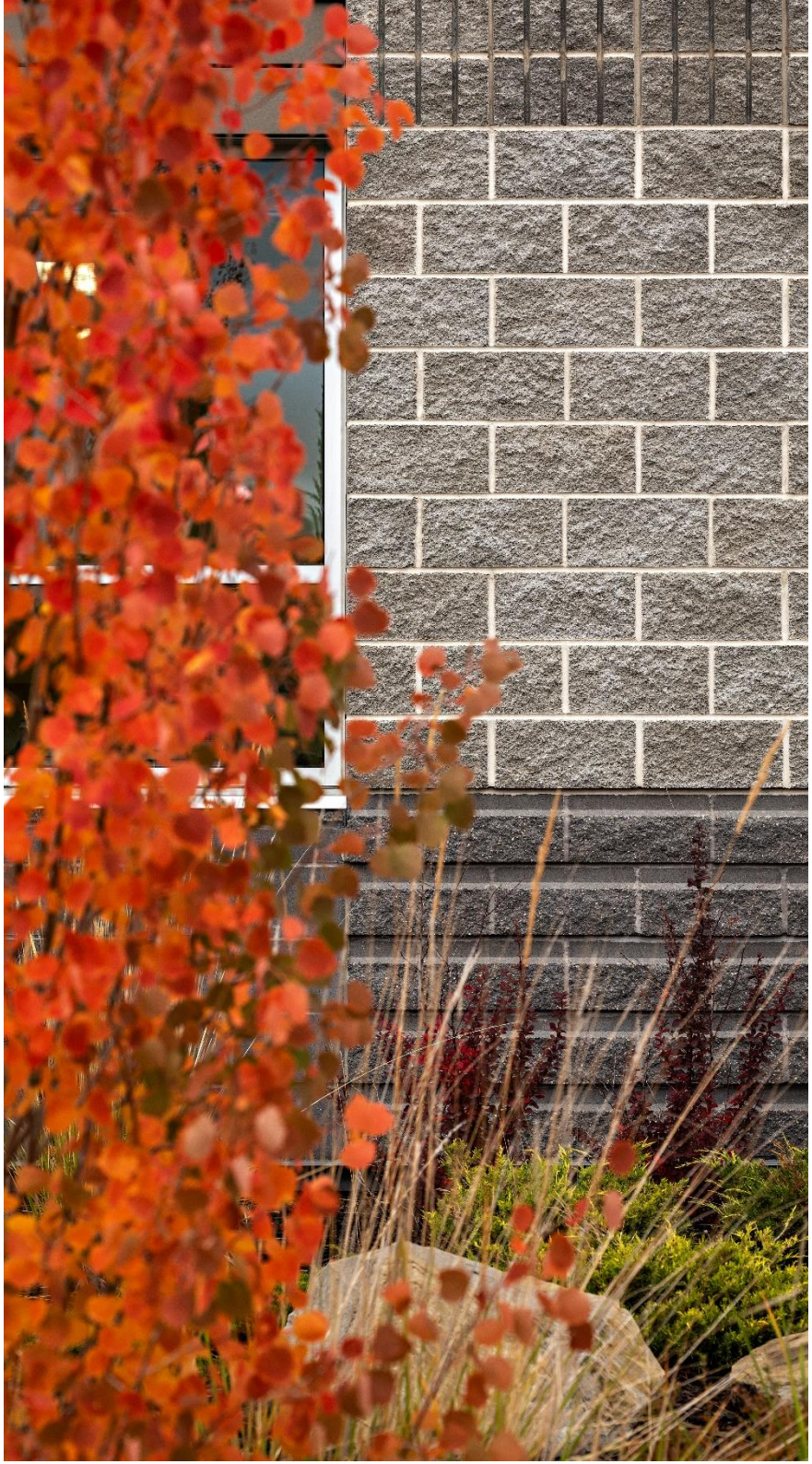


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Concrete Masonry Units - Normal Weight CMU
Oldcastle APG Canada West

EPD HUB, HUB-0468
Publishing date 19 May 2023, last updated on 19 May 2023, valid until 19 May 2028

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Oldcastle APG Canada West
Address	28234 Acheson Road Acheson, AB T7X 6A9
Contact details	Mike.lafontaine@oldcastle.com
Website	http://www.expocrete.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	ISO 21930:2017 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022 EN 16757 Product Category Rules for concrete and concrete elements
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate
EPD author	Chi Dara and Entuitive Corporation
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	H.N, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Concrete Masonry Units - Normal Weight CMU
Additional labels	-
Product reference	-
Place of production	Alberta Canada
Period for data	2020
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	Not Relevant

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m3 of CMU, concrete formed into masonry products
Declared unit mass	1058 kg
GWP-fossil, A1-A3 (kgCO2e)	205.0
Secondary material, inputs (%)	0.00119
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	661.0
Total water use, A1-A3 (m3e)	4.71

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Oldcastle APG Canada West is the recognized leading manufacturer and innovator of concrete masonry and hardscapes products throughout western Canada. Our products are the preferred choice among contractors, developers, builders, architects, and designers alike and we are proud of our standing as one of the most admired companies in our industry.

PRODUCT DESCRIPTION

The Expocrete concrete masonry units represented by this Environmental Product Declaration (EPD) are produced at the Edmonton plant under ASTM C90 or CAS A165-14 for loadbearing concrete masonry units. Expocrete CMUs typically have a length of 390 mm, a height of 190 mm, and a gross thickness of either 90 mm, 140 mm, 190 mm, 240 mm, or 290 mm. The main product mixes consist of Portland cement, aggregates, admixtures, and water. 1 m3 (cubic meter) of loadbearing concrete masonry units will be defined as structural concrete which fulfils the performance requirement of the structural application, fire and soundproof, durable, and long-lasting, for a defined reference service life of 100 years.

The Normal Weight CMUs provide an average loadbearing capacity of 20 MPA; it provides 52-53 STC sound rating; has a 1.8-hour fire rating (unless it is a ULC unit); and provides high ballistic ratings for stopping small arms fire.

Further information can be found at http://www.expocrete.com/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	100	CA
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	42.1504

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m3 of CMU, concrete formed into masonry products
Mass per declared unit	1058 kg
Functional unit	-
Reference service life	100 years for structural concrete

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Information modules A1 to A3 are considered mandatory and included in every EPD LCA modeling. The product stage system boundary includes technical processes that provide the material and energy inputs into the system and the subsequent manufacturing and transport processes up to the factory gate, as well as the processing of any waste arising from those processes. Concrete masonry block production starts by transporting the binders, aggregates and additives to silos, from where they are dosed onto a conveyor. Cement is then added to the ingredients, after which the material is mixed dry. Water and additives are then added to the mixture, followed by wet mixing. The wet mass is filled into moulds and vibrated to its final shape. The blocks are then transported on an automatic line to a dryer. From the dryer, the ingots go to the packaging line, where they are taken for storage. Eventually, the finished product is packaged in plastic film and sent to the installation site on a wooden pallet.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

This EPD does not cover the Transportation and installation phase (A4-A5).
Air, soil, and water impacts during the use phase have not been studied.

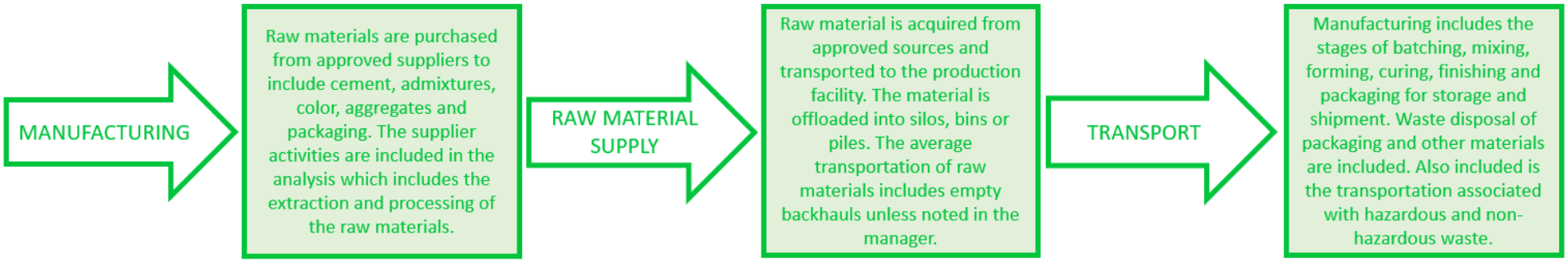
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

This EPD does not cover End of Life stage

MANUFACTURING PROCESS



Excluded from the system boundary are production, manufacturing and construction of manufacturing capital goods and infrastructure; production and manufacture of production equipment, laboratory equipment and delivery vehicles; personnel related activities (travel, furniture, and office supplies); energy and water use related to the company management and sales activities located either withing the factory site or at another location.

LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	Not Relevant

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

ENVIRONMENTAL IMPACTS – TRACI 2.1. / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	9.4E1	8.05E0	1.03E2	2.05E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Ozone Depletion	kg CFC_{-11}e	4.02E-6	1.95E-6	6.77E-6	1.27E-5	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Acidification	kg SO_2e	5.5E-1	3.03E-2	4.69E-1	1.05E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Eutrophication	kg Ne	3.03E-2	4.21E-3	1.33E-1	1.67E-1	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP (“smog”)	kg O_3e	7.2E0	6.51E-1	7.25E0	1.51E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-fossil	MJ	3.87E1	1.76E1	1.09E2	1.65E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	7.55E1	1.34E0	4.42E2	5.18E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Renew. PER as material	MJ	0E0	0E0	1.49E3	1.49E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Total use of renew. PER	MJ	7.55E1	1.34E0	1.93E3	2E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-re. PER as energy	MJ	4.85E2	1.24E2	1.25E3	1.86E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-re. PER as material	MJ	3.24E0	0E0	3.44E1	3.77E1	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Total use of non-re. PER	MJ	4.89E2	1.24E2	1.29E3	1.9E3	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Secondary materials	kg	1.34E-3	0E0	1.12E-2	1.26E-2	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Use of net fresh water	m^3	4.02E0	2.6E-2	6.71E-1	4.71	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	4.35E0	1.5E-1	2.22E0	6.72E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-hazardous waste	kg	6.87E1	1.37E1	6.98E2	7.81E2	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Radioactive waste	kg	1.63E-3	8.31E-4	2.1E-3	4.57E-3	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Materials for recycling	kg	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Materials for energy rec	kg	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Exported energy	MJ	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
19.05.2023

VERIFIED ISO 14025