasiloxane	84852-15-3 556-67-2

Environmental and Health

- Crown Polymers meet all federal and state environmental and occupational health regulations during manufacturing.
- Delayed emissions were not considered in this study.
- All recommendations shall be utilized as indicated by SDS and installation guidelines.
- All environmental/technical certifications can be found at: https://crownpolymers.com/about/technical-certifications-documents/
- Further information can be accessed at https://crownpolymers.com/.

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