

EMCON



Environmental Product Declaration

A cradle-to-gate EPD according to ISO 14025 and ISO 21930

Concrete Pavers and Kerbstone as
Manufactured by EMCON LLC



ASTM
INTERNATIONAL

About EMCON

EMCON L.L.C. was established by Al Naboodah Laing in 1978 to supply concrete blocks to the construction industry in UAE and was part of the group till June 2000.

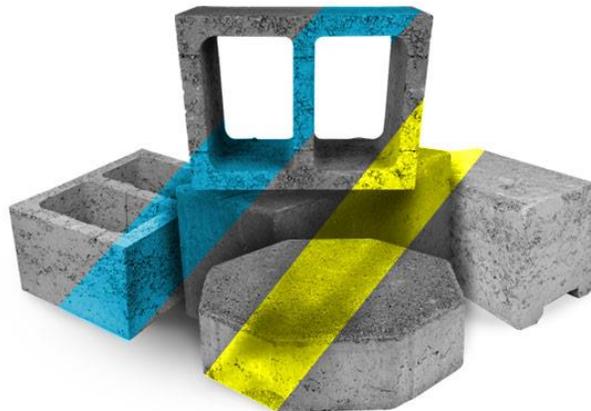
EMCON gradually emerged stronger and bigger, supplying to more than 3000 major projects in UAE and serving more than 700 customers. EMCON has successfully supplied to prestigious projects like Burj Khalifa, Burj Al Arab, Emirates Tower, Airport Expansion and Grand Hyatt to name a few.

EMCON is fully equipped and geared to meet new challenges with its present capacity of producing a variety of concrete blocks and interlocking tiles to serve the construction industry. Situated in Al Quoz Industrial area of Dubai and Hamriya Free Zone (Sharjah), we are equipped with modern plants such as MASA 9001 XL to produce standard and special range of products. Our Deliveries to site are achieved by our fleet of vehicles which are all fitted with mechanical off-loading facility.

EMCON have many specialty products and we are known for our innovative products range such as Concrete Lightweight and Normal weight Masonry Blocks, Thermal Insulated Blocks, Concrete Interlock pavers, Concrete Tiles, Concrete Kerbs...etc.

EMCON blocks and interlocking tiles are manufactured under strict quality-controlled conditions using high quality materials to ensure high class products are delivered to the clients to suit their needs.

EMCON is an ISO 9001 : 2015 & 14001 : 2015 Certified Company and is approved by Dubai Municipality, Dubai Civil Defense, DCA, Dubai Development Board, Ministry of Public Works-DUBAI, Nakheel, Emaar etc. ..



ASTM International Certified EPD

This is a business-to-business Type III environmental product declaration (EPD) for concrete paver products as manufactured by EMCON LLC. This declaration has been prepared in accordance with ISO 14025 and ISO 21930, and the ASTM product category rules (PCR) and EPD program operator rules.

The intent of this document is to further the development of environmentally compatible and more sustainable construction products by providing comprehensive environmental information related to potential impacts of concrete paver products available in the UAE in accordance with international standards.

Program Operator



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Environmental Product Declarations
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Owner of the EPD



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EPD Information

Product Names
Concrete pavers

Product Definition
Manufactured paver made of concrete in which the binder is a combination of water and cementitious materials

Declared Unit
1 m³ concrete paver product

Declaration Number
EPD-111

Declaration Type
A “cradle-to-gate” EPD - activity stages or information modules covered include production (modules A1 to A3). The declaration is intended for use in Business-to-Business (B-to-B) communication. This EPD of concrete paver products (UN CPC 3755) is applicable to those manufactured at the EMCON facility.

Content of the Declaration
The declaration follows Section 11, Content of the EPD, ASTM International, Product Category Rules for Preparing an Environmental Product Declaration for Segmental Concrete Paving Products, April 2015.

Declaration Comparability Limitation Statement

The following ISO statement indicates the EPD comparability limitations and intent to avoid any market distortions or misinterpretation of EPDs based on the ASTM PCR: 2015:

- EPDs from different programs (using different PCR) may not be comparable.
- Declarations based on the ASTM PCR are not comparative assertions; that is, no claim of environmental superiority may be inferred or implied.

Applicable Countries

United Arab Emirates

Date of Issue

July 26 2019

Period of Validity

5 years

EPD Prepared by



Athena
Sustainable Materials
Institute

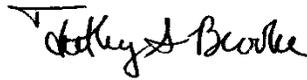
Athena Sustainable Materials Institute
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Ottawa, Ontario, K1Y 0N6, Canada

This EPD was independently verified by ASTM in accordance with ISO 14025:

Internal

External

X



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EPD Project Report Information

EPD Project Report

A Cradle-to-Gate Life Cycle Assessment of Concrete Masonry and Paver Products Manufactured by EMCON LLC in the Emirate of Dubai, UAE, June 2019.

The report is available upon request at cert@astm.org.

EPD Project Prepared by



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This EPD and EPD project report were independently verified by in accordance with ISO 14025 and the reference PCR:

Thomas Gloria, Ph.D. (LCACP ID: 2008-03)
Industrial Ecology Consultants
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PCR Information

Reference PCR

ASTM International, Product Category Rules For Preparing an Environmental Product Declaration For Segmental Concrete Paving Products

Date of Issue

April 2015

PCR review was conducted by:

Nicholas Santero, PE International (Chairperson)
Christine Subasic, Consulting Architectural Engineer
Juan Tejeda, ORCO Block Company

Contact information available upon request at cert@astm.org.

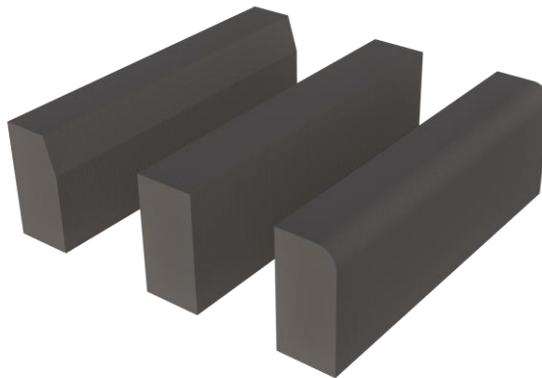
1. PRODUCT IDENTIFICATION

This EPD reports environmental information for the two concrete paver products shown in Figure 1 below, produced by EMCON in Dubai, United Arab Emirates.

Figure 1: EMCON Concrete Paving Products



Paving Block/Tiles



Kerbstones

Per the reference PCR, concrete pavers are defined as interlocking units that have an exposed face area $\leq 101 \text{ in.}^2$ (0.065 m^2), and their overall length divided by thickness ≤ 4 . The minimum specified thickness is 2.36 in. (60 mm).

2. DECLARED UNIT

The declared unit is 1 m³ of concrete paver product.

3. MATERIAL CONTENT

Table 1 below presents the material content by input material for the two concrete paver products, as provided by EMCON.

Table 1: Material Content of Concrete Paver Products

Material	Units	Paving Tiles	Kerbstone
Water	l	155	260
Portland Cement	kg	440	370
Crushed Coarse Aggregate	kg	1,000	400
Crushed Fine Aggregate	kg	1,200	1,225
Total		2,640	1,995

4. SYSTEM BOUNDARY

As per the ASTM PCR, the system boundary is the product stage, which includes the following modules:

- A1 Raw material supply;
- A2 Transport (to the manufacturer); and
- A3 Manufacturing.

Figure 2 shows the production stage system boundary for concrete paver products.

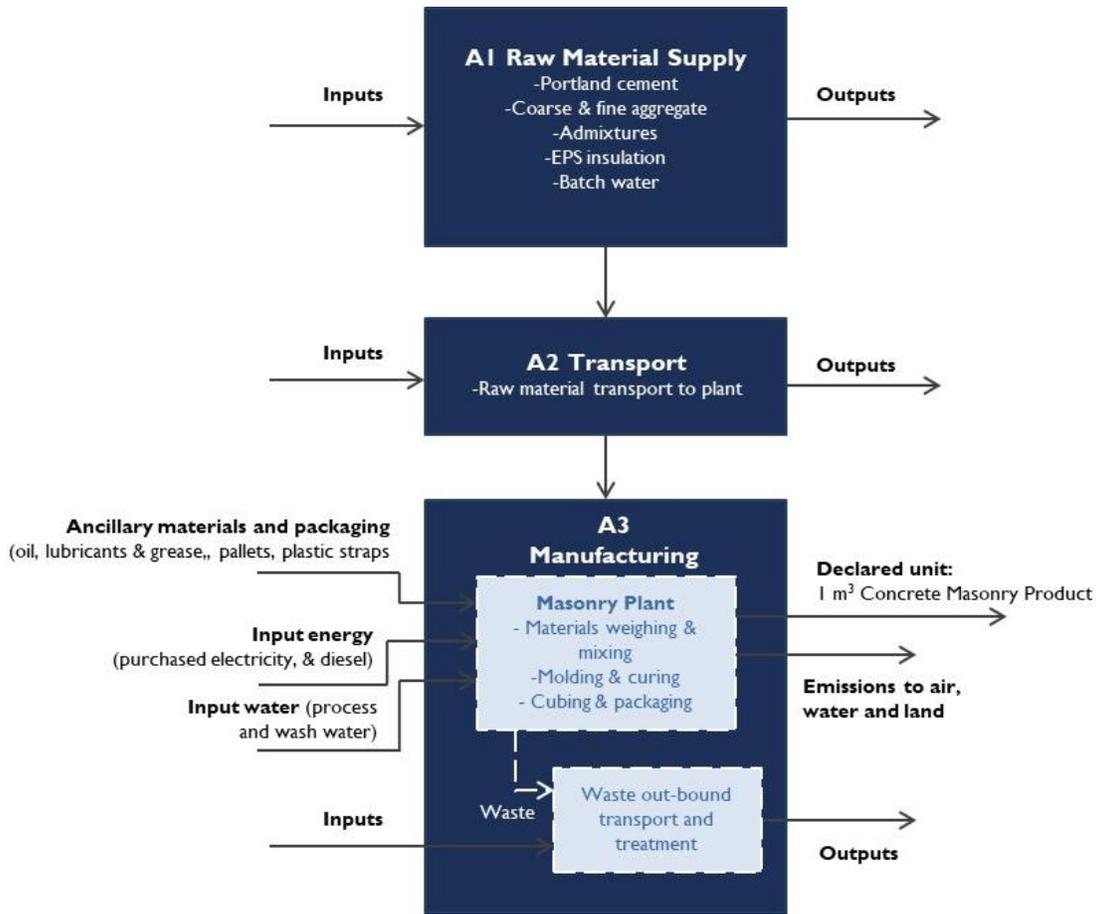


Figure 2: Product Stage (module A1 to A3) System Boundary

5. LIFE CYCLE ASSESSMENT

This section summarizes the results of the life cycle impact assessment (LCIA) based on the cradle-to-gate life cycle inventory inputs and outputs analysis. The results are calculated on the basis of 1 m³ concrete paver product (

Table 2 and 3). The production results are delineated by information modules A1 through A3.

As per the ASTM PCR, Section 8, US EPA Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI, version 2.1) impact categories are used for the mandatory category indicators to be included in this EPD. These are relative expressions only and do not predict category impact end-points, the exceeding of thresholds, safety margins or risks. Total primary and sub-set energy consumption was compiled using a cumulative energy demand model. Material resource consumption and generated waste reflect cumulative life cycle inventory flow information.

Table 2: LCA results – Paving Tiles, per m³

Environmental Indicator	Unit	A1 Raw Material Supply	A2 Transport	A3 Manufacturing	Total
TRACI 2.1 impact categories					
Global warming potential	kg CO ₂ eq.	435.30	51.02	5.57	491.89
Acidification potential	kg SO ₂ eq.	1.28	0.32	0.02	1.62
Eutrophication potential	kg N eq.	0.58	0.04	0.00	0.62
Smog creation potential	kg O ₃ eq.	18.87	8.50	0.31	27.68
Ozone depletion potential	kg CFC-11 eq.	3.51E-05	1.25E-05	1.51E-06	4.91E-05
Total primary energy consumption					
Non-renewable fossil	MJ (HHV)	3305.30	791.74	104.31	4201.34
Non-renewable nuclear	MJ (HHV)	173.96	41.67	5.49	221.12
Renewable (non-biomass)	MJ (HHV)	11.28	4.92	0.38	16.58
Renewable (biomass)	MJ (HHV)	13.79	6.01	0.47	20.26
Material resources consumption					
Non-renewable material resources	kg	2947.58	58.70	0.20	3006.48
Renewable material resources	kg	3.52	0.19	0.01	3.72
Net fresh water	l	3446.32	0.00	237.04	3683.36
Waste generated					
Non-hazardous waste generated	kg	0.05	0.00	19.34	19.39
Hazardous waste generated	kg	0.00	0.00	0.00	0.00

Table 3: LCA results – Kerbstone, per m³

Environmental Indicator	Unit	A1 Raw Material Supply	A2 Transport	A3 Manufacturing	Total
TRACI 2.1 impact categories					
Global warming potential	kg CO ₂ eq.	363.45	37.99	5.57	407.01
Acidification potential	kg SO ₂ eq.	1.06	0.24	0.02	1.32
Eutrophication potential	kg N eq.	0.49	0.03	0.00	0.51
Smog creation potential	kg O ₃ eq.	15.65	6.33	0.31	22.29
Ozone depletion potential	kg CFC-11 eq.	2.90E-05	9.31E-06	1.51E-06	3.98E-05
Total primary energy consumption					
Non-renewable fossil	MJ (HHV)	2736.13	589.58	104.31	3430.02
Non-renewable nuclear	MJ (HHV)	144.01	31.03	5.49	180.53
Renewable (non-biomass)	MJ (HHV)	9.37	3.66	0.38	13.41
Renewable (biomass)	MJ (HHV)	11.45	4.47	0.47	16.39
Material resources consumption					
Non-renewable material resources	kg	2241.64	43.71	0.20	2285.55
Renewable material resources	kg	2.95	0.14	0.01	3.10
Net fresh water	l	3018.38	0.00	342.94	3361.32
Waste generated					
Non-hazardous waste generated	kg	0.04	0.00	19.34	19.38
Hazardous waste generated	kg	0.00	0.00	0.00	0.00