

The EPD for North American-made ceramic tile: certified and LEED friendly

The tile EPD joins the ranks of publicly available EPDs for construction materials—bringing with it contributions toward earning LEED points for using North American-made ceramic tile

by Bill Griese, LEED AP, TCNA Standards Development & Green Initiative Manager

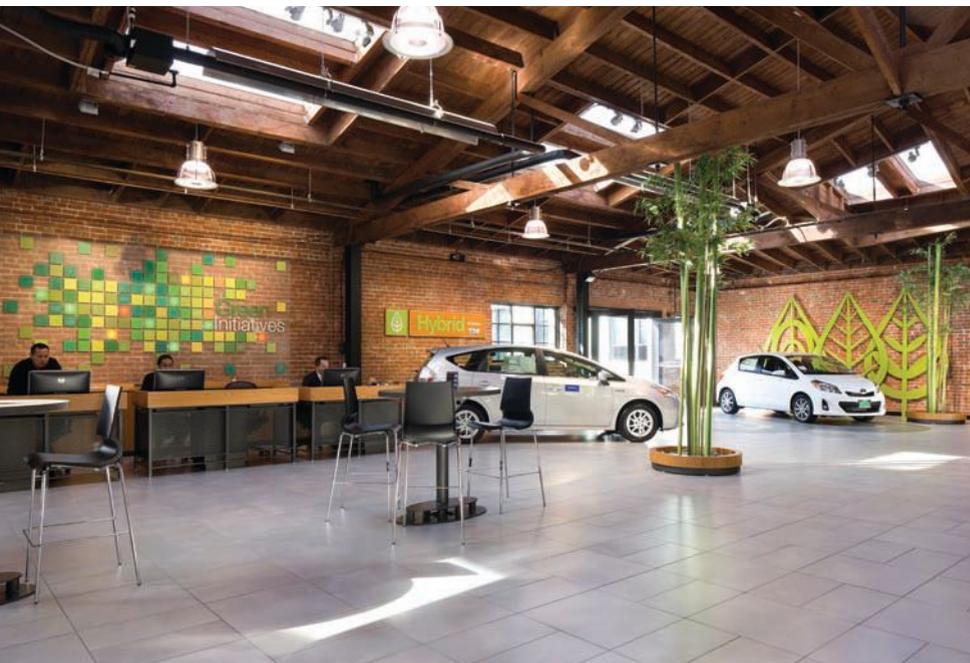
The Environmental Product Declaration (EPD) for ceramic tile made in North America is now available for use by architects and specifiers seeking to satisfy green building project requirements such as those set forth by LEED (Leadership in Energy and Environmental Design) and other popular green building standards. In simplest terms, the

EPD is a reader-friendly, comprehensive disclosure of the environmental impacts of the ceramic tile made in North America by the companies that contributed the data aggregated to produce the EPD: Arto, Crossville, Dal-Tile Corp., Florida Tile, Florim USA, Interceramic, Ironrock, Porcelanite Lamosa, Quarry Tile Co., StonePeak Ceramics and Vitromex de Norteamérica. As all major North

American manufacturers participated in its development, the EPD covers well over 95% of North American-made tile.

In providing summarized data related to tile manufacturing and use — from the raw material extraction process to disposal of tile at the end of its life — the EPD focuses on the green building community’s top concerns, including energy and resource consumption and emissions to air, land and water. The environmental impacts measured and the methodology for measuring them were dictated by the North American Product Category Rule (PCR) for flooring EPDs. By following this standard, the ceramic tile EPD reports the environmental facts of ceramic tile in a manner similar to that used in other flooring EPDs, resembling the way standardized nutrition labeling is used for food to inform and simplify consumers’ choices.

When using this EPD alongside other flooring products’ EPDs, one thing is clear: ceramic tile has the lowest 60-year



North American-made ceramic tile covered by the generic EPD was used in this LEED NC Platinum Certified installation in the showrooms, coffee bar, new car delivery area and corridors.

environmental impact per square foot (and per square meter) across all major impact categories: global warming, abiotic resource depletion, acidification, smog formation, eutrophication, and ozone depletion. These are the most commonly referenced environmental impact categories relating to how the manufacture and use of a product will affect the well-being of humans and our environment. And third-party certification of the EPD by sustainability leader UL Environment ensures the included information is accurate, not unsubstantiated marketing claims or other attempts at “greenwashing.” In short, the certified EPD provides the breadth of multi-attribute environmental reporting and the validity of information that building designers and owners are increasingly demanding, for better informed product selection with respect to sustainability.

THE NORTH AMERICAN-MADE CERAMIC TILE EPD AND LEED

In the latest iteration of LEED (Version 4), specifying tile covered by EPDs can help satisfy requirements for up to two points under the LEED credit category *Building Product Disclosure and Optimization—Environmental Product Declarations*. The purpose of this credit category is “to encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically and socially preferable lifecycle impacts, and to reward project teams for selecting products from manufacturers who have verified improved environmental life-cycle impacts,” according to the U.S. Green Building Council (USGBC).

Accordingly, of the two available points, one is awarded simply for using transparent products: products with environmental impacts that are made known and reported by an EPD or life cycle assessment (LCA), regardless of what the actual impacts are. Specifically, to earn this LEED point the specifier must use at least 20 different permanently installed products that are sourced from at least five different manufacturers and that have either a critically reviewed LCA, a generic (industry-wide) EPD or a proprietary (product-specific) EPD. A

Environmental Facts	
Functional unit: 1 m ² of Ceramic Tile Floor Covering	
Reference Service Life (RSL): 60 Years	
Life Cycle Inventory Analysis	
Energy Demand	
Primary Renewable (MJ)	10.4
Primary Non-Renewable (MJ)	225
Secondary Renewable (MJ)	0.15
Secondary Non-Renewable (MJ)	1.4
Non-Renewable Material Sources (kg)	51
Waste Output	
Non-Hazardous (kg)	41
Hazardous (kg)	0.0028
60 Year Impact Assessment	
Global Warming Potential (kg CO ₂ eq)	15
Acidification Potential (kg SO ₂ eq)	0.0565
Ozone Depletion Potential (kg R11 eq)	8.11E-10
Smog Potential (kg Ethene eq)	0.0052
Eutrophication Potential (kg Phosphate eq)	0.00604
Abiotic Depletion Potential - Elemental (kg Sb eq)	1.22E-05
Abiotic Depletion Potential - Fossil (MJ)	219
Boundaries: Cradle to Grave	Clay: 70.3%
Company: North American Tile Manufacturers	Quartz: 4.8%
Product Name: North American-Made Ceramic Tile	Feldspar: 5.3%
Recycled Content: Wide Percentage Range	Scrap: 4.2%
Certification: Some Tiles Green Squared Certified®	Kaolin: 3.2%
Other Attributes: Zero VOCs	Granite: 1.3%
	Lime: 1.1%
	Glaze & Stain: 5.4%
	Other Minerals: 4.0%



Because EPDs report the environmental pros and cons of a product, they are often called the nutrition label for building materials. When transparency is the goal, specify tile covered by the North American ceramic tile EPD.

product with a critically reviewed LCA counts as ¼ of a product, while a product with a generic EPD counts as ½ of a product, and a product with a proprietary EPD counts as a full product.

In totaling up products, there are two additional factors to be aware of. First, products that meet multiple criteria are eligible only for the highest valuation available; the valuations cannot be combined. So even though a product covered by an EPD has a critically reviewed LCA — a byproduct of EPD development — the product provides more value having an EPD. Secondly, the valuations are awarded on a per-product basis. This means each product covered by a generic EPD can be counted as ½ of a product. Those for which proprietary EPDs are available, either exclusively or in addition to a generic EPD, offer specifiers the full one product valuation each.

For example, for a project with 10 different tiles covered by the generic tile EPD, these tiles would contribute at least 5 products (10 tiles X .5 products contribution) toward the 20-product requirement. In the same example, if 3 of the 10 tiles also had proprietary EPDs, the 10 tiles would contribute a total of 6.5 products (three for the three

tiles that have proprietary EPDs, and 3.5 for the seven tiles that don't.) By adding up “products” in this way, design professionals work toward fulfilling the 20-product requirement for the building to be awarded the point.

The second LEED point available under this credit category — for products with EPDs — rewards the use of products with lower environmental impacts. Specifically, it is awarded if at least 50% of the permanently installed products — as measured by their total value — have lower environmental impacts than the industry average for its product type in at least three of the listed impact categories: global warming potential, ozone depletion potential, acidification potential, eutrophication potential, photo-oxidant formation potential and fossil abiotic depletion potential.

Take, for example, a project with \$1 million in permanently installed products, including \$100,000 worth of a floor tile covered by the generic tile EPD. If, compared to the generic tile EPD, the tile's proprietary EPD shows lower environmental impacts as required, this tile would contribute 10% toward the 50% requirement. Thus, here too the generic tile EPD can be beneficial, as it establishes

a means for comparison to tiles it covers that additionally have proprietary EPDs.

LEED provisions relating to EPDs evidence increasing emphasis on transparency in green construction. They also show how standards can incentivize the even greater transparency achieved by proprietary EPDs by rewarding specification of products that have them, as well as specification of “more sustainable” products based upon comparison to a generic EPD counterpart.

The North American ceramic tile EPD was developed in response to these emerging marketplace demands for transparency — also reflected in numerous other green construction standards — to give the design community the desired documentation on today’s most important environmental considerations. With the vast majority of tile produced in North America covered by the EPD, virtually all North American-made ceramic tile

can contribute toward LEED and various other provisions in green standards, making it a powerful and useful tool for specifiers concerned with sustainable construction. Future articles will explain how specifying tiles covered by the EPD can contribute toward points, credits and compliance in other green standards and rating systems such as Green Globes, CHPS (Collaborative for High Performance Schools), ASHRAE Standard 189.1, the 2015 International Green Construction Code (IgCC), the 2014 GSA Facilities Standards for Public Buildings, the California Green Building Code for non-residential construction and the 2012 NAHB National Green Building Standard.

Production of the North American Ceramic Tile EPD was a collaborative effort of the Tile Council of North America (TCNA) and its participating members, with data analysis and modeling by PE International and third party independent certification by UL Environment. To download the full text of the EPD and the related transparency report, visit www.TCNAtile.com. **TILE**



Ceramic Tile

Glass Tile

Installation Products



CREDITS

- LEED v4
- Green Globes
- NAHB National Green Building Standard

COMPLIANCE

- International Green Construction Code
- ASHRAE Standard for the Design of High-Performance Green Buildings
- GSA Facilities Standards for Public Buildings

CONFIDENCE

- Life Cycle-based, Multi-attribute Criteria
- Verification by Leading Certification Bodies
- Listed in National Institute of Building Sciences' Whole Building Design Guide

ABOUT THE AUTHOR



Bill Griese, Standards Development and Green Initiative Manager for Tile Council of North America, develops ASTM, ANSI, ISO, and other industry standards

and leads TCNA's sustainability work, working closely with the TCNA Lab in performing these functions. Griese served two terms as Chairman of ASTM Committee C21 on Ceramic Whitewares and Related Products and is Chairman of ASTM Subcommittee C21.06 on Ceramic Tile. He is also active in ASTM Committee E60 on Sustainability and is Chairman of the ASTM Committee on Technical Committee Operations' Subcommittee on Regulations. Griese participates in the World Ceramic Tiles Forum and is the U.S. delegate for several global standardization initiatives. He is a regular speaker at national and international events and authors for trade publications regularly. Griese is a LEED Accredited Professional (LEED AP) with a specialty in Building Design and Construction (BD+C) and earned his Bachelor of Science degree in Ceramic and Materials Engineering from Clemson University.

For certified product lines, visit www.greensquaredcertified.com