

Life Cycle Impact Reduction Action Plan

Fireclay Tile

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 m² of installed flooring for 75 years

Date of Issue: October 26, 2020

Date of Expiry: October 25, 2023

Manufacturer Name and Address	Fireclay Tile 901 Brannan Street San Francisco, CA 94019
Declared Product	Ceramic Floor and Wall Tile manufactured at Aromas, CA
Product Type	Floor Covering - Tile
Product Description	Ceramic Floor and Wall Tile
Action Plan Number	FTCA01
Functional Unit as Defined by PCR	1 square meter of installed flooring and with a building service life of 75 years
LCA/EPD Action Plan is Based On	EPD – Fireclay Tile http://info.nsf.org/Certified/Sustain/ProdCert/EPD10355.pdf EPD Number: EPD10355
LCA/EPD Type	<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
LCA/EPD Reviewer	Terri Boguski Harmony Environmental, LLC
Reference PCR(s) for LCA/EPD	Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Version 3.2, 2018 Part B: Flooring EPD Requirements. UL 10010-7, September 28, 2018
LCA/EPD Scope	Cradle-to-Grave
Date of LCA/EPD Issue	May 22, 2020
Date of LCA/EPD Expiration	May 21, 2025
Markets of Applicability	North America
LCA Software and Version Number	GaBi 9.2.0.58
LCI Database and Version Number	GaBi Database Version 9.2, Service Pack 39
LCIA Methodology and Version Number	TRACI 2.1
Action Plan Date of Issue	October 26, 2020
Action Plan Period of Validity	3 years from date of issue
Action Plan Type	Product Specific
Is the action plan applicable to all products listed in the corresponding LCA/EPD or only a subset?	All color options and collections in Fireclay's Tile, Non-Slip and Hand painted lines
This Action Plan was prepared by an expert in product specific LCAs/EPDs:	Matt Van Duinen, LCACP Sustainability Director WAP Sustainability 
This Action Plan was confirmed by an executive of the manufacturer:	Eric Edelson CEO Fireclay Tile 

1. PRODUCT DESCRIPTION

This Action Plan includes representative products derived from Fireclay’s line of products produced at the facility located in Aromas, California. Ceramic tiles are primarily made up of clays, silica and other additives and then molded into shape followed by firing into a kiln. Ceramic tiles can be glazed or unglazed. There are several advantages to ceramic tiles. They are fire resistant, non-combustible, durable (lasts a lifetime) and extremely easy to maintain. The UNSPSC code for this flooring product is 301617 and the CSI code is 09 30 00.

All ceramic tiles made at this facility contain recycled content. For more information on specific products, please visit: <https://www.fireclaytile.com/>.

This Optimization Plan is applicable to all color options and collections in Fireclay’s Tile, Non-Slip and Hand painted lines.

2. 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 NSF Certification, LLC. Fireclay 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.

3. 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 raw material sourcing and manufacturing (A1-A3) and transport of product to customer (A4), which are mostly controlled by Fireclay. The largest contributor to impacts within A1-A3 phase is thermal energy used in kilns and electricity used in the production of tiles. This is followed by impacts from raw materials like mullite and clay.

Global warming impacts from the transport phase (A4) is due to heavy products being transported through air freight.

LCA Results from EPD							
Impact Category	A1-A3	A4	A5	B1	B2	B3	B4
AP [kg SO2 eq]	6.28E-02	4.66E-02	1.10E-02	0.00E+00	2.91E-05	0.00E+00	0.00E+00
EP [kg N eq]	3.66E-03	3.09E-03	8.22E-04	0.00E+00	1.23E-05	0.00E+00	0.00E+00
GWP [kg CO2 eq]	4.59E+01	1.15E+01	5.91E+00	0.00E+00	2.51E-02	0.00E+00	0.00E+00
ODP [kg CFC 11 eq]	5.01E-08	-5.10E-14	2.86E-09	0.00E+00	-3.55E-16	0.00E+00	0.00E+00
Resources [MJ]	1.07E+02	2.17E+01	8.71E+00	0.00E+00	1.50E-02	0.00E+00	0.00E+00
POCP [kg O3 eq]	1.38E+00	1.34E+00	8.35E-02	0.00E+00	5.62E-04	0.00E+00	0.00E+00

Impact Category	B5	B6	B7	C1	C2	C3	C4	D
AP [kg SO2 eq]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.43E-04	0.00E+00	4.26E-03	MND
EP [kg N eq]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.79E-05	0.00E+00	2.18E-04	MND
GWP [kg CO2 eq]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.67E-01	0.00E+00	9.28E-01	MND
ODP [kg CFC 11 eq]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.44E-15	0.00E+00	-4.88E-14	MND
Resources [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.04E-01	0.00E+00	1.86E+00	MND
POCP [kg O3 eq]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-02	0.00E+00	8.54E-02	MND

4. IMPACT REDUCTION ACTION PLAN

Fireclay Tile was founded in 1986 by Paul Burns, its Chief Ceramicist, whose mission was to make beautiful tile for people, the way they want it, when they want it. Today Fireclay is proud to be the only vertically integrated, direct-to-customer tile manufacturer whose strength lies just as much in service as in making tile. With a firm belief that there is nothing more sustainable than good design, Fireclay has chosen to devote its work to making durable products that will retain their beauty for years to come. A long-standing dedication to reducing waste and maximizing efficiency has led the company to make 100 percent of its product at its Northern California factory where they are able to leverage time honored techniques with modern technology. Fireclay has offset 100% of its carbon footprint from operations and shipping through CarbonFund. Another key achievement is that all product lines contribute towards LEED credits. Fireclay aims to be a triple bottom line company and ensure they take the environment and its 155 employees' well-being into every decision they make.

As seen by the results on the previous page, the vast majority of impacts across the life cycle are due to manufacturing inputs used in production and transport of tile to the customer through air freight. Though raw materials contribute to overall impacts, these do not form the majority of impacts. As most of the impacts come directly from Fireclay's operations, there is potential for reduction of impacts, for which the following items have been identified as steps that Fireclay will be taking over the next three years to reduce the impacts of their products, ordered in decreasing order of priority.

Impact Reduction Steps	Reduction Scope	Expected Outcomes	Responsible Team(s)	Due Date
Solar panel installation on premises and tracking through RECs.	Engineering and Facilities co-ordination	Be able to produce enough solar energy to cover production of tile and operation of facility and reduce Global Warming impacts by at least 60%	Engineering/ Facilities	Q2 2022
Leverage kiln heat to heat facilities in new buildings.	Engineering and Facilities co-ordination	Reduce overhead HVAC energy use during winter months by at least 20%	Engineering/ Facilities	Q2 2022
Research on ways to efficiently run kilns.	Engineering and Facilities co-ordination	Study the feasibility of single firing of tile and subsequent performance of tile	Engineering	Q2 2022
Work with engineering and facilities team to reduce electricity consumption in production of tile.	Engineering and Facilities co-ordination	Optimize usage of electricity across manufacturing processes and overhead usage and track them separately, if possible. Focus on reduction of electricity consumption for hand painted product lines.	Engineering/ Facilities	Q2 2022

Impact Reduction Steps	Reduction Scope	Expected Outcomes	Responsible Team(s)	Due Date
Work with logistics team to devise delivery plan that minimizes the use of air freight and employs ground or cargo freight.	Logistics	Reduce air freight to less than 10% of total shipments	Logistics/ Sales	Q2 2022
Work with purchasing to locally source raw materials.	Purchasing	100% by weight of raw material suppliers are within 500 miles of facility	Purchasing	Q2 2022
Work with facilities to divert production and packaging waste from landfill.	Co-ordination between Facilities and Operations	Divert at least 90% waste from landfill and attain Zero Waste Certification	Facilities/ Operation	Q2 2022
Increase recycled content.	Formulation Change/ Supplier Change	Incorporate at least 10% additional recycled content by mass into formulation	Sustainability/ Sourcing/ Engineering	Q2 2022
Maintain Climate Neutral Certification.	Purchasing	Offsets impacts that we are not yet able to reduce. Show commitment.	Sustainability/ Purchasing	Q2 2022
Engage suppliers with a supply chain specific sustainability evaluation criteria, that includes a requirement that raw material suppliers provide raw material specific LCA data.	Purchasing/Supply Chain	Promote sustainability and life cycle thinking and capacity of our suppliers	Sustainability/ Purchasing	Q2 2022