Fly Ash & CONCRETE IN LEED® V4 FOR BD+C
NEW CONSTRUCTION AND MAJOR RENOVATION

The U.S. Green Building Council's (USGBC'S) Leadership in Energy and Environmental Design (LEED v4) program is a point system designed to be applied to every building type and phase of a building life cycle. It recognizes responsible use of materials, land, energy, ergonomics, and design considerations. LEED v4 significantly raises the bar compared to previous versions, changing the traditional, low-hanging fruit of using fly ash for a specific number of credits in sections (MR 4) and (MR 5) to a more complex system of determining credits based on environmental product declarations (EPDs), health product declarations (HPDs), and the percentage of cement replacement. To become a LEED v4 Certified project, a building must score at least 40 points. The Certified, Silver, Gold, and Platinum certification levels require 40, 50, 60 and 80+ points, respectively, to an ideal 110 points.

Category	Available Points
Integrative Process	1 (1%)
Location and Transportation (LT)	16 (15%)
Sustainable Site (SS)	10 (9%)
Water Efficiency (WE)	11 (10%)
Energy and Atmosphere (EA)	33 (30%)
Materials and Resources (MR)	13 (12%)
Indoor Environmental Quality (EQ)	16 (15%)
Innovation (IN)	6 (5%)
Regional Priority (RP)	4 (4%)
Total Points Available	**110**

Benefits associated with sustainable development practices include:

- Lower life cycle costs, because design is not constricted to first cost, yielding increased profitability to owners.
- Enhanced habitability, occupancy, and productivity because of ergonomic design.
- Increased worker productivity and satisfaction.
- Possible energy tax rebates. (Tax rebates are not available in all states. For more information, visit http://dsireusa.org.)

Fly Ash in LEED v4

Fly ash, in combination with other qualifying building materials, can contribute points in several categories when used in concrete and other building products. (The only way fly ash itself earns a point is in Innovation (IN) when using high-volume fly ash (HVFA) concrete mixes, which contribute to greenhouse gas reductions.) Building owners and engineers should consult with their project LEED representative to determine their max potential for using fly ash specifically for earning points toward LEED certification.

(MR) Option 1. Environmentally Preferable Products: (Local Products) Applies to products that are extracted, processed, and manufactured locally for the following components: framing, aggregate for concrete and foundation, drywall, and interior sheathing. Bottom ash is an aggregate

For more information or answers to questions about the use of fly ash in specific applications, contact your nearest Boral Resources Technical Sales Representative or call 1-770-684-0102

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used in concrete masonry products; in addition, some fly ash types can be used in foundation base material and/or for solidification (check state and local environmental rules). If sources of fly ash and bottom ash are within 100 and/or 500 miles of the LEED project, potential points may apply.

(MR) Option 2. Environmentally Preferable Products: (100% post-consumer and/or 50% pre-consumer) This credit is awarded if concrete consists of at least 30% fly ash, slag, or other cement substitute and/or 50% recycled content or reclaimed aggregate by volume, or 90% recycled content or reclaimed aggregate based on the IS0 14021 definition. LEED v4 recognizes fly ash as 100% pre-consumer recycled product.

(IN) Option 1-3 Innovation 1 to 5 points. These credits are designed to reward exceptional performance above the requirements of the rating system and/or innovative performance in categories not specifically addressed in the rating system Concrete mixtures utilizing high volumes of fly ash as a percentage by weight of total cementitious materials may be awarded points because using fly ash to replace portland cement reduces cement production, which in turn reduces the CO2 emissions associated with the production of portland cement.

Other innovative products such as fly ash bricks, roofing tiles, flex-crete, poly-ash, etc., may be eligible for points in this category because they are generally 70 to 100% of total product.

Concrete in LEED

Using concrete can influence 25 of 55 LEED v4 credits and prerequisites and may potentially contribute to as many as 74 of the 110 points, according the the National Ready Mixed Concrete Association's Concrete Sustainability Report. Points are earned depending upon circumstances, conditions, and design. Green building is a collaborative effort. The key to maximizing points is for the project team—owner, architect, engineer, contractor, and concrete supplier—to work together as early in the construction process as possible so that team members can provide input on the best ways to achieve sustainability goals.

To learn more about green building practices and LEED, visit www.usgbc.org.

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