THE BRICK INDUSTRY ASSOCIATION

Brick Brief

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LEED V4 *BUILDING PRODUCT DISCLOSURE CREDITS* FOR BRICK

Introduction

LEED, the rating system developed by the U.S. Green Building Council to promote environmental responsibility and sustainable practices, released an updated version of its standard in 2013. The new version, LEED v4, supersedes LEED v3 (LEED 2009).

This *Brick Brief* is not intended to address all the changes in LEED v4, but focuses on changes in the category of Materials and Resources (MR) that impact the brick industry most directly.

Changes to MR Credits in LEED v4

LEED v4 replaced four of the seven MR credits found in LEED 2009 with three new credits focused on Building Product Disclosure and Optimization (BPDO). As the name implies, these new credits focus on building product transparency, in areas ranging from raw material sourcing to impacts on the environment and human health. These new credits and the point values assigned to them are shown in Table 1. Note that this table does not provide all the details of the requirements for each credit.

The remaining MR credits in LEED v4 are similar to those in LEED 2009. The LEED v4 credit Building Life-Cycle Impact Reduction is essentially the LEED 2009 credit for building reuse and the LEED 2009 credit for material reuse (salvaged materials) rolled into one credit. LEED v4 also retained the MR credit on construction waste. This credit was revised to require a minimum of three waste streams to be diverted and also added an option for minimizing total construction waste. The separate credit for Regional Materials was deleted in LEED v4. More information on the LEED MR credits can be found **here**.

Earning MR BPDO Credits in LEED v4

With the new LEED v4 MR credits on product transparency, some are easier to comply with than others. Of the credits listed in Table 1, only four of the options are attainable by any product at this writing. The shading in the table shows the difficulty of obtaining the credit. Currently, USGBC has not recognized any industry average Life Cycle Assessments (LCAs), corporate sustainability reports or manufacturer supply chain optimization documentation. Of the remaining credit options, all are possible for

Table 1: Building Product Disclosure and Optimization Credits in LEED v4

Environmental Product Declarations	**Option 1:** Environmental Product Declaration	1 point	Point earned by using products with publicly available product declarations or Type III EPD labels (industry-wide or product specific)
	Option 2: Multi-attribute Optimization	1 point	Point earned by using products with LCA impacts below industry average
Sourcing of Raw Materials	**Option 1:** Raw Material Source and Extraction Reporting	1 point	Point earned by using products with Corporate Sustainability Reports from raw material suppliers
	Option 2: Leadership Extraction Practices	1 point	Point is earned by using products having recycled content, bio-based content, FSC-certified wood, or reused materials
Material Ingredients	**Option 1:** Material Ingredient Reporting	1 point	Point earned by using products that have publicly declared their raw ingredients using one of the following: Manufacturer Inventory via CAS Registry Number (with GreenScreen v1.2 Benchmark if needed); Health Product Declaration (HPD); Cradle to Cradle v2 Basic or Cradle to Cradle v3 Bronze certification; Declare product label; Cradle to Cradle Material Health Certificate; or Product Lens Certification
	Option 2: Material Ingredient Optimization	1 point	Point earned by using products that meet GreenScreen v1.2 Benchmark, Cradle to Cradle v2 gold or higher certified, or Cradle to Cradle v3 Silver or higher certified
	Option 3: Product Manufacturer Supply Chain Optimization	1 point	Point earned by using products from manufacturers with: validated hazard, health, safety, and risk programs; documented 99% by weight of the raw ingredients in the product; and have third-party verified supply chain

Easiest to attain → **Hardest to attain** | **Not yet attainable**

most brick manufacturers to meet. These options are listed in the following sections in order of the effort required to achieve compliance. Costs to comply typically increase as the effort required increases.

Sourcing of Raw Materials

Option 2: Leadership Extraction Practices

Projects earn 1 point by using products that meet at least one of the responsible extraction criteria for at least 25 percent, by cost, of the total value of permanently installed building products in the project. Responsible extraction criteria include recycled content and material reuse (salvaged materials), as well as bio-based materials and certified wood products. As with LEED 2009, in LEED v4 recycled content is the sum of postconsumer recycled content plus one-half the pre-consumer recycled content, based on cost. LEED v4 is different in that the recycled content dollar value is added to the value of other qualifying products (bio-based, salvaged, etc.) to meet the 25 percent threshold and together the total products earn only 1 point. Products that qualified under LEED 2009 will continue to meet LEED v4 requirements. *No additional costs or documentation are expected with this credit option.* For more information on this credit, click **here**.

Material Ingredients

Option 1: Material Ingredient Reporting

Projects earn 1 point if at least 20 different permanently installed products from five different manufacturers that have disclosed their chemical inventory are used. There are several ways brick manufacturers can comply with this requirement, as described below. *This is the easiest and least costly of the new LEED v4 Building Product Disclosure and Optimization credits with which to comply.*

Manufacturers need only choose one method for compliance, and no additional points are earned for complying with more than one of the requirements, except that GreenScreen v1.2 Benchmark products meet both Option 1 and 2 of this credit.

For this option, manufacturers must report the chemical inventory of their product to at least 0.1 percent (1000 ppm) using one of the following methods.[1] Additional compliance programs are being added on a regular basis. For the latest list, refer to **this site**.

Manufacturer Inventory. Manufacturers must publish a complete chemical inventory of their product that identifies all ingredients by name and Chemical Abstract Service Registration Number (CASRN) and/or European Community Number (EC Number). Percentages or quantities of the raw ingredients are not required.

For brick manufacturers, this is a relatively easy and low-cost approach to meet this LEED credit requirement. CAS numbers are readily available for most of the raw materials used in brick manufacturing. Colorants or additives may pose the most challenges. The inventory can be completed by the manufacturer directly. The inventory must be accessible on the manufacturer's website and cannot be provided only upon request.

Ingredients defined as trade secret or intellectual property may withhold the name and/or CASRN/EC Number but must disclose role, amount and hazard screen for the non-disclosed ingredients using the GreenScreen benchmark, as defined in GreenScreen v1.2 or the Globally Harmonized System of Classification and Labeling of Chemicals, Rev. 6 (2015) (GHS). The remaining ingredients must be listed with CAS numbers.

Health Product Declaration. The product has a published, complete Health Product Declaration (HPD) with full disclosure of known hazards in compliance with the Health Product Declaration Open Standard. Health Product Declarations can be produced using the HPD Builder found **here**. This tool requires manufacturers to provide the names and quantities of all the raw ingredients used in a product, but it allows for reporting in ways that protect proprietary information.

This work can be done by a manufacturer or by a consultant. The direct cost to use the HPD Builder is currently $250 for the publication of five product declarations. The HPD Builder automatically publishes the product HPD to a publicly available **repository**. *An HPD is good for no more than three years. An HPD is fairly easy to complete, and the cost is modest, even if a consultant is used.*

Cradle to Cradle (C2C). This requires the product to be certified at the Cradle to Cradle v2 Basic level or Cradle to Cradle v3 Bronze level. This certification considers Material Health, Material Reutilization, Renewable Energy & Carbon Management, Water Stewardship, and Social Fairness in evaluating products.

Information on the C2C certification process can be found **here**. C2C certification is available only for those products that do not contain any of their **banned chemicals** as intentional inputs above 1000 ppm. There are some European brick manufacturers that have C2C certified products.

C2C certification requires an initial $1600 new product fee and an annual $1000 certification fee. This does not include the fees associated with product assessment. *C2C certification is more extensive and more costly than an HPD.*

Cradle to Cradle Material Health Certificate. This certification is relatively new and is an evaluation of only the Material Health portion of a C2C certification. The product must be certified at the Bronze level or higher and at least 90 percent of materials assessed by weight. Pricing on the C2C Material Health Certificate is not publicly available at the time of this writing. For more information, visit **this** site.

Declare. The Declare product label must indicate that all ingredients have been evaluated and disclosed down

1. Information based on **www.usgbc.org/credits**, accessed Jan. 10, 2018.

to 1000 ppm. Declare products must not contain any of the International Living Future Institute's **Red List items**. Declare requires a complete disclosure of information and allows only 1 percent by weight to be considered proprietary. This information can be completed directly by the manufacturer. Products are evaluated based on location of manufacture, so similar products made in different locations require different labels. Costs for a Declare label are $1000 for one product, $850 each for two to nine products, and $750 per label for 10 or more products. Declare labels are good for one year. Renewal fees are half the initial fee. More information can be found **here**.

Product Lens Certification. This new certification program is similar to the others listed. However as a new program, little information is currently publicly available about this program sponsored by UL. See **this site**.

Material Ingredients

Option 2: Material Ingredient Optimization

Projects earn 1 point if products that document their material ingredient optimization are used for at least 25 percent, by cost, of the total value of permanently installed products in the project. Compliant products meet either GreenScreen v1.2 Benchmark with full inventories of chemical ingredients to 100 ppm and have no Benchmark 1 hazards or have Cradle to Cradle certification, v2 Gold or higher/v3 Silver or higher. See **this site** for more information about the credit. Ability to meet these criteria depends upon the specific product ingredients. There are some European brick products that have attained **C2C v3 Silver certification**.

Environmental Product Declarations

Option 1: Environmental Product Declaration

Projects earn 1 point if at least 20 different permanently installed products from five different manufacturers that meet one of the disclosure criteria are used. There are three types of declarations that are recognized in LEED v4. All are based on life cycle assessment (LCA) of the product with at least a cradle-to-gate (raw material to completed manufacture) scope. All require the manufacturer to be a participant in the LCA to make the declaration. *All require significant investment in time and resources.*

Product-Specific Declaration. Products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle-to-gate scope are valued as one-quarter of a product for the purposes of credit achievement calculation. *This option is typically slightly less costly than an EPD due to the lesser requirements for verification and reporting.*

Industry-Wide Environmental Product Declaration (EPD). Products with third-party verified industry-wide certification (Type III) in which the manufacturer is explicitly recognized as a participant by the program operator are valued as one-half of a product for purposes of credit achievement calculation. External (third-party) verification is required. *This type of EPD reports the results of the average LCA impacts from a number of manufacturers that are intended to represent the range of products in a given industry. No product-specific information is provided.*

Product-Specific Type III EPD. Products with third-party certification (Type III), including external verification in which the manufacturer is explicitly recognized as the participant by the program operator, are valued as one whole product for purposes of credit achievement calculation. *This type of EPD is the type most often referred to as simply an EPD. It contains information for a specific product or group of products as made by a single manufacturer. It is given the highest value in LEED v4 and is potentially the most costly to complete. Costs for completion of a Type III EPD are typically tens of thousands of dollars or more, with higher costs associated with more complex products. In addition to development costs, there may be annual registration costs in the range of $1000 to $1500 per product. There is no single registry for EPDs. Several program operators, such as NSF, ASTM and others provide listings of EPDs.*

More information on the Environmental Product Declarations credit can be found **here**.

Summary and Recommendations

The changes in LEED v4 are challenging for all building product manufacturers. Old credits related to recycled content and salvaged materials have been combined and are worth fewer points than in previous versions of LEED. The new focus in LEED v4 is on product transparency.

Of the new BPDO credits in LEED v4, some are far easier to comply with than others. Manufacturers should focus on incremental steps toward achievement of LEED credit requirements. One of the easiest credits is the BPDO Materials Ingredients Option 1: Material Ingredient Reporting. This credit provides numerous pathways for reporting information on the raw ingredients in a product at relatively low cost to the manufacturer. Depending upon screening outcomes, products may also qualify for an additional Material Ingredient Optimization point.

At the other end of the scale is the BPDO Environmental Product Declarations credit. This credit is more difficult and costly to complete, but it also provides information sought by many of the larger architectural firms.

As with previous versions of LEED, product manufacturers must remember that their product is one of many required to achieve a LEED credit and that no single product can achieve a LEED credit on its own. Many LEED credits require a holistic calculation of all products used on a project to determine compliance. Other credits provide for more direct product contribution via using minimum numbers of complying products. In either case, no one product can earn a LEED credit by itself.

Brick Briefs are short discussions of a particular topic. The information contained herein must be used with good technical judgment. Final decisions on the use of this information must rest with the project designer and owner.