

## Environmental Product Declaration

# Raptor Materials Ready Mix Concrete:

MBDPC20S, M4000C20E, MBDPC15S, MBDPF15S, M4000C15E



Raptor Materials LLC is a subsidiary of Eagle Materials. Eagle Materials Inc. is a leading US manufacturer of basic construction materials that are used in residential, commercial, industrial, infrastructure and energy applications.



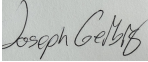
# Environmental Product Declaration

Raptor Materials Ready Mix Concrete:  
 MBDP20S, M4000C20E, MBDP15S, MBDP15S, M4000C15E



According to  
 ISO 14025, ISO 14040,  
 and ISO 21930

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025 and ISO 21930. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	NRMCA <a href="https://www.nrmca.org/epd">https://www.nrmca.org/epd</a> 66 Canal Center Plaza, Suite 250, Alexandria, VA 22314	
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	NRMCA, General Program Instructions, v2.0, June 1, 2019 - May 31, 2024.	
MANUFACTURER NAME AND ADDRESS	Raptor Materials 8120 Gage Street Frederick, CO 80516	
DECLARATION NUMBER	NRMCA EPD: 20143	
DECLARED PRODUCT & DECLARED UNIT	Raptor's Ready Mix Concrete Declared Unit = 1 m <sup>3</sup> Concrete	
REFERENCE PCR AND VERSION NUMBER	NSF: Product Category Rule for Environmental Product Declarations: PCR for Concrete, Version 2.2, Published December 2022	
DESCRIPTION OF PRODUCT(S) APPLICATION/USE	Raptor's Ready Mix Concrete is supplied in concrete mixer trucks. Additional features include 4000 PSI, Portland Cement Type I/II Locally sourced rock and sand.	
MARKETS OF APPLICABILITY	US	
DATE OF ISSUE	5/7/2024	
PERIOD OF VALIDITY	5 years - 5/7/2029	
EPD TYPE	Product Specific	
DATASET VARIABILITY	N/A	
EPD SCOPE	Cradle-to-Gate	
YEAR(S) OF REPORTED PRIMARY DATA	April 2022 - April 2023	
LCA SOFTWARE & VERSION NUMBER	SimaPro 9.4	
LCI DATABASE(S) & VERSION NUMBER	ecoinvent v3.8 & USLCI v2.0	
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1; CML 4.1	
The sub-category PCR review was conducted by:		
This declaration was independently verified in accordance with ISO 14025: 2006. The NSF: Product Category Rule for Environmental Product Declarations: PCR for Concrete, Version 2.2, Published December 2022, based on ISO 21930 serves as the core PCR.	<p style="text-align: center;">Thomas P. Gloria – Industrial Ecology Consultants t.gloria@industrial-ecology.com</p>	
<input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL		
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	<p>Joseph Geibig – Ecoform (joseph@ecoform.com)</p> 	

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance using EPD information shall consider all relevant information modules over the full life cycle of the products within the building. This PCR allows EPD comparability only when the same functional requirements between products are ensured and the requirements of ISO 21930 §5.5 are met. It should be noted that different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

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## General Information

### Description of Company/Organization

Raptor Materials, a subsidiary of Eagle Materials, supplies Ready Mix Concrete, aggregates, and recycled materials to the construction market in Northern Colorado.

### Product Description

Ready Mix Concrete is supplied in concrete mixer trucks. Additional features include:

- 4000 PSI
- Portland Cement Type I/II
- Locally sourced rock and sand.

### Manufacturer Specific EPD

This product-specific EPD was developed based on the Cradle-to-Gate Life Cycle Assessment. The EPD accounts for raw material extraction and processing, transport, and product manufacturing. Manufacturing data were gathered directly from company personnel. When updated company-specific data were not available, the ratio of production units, within the April 2022 - April 2023 calendar year, was used as a proxy. For any product group EPDs, an impact assessment was completed for each product and the highest impacts were reported as conservative representations of the product group. Product grouping was considered appropriate if the individual product impacts differed by no more than  $\pm 10\%$  in any impact category.

### Application

Ready Mix Concrete is delivered in a mixer truck and is used in applications such as concrete patios, driveways, sidewalks, curbs, and gutters.

### Material Composition

The sub-category PCR recognizes fly ash, silica fume, and granulated blast furnace slag as recovered materials and thus the environmental impacts allocated to these materials are limited to the treatment and transportation required to use as a concrete material input.

The primary product components and/or materials are indicated as a percentage mass to enable the user of the EPD to understand the composition of the product in delivery status.

The composition of the Ready Mix Concrete is as follows:

Material	MBDPC20S	M4000C20E	MBDPC15S	MBDPF15S	M4000C15E
Cement	13.56%	12.55%	13.56%	13.51%	12.55%
Fly Ash	3.39%	3.13%	3.39%	3.38%	3.13%
Fine Aggregate	32.34%	32.61%	32.35%	32.24%	32.58%
Coarse Aggregate	44.55%	44.93%	44.54%	44.52%	44.90%
Water	6.15%	6.77%	6.11%	6.30%	6.79%
Admixtures	0.01%	0.01%	0.05%	0.05%	0.05%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

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Raw Materials		Database(s) and Source	Temporal Information	Regional Coverage	Technology Coverage	Data Type
Cement		EPD				Secondary
Fly Ash	Dummy_Fly ash, unspecified origin/US	N/A	N/A	N/A	This is a dummy process for fly ash which is considered zero impact per the PCR.	Secondary
Water Reducer	Triphenyl phosphate {GLO} triphenyl phosphate production   Cut-off, U	ecoinvent 3	2021	GLO	This dataset represents the production of a triphenyl phosphate based on a generic model on the production of chemicals. Triphenyl phosphate production is the result of the reaction of phosphorus oxychloride and phenol.	Secondary
	Tap water {RoW} tap water production, conventional treatment   Cut-off, U	ecoinvent 3	2021	RoW	This dataset represents production of 1 kg of tap water under pressure at facility gate, ready for distribution in network. It represents average operation of conventional treatment for production tap water. Conventional treatment includes coagulation and decantation, filtration and disinfection.	Secondary
Air Entrainment	Non-ionic surfactant {GLO} non-ionic surfactant production, fatty acid derivate   Cut-off, U	ecoinvent 3	2021	GLO	This dataset represents the production of non-ionic surfactants using ethylene oxide.	Secondary
	Tap water {RoW} tap water production, conventional treatment   Cut-off, U	ecoinvent 3	2021	RoW	This dataset represents production of 1 kg of tap water under pressure at facility gate, ready for distribution in network. It represents average operation of conventional treatment for production tap water. Conventional treatment includes coagulation and decantation, filtration and disinfection.	Secondary
Concrete Sand	Sand {RoW} gravel and quarry operation   Cut-off, U	ecoinvent 3	2021	RoW	This dataset represents the multioutput-process 'mining, gravel / sand' delivers the co-products 'sand, at mine' and 'gravel, round, at mine'. The typical production mix in Switzerland is: sand 35% and round gravel 65%. From the total sectoral production volume (100%) of mined gravel round, crushed and sand, about 85% is gravel round and sand.	Secondary
Gravel Aggregates	Gravel, round {RoW} gravel and sand quarry operation   Cut-off, U	ecoinvent 3	2021	RoW	This dataset is representative of round gravel. The typical production mix in Switzerland is: sand 35% and round gravel 65%. From the total sectoral production volume (100%) of mined gravel round, crushed and sand, about 85% is gravel round and sand.	Secondary
Water	Tap water {RoW} tap water production, conventional treatment   Cut-off, U	ecoinvent 3	2021	RoW	This dataset represents production of 1 kg of tap water under pressure at facility gate, ready for distribution in network. It represents average operation of conventional treatment for production tap water. Conventional treatment includes coagulation and decantation, filtration and disinfection.	Secondary
Transportation		Database(s) and Source	Temporal Information	Regional Coverage	Technology Coverage	Data Type
Truck Transport	Transport, freight, lorry, unspecified {RoW} market for transport, freight, lorry, unspecified   Cut-off, U	ecoinvent 3	2021	ROW	This is the market for 'transport, freight, lorry, unspecified', in the the Global geography. This is a generic market; the suppliers of this market make available this generic product by redirecting a part of the production of several more specific products.	Secondary
Rail Transport	Transport, train, diesel powered/US	USLCI	N/A	US	This dataset represents transport by diesel powered train.	Secondary

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Manufacturing	Database(s) and Source	Temporal Information	Regional Coverage	Technology Coverage	Data Type	
Diesel	Diesel, combusted in industrial equipment/US	USLCI	N/A	US	This dataset is representative of diesel combusted in industrial equipment.	Secondary
Propane	Propane, burned in building machine {GLO}  propane, burned in building machine   Cut-off, U	ecoinvent 3	2021	ROW	This dataset represents the combustion of propane in a building machine.	Secondary
Water	Tap water {RoW}  tap water production, conventional treatment   Cut-off, U	ecoinvent 3	2021	RoW	This dataset represents production of 1 kg of tap water under pressure at facility gate, ready for distribution in network. It represents average operation of conventional treatment for production tap water. Conventional treatment includes coagulation and decantation, filtration and disinfection.	Secondary
Electricity	Electricity, at eGrid, RMPA, 2020/RNA U	Sustainable Solutions	2020	RNA	This dataset describes the electricity available in the RMPA region of RNA.	Secondary
Fuel Oil	Residual fuel oil, combusted in industrial boiler/US	USLCI	N/A	US	This data represents heavy fuel oil and describes the operation of a petroleum oil refinery of representative configuration and quality of crude oil input for European conditions.	Secondary
Engine Oil	Lubricating oil {RoW}  production   Cut-off, U	ecoinvent 3	2021	RoW	This dataset represents the production of 1 kg of liquid lubricating oil, including additives.	Secondary
	Para-phenylene diamine {GLO}  market for   Cut-off, U	ecoinvent 3	2021	GLO	This is the market for 'para-phenylene diamine', in the Global geography. Transport from producers to consumers of this product in the geography covered by the market is included.	Secondary
	Adipic acid {RoW}  production   Cut-off, U	ecoinvent 3	2021	RoW	This dataset represents the production of 1 kg of adipic acid. Adipic acid is isolated as colourless, odourless crystals having an acidic taste. This dataset is based on estimations using industrial data.	Secondary
Lubricating Oil	Lubricating oil {RoW}  production   Cut-off, U	ecoinvent 3	2021	RoW	This dataset represents the production of 1 kg of liquid lubricating oil, including additives.	Secondary
Manufacturing Transport	Transport, freight, lorry, unspecified {RoW}  market for transport, freight, lorry, unspecified   Cut-off, U	ecoinvent 3	2021	ROW	This is the market for 'transport, freight, lorry, unspecified', in the the Global geography. This is a generic market; the suppliers of this market make available this generic product by redirecting a part of the production of several more specific products.	Secondary
Waste	Waste concrete {RoW}  treatment of, inert material landfill   Cut-off, U	ecoinvent 3	2021	ROW	This dataset represents	Secondary

## Placing on the Market / Application Rules

This EPD is intended for business-to-business communication.

- The standards that can be applied for M4000C15E are:
- Colorado Department of Transportation concrete requirements
  - ACI/ASTM Concrete Standards

## Properties of Declared Product as Shipped

The Ready Mix Concrete is delivered in a mixer truck

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## Methodological Framework

### Declared Unit

The declaration refers to the declared unit of 1 m<sup>3</sup> of Raptor Materials Ready Mix Concrete as specified in the PCR.

	MBDPC20S		M4000C20E		MBDPC15S		MBDPF15S		M4000C15E	
Name	Value	Unit	Value	Unit	Value	Unit	Value	Unit	Value	Unit
Declared unit	1 cubic meter of product									
Manufacturing Location	Greeley, CO		Greeley, CO		Erie, CO		Erie, CO		Erie, CO	
Density	2287.0	kg/m <sup>3</sup>	2287.0	kg/m <sup>3</sup>	2294.0	kg/m <sup>3</sup>	2294.0	kg/m <sup>3</sup>	2287.0	kg/m <sup>3</sup>
CSI	30000									
UNSPSC	30111505									

### System Boundary

This is a Cradle-to-Gate Environmental Product Declaration. The following life cycle phases were considered:

Product Stage			Construction Process Stage		Use Stage								End of Life Stage*				Benefits and Loads Beyond the System Boundaries
Raw material supply	Transport	Manufacturing	Transport from gate to the site	Construction/ installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction /demolition	Transport	Waste processing	Disposal	Reuse-Recovery- Recycling potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Description of the System Boundary Stages Corresponding to the PCR

(X = Included; MND = Module Not Declared)

\*This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues.

### Allocation

Allocation was determined on a per cubic meter basis for primary data. For secondary data, cut-off methodology was used.

### Cut-off Criteria

Processes whose total contribution to the final result, with respect to their mass and in relation to all considered impact categories, is less than 1% can be neglected. The sum of the neglected processes may not exceed 5% by mass of the considered impact categories. For that a documented assumption is admissible.

For Hazardous Substances the following requirements apply:

- The Life Cycle Inventory (LCI) of hazardous substances will be included, if the inventory is available.
- If the LCI for a hazardous substance is not available, the substance will appear as an input in the LCI of the product, if its mass represents more than 0.1% of the product composition.
- If the LCI of a hazardous substance is approximated by modeling another substance, documentation will be provided.

This EPD is in compliance with the cut-off criteria. No processes were neglected or excluded. Capital items for the production processes (machine, buildings, etc.) were not taken into consideration.

### Data Sources

Primary data were collected for every process in the product system under the control of Raptor Materials. Secondary data from the SimaPro ecoinvent v3.8 & USLCI v2.0 databases were utilized. These data were evaluated and have temporal, geographic, and technical coverage appropriate to the scope of the Ready Mix Concrete product category.

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## Data Quality

The data sources used are complete and representative of North America in terms of the geographic and technological coverage and are a recent vintage (i.e. less than ten years old). The data used for primary data are based on direct information sources of the manufacturer. Secondary data sets were used for raw materials extraction and processing, end of life, transportation, and energy production flows. Wherever secondary data is used, the study adopts critically reviewed data for consistency, precision, and reproducibility to limit uncertainty.

## Period Under Review

The period under review is April 2022 through April 2023.

## Treatment of Biogenic Carbon

The uptake and release of biogenic carbon throughout the product life cycle follows ISO 21930 Section 7.2.7

## Comparability and Benchmarking

Environmental declarations from different programs (ISO 14025) may not be comparable. EPDs are comparable only if they use the same PCR (or sub-category PCR where applicable), include all relevant information modules, and are based on equivalent scenarios with respect to the context of construction works. Comparability of EPDs is limited to those applying a functional unit. The PCR, NSF: Product Category Rule for Environmental Product Declarations: PCR for Concrete, Version 2.2, Published December 2022, allows EPD comparability only when the same functional requirements between products are ensured and the requirements of ISO 21930:2017 are met; however, variations and deviations are possible. Example of variations: different LCA software and background LCI datasets may lead to different results for the life cycle stages declared.

## Estimates and Assumptions

This EPD was calculated using industry average cement data. Cement LCA impacts can vary depending upon manufacturing process, efficiency, and fuel source by as much as 50% for some environmental impact categories. Cement accounts for as much as 93% of the impacts of the concrete mixes included in this EPD and thus manufacturer specific cement impacts could result in variation of as much as 46.5%

## Units

The LCA results within this EPD are reported in SI units.

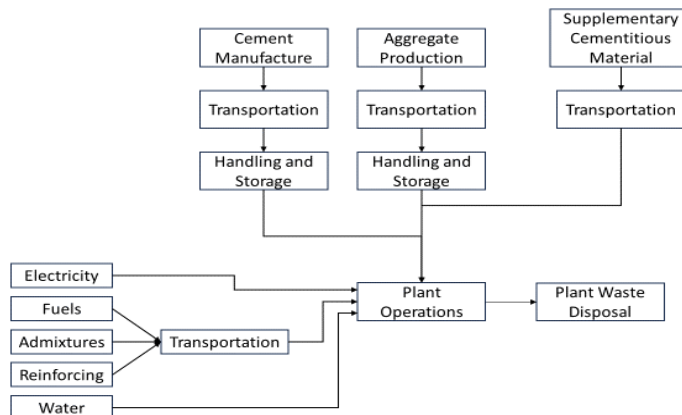
## Additional Environmental Information

### Background data

For the life cycle modeling of the considered products, the SimaPro v9.4.0.2 software was used. Primary data were collected from the Raptor Materials owned facility. Secondary data were used for upstream raw material production and downstream inventory flows. This secondary data were sourced from either the ecoinvent v3.8 or USLCI databases.

### Manufacturing

The manufacturing of the Ready Mix Concrete products starts with the raw materials, which are transported to a plant where they are mixed in mixing trucks to create concrete.



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## Cradle-to-Gate Results per Declared Unit

\*Note: Not all LCA datasets for upstream materials include these impact categories and thus results may be incomplete. Use caution when interpreting data in the following categories.

Results shown below were calculated using TRACI 2.1 Methodology.

TRACI 2.1 Impact Assessment							
Parameter	Parameter	Unit	MBDPC20S	M4000C20E	MBDPC15S	MBDPF15S	M4000C15E
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	3.28E+02	3.05E+02	3.33E+02	3.35E+02	3.11E+02
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	7.78E-06	7.29E-06	7.80E-06	7.80E-06	7.30E-06
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	8.23E-01	7.76E-01	8.90E-01	9.18E-01	8.45E-01
EP	Eutrophication potential	kg N-Eq.	3.70E-01	3.44E-01	3.74E-01	3.75E-01	3.49E-01
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	1.72E+01	1.64E+01	1.91E+01	2.01E+01	1.83E+01
FFD	Fossil fuel depletion	MJ-surplus	1.60E+02	1.50E+02	1.70E+02	1.73E+02	1.61E+02

Results shown below were calculated using CML 2001 - April 2013 Methodology.

CML 4.1 Impact Assessment							
Parameter	Parameter	Unit	MBDPC20S	M4000C20E	MBDPC15S	MBDPF15S	M4000C15E
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	3.28E+02	3.05E+02	3.33E+02	3.35E+02	3.11E+02
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	7.58E-06	7.08E-06	7.59E-06	7.59E-06	7.09E-06
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	7.76E-01	7.30E-01	8.28E-01	8.49E-01	7.84E-01
EP	Eutrophication potential	kg(PO <sub>4</sub> ) <sup>3</sup> -Eq.	3.82E-01	3.56E-01	3.92E-01	3.97E-01	3.67E-01
POCP	Formation potential of tropospheric ozone	kg ethane-Eq.	-	-	-	-	-
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	1.29E-04	1.25E-04	1.30E-04	1.30E-04	1.26E-04
ADPF	Abiotic depletion potential for fossil resources	MJ	4.39E+02	4.26E+02	5.14E+02	5.35E+02	5.04E+02

\*Note: Emerging LCA impact categories and inventory items are still under development and can have high levels of uncertainty that preclude international acceptance pending further development. Use caution when interpreting data in the following categories.

Results below contain the resource use throughout the life cycle of the product.

Resource Use							
Parameter	Parameter	Unit	MBDPC20S	M4000C20E	MBDPC15S	MBDPF15S	M4000C15E
RPR <sub>E</sub>	Renewable primary energy as energy carrier	MJ	4.56E+01	4.22E+01	4.56E+01	4.56E+01	4.23E+01
RPR <sub>M</sub>	Renewable primary energy resources as material utilization	MJ	1.18E+00	1.10E+00	1.19E+00	1.19E+00	1.10E+00
NRPR <sub>E</sub>	Nonrenewable primary energy as energy carrier	MJ	3.51E+02	3.47E+02	4.30E+02	4.52E+02	4.29E+02
NRPR <sub>M</sub>	Nonrenewable primary energy as material utilization	MJ	1.34E+03	1.24E+03	1.34E+03	1.34E+03	1.24E+03
SM	Use of secondary material	kg	3.15E+01	2.92E+01	3.15E+01	3.15E+01	2.92E+01
RSF	Use of renewable secondary fuels	MJ	1.79E+01	1.65E+01	1.79E+01	1.79E+01	1.65E+01
NRSF	Use of nonrenewable secondary fuels	MJ	1.72E+02	1.59E+02	1.72E+02	1.72E+02	1.59E+02
RE	Energy recovered from disposed waste	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	m <sup>3</sup>	3.04E+00	3.05E+00	3.06E+00	3.07E+00	3.08E+00



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Results below contain the output flows and wastes throughout the life cycle of the product.

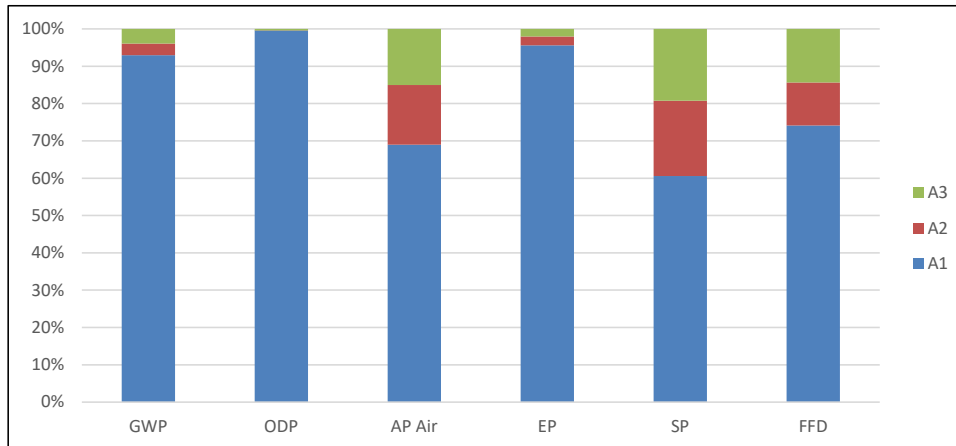
Output Flows and Waste Categories							
Parameter	Parameter	Unit	MBDPC20S	M4000C20E	MBDPC15S	MBDPF15S	M4000C15E
HWD	Hazardous waste disposed	kg	4.48E-03	4.16E-03	4.48E-03	4.48E-03	4.16E-03
NHWD	Non-hazardous waste disposed	kg	1.03E+02	9.53E+01	1.03E+02	1.03E+02	9.53E+01
HLRW	High-level radioactive waste	kg	-	-	-	-	-
ILLRW	Intermediate- and low-level radioactive waste	kg	-	-	-	-	-
CRU	Components for re-use	kg	1.71E-01	1.58E-01	1.71E-01	1.71E-01	1.58E-01
MR	Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	Recovered energy exported from system	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Results below contain direct greenhouse gas emissions and removals throughout the life cycle of the product.

Resource Use							
Parameter	Parameter	Unit	MBDPC20S	M4000C20E	MBDPC15S	MBDPF15S	M4000C15E
BCRP	Biogenic carbon removal from product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic carbon emissions from product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic carbon removal from packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic carbon emissions from packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic carbon emissions from combustion of waste from renewable sources used in production process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination carbon emissions	kg CO <sub>2</sub>	7.97E+01	9.84E+01	9.89E+01	1.07E+02	1.07E+02
CCR	Carbonation carbon removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon emissions from combustion of waste from non-renewable sources used in production process	kg CO <sub>2</sub>	1.68E+01	1.56E+01	1.68E+01	1.68E+01	1.56E+01

## LCA Interpretation

The raw material extraction and processing life cycle stage dominates the impacts across all impact categories.



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According to  
ISO 14025, ISO 14040,  
and ISO 21930

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## Additional Environmental Information

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### Environmental and Health During Manufacturing

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Raptor Materials has a well established Environmental, Health and Safety program. This allows Raptor Materials to enforce proper evaluation and monitoring of the chemicals that are chosen to manufacture our products. Our programs ensure that we conform to all environmental and OSHA requirements. There are no hazardous or toxic substances used in the production of Raptor's ready-mix

### Environmental and Health During Installation

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There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

### Extraordinary Effects

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#### Fire

No danger to the environment is anticipated during exposure to fire.

#### Water

No substances are used which have a negative impact on ecological water quality on contact by the product with water.

#### Mechanical Destruction

Surface may flake or crack during mechanical destruction.

### Delayed Emissions

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Global warming potential is calculated using the TRACI 2.1 and CML 4.1 impact assessment methodologies. Delayed emissions are not considered.

### Environmental Activities and Certifications

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Raptor Materials crushes and recycles broken concrete and asphalt for use in other applications, keeping materials from being dumped in a landfill. Raptor Materials also reclaims our aggregate quarries at the end of their life cycle back to their native use or repurpose them as water storage, wetlands, or for other purposes beneficial to the community.

# Environmental Product Declaration

Raptor Materials Ready Mix Concrete:  
MBDPC20S, M4000C20E, MBDPC15S, MBDPF15S, M4000C15E



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# Environmental Product Declaration

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## Contact Information

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### Study Commissioner

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### LCA Practitioner

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