



# Crossville Porcelain Countertop

## Life Cycle Impact Reduction Action Plan

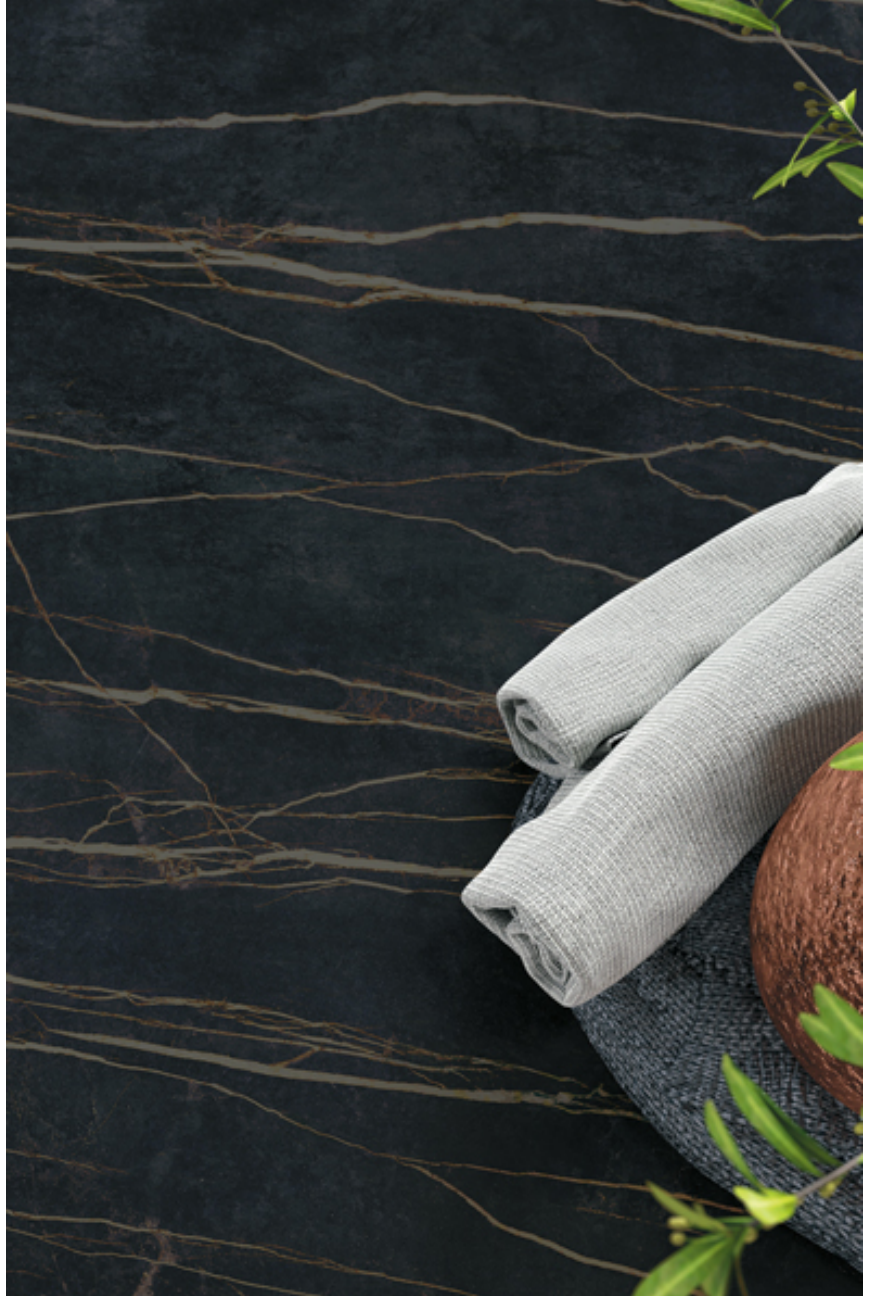
Date of Issue: June 10, 2021  
Date of Expiration: June 10, 2024

### Product Category Rules

Part A: Life Cycle Assessment Calculation Rules and Report Requirements, (UL Environment, V3.2, 2018)  
Part B: Flooring EPD Requirements, (UL Environment, V2.0, 2018)

### Functional Unit

1 m<sup>2</sup> of floor covering for 75 years



<b>Manufacturer Name and Address</b>	Crossville, Inc. 346 Sweeney Dr. Crossville, TN 38555
<b>Declared Product</b>	Crossville Porcelain Countertop
<b>Product Type</b>	Porcelain Countertop
<b>Product Description</b>	Porcelain Countertop
<b>Functional Unit as Defined by PCR</b>	1 m <sup>2</sup> of floor covering for 75 years

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<b>LCA/EPD Action Plan is Based On</b>	EPD – Crossville Porcelain Tile Panels and Crossville Porcelain Countertops <a href="https://www.crossvilleinc.com/getmedia/17a2a0ca-6ea5-46d8-adf2-8602923fe6f6/EPD-Product-Specific-(Crossville-Countertops-and-Panels).pdf">https://www.crossvilleinc.com/getmedia/17a2a0ca-6ea5-46d8-adf2-8602923fe6f6/EPD-Product-Specific-(Crossville-Countertops-and-Panels).pdf</a>
<b>LCA/EPD Type</b>	<input type="checkbox"/> Publicly available, critically reviewed LCA <input type="checkbox"/> Internally verified LCA with a product specific EPD <input checked="" type="checkbox"/> Externally-verified Product specific Type III EPD
<b>LCA/EPD Reviewer</b>	Grant R. Martin UL Environment
<b>Reference PCR(s) for LCA/EPD</b>	Part A: Life Cycle Assessment Calculation Rules and Report Requirements, (UL Environment, V3.2, 2018) Part B: Flooring EPD Requirements. (UL Environment V2.0, 2018)
<b>LCA/EPD Scope</b>	Cradle to Grave
<b>Date of LCA/EPD Issue</b>	April 1, 2019
<b>Date of LCA/EPD Expiration</b>	March 31, 2024
<b>Markets of LCA/EPD Applicability</b>	North America
<b>LCA Software and Version Number</b>	GaBi 8.7
<b>LCI Database and Version Number</b>	GaBi 8.7, Service Pack 36
<b>LCIA Methodology and Version Number</b>	TRACI 2.1
<b>Action Plan Date of Issue</b>	June 10, 2021
<b>Action Plan Period of Validity</b>	3 years from date of issue
<b>Action Plan Type</b>	Product Specific
<b>Is the action plan applicable to all products listed in the corresponding LCA/EPD or only a subset?</b>	Porcelain Countertops
<b>This Action Plan was prepared by an expert in product specific LCAs/EPDs:</b>	Matt Van Duinen, LCACP Sustainability Director WAP Sustainability
<b>This Action Plan was confirmed by an executive of the manufacturer:</b>	Noah Chitty Director of Technical Services Crossville Inc.

### Product Description

This Action Plan is for Crossville Porcelain Countertops line of products. Porcelain countertops are primarily made up of sand, clays and other additives and then molded into shape followed by firing into a kiln. Porcelain countertops can be glazed or unglazed, the former being the popular choice today. There are several advantages to porcelain countertops. They are impervious to moisture, resistant to tread wear, permanence of color and easy cleaning opportunities. They are also slip resistant if an abrasive glaze is added to the surface.

Manufactured with unique technology, Crossville’s collections are ideal for skinning surfaces in sophisticated, nearly uninterrupted style. The countertops’ outer dimensions of 1 m x 3 m or 1.6 m x 3.2 m and very lean profiles are versatile and flexible with the performance characteristics expected of porcelain countertops. This results in design-forward, low

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maintenance looks that will stand the test of time for floors, walls, and other surfaces in commercial and residential settings, inside or out.

### LCA Description

The cradle-to-grave, product-specific life cycle assessment and subsequent EPD were created according to the following standards: UL Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL Part B: Flooring EPD Requirements, and ISO 14025/40/44. The assessment was performed using the GaBi LCA software. Both the LCA report and EPD were externally reviewed and verified against the previous standards by UL Environment.

Crossville associates collected the bill of materials data for the product which was utilized in the model. Additionally, facility-level utility data was collected and allocated to each product to generate manufacturing impacts. Finally, transportation data was collected via supplier locations and utilized to generate these impacts. When primary data did not exist, secondary data for raw material production was utilized from GaBi Database Version 8.7, Service Pack 36.

### LCA Results

The cradle-to-grave results for the product are shown below using TRACI v2.1 indicators. The vast majority of the impacts come from the manufacturing of the product (A1-A3). Within the sourcing and extraction phase, the largest contributors to the impacts are feldspar and clay powder in terms of raw materials. In manufacturing the largest impacts are caused by thermal energy used to fire the tiles in kilns and the electricity used in the facility. Following the A1-A3 phase, is the A5 phase that includes installation of the product. Global warming impacts from the installation phase are due to the use of mortar and grout for installation of porcelain countertops.

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5
AP [kg SO2 eq]	9.27E-02	1.38E-01	1.83E-02	0.00E+00	2.61E-05	0.00E+00	0.00E+00	0.00E+00
EP [kg N eq]	5.89E-03	5.10E-03	4.02E-03	0.00E+00	1.61E-05	0.00E+00	0.00E+00	0.00E+00
GWP [kg CO2 eq]	2.10E+01	6.37E+00	4.71E+00	0.00E+00	1.88E-02	0.00E+00	0.00E+00	0.00E+00
ODP [kg CFC 11 eq]	2.77E-07	1.40E-13	4.06E-09	0.00E+00	2.20E-15	0.00E+00	0.00E+00	0.00E+00
Resources [MJ]	4.68E+01	1.15E+01	1.90E+00	0.00E+00	1.15E-02	0.00E+00	0.00E+00	0.00E+00
POCP [kg O3 eq]	1.38E+00	2.70E+00	1.11E-01	0.00E+00	4.64E-04	0.00E+00	0.00E+00	0.00E+00

Impact Category	B6	B7	C1	C2	C3	C4	D
AP [kg SO2 eq]	0.00E+00	0.00E+00	0.00E+00	1.94E-03	0.00E+00	7.06E-03	0.00E+00
EP [kg N eq]	0.00E+00	0.00E+00	0.00E+00	1.58E-04	0.00E+00	3.58E-04	0.00E+00
GWP [kg CO2 eq]	0.00E+00	0.00E+00	0.00E+00	4.18E-01	0.00E+00	1.53E+00	0.00E+00
ODP [kg CFC 11 eq]	0.00E+00	0.00E+00	0.00E+00	1.43E-14	0.00E+00	2.81E-13	0.00E+00
Resources [MJ]	0.00E+00	0.00E+00	0.00E+00	7.91E-01	0.00E+00	3.06E+00	0.00E+00
POCP [kg O3 eq]	0.00E+00	0.00E+00	0.00E+00	6.40E-02	0.00E+00	1.40E-01	0.00E+00

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#### Impact Reduction Action Plan

At an organizational level, Crossville has always had a culture of environmental stewardship. As the first tile manufacturer in Tennessee (est. 1986), Crossville Inc. is the leading American manufacturer of beautiful, sustainable solutions that advance the frontiers of tile design. From introducing the nation’s first large-format porcelain tiles, to developing cutting-edge performance innovations that turn mere surfaces into “breathing” living environments—they are committed to pioneering products and practices that change the way the world views tile. For more information on Crossville’s sustainability initiatives, visit [Crossville Sustainability](#).

As indicated by the results on the previous page, the vast majority of the impacts across the cycle stage are due to the manufacturing process of the porcelain countertops. Since Crossville does not have direct control over manufacturing of these products as they are manufactured by an external supplier and sold through Crossville, there are various challenges in determining which impact reduction steps to take. That being said, the following items have been identified as steps that Crossville will be taking over the course of the next three years to reduce the impacts of our products.

Impact Reduction Steps	Reduction Scope	Expected Outcomes	Responsible Team(s)	Due Date
Encourage supplier to leverage kiln heat to heat facilities in buildings	Manufacturing	Reduce overhead HVAC energy use during winter months by at least 20%	Procurement/ Engineering	Q3 2022
Request supplier to research on ways to efficiently run kilns	Manufacturing	Study ways to efficiently run kilns and subsequent performance of tile.	Procurement/ Engineering	Q3 2022
Consider process efficiencies and work with supplier engineering team to reduce electricity consumption in production of tile	Manufacturing	Optimize usage of electricity across manufacturing processes and overhead usage and track them separately, if possible. Aim to reduce company-wide energy usage by 30%.	Engineering/ Facilities	Q3 2022
Work with supplier to increase pre and post-consumer recycled content	Formulation Change/ Supplier Change	Incorporate at least 10% additional recycled content by mass into formulation.	Sustainability/ Sourcing/ Engineering	Q3 2022
Work with supplier to increase internal fired and green recycled content	Formulation Change/ Supplier Change	Incorporate at least 10% additional recycled content by mass into formulation.	Sustainability/ Sourcing/ Engineering	Q3 2022

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Impact Reduction Steps	Reduction Scope	Expected Outcomes	Responsible Team(s)	Due Date
Engage suppliers with a supply chain specific sustainability evaluation criterion, that includes a requirement that raw material suppliers provide raw material specific LCA data	Purchasing/Supply Chain	Promote sustainability, life cycle thinking and capacity of our suppliers.	Sustainability/ Purchasing	Q1 2022
Encourage increased onsite renewable energy production	Engineering and Facilities co-ordination	Discuss feasibility of increased renewable energy production at supplier HQ.	Facilities	Q1 2022
Develop a product specific carbon neutral offering.	Multiple	Carbon Neutral Products	Sustainability/ Purchasing	Q1 2022