Declaration Owner

Tate Access Floors, Inc.
7001 Columbia Gateway Drive Suite 500
Columbia, MD 21046
Phone: 410-799-4200
https://www.tateinc.com

Products:

ConCore™ Access Floor Systems: ConCore™ 1000, ConCore™ 1250, ConCore™ 1500, ConCore™ 2000, ConCore™ 2500, ConCore™ 3000, ConCore™ 4000

Functional Unit

The functional unit is one square meter of installed floor panel with a reference service life (RSL) of 50 years

EPD Number and Period of Validity

SCS-EPD-10099
EPD Valid April 22, 2024 through April 21, 2029
Version: September 22, 2025

Product Category Rule

ISO 21930:2017

Program Operator

SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608
+1.510.452.8000 | www.SCSglobalServices.com

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Address:	7001 Columbia Gateway Drive Suite 500, Columbia, MD 21046
Declaration Number:	SCS-EPD-10099
Declaration Validity Period:	April 22, 2024 through April 21, 2029
Version:	September 22, 2025
Program Operator:	SCS Global Services
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide
LCA Practitioner:	Ilan MacAdam-Somer, SCS Global Services
LCA Software and LCI database:	OpenLCA 2.0 software and the Ecoinvent v3.9.1 database
Product's Intended Application:	Raised floor panel
Product RSL:	50 years
Markets of Applicability:	US (Domestic)
EPD Type:	Product-Specific
EPD Scope:	Cradle-to-Grave
LCIA Method and Version:	TRACI 2.1
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	☐ internal ☒ external
LCA Reviewer:	Thomas Gloria, Ph.D., Industrial Ecology Consultants
Product Category Rule:	ISO 21930:2017
PCR Review conducted by:	ISO Technical Committee
Independent verification of the declaration and data, according to ISO 21930, ISO 14025 and the PCR	☐ internal ☒ external
EPD Verifier:	Thomas Gloria, Ph.D., Industrial Ecology Consultants
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Disclaimers: *This EPD conforms to ISO 14025, 14040, 14044, and ISO 21930.*

Scope of Results Reported: *The PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social performance benchmarks and thresholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean impacts related to greenhouse gas emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions.*

Accuracy of Results: *Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.*

Limitations: *Environmental declarations from different programs (ISO 14025) may not be comparable.*
Comparison of the environmental performance of floor system 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 use phase as instructed under this PCR.
Full conformance with the PCR allows EPD comparability only 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.

1. Declaration Owner and Product Description

1.1 Tate Access Floors, Inc.

Tate Access Floors, Inc. referred to here on out as Tate, provides high performance and sustainable solutions for commercial buildings, offering a wide range of products to improve efficiency and indoor environmental quality through the use of underfloor service distribution. The products include access floors and wide range of integrated high-end architectural finishes.

1.2 Product Description

ConCore™ access floor panels are epoxy coated unitized shells. The shells consist of a flat steel top sheet welded to a formed steel bottom sheet. The panels are then filled with a highly controlled mixture of lightweight cement. Manufactured to exact toleraces, these solid panels deliver the ultimate in design, performance, plenum integrity, service, and usability. There are seven panel grades (ConCore™ 1000, ConCore™ 1250, ConCore™ 1500, ConCore™ 2000, ConCore™ 2500, ConCore™ 3000, ConCore™ 4000) and two different understructure supports to meet specific performance requirements. The two different understructures used—the Bolted Stringer and Posilock Cornerlock, which are here on out referred to as the Cornerlock and Stringer—support the floor panels for different load requirements. **Table 1** below presents the representative panel and understructure combination for each ConCore™ access floor system declared in this EPD.

These floor systems are used for any commercial application. ConCore™ access floor systems are expected to last 50 years after the initial installation. Furthermore, ConCore™ access floor systems can be used with a variety of finishes, including porcelain, terrazzo, hardwood, soft tile, concrete, high pressure laminate, and carpet. These finishes and the adhesives used to install them are not included in the scope of this EPD.

Table 1. *Representative panel and understructure combination for each ConCore™ access floor system.*

Product	Percent Sold with Bolted Stringer	Percent Sold with Cornerlock
ConCore™ 1000	30%	70%
ConCore™ 1250	60%	40%
ConCore™ 1500	80%	20%
ConCore™ 2000	100%	0%
ConCore™ 2500	100%	0%
ConCore™ 3000	100%	0%
ConCore™ 4000	100%	0%

1.3 Technical Data

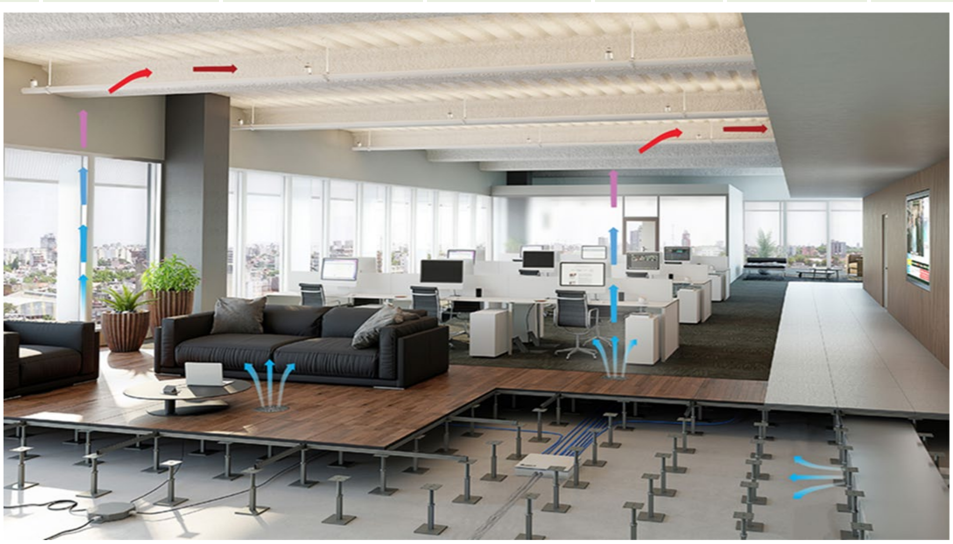
System performance criteria for each ConCore™ access floor system are presented below in **Table 2** and **Table 3**. System design load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the Ceilings & Interior Systems Construction Association (CISCA) Standards and Procedures for concentrated load methods, but with panels installed on actual understructure instead of steel blocks. Ultimate, rolling, and impact load tests are performed using CISCA test procedures.

Table 2. *System performance criteria for each ConCore™ access floor system.*

Panel	Understructure	Static Loads			Rolling Loads		Impact Loads
		Design Loads	Ultimate Loads	Safety Factor	10 Passes	10,000 Passes	
ConCore™ 1000	Cornerlock	1000 lb 454 kg	Min. 2000 lb Min. 908 kg	Min. 2	800 lb 363 kg	600 lb 272 kg	150 lb 68 kg
	Bolted Stringer	1000 lb 454 kg	Min. 2000 lb Min. 908 kg	Min. 2	800 lb 363 kg	600 lb 272 kg	150 lb 68 kg
ConCore™ 1250	Cornerlock	1250 lb 567 kg	Min. 2500 lb Min. 1134 kg	Min. 2	1000 lb 454 kg	800 lb 363 kg	150 lb 68 kg
	Bolted Stringer	1250 lb 567 kg	Min. 2500 lb Min. 1134 kg	Min. 2	1000 lb 454 kg	800 lb 363 kg	150 lb 68 kg
ConCore™ 1500	Cornerlock	1500 lb 680 kg	Min. 3000 lb Min. 1360 kg	Min. 2	1250 lb 567 kg	900 lb 408 kg	150 lb 68 kg
	Bolted Stringer	1500 lb 680 kg	Min. 3000 lb Min. 1360 kg	Min. 2	1250 lb 567 kg	900 lb 408 kg	150 lb 68 kg
ConCore™ 2000	Bolted Stringer	2000 lb 907 kg	Min. 4000 lb Min. 1814 kg	Min. 2	1500 lb 680 kg	1100 lb 499 kg	200 lb 91 kg
ConCore™ 2500	Bolted Stringer	2500 lb 1134 kg	Min. 5000 lb Min. 2268 kg	Min. 2	2000 lb 907 kg	2000 lb 907 kg	200 lb 91 kg
ConCore™ 3000	Bolted Stringer	3000 lb 1361 kg	Min. 6000 lb Min. 2722 kg	Min. 2	2700 lb 1225 kg	2400 lb 1089 kg	200 lb 91 kg
ConCore™ 4000	Bolted Stringer	4000 lb 1814 kg	Min. 8000 lb Min. 3628 kg	Min. 2	2700 lb 1225 kg	2400 lb 1089 kg	300 lb 136 kg

Table 3. *Additional system product performance requirements for all ConCore™ Access Floor Systems.*

Flammability	Combustibility	Perforated Airflow Panel (without damper)	Perforated Airflow Panel (with damper)	Perforated Direction Airflow Panel	Directional Airflow Panels	Cornerlock Height	Bolted Stringer Height
Class A, ASTM E84-1998	ASTM E136, @750° C	746 cfm @0.1-inch H_2O	515 cfm @0.1-inch H_2O	765 cfm @0.1-inch H_2O	2,594 cfm @0.1-inch H_2O	15cm – 40cm	30cm – 90cm



1.4 Product Material Composition

Table 4. *Material composition of ConCore™ 1000 panel and its packaging, including percentage of pre- and post-consumer material.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
ConCore™ 1000 Panel				
Portland cement	16.5	44%	20%	0%
Cold Rolled Steel	15.6	42%	9%	42%
Rainwater	3.66	10%	0%	0%
Recycled Fly Ash	1.65	4%	100%	0%
Epoxy resin	0.116	0.3%	0%	0%
Epoxy paste	5.16×10^{-2}	0.1%	0%	0%
Synthetic detergent	9.79×10^{-3}	0.03%	0%	0%
Polyethylene	3.67×10^{-3}	0.01%	0%	0%
Urethane acrylic copolymer	3.67×10^{-3}	0.01%	0%	0%
Total	**37.6**	**100%**	-	-
ConCore™ 1000 Packaging				
Corrugated box	0.114	32%	12%	57%
Polyester strap	0.245	68%	0%	0%
Total	**0.358**	**100%**	-	-

Table 5. *Material composition of ConCore™ 1250 panel and its packaging, including percentage of pre- and post-consumer material.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
ConCore™ 1250 Panel				
Portland cement	16.5	41%	20%	0%
Cold Rolled Steel	17.2	43%	9%	42%
Rainwater	4.52	11%	0%	0%
Recycled Fly Ash	1.65	4%	100%	0%
Epoxy resin	0.116	0.3%	0%	0%
Epoxy paste	5.16×10^{-2}	0.1%	0%	0%
Synthetic detergent	9.79×10^{-3}	0.02%	0%	0%
Polyethylene	3.67×10^{-3}	0.01%	0%	0%
Urethane acrylic copolymer	3.67×10^{-3}	0.01%	0%	0%
Total	**40.0**	**100%**	-	-
ConCore™ 1250 Packaging				
Corrugated box	0.114	32%	12%	57%
Polyester strap	0.245	68%	0%	0%
Total	**0.358**	**100%**	-	-

Table 6. *Material composition of ConCore™ 1500 panel and its packaging, including percentage of pre- and post-consumer material.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
ConCore™ 1500 Panel				
Portland cement	16.5	39%	20%	0%
Cold Rolled Steel	21.1	50%	9%	42%
Rainwater	3.10	7%	0%	0%
Recycled Fly Ash	1.65	4%	100%	0%
Epoxy resin	0.116	0.3%	0%	0%
Epoxy paste	5.16×10^{-2}	0.1%	0%	0%
Synthetic detergent	9.79×10^{-3}	0.02%	0%	0%
Polyethylene	3.67×10^{-3}	0.01%	0%	0%
Urethane acrylic copolymer	3.67×10^{-3}	0.01%	0%	0%
Total	**40.0**	**100%**	-	-
ConCore™ 1500 Packaging				
Corrugated box	0.114	32%	12%	57%
Polyester strap	0.245	68%	0%	0%
Total	**0.358**	**100%**	-	-

Table 7. *Material composition of ConCore™ 2000 panel and its packaging, including percentage of pre- and post-consumer material.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
ConCore™ 2000 Panel				
Portland cement	16.5	34%	20%	0%
Cold Rolled Steel	24.7	51%	9%	42%
Rainwater	5.65	12%	0%	0%
Recycled Fly Ash	1.65	3%	100%	0%
Epoxy resin	0.116	0.2%	0%	0%
Epoxy paste	5.16×10^{-2}	0.1%	0%	0%
Synthetic detergent	9.79×10^{-3}	0.02%	0%	0%
Polyethylene	3.67×10^{-3}	0.01%	0%	0%
Urethane acrylic copolymer	3.67×10^{-3}	0.01%	0%	0%
Total	**48.6**	**100%**	-	-
ConCore™ 2000 Packaging				
Corrugated box	0.114	32%	12%	57%
Polyester strap	0.245	68%	0%	0%
Total	**0.358**	**100%**	-	-

Table 8. *Material composition of ConCore™ 2500 panel and its packaging, including percentage of pre- and post-consumer material.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
ConCore™ 2500 Panel				
Portland cement	16.5	30%	20%	0%
Cold Rolled Steel	31.4	56%	9%	42%
Rainwater	5.92	11%	0%	0%
Recycled Fly Ash	1.65	3%	100%	0%
Epoxy resin	0.116	0.2%	0%	0%
Epoxy paste	$5.16x10^{-2}$	0.1%	0%	0%
Synthetic detergent	$9.79x10^{-3}$	0.02%	0%	0%
Polyethylene	$3.67x10^{-3}$	0.01%	0%	0%
Urethane acrylic copolymer	$3.67x10^{-3}$	0.01%	0%	0%
Total	**55.6**	**100%**	**-**	**-**
ConCore™ 2500 Packaging				
Corrugated box	0.114	32%	12%	57%
Polyester strap	0.245	68%	0%	0%
Total	**0.358**	**100%**	**-**	**-**

Table 9. *Material composition of ConCore™ 3000 panel and its packaging, including percentage of pre- and post-consumer material.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
ConCore™ 3000 Panel				
Portland cement	16.5	29%	20%	0%
Cold Rolled Steel	33.1	58%	9%	42%
Rainwater	5.92	10%	0%	0%
Recycled Fly Ash	1.65	3%	100%	0%
Epoxy resin	0.116	0.2%	0%	0%
Epoxy paste	$5.16x10^{-2}$	0.1%	0%	0%
Synthetic detergent	$9.79x10^{-3}$	0.02%	0%	0%
Polyethylene	$3.67x10^{-3}$	0.01%	0%	0%
Urethane acrylic copolymer	$3.67x10^{-3}$	0.01%	0%	0%
Total	**57.4**	**100%**	**-**	**-**
ConCore™ 3000 Packaging				
Corrugated box	0.114	32%	12%	57%
Polyester strap	0.245	68%	0%	0%
Total	**0.358**	**100%**	**-**	**-**

Table 10. *Material composition of ConCore™ 4000 panel and its packaging, including percentage of pre- and post-consumer material.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
ConCore™ 4000 Panel				
Portland cement	16.5	26%	20%	0%
Cold Rolled Steel	35.7	57%	9%	42%
Rainwater	8.49	14%	0%	0%
Recycled Fly Ash	1.65	3%	100%	0%
Epoxy resin	0.116	0.2%	0%	0%
Epoxy paste	5.16×10^{-2}	0.1%	0%	0%
Synthetic detergent	9.79×10^{-3}	0.02%	0%	0%
Polyethylene	3.67×10^{-3}	0.01%	0%	0%
Urethane acrylic copolymer	3.67×10^{-3}	0.01%	0%	0%
Total	**62.5**	**100%**	-	-
ConCore™ 4000 Packaging				
Corrugated box	0.114	32%	12%	57%
Polyester strap	0.245	68%	0%	0%
Total	**0.358**	**100%**	-	-

Table 11. *Material composition of the Cornerlock understructure and its packaging, including percentage of pre- and post-consumer material per meter square of raised floor panel.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
Cornerlock Understructure				
Galvanized steel	2.70	95%	18%	59%
Stainless steel	0.134	5%	18%	59%
Grey phosphate steel	1.41×10^{-2}	0.5%	18%	59%
Total	**2.85**	**100%**	-	-
Cornerlock Understructure Packaging				
Corrugated box	2.34×10^{-3}	100%	12%	57%
Total	**2.34×10^{-3}**	**100%**	-	-

Table 12. *Material composition of the Stringer understructure and its packaging, including percentage of pre- and post-consumer material per meter square of raised floor panel.*

Material	Amount (kg/m^2)	Percent of Total Weight	Percent Pre-consumer Recycled Content	Percent Post-consumer Recycled Content
Stringer Understructure				
Galvanized steel	5.56	98%	21%	53%
Stainless steel	0.00	0%	-	-
Grey phosphate steel	0.107	2%	21%	53%
Total	**5.67**	**100%**	**-**	**-**
Stringer Understructure Packaging				
Corrugated box	$6.07\text{x}10^{-3}$	100%	12%	57%
Total	**$6.07\text{x}10^{-3}$**	**100%**	**-**	**-**

2.5 FURTHER INFORMATION

Further information on the product can be found on the manufacturer's website at https://www.tateinc.com.

2. Scope of the Study

2.1 FUNCTIONS OF THE PRODUCT SYSTEM

ConCore™ access floor systems provide the primary function of an elevated floor system, allowing access to building services such as wiring and HVAC. According to ISO 14044 [1], the functional unit is "the quantified performance of a product system, for use as a reference unit." The functional unit used in the study, as specified in the PCR, ISO 21930:2017 [2], is 1 m^2 of access floor system with a reference service life of 50 years. The access floor system includes the panel and its supporting understructure. The reference flows for each ConCore™ access floor system is provided below:

ConCore™ 1000: 37.6 kg/m^2
ConCore™ 1250: 40.0 kg/m^2
ConCore™ 1500: 42.5 kg/m^2
ConCore™ 2000: 48.6 kg/m^2
ConCore™ 2500: 55.6 kg/m^2
ConCore™ 3000: 57.4 kg/m^2
ConCore™ 4000: 62.5 kg/m^2

2.2 SYSTEM BOUNDARY

The system boundary includes the cradle-to-grave life cycle of the floor panel products, which includes all inputs required and outputs generated from each life cycle module. The modules are described in **Table 13** and a flow diagram illustrating the processes involved within each life cycle module is shown below in **Figure 1**. Module D is not covered within the scope of this EPD and is listed as "module not declared".

Table 13. *A description of the life cycle phases included in the floor panel products' system boundary.*

Module	Module description from the PCR	Included in System Boundary
A1	Raw Material extraction and upstream production: Includes raw material extraction and processing, as well as processing of secondary material inputs (e.g., recycled or reused materials).	x
A2	Transport to factory: Covers transport of raw materials and other inputs to the factory and internal transport.	x
A3	Manufacturing: Includes all fuels, electricity, and water used in manufacturing the product; the extraction and upstream production, transport to factory, and manufacturing of product packaging; transport and treatment of all waste generated at the manufacturing facility.	x
A4	Transport to the building site: Includes transport from the manufacturing facility to the building.	x
A5	Installation: This stage includes the installation of the ConCore™ access floor systems. Installation is done by hand with tools that require neglible amounts of electricity; therefore there are no impacts associated with this module.	x
B1	Use stage: The use stage includes environmental aspects and impacts arising from normal product use over the 50 year reference service life. There are no release of substances to indoor air, soil, and water from product use and results for this stage are zero.	X
B2	Maintenance: The maintenance stage includes cleaning, planned technical servicing, and the replacement of worn and damaged parts. ConCore™ access floor systems are not exposed during their use since they are covered by a finish and therefore require no cleaning schedule. No other servicing is required over the 50 reference service life. Results for this stage are zero.	X
B3 – B5	Repair, Replacement, & Refurbishment: Neither the panel nor understructure are expected to need any replacement or refurbishing during normal use over the 50 year reference service life. Furthermore, repairing of the ConCore™ access floor system is assumed to be irregular, and is assumed to have a negligible contribution to environmental impacts arising from normal product use over the 50 year reference service life. Results for these stages are zero.	X
B6 – B7	Operational energy and water use: There is no operational energy or water use associated with the use of the product and the results for these modules are zero..	X
C1	Deconstruction/demolition: Includes dismantling or demolition, of the construction product from the construction works and the energy use for this, including initial on-site sorting of the materials. There are no additional inputs required to deconstruct this product, so the impact associated with this module is zero.	X
C2	Transport to waste processing or disposal: Includes the transportation of the discarded construction product as part of the waste processing, for example to a recycling site and transportation of waste, to final disposal.	x
C3	Waste processing for generation of secondary materials (i.e. recycling): Includes the inputs required for recycling impacts from recycling.	x
C4	Disposal of waste: Includes physical pre-treatment and management of the disposal site, including provision and transport of all materials, products and related energy and water use	x
D	Optional supplementary information about the potential net benefits from reuse, recycling and energy recovery beyond the system boundary of the studied product system.	MND

x = Module Included | MND = Module Not Declared

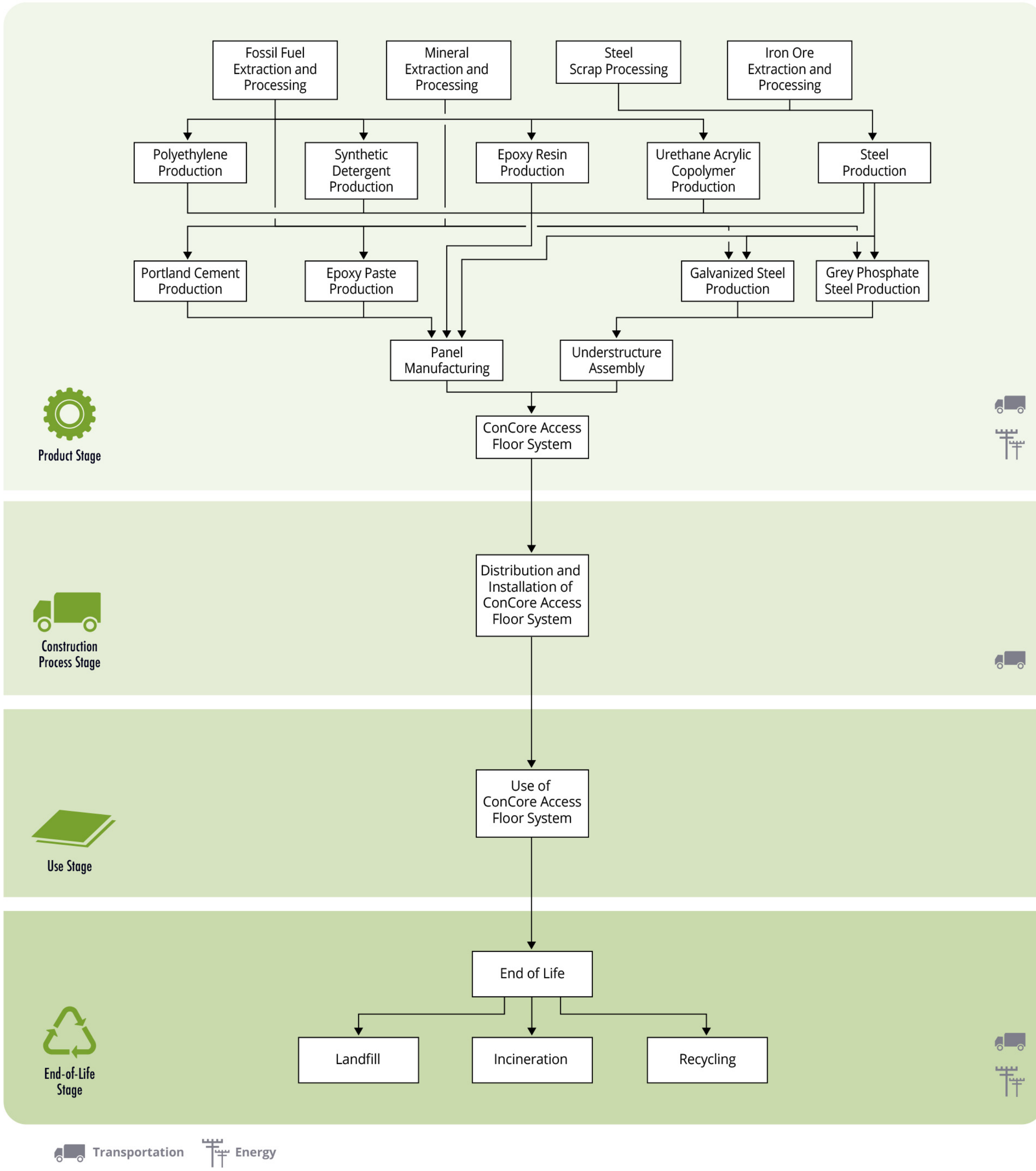


Figure 1. *Flow diagram representing the major processes in the life cycle of the ConCore™ access floor systems.*

3. Technical Information and Scenarios

3.1 LIFE CYCLE MODULES

(A1- A3) Raw Material Extraction, Transport, & Manufacturing

These three modules include all of the inputs and outputs necessary to produce the raw materials (A1 module) of the floor panels (**Table 4 - Table 10**) and their understructure supports (**Table 11 - Table 12)**, transport these raw materials to the manufacturing facility located in Red Lion, Pennsylvania (A2 module), and then process the raw materials into the floor panel products (A3 module). The manufacturing module also includes the production of the product packaging.

To manufacture the ConCore™ floor panels, first the top sheet is uncoiled and stamped into a 2 ft x 2 ft square. The bottom pan goes through a proprietary three-step process to form the same square dimension with an "egg-carton" texture. The top sheet is then welded to the bottom pan before the panel is sent to a trim die to be sized within ten-thousands of an inch. The panel is pre-treated to remove any residue and then painted via an electrodeposition process before being cured in an oven. The panel is then fed into a continuous filling process to allow for the injection of Portland cement, reclaimed water, and foaming material into the panel cavity. The panel is then plugged after filling and the excess material is sent to a collecting bin that reclaims the water to be used in the filling process again. The panel is then cleaned with pressurized water in a continuous batch tunnel washer and dried with pressurized air in an air knife system. The panel is put into a corrugated board sleeve before being shipped for customer use.

These processing steps require electricity, collected rainwater, and natural gas. The corrugated cardboard used to package the floor panels and the supporting understructure contain biogenic carbon, which is shown in **Table 14**. Electricity is modeled using the NERC SERC regional grid mix [4]. Manufacturing also generates a small amount of waste for recycling, non-hazardous waste which is incinerated, and small amounts of air emissions. Transport of waste is based on the EPA WARM model [3], which assumes a distance of 20 miles (~32km) from point of generation of waste to a disposal facility (e.g., landfill, recycling or incineration); transport is assumed to be done by diesel**.** No substances required to be reported as hazardous are associated with the production of this product.

The type, mass, mode of transport, and distance raw materials were transported were provided by Tate. The quantity of manufacturing facility inputs and outputs were also provided by Tate.

Table 14. *The biogenic carbon content per square meter of the floor panel products and products' packaging.*

Material	Biogenic Carbon Content (kg CO_2 eq)
All floor panels	2.18
Cornerlock	$1.28x10^{-2}$
Stringer	$2.82x10^{-2}$

* The corrugated cardboard is estimated to be composed of 52% cellulose, 10% lignin, and 7% hemicellulose, which is based on Xu et al. (2020) [4]. The carbon content of these materials is based on Chatterjee & Saito (2015) [5] and is 42%, 59%, and 38%, respectively.

(A4) Transport to Installation Site

This module includes all transport from the manufacturing facility to the site of installation. Tate distributes nearly all of its floor system product domestically within the U.S. The type and distance of transport was provided by Tate which was used to calculate the metric ton–kilometer transport (mass of transported product multiplied by the distance). The capacity and fuel utilization of the truck, ship, and train transport modeled in this module (and all others) are shown in (**Table 15**) and the metric ton-kilometer of transport is shown in **Table 16.**

Table 15. *The type, fuel utilization, and capacity utilization of truck transport used in all modules.*

Transport Specifications	Value
Truck - EURO 4, 16-32 MT Freight Lorry	
Diesel Fuel Utilization (kg/tkm)	3.67×10^{-2}
Capacity Utilization (%)	37%
Ship - 43,000 Metric Ton Sea Container Ship	
Heavy Fuel Oil Utilization (kg/tkm)	2.52×10^{-3}
Capacity Utilization (%)	70%
Train – 1,000,000 Metric Ton Freight Train	
Diesel Fuel Utilization (kg/tkm)	1.07×10^{-2}
Capacity Utilization (%)	44%
A2 – Total Transport	
Total Raw Material Transport Distance – Truck (tkm)	0.363
Total Raw Material Transport Distance – Ship (tkm)	9.73×10^{-2}
Total Raw Material Transport Distance – Rail (tkm)	2.36

Table 16. *The metric ton-kilometer of transported floor panel products to the site of installation.*

Panel Grade	Road Freight (tkm/m^2)	Rail Freight (tkm/m^2)	Ship Freight (tkm/m^2)
1000	22.6	51.0	12.5
1250	24.3	55.0	13.4
1500	26.0	58.7	14.3
2000	29.6	66.9	16.3
2500	33.4	75.6	18.4
3000	34.4	77.7	19.0
4000	37.2	84.0	20.5

(A5) Installation

The installation of the access floor systems is completed using manual labor and does not require any electricity or other resources.

(B1) Product Use

This module includes any impacts from product use, which include volatile organic compound emissions (VOCs) from the products. ConCore™ access floor systems are not exposed during their use since they are covered by a finish and so do not produce any emissions.

(B2 & B3) Maintenance & Repair

This module accounts for any maintenance, including cleaning, and repair of the products. As the floor panels are covered, they do not require routine cleaning, nor do they require maintenance. According to Tate, the finish may need to be replaced; however, finishes and the adhesives used for them are not included in this LCA study. Repairing of the access floor system is assumed to be irregular and to have a negligible contribution to environmental impacts arising from normal product use over the 50 year reference service life.

(B4 & B5) Replacement & Refurbishment

This module accounts for any product replacement or refurbishment that is required over the reference service life. Ultimately, neither the panel nor understructure are expected to need any replacement (Module B4) or refurbishing (Module B5) during normal use over the 50 year reference service life.

B6 & B7. Operational Energy & Water

No operational energy (Module B6) or water (Module B7) is needed for the use of the access floor systems.

C1. Deconstruction/Demolition

This module includes dismantling or demolition, of the floor panels from the building in which they're installed and the energy use for this, including initial on-site sorting of the materials. Similar to installation, dismantiling of the floor system is conducted using manual labor and does not require any energy or water. This module is where the ISO 21930 resource indicator for recovered materials (MR) is reported.

C2. Waste Transport

This module accounts for the transport of the product at its end-of-life to a waste treatment facility. Transport for disposal of all product waste is based on the EPA WARM model [3], which assumes a distance of 20 miles (~32km) from point of generation of waste to a disposal facility (e.g., landfill, recycling or incineration). Waste is assumed to be transported by the same truck transport shown in **Table 15**.

C3. Waste Processing

This module includes the processing (e.g., collecting and sorting) of materials and secondary fuels for reuse, as well as recovered energy from waste. As all materials for recycling are sorted in the C1 module, there are no impacts associated with the C3 module.

C4. Waste Treatment

This module accounts for the impact from the treatment of all product non-recyclable or reusable waste. Primary data on actual end-of-life treatment for the access floor systems were not available. The disposal of the steel and concrete within the product at end-of-life is based on 2015 statistics regarding construction and demolition debris management in the United States from the US Environmental Production Agency [6]. All of materials within the products are assumed to be landfilled. The mass of treated waste is shown below in **Table 17.**

Table 17. *Mass of treated waste shown for each grade of ConCore™ floor panel.*

Treatment Type & Type of Waste	Mass of Treated Waste						
	1000	1250	1500	2000	2500	3000	4000
Landfilled Concrete	2.87	2.87	2.87	2.87	2.87	2.87	2.87
Landfilled Fly Ash	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Landfilled Other Waste Materials	2.78	3.02	3.60	4.14	5.16	5.42	5.80

3.2 DATA SOURCES

Modeling of this LCA was conducted in openLCA v2.0 [7] and all datasets used were from the Ecoinvent 3.9.1 database [8]. Detailed descriptions of unit processes can be found in the accompanying documentation. For the manufacturing and packaging of the access floor systems, primary data were provided by Tate. Similarly, the upstream transport of materials used for manufacturing and packaging is based on primary data provided by Tate. For the distribution of product from manufacturing facility to distribution center, a weighted average based on primary shipment data was provided by Tate.

For the ConCore™ panels, the production of steel was modeled using inventory data taken from a 2020 Sphera™ report on "North American Steel Products" [9]. The recycled fly ash used in all floor panels was modeled using LCI data taken from a published LCA of municipal solid waste incineration fly ash recycling as a feedstock for brick manufacturing [10]; only LCI data on the processes used to produce the recycled fly ash were taken (Figure 2 of report).

Table 18 below lists the individual datasets used.

Table 18. *The LCI datasets from the Ecoinvent v3.9.1 (2023) database used to model the product system.*

Flow	Dataset
Portland cement	cement production, type general use | cement, type general use | Cutoff, U - CO
Cold Rolled Steel	market group for electricity, medium voltage | electricity, medium voltage | Cutoff, U – GLO heat production, natural gas, at industrial furnace >100kW | heat, district or industrial, natural gas | Cutoff, U – RoW market for heat, from steam, in chemical industry | heat, from steam, in chemical industry | Cutoff, U – RoW steel production, converter, low-alloyed | steel, low-alloyed | Cutoff, U – RoW steel production, electric, low-alloyed | steel, low-alloyed | Cutoff, U - RoW
Epoxy resin	epoxy resin production, liquid | epoxy resin, liquid | Cutoff, U - RoW
Epoxy paste+	Titanium dioxide {RoW}| market for | Alloc Rec, U; Aluminium oxide {GLO}| market for | Alloc Rec, U; Ethylene glycol monoethyl ether {RoW}| production | Alloc Rec, U; Silicone product {RoW}| production | Alloc Rec, U; Indium tin oxide powder, nanoscale, for sputtering target {RoW}| production | Alloc Rec, U; Carbon black {GLO}| market for | Alloc Rec, U; Epoxy resin, liquid {RoW}| production | Alloc Rec, U; Plaster mixing {GLO}| market for | Alloc Rec, U
Synthetic detergent	Dipropylene glycol monomethyl ether {RoW}| production | Alloc Rec, U
Polyethylene	Polyethylene, high density, granulate {RoW}| production | Alloc Rec, U
Urethane acrylic copolymer	Butyl acrylate {RoW}| production | Alloc Rec, U
Recycled fly ash	market for electricity, medium voltage | electricity, medium voltage | Cutoff, U - US-RFC market for phosphoric acid, industrial grade, without water, in 85% solution state | phosphoric acid, industrial grade, without water, in 85% solution state | Cutoff, U – GLO market for water, decarbonised | water, decarbonised | Cutoff, U - US
Galvanized steel	Steel, low-alloyed {RoW}| steel production, electric, low-alloyed | Alloc Rec, U; Zinc coat, pieces {RoW}| zinc coating, pieces | Alloc Rec, U; Metal working, without steel input, average for steel product manufacturing {RoW}| processing | Alloc Rec, U
Stainless steel	Steel, chromium steel 18/8 {RoW}| steel production, electric, chromium steel 18/8 | Alloc Rec, U; Metal working, without steel input, average for steel product manufacturing {RoW}| processing | Alloc Rec, U
Grey phosphate steel	Steel, low-alloyed {RoW}| steel production, electric, low-alloyed | Alloc Rec, U; Zinc coat, pieces {RoW}| zinc coating, pieces | Alloc Rec, U; Metal working, without steel input, average for steel product manufacturing {RoW}| processing | Alloc Rec, U
Steel	Steel, low-alloyed {RoW}| steel production, electric, low-alloyed | Alloc Rec, U; Metal working, without steel input, average for steel product manufacturing {RoW}| processing | Alloc Rec, U
Corrugated board	corrugated board box production | corrugated board box | Cutoff, U - US
Polyester strapping	polyethylene terephthalate production, granulate, amorphous | polyethylene terephthalate, granulate, amorphous | Cutoff, U - RoW
Electricity*	Electricity, medium voltage, at grid/RFCE 2022 U
Natural Gas	heat production, natural gas, at industrial furnace >100kW | heat, district or industrial, natural gas | Cutoff, U - Europe without Switzerland
Rain water	Water, rain (elementary flow)
Road	market for transport, freight, lorry 16-32 metric ton, EURO4 | transport, freight, lorry 16-32 metric ton, EURO4 | Cutoff, U - RoW
Rail	market for transport, freight train | transport, freight train | Cutoff, U - US
Ship	market for transport, freight, sea, container ship | transport, freight, sea, container ship | Cutoff, U - GLO

+ Based on MSDS for "Powercron gray paste" produced by PPG Industries, Inc. Documentation provided by Tate.
* This Ecoinvent electricity dataset has been modified to represent the 2022 RFCE eGRID subregion grid mix.

3.3 DATA QUALITY

The data quality assessment is discussed in the table below for each of the data quality parameters.

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage Age of data and the minimum length of time over which data is collected	Manufacturer data (primary data) are based on 2022 annual production. All primary data used represented an average of at least one year's worth of data collection. Representative Ecoinvent datasets (secondary data) used for upstream and background processes are generally less than 5 years old. LCI data taken from the Lin et al. 2023 [10] article on the recycling of fly ash for use as feedstock to produce bricks, was collected in 2022.
Geographical Coverage Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provide the best possible representation available with current data. All data was representative of US or North America, with the exception that secondary data taken from the Lin et al. article [10] to model the recycled fly ash is representative of production in Taiwan, and that secondary data from Ecoinvent are are representative of US, EU, Global, or "Rest-of-World" (average for all countries in the world with uncertainty adjusted). Ecoinvent datasets chosen are considered sufficiently similar to actual processes.
Technology Coverage Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations; the exception is secondary data used for the production of recycled fly ash, which may or may not be representative of the actual technology used.
Precision Measure of the variability of the data values for each data expressed (e.g. variance)	Precision of results are not quantified due to a lack of data. Data collected for operations were typically averaged for one year and over multiple operations, which is expected to reduce the variability of results.
Completeness Percentage of flow that is measured or estimated	Except where noted, the LCA model included all known mass and energy flows. In some instances, surrogate data used to represent upstream operations may be missing some data which is propagated in the model. No known processes or activities contributing to more than 10% of the total environmental impact for each indicator are excluded; in total, these missing data represent less than 5% of the cumulative omitted mass or energy flows.
Representativeness Qualitative assessment of the degree to which the data set reflects the true population of interest (i.e. geographical coverage, time period and technology coverage)	Data used in the assessment represent typical or average processes as currently reported from multiple data sources, and are therefore generally representative of the range of actual processes and technologies for production of these materials. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction. Some proxy datasets are used to represent materials due to the lack of data available.
Consistency Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	The consistency of the assessment is considered to be high. Primary data was used to represent Tate's manufacturing, distribution, product material compositon, packaging, and upstream transport. In general, secondary data was also of high quality secondary data: North American steel production LCI data [9] were used to model the cold rolled steel used in the floor panels. In general, data sources of similar quality and age are used. Different portions of the product life cycle are equally considered.
Reproducibility Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documented.
Sources of the Data Description of all primary and secondary data sources	For manufacturing and packaging, primary data were provided by Tate. Similarly, the upstream transport of materials is based on primary data provided by Tate. For the distribution of product from manufacturing facility to customer, a weighted average was calculated based on primary shipment data provided by Tate. Where primary upstream data were unavailable, secondary data were used. The principal source of secondary LCI data is Ecoinvent.
Uncertainty of the Information Uncertainty related to data, models, and assumptions	Uncertainty related to the product materials and packaging is low. Data for upstream operations relied upon use of existing representative datasets. These datasets contained relatively recent data (<5 years), but lacked specific geographical representativeness. Uncertainty related to the impact assessment methods used in the study are high. The impact methods required by the PCR [2] include impact potentials, which lack characterization of providing and receiving environments or tipping points.

3.4 ALLOCATION

This study follows the allocation guidelines of ISO 14044 [1] and allocation rules specified in the PCR [2] and minimized the use of allocation wherever possible.

Mass allocation was deemed the most accurate and reproducible way of calculating the energy and material requirements for the manufacture of ConCore™ access floor systems. Primary data for resource use (e.g., electricity, natural gas, water, etc.), waste, and emissions released, are allocated on a mass-basis as a fraction of total annual production (January 1, 2022 – December 31, 2022).

Each panel and supporting understructure includes amounts of recycled content (see Section 1.4), which are allocated using the recycled content allocation method, also known as the 100-0 cut off method. Using the recycled content allocation approach, system inputs with recycled content do not receive any burden from the previous life cycle other than reprocessing of the waste material. At the end-of-life, materials which are recycled leave the system boundaries with no additional burden.

Impacts from transportation were allocated based on the mass and distance transported.

3.5 CUT-OFF RULES

The cut-off criteria for including or excluding materials, energy, and emissions data from the study are in accordance with the PCR and are listed below.

- All inputs and outputs to a unit process are included in the LCA calculation for which data are available. Any data gaps are filled with representative data. Assumptions used for filling data gaps are documented in the LCA report.
- Where there is a data gap or insufficient data, criteria for exclusion of inputs and outputs is 1% of primary energy usage (renewable and non-renewable energy) and 1% on a mass basis for the specific unit process. The maximum criteria for exclusion of inputs and outputs is 5% of primary energy usage and mass across all modules included in the LCA.
- If a flow meets the above criteria for exclusion but is considered to have a significant potential environmental impact, it is included.
- No excluded processes were thought to have any significant impact on the total life cycle impact of this product.

According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results. No known flows are deliberately excluded from this EPD.

3.6 SUMMARY OF ASSUMPTIONS

The assessment relied on several assumptions, described below:

Representative inventory data were used to reflect the energy mix for electricity use. The Red Lion, Pennsylvania facility is located in the RFCE EPA subregion. An Ecoinvent inventory dataset was modified to reflect the 2022 eGRID energy mix for RFCE to estimate resource use and emissions from electricity use at the Tate manufacturing facility.
Repairing of the floor systems is assumed to be irregular and to have negligible contribution to environmental impacts arising from normal product use over the 50 year reference service life.
For some materials used in manufacturing, a proxy material dataset was used. Datasets are provided in **Table 18**.
Inventory data for raw materials, packaging, and ancillary materials were modeled with unit process data taken from Ecoinvent.
Recycled steel components were assumed to be electric arc furnace (EAF) steel given the range in percent recycled content based on primary data received from Tate, while virgin steel components were assumed to be produced by a basic oxygen furnace (BOF). The model used both production processes to obtain the desired recycled steel

content for each steel material. In actual practice, steel is made by one or the other steel methods. EAF steel typically contains 90-100% recycled steel, while BOF steel typically contains 5-20% recycled steel.
Primary data for the production of the recycled fly ash was not available, so life cycle inventory data was taken from a peer-reviewed published article [10] and is assumed to be representative of the recycled fly ash used by all fourteen floor panels.
While concrete, steel, and fly ash are modeled at end-of-life based on US EPA waste statistics [6], all other materials within the products are assumed to be landfilled.

3.7 PERIOD UNDER REVIEW

The period of review is January 1, 2022 through December 31, 2022

3.8 COMPARABILITY

The PCR [2] this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.

4. LCA Results

The LCIA results are presented in **Table 19 - Table 25** below using the TRACI 2.1 [11] characterization methodologies, as required by the PCR for North American markets: climate change (TRACI 2.1 IPCC AR4 100a), acidification, eutrophication, ozone depletion, smog formation, and resource depletion of fossil fuels. These six 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. It should be noted that the indicators prescribed by the PCR do not represent all categories of potential environmental and human health impact associated with the life cycle of the product, and this represents a general limitation of the LCA study. Additionally, these indicators have no "environmental relevance," as defined in the ISO-14044 §4.4.2.2.2, 4.4.2.2.4, and 4.4.5, with the exception of the "Global Warming Potential" indicator, which has low environmental relevance. That is, these "potential" results may or may not have any relationship to actual impacts occurring.

Any comparison of EPDs shall be subject to the requirements of the PCR [2]. 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.

The PCR [2] requires the calculation of biogenic carbon emissions and removals. While the product packaging, corrugated cardboard boxes contain biogenic carbon, this carbon is assumed to be released at EOL or after landfilling. In addition, the TRACI 2.1 characterization methodologies do not account for biogenic carbon uptake or biomass CO_2 emissions [11].

Note that the impact from modules A5, B1-B7, and C3 are zero and are therefore not displayed in the tables below.

Table 19. *The Impact category results reported by life cycle stage for 1 m^2 of ConCore™ 1000 maintained for a period of 50 years.*

Impact Category	Total	A1 - A3	A4	C1	C2	C4
Climate Change	76.3	68.5	7.45	0.00	0.254	0.176
(kg CO_2 eq.)	100%	90%	10%	0%	0%	0%
Acidification	0.373	0.323	$4.79x10^{-2}$	0.00	$1.01x10^{-3}$	$3.30x10^{-4}$
(kg SO_2 eq.)	100%	87%	13%	0%	0%	0%
Eutrophication	0.260	0.248	$8.80x10^{-3}$	0.00	$2.40x10^{-4}$	$3.01x10^{-3}$
(kg N eq.)	100%	95%	3%	0%	0%	1%
Ozone Depletion	$1.88x10^{-6}$	$1.76x10^{-6}$	$1.23x10^{-7}$	0.00	$4.47x10^{-9}$	$1.76x10^{-9}$
(kg CFC-11 eq.)	100%	93%	7%	0%	0%	0%
Smog	5.30	3.94	1.32	0.00	$2.55x10^{-2}$	$9.22x10^{-3}$
(kg $O_{3)}$	100%	74%	25%	0%	0%	0%
Fossil Fuel Depletion	70.3	55.7	13.9	0.00	0.510	0.188
(MJ surplus, LHV)	100%	79%	20%	0%	1%	0%

Table 20. *The Impact category results reported by life cycle stage for 1 m^2 of ConCore™ 1250 maintained for a period of 50 years.*

Impact Category	Total	A1 - A3	A4	C1	C2	C4
Climate Change	83.8	75.3	8.08	0.00	0.270	0.160
(kg CO2 eq.)	100%	90%	10%	0%	0%	0%
Acidification	0.417	0.363	$5.19x10^{-2}$	0.00	$1.08x10^{-3}$	$3.40x10^{-4}$
(kg SO2 eq.)	100%	87%	12%	0%	0%	0%
Eutrophication	0.287	0.274	$9.54x10^{-3}$	0.00	$2.60x10^{-4}$	$2.91x10^{-3}$
(kg N eq.)	100%	96%	3%	0%	0%	1%
Ozone Depletion	$2.05x10^{-6}$	$1.91x10^{-6}$	$1.33x10^{-7}$	0.00	$4.75x10^{-9}$	$1.86x10^{-9}$
(kg CFC-11 eq.)	100%	93%	7%	0%	0%	0%
Smog	5.85	4.37	1.44	0.00	$2.72x10^{-2}$	$9.68x10^{-3}$
(kg O3)	100%	75%	25%	0%	0%	0%
Fossil Fuel Depletion	77.3	61.5	15.1	0.00	0.543	0.198
(MJ surplus, LHV)	100%	80%	19%	0%	1%	0%

Table 21. *The Impact category results reported by life cycle stage for 1 m^2 of ConCore™ 1500 maintained for a period of 50 years.*

Impact Category	Total	A1 - A3	A4	C1	C2	C4
Climate Change	95.9	72.2	8.61	0.00	0.288	0.164
(kg CO_2 eq.)	100%	91%	9%	0%	0%	0%
Acidification	0.471	0.414	$5.54x10^{-2}$	0.00	$1.15x10^{-3}$	$3.60x10^{-4}$
(kg SO_2 eq.)	100%	88%	12%	0%	0%	0%
Eutrophication	0.332	0.318	$1.02x10^{-2}$	0.00	$2.70x10^{-4}$	$2.91x10^{-3}$
(kg N eq.)	100%	96%	3%	0%	0%	1%
Ozone Depletion	$2.32x10^{-6}$	$2.17x10^{-6}$	$1.42x10^{-7}$	0.00	$5.08x10^{-9}$	$2.00x10^{-9}$
(kg CFC-11 eq.)	100%	94%	6%	0%	0%	0%
Smog	6.59	5.02	1.53	0.00	$2.90x10^{-2}$	$1.03x10^{-2}$
(kg $O_{3)}$	100%	76%	23%	0%	0%	0%
Fossil Fuel Depletion	87.2	70.3	16.1	0.00	0.580	0.212
(MJ surplus, LHV)	100%	81%	18%	0%	1%	0%

Table 22. *The Impact category results reported by life cycle stage for 1 m² of ConCore™ 2000 maintained for a period of 50 years.*

Impact Category	Total	A1 - A3	A4	C1	C2	C4
Climate Change	109	98.3	9.81	0.00	0.329	0.167
(kg CO_2 eq.)	100%	91%	9%	0%	0%	0%
Acidification	0.528	0.464	6.31×10^{-2}	0.00	1.31×10^{-3}	3.90×10^{-4}
(kg SO_2 eq.)	100%	88%	12%	0%	0%	0%
Eutrophication	0.376	0.361	1.16×10^{-2}	0.00	3.10×10^{-4}	2.92×10^{-3}
(kg N eq.)	100%	96%	3%	0%	0%	1%
Ozone Depletion	2.59×10^{-6}	2.42×10^{-6}	1.62×10^{-7}	0.00	5.80×10^{-9}	2.12×10^{-9}
(kg CFC-11 eq.)	100%	93%	6%	0%	0%	0%
Smog	7.44	5.65	1.74	0.00	3.31×10^{-2}	1.10×10^{-2}
(kg O_3)	100%	76%	23%	0%	0%	0%
Fossil Fuel Depletion	98.7	79.6	18.3	0.00	0.662	0.225
(MJ surplus, LHV)	100%	81%	19%	0%	1%	0%

Table 23. *The Impact category results reported by life cycle stage for 1 m² of ConCore™ 2500 maintained for a period of 50 years.*

Impact Category	Total	A1 - A3	A4	C1	C2	C4
Climate Change	128	116	11.1	0.00	0.371	0.173
(kg CO_2 eq.)	100%	91%	9%	0%	0%	0%
Acidification	0.602	0.528	7.12×10^{-2}	0.00	1.48×10^{-3}	4.20×10^{-4}
(kg SO_2 eq.)	100%	88%	12%	0%	0%	0%
Eutrophication	0.442	0.426	1.31×10^{-2}	0.00	3.50×10^{-4}	2.92×10^{-3}
(kg N eq.)	100%	96%	3%	0%	0%	1%
Ozone Depletion	3.00×10^{-6}	2.81×10^{-6}	1.83×10^{-7}	0.00	6.53×10^{-9}	2.34×10^{-9}
(kg CFC-11 eq.)	100%	94%	6%	0%	0%	0%
Smog	8.67	6.65	1.97	0.00	3.73×10^{-2}	1.20×10^{-2}
(kg O_3)	100%	77%	23%	0%	0%	0%
Fossil Fuel Depletion	115	93.5	20.7	0.00	0.745	0.247
(MJ surplus, LHV)	100%	81%	18%	0%	1%	0%

Table 24. *The Impact category results reported by life cycle stage for 1 m² of ConCore™ 3000 maintained for a period of 50 years.*

Impact Category	Total	A1 - A3	A4	C1	C2	C4
Climate Change	133	121	11.4	0.00	0.382	0.174
(kg CO_2 eq.)	100%	91%	9%	0%	0%	0%
Acidification	0.621	0.546	7.32×10^{-2}	0.00	1.52×10^{-3}	4.30×10^{-4}
(kg SO_2 eq.)	100%	88%	12%	0%	0%	0%
Eutrophication	0.460	0.443	1.35×10^{-2}	0.00	3.60×10^{-4}	2.92×10^{-3}
(kg N eq.)	100%	96%	3%	0%	0%	1%
Ozone Depletion	3.11×10^{-6}	2.91×10^{-6}	1.88×10^{-7}	0.00	6.73×10^{-9}	2.39×10^{-9}
(kg CFC-11 eq.)	100%	94%	6%	0%	0%	0%
Smog	8.99	6.92	2.02	0.00	3.85×10^{-2}	1.22×10^{-2}
(kg O_3)	100%	77%	23%	0%	0%	0%
Fossil Fuel Depletion	119	97.2	21.2	0.00	0.768	0.252
(MJ surplus, LHV)	100%	81%	18%	0%	1%	0%

Table 25. *The Impact category results reported by life cycle stage for 1 m^2 of ConCore™ 4000 maintained for a period of 50 years.*

Impact Category	Total	A1 - A3	A4	C1	C2	C4
Climate Change ($kg\ CO_2$ eq.)	141	128	12.3	0.00	0.412	0.176
	100%	91%	9%	0%	0%	0%
Acidification ($kg\ SO_2$ eq.)	0.652	0.570	7.91×10^{-2}	0.00	1.64×10^{-3}	4.40×10^{-4}
	100%	88%	12%	0%	0%	0%
Eutrophication (kg N eq.)	0.486	0.468	1.45×10^{-2}	0.00	3.90×10^{-4}	2.92×10^{-3}
	100%	96%	3%	0%	0%	1%
Ozone Depletion (kg CFC-11 eq.)	3.28×10^{-6}	3.07×10^{-6}	2.03×10^{-7}	0.00	7.26×10^{-9}	2.47×10^{-9}
	100%	94%	6%	0%	0%	0%
Smog ($kg\ O_3$)	9.54	7.30	2.19	0.00	4.15×10^{-2}	1.26×10^{-2}
	100%	77%	23%	0%	0%	0%
Fossil Fuel Depletion (MJ surplus, LHV)	127	103	22.9	0.00	0.829	0.261
	100%	81%	18%	0%	1%	0%

5. LCI Results

The following life cycle inventory (LCI) resource and waste indicators were specified by the PCR. The indicator name, abbreviation, and units are shown in **Table 26** below while the results are reported in **Table 27 - Table 33**. These resource and waste indicators were calculated based on the ACLCA Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930:2017 [12]. Note that there is no impact from modules A5, B1-B7, and C3 which are therefore not displayed in the following tables.

Table 26. *The full name, abbreviation, and unit of additional LCI indicators required by the PCR. All energy indicators use the lower heating value (LHV).*

Indicator Category	Abbreviation	Units
Resource use		
Renewable primary resources used as an energy carrier	RPR_E	MJ, LHV
Renewable primary resources with energy used as a material	RPR_M	MJ, LHV
Non-renewable primary resources with used as an energy carrier	$NRPR_E$	MJ, LHV
Non-renewable primary resources with energy content used as material	$NRPR_M$	MJ, LHV
Secondary materials	SM	kg
Renewable secondary fuels	RSF	MJ, LHV
Non-renewable secondary fuels	NRSF	MJ, LHV
Recovered energy	RE	MJ, LHV
Use of net fresh water	FW	m^3
Waste and outflows		
Non-hazardous waste disposed	NHWD	kg
Hazardous waste disposed	HWD	kg
High-level radioactive waste, conditioned, to final repository	HLRW	kg
Intermediate low level radioactive waste, conditioned, to final repository	ILLRW	kg
Components for re-use	CRU	kg
Materials for recycling	MR	kg
Materials for energy recovery	MER	MJ, LHV
Recovered energy	RE	MJ, LHV

Table 27. *Resource use results for the ConCore™ 1000 panel over a 50 year time horizon. All values are rounded to two significant figures. Results reported in MJ are calculated using lower heating values. N/A indicates modules that are not applicable to the indicator being assessed.*

Impact Category	Total	A1	A2	A3	A4	C1	C2	C4
RPRe (MJ, NCV)	57.1	48.7	0.852	5.56	1.82	0.00	4.63×10^{-2}	3.43×10^{-2}
	100%	85%	1%	10%	3%	0%	0%	0%
RPRm (MJ, NCV)	2.67	0.00	N/A	2.67	N/A	N/A	N/A	N/A
	100%	0%	N/A	100%	N/A	N/A	N/A	N/A
NRPRe (MJ, NCV)	883	562	67.5	146	102	0.00	3.64	1.29
	100%	64%	8%	17%	12%	0%	0%	0%
NRPRm (MJ, NCV)	104	98.7	N/A	5.39	N/A	N/A	N/A	N/A
	100%	95%	N/A	5%	N/A	N/A	N/A	N/A
SM (kg)	15.7	15.6	N/A	9.02×10^{-2}	N/A	N/A	N/A	N/A
	100%	99%	N/A	1%	N/A	N/A	N/A	N/A
RSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NRSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RE (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FW (m3)	1.62	0.692	2.98×10^{-2}	0.845	5.26×10^{-2}	0.00	1.62×10^{-3}	1.79×10^{-3}
	100%	43%	2%	52%	3%	0%	0%	0%
HWD (kg)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NWHD (kg)	7.45	N/A	N/A	0.142	N/A	N/A	N/A	7.30
	100%	N/A	N/A	2%	N/A	N/A	N/A	98%
HLRW (kg)	3.02×10^{-4}	1.50×10^{-4}	4.00×10^{-6}	1.40×10^{-4}	7.93×10^{-6}	0.00	2.17×10^{-7}	9.58×10^{-8}
	100%	50%	1%	46%	3%	0%	0%	0%
LLRW (kg)	9.60×10^{-4}	3.50×10^{-4}	9.52×10^{-6}	5.80×10^{-4}	1.94×10^{-5}	0.00	5.18×10^{-7}	3.36×10^{-7}
	100%	36%	1%	60%	2%	0%	0%	0%
CRU (kg)	0.00	N/A	N/A	N/A	N/A	0.00	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MR (kg)	34.7	N/A	N/A	4.74	N/A	30.0	N/A	N/A
	100%	N/A	N/A	14%	N/A	86%	N/A	N/A

Table 28. *Resource use results for the ConCore™ 1250 panel over a 50 year time horizon. All values are rounded to two significant figures. Results reported in MJ are calculated using lower heating values. N/A indicates modules that are not applicable to the indicator being assessed.*

Impact Category	Total	A1	A2	A3	A4	C1	C2	C4
RPRe (MJ, NCV)	62.8	54.4	0.918	5.40	1.97	0.00	4.93×10^{-2}	3.50×10^{-2}
	100%	87%	1%	9%	3%	0%	0%	0%
RPRm (MJ, NCV)	2.78	0.00	N/A	2.78	N/A	N/A	N/A	N/A
	100%	0%	N/A	100%	N/A	N/A	N/A	N/A
NRPRe (MJ, NCV)	968	628	72.4	152	110	0.00	3.87	1.36
	100%	65%	7%	16%	11%	0%	0%	0%
NRPRm (MJ, NCV)	105	99.8	N/A	5.39	N/A	N/A	N/A	N/A
	100%	95%	N/A	5%	N/A	N/A	N/A	N/A
SM (kg)	17.1	17.0	N/A	9.40×10^{-2}	N/A	N/A	N/A	N/A
	100%	99%	N/A	1%	N/A	N/A	N/A	N/A
RSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NRSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RE (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FW (m3)	1.81	0.822	3.21×10^{-2}	0.899	5.70×10^{-2}	0.00	1.72×10^{-3}	1.88×10^{-3}
	100%	45%	2%	50%	3%	0%	0%	0%
HWD (kg)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NWHD (kg)	7.69	N/A	N/A	0.151	N/A	N/A	N/A	7.54
	100%	N/A	N/A	2%	N/A	N/A	N/A	98%
HLRW (kg)	3.23×10^{-4}	1.70×10^{-4}	4.31×10^{-6}	1.40×10^{-4}	8.59×10^{-6}	0.00	2.31×10^{-7}	9.73×10^{-8}
	100%	53%	1%	43%	3%	0%	0%	0%
LLRW (kg)	9.92×10^{-4}	3.90×10^{-4}	1.03×10^{-5}	5.70×10^{-4}	2.10×10^{-5}	0.00	5.51×10^{-7}	3.40×10^{-7}
	100%	39%	1%	57%	2%	0%	0%	0%
CRU (kg)	0.00	N/A	N/A	N/A	N/A	0.00	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MR (kg)	37.1	N/A	N/A	5.05	N/A	32.0	N/A	N/A
	100%	N/A	N/A	14%	N/A	86%	N/A	N/A

Table 29. *Resource use results for the ConCore™ 1500 panel over a 50 year time horizon. All values are rounded to two significant figures. Results reported in MJ are calculated using lower heating values. N/A indicates modules that are not applicable to the indicator being assessed.*

Impact Category	Total	A1	A2	A3	A4	C1	C2	C4
RPRe (MJ, NCV)	72.9	64.0	1.05	5.61	2.10	0.00	5.26×10^{-2}	3.69×10^{-2}
	100%	88%	1%	8%	3%	0%	0%	0%
RPRm (MJ, NCV)	2.85	0.00	N/A	2.85	N/A	N/A	N/A	N/A
	100%	0%	N/A	100%	N/A	N/A	N/A	N/A
NRPRe (MJ, NCV)	200	0.00	82.7	110	2.05	0.00	4.13	1.45
	100%	0%	41%	55%	1%	0%	2%	1%
NRPRm (MJ, NCV)	107	102	N/A	5.39	N/A	N/A	N/A	N/A
	100%	95%	N/A	5%	N/A	N/A	N/A	N/A
SM (kg)	19.4	19.3	N/A	9.65×10^{-2}	N/A	N/A	N/A	N/A
	100%	100%	N/A	0%	N/A	N/A	N/A	N/A
RSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NRSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RE (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FW (m3)	1.05	0.00	3.67×10^{-2}	0.953	6.08×10^{-2}	0.00	1.84×10^{-3}	2.01×10^{-3}
	100%	0%	3%	90%	6%	0%	0%	0%
HWD (kg)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NWHD (kg)	8.29	N/A	N/A	0.161	N/A	N/A	N/A	8.12
	100%	N/A	N/A	2%	N/A	N/A	N/A	98%
HLRW (kg)	3.64×10^{-4}	2.00×10^{-4}	4.93×10^{-6}	1.50×10^{-4}	9.16×10^{-6}	0.00	2.47×10^{-7}	1.02×10^{-7}
	100%	55%	1%	41%	3%	0%	0%	0%
LLRW (kg)	1.09×10^{-3}	4.50×10^{-4}	1.17×10^{-5}	6.00×10^{-4}	2.24×10^{-5}	0.00	5.88×10^{-7}	3.56×10^{-7}
	100%	41%	1%	55%	2%	0%	0%	0%
CRU (kg)	0.00	N/A	N/A	N/A	N/A	0.00	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MR (kg)	41.1	N/A	N/A	5.35	N/A	35.8	N/A	N/A
	100%	N/A	N/A	13%	N/A	87%	N/A	N/A

Table 30. *Resource use results for the ConCore™ 2000 panel over a 50 year time horizon. All values are rounded to two significant figures. Results reported in MJ are calculated using lower heating values. N/A indicates modules that are not applicable to the indicator being assessed.*

Impact Category	Total	A1	A2	A3	A4	C1	C2	C4
RPRe (MJ, NCV)	82.8	73.0	1.18	6.09	2.39	0.00	6.01×10^{-2}	3.87×10^{-2}
	100%	88%	1%	7%	3%	0%	0%	0%
RPRm (MJ, NCV)	2.93	0.00	N/A	2.93	N/A	N/A	N/A	N/A
	100%	0%	N/A	100%	N/A	N/A	N/A	N/A
NRPRe (MJ, NCV)	1,260	844	92.4	183	134	0.00	4.72	1.54
	100%	67%	7%	15%	11%	0%	0%	0%
NRPRm (MJ, NCV)	109	103	N/A	5.39	N/A	N/A	N/A	N/A
	100%	95%	N/A	5%	N/A	N/A	N/A	N/A
SM (kg)	7.51	7.41	N/A	9.90×10^{-2}	N/A	N/A	N/A	N/A
	100%	99%	N/A	1%	N/A	N/A	N/A	N/A
RSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NRSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RE (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FW (m3)	2.45	1.24	4.11×10^{-2}	1.09	6.92×10^{-2}	0.00	2.10×10^{-3}	2.13×10^{-3}
	100%	51%	2%	45%	3%	0%	0%	0%
HWD (kg)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NWHD (kg)	8.85	N/A	N/A	0.184	N/A	N/A	N/A	8.67
	100%	N/A	N/A	2%	N/A	N/A	N/A	98%
HLRW (kg)	4.16×10^{-4}	2.30×10^{-4}	5.52×10^{-6}	1.70×10^{-4}	1.04×10^{-5}	0.00	2.82×10^{-7}	1.06×10^{-7}
	100%	55%	1%	41%	3%	0%	0%	0%
LLRW (kg)	1.24×10^{-3}	5.10×10^{-4}	1.31×10^{-5}	6.90×10^{-4}	2.55×10^{-5}	0.00	6.72×10^{-7}	3.71×10^{-7}
	100%	41%	1%	56%	2%	0%	0%	0%
CRU (kg)	0.00	N/A	N/A	N/A	N/A	0.00	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MR (kg)	45.4	N/A	N/A	6.13	N/A	39.3	N/A	N/A
	100%	N/A	N/A	13%	N/A	87%	N/A	N/A

Table 31. *Resource use results for the ConCore™ 2500 panel over a 50 year time horizon. All values are rounded to two significant figures. Results reported in MJ are calculated using lower heating values. N/A indicates modules that are not applicable to the indicator being assessed.*

Impact Category	Total	A1	A2	A3	A4	C1	C2	C4
RPRe (MJ, NCV)	97.9	87.0	1.40	6.64	2.70	0.00	6.76×10^{-2}	4.16×10^{-2}
	100%	89%	1%	7%	3%	0%	0%	0%
RPRm (MJ, NCV)	2.93	0.00	N/A	2.93	N/A	N/A	N/A	N/A
	100%	0%	N/A	100%	N/A	N/A	N/A	N/A
NRPRe (MJ, NCV)	1,480	1,010	110	208	151	0.00	5.31	1.69
	100%	68%	7%	14%	10%	0%	0%	0%
NRPRm (MJ, NCV)	112	106	N/A	5.39	N/A	N/A	N/A	N/A
	100%	95%	N/A	5%	N/A	N/A	N/A	N/A
SM (kg)	25.1	25.0	N/A	9.90×10^{-2}	N/A	N/A	N/A	N/A
	100%	100%	N/A	0%	N/A	N/A	N/A	N/A
RSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NRSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RE (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FW (m3)	2.93	1.56	4.88×10^{-2}	1.25	7.82×10^{-2}	0.00	2.37×10^{-3}	2.33×10^{-3}
	100%	53%	2%	42%	3%	0%	0%	0%
HWD (kg)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NWHD (kg)	9.89	N/A	N/A	0.210	N/A	N/A	N/A	9.68
	100%	N/A	N/A	2%	N/A	N/A	N/A	98%
HLRW (kg)	4.79×10^{-4}	2.70×10^{-4}	6.55×10^{-6}	1.90×10^{-4}	1.18×10^{-5}	0.00	3.18×10^{-7}	1.13×10^{-7}
	100%	56%	1%	40%	2%	0%	0%	0%
LLRW (kg)	1.44×10^{-3}	6.00×10^{-4}	1.56×10^{-5}	7.90×10^{-4}	2.88×10^{-5}	0.00	7.56×10^{-7}	3.96×10^{-7}
	100%	42%	1%	55%	2%	0%	0%	0%
CRU (kg)	0.00	N/A	N/A	N/A	N/A	0.00	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MR (kg)	52.0	N/A	N/A	7.01	N/A	45.0	N/A	N/A
	100%	N/A	N/A	13%	N/A	87%	N/A	N/A

Table 32. *Resource use results for the ConCore™ 3000 panel over a 50 year time horizon. All values are rounded to two significant figures. Results reported in MJ are calculated using lower heating values. N/A indicates modules that are not applicable to the indicator being assessed.*

Impact Category	Total	A1	A2	A3	A4	C1	C2	C4
RPRe (MJ, NCV)	102	90.7	1.45	6.78	2.78	0.00	6.97×10^{-2}	4.23×10^{-2}
	100%	89%	1%	7%	3%	0%	0%	0%
RPRm (MJ, NCV)	2.93	0.00	N/A	2.93	N/A	N/A	N/A	N/A
	100%	0%	N/A	100%	N/A	N/A	N/A	N/A
NRPRe (MJ, NCV)	1,540	1,050	114	214	155	0.00	5.48	1.73
	100%	68%	7%	14%	10%	0%	0%	0%
NRPRm (MJ, NCV)	112	107	N/A	5.39	N/A	N/A	N/A	N/A
	100%	95%	N/A	5%	N/A	N/A	N/A	N/A
SM (kg)	25.9	25.8	N/A	9.90×10^{-2}	N/A	N/A	N/A	N/A
	100%	100%	N/A	0%	N/A	N/A	N/A	N/A
RSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.38×10^{-3}
NRSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RE (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FW (m3)	3.06	1.64	5.08×10^{-2}	1.28	8.04×10^{-2}	0.00	2.44×10^{-3}	2.38×10^{-3}
	100%	54%	2%	42%	3%	0%	0%	0%
HWD (kg)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NWHD (kg)	10.2	N/A	N/A	0.217	N/A	N/A	N/A	9.94
	100%	N/A	N/A	2%	N/A	N/A	N/A	98%
HLRW (kg)	4.99×10^{-4}	2.80×10^{-4}	6.81×10^{-6}	2.00×10^{-4}	1.21×10^{-5}	0.00	3.27×10^{-7}	1.15×10^{-7}
	100%	56%	1%	40%	2%	0%	0%	0%
LLRW (kg)	1.48×10^{-3}	6.20×10^{-4}	1.62×10^{-5}	8.10×10^{-4}	2.96×10^{-5}	0.00	7.79×10^{-7}	4.02×10^{-7}
	100%	42%	1%	55%	2%	0%	0%	0%
CRU (kg)	0.00	N/A	N/A	N/A	N/A	0.00	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MR (kg)	53.7	N/A	N/A	7.23	N/A	46.5	N/A	N/A
	100%	N/A	N/A	13%	N/A	87%	N/A	N/A

Table 33. *Resource use results for the ConCore™ 4000 panel over a 50 year time horizon. All values are rounded to two significant figures. Results reported in MJ are calculated using lower heating values. N/A indicates modules that are not applicable to the indicator being assessed.*

Impact Category	Total	A1	A2	A3	A4	C1	C2	C4
RPRe (MJ, NCV)	108	95.8	1.53	7.17	3.00	0.00	7.52×10^{-2}	4.34×10^{-2}
	100%	89%	1%	7%	3%	0%	0%	0%
RPRm (MJ, NCV)	2.93	0.00	N/A	2.93	N/A	N/A	N/A	N/A
	100%	0%	N/A	100%	N/A	N/A	N/A	N/A
NRPRe (MJ, NCV)	1,740	1,180	128	246	178	0.00	6.28	1.89
	100%	68%	7%	14%	10%	0%	0%	0%
NRPRm (MJ, NCV)	113	108	N/A	5.39	N/A	N/A	N/A	N/A
	100%	95%	N/A	5%	N/A	N/A	N/A	N/A
SM (kg)	27.2	27.1	N/A	9.90×10^{-2}	N/A	N/A	N/A	N/A
	100%	100%	N/A	0%	N/A	N/A	N/A	N/A
RSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NRSF (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RE (MJ, NCV)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FW (m3)	3.29	1.75	5.36×10^{-2}	1.40	8.68×10^{-2}	0.00	2.63×10^{-3}	2.45×10^{-3}
	100%	53%	2%	42%	3%	0%	0%	0%
HWD (kg)	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NWHD (kg)	10.6	N/A	N/A	0.236	N/A	N/A	N/A	10.3
	100%	N/A	N/A	2%	N/A	N/A	N/A	98%
HLRW (kg)	5.30×10^{-4}	2.95×10^{-4}	7.20×10^{-6}	2.14×10^{-4}	1.31×10^{-5}	0.00	3.53×10^{-7}	1.18×10^{-7}
	100%	56%	1%	40%	2%	0%	0%	0%
LLRW (kg)	1.59×10^{-3}	6.54×10^{-4}	1.71×10^{-5}	8.82×10^{-4}	3.20×10^{-5}	0.00	8.41×10^{-7}	4.12×10^{-7}
	100%	41%	1%	56%	2%	0%	0%	0%
CRU (kg)	0.00	N/A	N/A	N/A	N/A	0.00	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MR (kg)	56.5	N/A	N/A	7.87	N/A	48.6	N/A	N/A
	100%	N/A	N/A	14%	N/A	86%	N/A	N/A

6. Additional Environmental Information

Tate is part of the Kingspan group. Kingspan understands its impact on the environment, both in terms of the role its products can play in optimizing energy efficiency, and the responsibility the company has with a global footprint of over 159 manufacturing facilities and over 15,000 employees. Kingspan seeks to operate as sustainably as possible throughout its supply chain.

Planet Passionate is Kingspan's ambitious 10-year global sustainability strategy that will impact on three big global issues: climate change, circularity, and protection of our natural world. Through Planet Passionate Kingspan will contribute to the world's renewable energy mix, reduce carbon emissions, divert waste from landfill, conserve water, provide upcycling solutions for plastic waste and help clean the world's oceans and protect biodiversity.

The strategy is made up of 12 ambitious targets, addressing the impact of Kingspan's business operations and manufacturing on the four key areas of energy, carbon, circularity and water, with commitments by 2030 to include:

- Energy: powering 60% of all Kingspan operations directly from renewable energy with a minimum of 20% of this energy generated on manufacturing sites (up from 5.3% today). This will include install solar PV on all wholly owned facilities.
- Carbon: achieving net zero carbon manufacturing and a 50% reduction in product CO2 intensity from primary supply partners.
- Circularity: upcycling of 1 billion PET bottles per annum into insulation products plus zero company waste to landfill across all sites.
- Water: harvesting 100 million liters of Kingspan's water usage from rainwater with a goal of five active ocean clean-up projects by 2025.
- Waste: target of zero company waste sent to landfill.

7. References

1. ISO-14044:2006+Amd2:2020 Environmental management – Life Cycle Assessment – Requirements and guidelines
2. ISO 21930:2017. Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services
3. US EPA, 2004. "WARM Model Transportation Research - Draft." Memorandum from ICF Consulting to United States Environmental Protection Agency.http://epa.gov/epawaste/conserve/tools/warm/SWMGHGreport.html#background
4. Xu, H., Huang, L., Xu, M., Qi, M., Yi, T., Mo, Q., Zhao, H., Huang, C., Wang, S., & Liu, Y. (2020). Preparation and Properties of Cellulose-Based Films Regenerated from Waste Corrugated Cardboards Using [Amim]Cl/CaCl2. ACS Omega, 5(37), 23743–23754. https://doi.org/10.1021/acsomega.0c02713
5. Chatterjee, S., & Saito, T. (2015). Lignin-Derived Advanced Carbon Materials. ChemSusChem, 8(23), 3941–3958. https://doi.org/10.1002/cssc.201500692
6. US EPA. (2015). Construction and Demolition Debris Management in the United States. https://www.epa.gov/sites/default/files/2020-03/documents/final_cd-eol-management_2015_508.pdf
7. GreenDelta, 2023. openLCA 2.0. https://www.openlca.org/openlca/
8. Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at: http://link.springer.com/10.1007/s11367-016-1087-8
9. Sphera™ 2020. Life Cycle Inventories of North American Steel Products. American Iron and Steel Institute (AISI). v1.0
10. Lin et al. (2023) "Life-Cycle Asessment of Municipal Solid Waste Incineration Fly Ash Recycling as a Feedstock for Brick Manufacturing", https://www.mdpi.com/2071-1050/15/13/10284#B10-sustainability-15-10284
11. Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI). Dr. Bare, J., https://www.epa.gov/chemical-research/tool-reduction-and-assessment-chemicals-and-other-environmental-impacts-traci
12. ACLCA (2019). ACLCA Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930:2017
13. SCS Global Services, 2023. Program Operator Manual: Type III Environmental Declaration Program, v12, Nov.

For more information, contact:

Tate Access Floors, Inc.
7001 Columbia Gateway Drive Suite 500
Columbia, MD 21046
Phone: 410-799-4200
https://www.tateinc.com

SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA
Main +1.510.452.8000 | fax +1.510.452.8001