

Building Green? Evolving lifecycle and raw material requirements. . . and What we can learn from LEED v4

After much anticipation for its release, LEED v4 was launched in November 2013 and several new provisions of the completely restructured green building rating system highlight the increasing interest in lifecycle, raw materials, transparency, and multi-attribute sustainability

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FIND IT FAST

MATERIALS AND RESOURCES	
Building Life-cycle Impact Reduction	13
Building Product Disclosure and Optimization – Environmental Product Declarations	14
Sourcing of Raw Materials	14
Material Ingredients	15
Construction and Demolition Waste Management	16
INDOOR ENVIRONMENTAL QUALITY	
Low-Emitting Materials	17
Construction Indoor Air Quality Management Plan	17
Indoor Air Quality Assessment	18
Thermal Comfort	18
Interior Lighting	19
SUSTAINABLE SITES	
Open Space	20
Heat Island Reduction	20
INTEGRATIVE PROCESS	
Integrative Process	21
ENERGY AND ATMOSPHERE	
Optimize Energy Performance	22
INNOVATION	
Innovation	22

Using ceramic tile can contribute toward LEED points and certification. Download the LEED Guide from www.tcnatile.com to find out how ceramic tile applies under each LEED v4 credit category.

BUILDING LIFECYCLE ANALYSES (LCAS) AND ENVIRONMENTAL PRODUCT DECLARATIONS (EPDS)

Today, there is a big push for “whole building lifecycle assessments” (LCAs). While simple in theory, whole building LCAs are very difficult to standardize, especially given the incompleteness of databases, variation in modeling techniques and uncertainty of desired outcomes. Nevertheless, whole building LCAs are widely embraced, and the transition toward their implementation is already taking place in small doses.

In LEED v4, the materials and resources (MR) Credit for “building lifecycle impact reduction” addresses building lifecycle analyses in a number of ways, including by rewarding points for buildings that demonstrate reduced materials use over the life of the building, as evidenced by a whole building LCA. Similarly, points are awarded under this MR Credit for “salvageability” of inherently durable interior elements, such as walls, doors, floor coverings and ceiling systems.

To meet increasing demands for whole building LCA, manufacturers and industries are increasingly providing the lifecycle

benefits of their products with supporting LCA data. One way they are doing so is by providing their Environmental Product Declaration (EPD), which is a report of quantified environmental impacts of a product. Similar in concept to a nutrition label, an EPD tells a product's full environmental story in a familiar reporting format to facilitate informed decision making. In LEED v4, using products with EPDs can contribute toward the MR Credit for "building product disclosure and optimization — EPDs" when at least 20 products with readily available LCA and EPD information are used.

A point can also be earned if 50% of the products in a building have lower environmental impacts than what is typical for their respective product types, which is evaluated by comparing proprietary (product-specific) LCA data to the generic LCA data for the product type. For example, LCA data from the EPD for North American-made ceramic tile shows that, overall, ceramic tile has a 60-year global warming potential of 15 kg CO₂ per square meter. But an individual tile line may have a proprietary EPD with LCA data that shows a lower 60-year global warming potential per square meter for that particular tile.

RAW MATERIALS, PRODUCT TRANSPARENCY AND MULTI-ATTRIBUTE SUSTAINABILITY

LEED v4 includes several new provisions that expand the emphasis on building material attributes, as illustrated by the MR Credits for "building product disclosure and optimization — sourcing of raw materials" and "building product and optimization — material ingredients." In these sections, points are earned through a combination of strategies, including the use of:

- recycled materials
- salvaged or refurbished products
- regionally produced products
- products with known raw material extraction locations and for which the raw material supplier demonstrates a commitment to long term sustainability
- products manufactured by companies that offer "Extended Producer Responsibility"
- products with a well-documented chemical inventory of the raw materials used to manufacture them
- products manufactured by companies that participate in benchmarking or certification programs for minimizing hazardous chemicals or supply chain sustainability efforts

This list illustrates the growing trend toward expanded material considerations and raw material transparency. No longer is a single point awarded solely for the use of products with high levels of recycled content or other single environmental attributes. Rather, several product characteristics and the materials from which products are made are considered in aggregate, representing a multi-attribute approach towards sustainability.

CERAMIC TILE: AHEAD OF THE CURVE

Today's trending requirements and the new MR criteria in LEED v4 have brought change to the way tile is specified and

marketed for green building projects. There is less specificity with regard to the exact points and credits that can be earned by using a particular product, because the overall approach to sustainability is becoming broader and more philosophical, with increased focus on lifecycle, raw materials, transparency and multi-attribute sustainability. Additionally, by awarding points in LEED v4 for products with EPDs, the USGBC has motivated industries to collect and provide the copious amounts of data required to provide generic and proprietary EPDs, to populate databases needed for accurate, thorough LCAs, and to generally increase transparency with regard to environmental impacts.

Following this approach, many industries have developed multi-attribute product sustainability standards, in order that conforming products can help fulfill LEED v4 MR credits, because of parallel requirements or philosophies between the LEED v4 and the industry-specific standard. For ceramic tile and tile installation materials, the Green Squared® standard includes sustainability requirements for raw materials, manufacturing, corporate responsibility, and more, in order for a product to be Green Squared Certified®. The USGBC is looking closely at such programs to determine if the Green Squared requirements and certification process are robust enough to warrant directly awarding points for using certified products. Hundreds of Green Squared Certified products are already available.

More recently, an EPD for tile made in North America was released by Tile Council of North America (TCNA). Products from manufacturers who contributed data to this EPD can directly contribute toward LEED points, plus, the EPD establishes the reference point for the comparison between tiles, and between tile and other flooring products. It also sets forth a common framework for future EPD and LCA initiatives as demand for lifecycle information continues to grow. **TILE**

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

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