Concrete's Contribution to LEED v5:

Decarbonization, Transparency, and Responsible Sourcing

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Introduction

The evolution of sustainable building standards has reached a pivotal moment. As climate pressures intensify and expectations for transparency rise, the building industry is being asked to deliver structures that are not only functional and durable but also low-carbon, resilient, and ethically sourced. LEED v5—the most comprehensive update to the LEED rating system in more than a decade—reflects this shift with a sharpened focus on embodied carbon, lifecycle performance, and responsible procurement.

Concrete, as the backbone of modern construction, sits squarely at the center of this transformation. It is ubiquitous, versatile, and essential to structural performance. Yet it is also one of the largest contributors to embodied carbon in the built environment. LEED v5 recognizes both realities: concrete is indispensable, and it is also one of the most powerful levers for reducing environmental impact.

This article explores concrete's contribution across LEED v5, with a particular focus on the Materials and Resources (MR) category—where concrete producers, specifiers, and design teams can have the greatest influence. It expands substantially on credits MRp2, MRc2, MRc4, MRpc181 and MRpc182. Additionally, this article focuses on the New Construction LEED v5 framework. The intent and requirements for the Core and Shell LEED v5 framework are similar, but with different points assigned for many credits.

LEED v5 Credit Categories	New Construction	Core and Shell
Integrative Process, Planning and Assessment (IP)	1	7
Location and Transportation (LT)	15	15
Sustainable Sites (SS)	11	11
Water Efficiency (WE)	9	8
Energy and Atmosphere (EA)	33	27
Materials and Resources (MR)	18	21
Indoor Environmental Quality (IQ)	13	11
Project Priorities (PR)	10	10
Total	110	110

A New LEED Framework

LEED v5 maintains the familiar structure of credit categories from LEED v4.1, but the underlying requirements have changed dramatically. Many of the credits within each one of the credit categories have changed, placing a lot more emphasis on decarbonization, resilience and responsible sourcing. This shift reflects a broader industry movement toward lifecycle thinking and climate-aligned design. Three themes define LEED v5:

Decarbonization

Embodied carbon is now a central metric. LEED v5 requires teams to quantify, assess, and reduce embodied carbon across structure, enclosure, and hardscape. Concrete—often one of the top three contributors to embodied carbon—is a primary target for reduction strategies.

Resilience

Buildings must withstand natural hazards, maintain functionality during disruptions, and support occupant safety. Concrete's inherent resilience—its ability to resist fire, wind, flooding, and seismic forces—aligns naturally with these goals.

Equity and Responsible Sourcing

LEED v5 expands its lens to include social health, supply-chain transparency, and ethical procurement. Certifications such as the Concrete Sustainability Council (CSC) now play a major role in demonstrating responsible sourcing.

Together, these themes create a framework in which concrete is not merely a structural material but a strategic asset in achieving LEED v5 performance.

Two Pathways for Concrete to Contribute

Most architects, structural engineers, and project teams choose concrete for familiar reasons—its cost-effectiveness, resilience, energy performance, durability, comfort, and aesthetics. And many of their design decisions naturally position concrete to contribute to LEED v5 credits.

But the real opportunity lies with concrete producer actions. Concrete producers can significantly expand the number and value of LEED v5 contributions through steps such as:

- Delivering innovative or performance-optimized products
- Supplying low-carbon concrete aligned with project carbon goals
- Providing environmental product declarations (EPDs)
- Achieving responsible sourcing certifications that verify ethical and sustainable practices

This article will focus primarily on these producer-driven strategies—because they are where the biggest gains can be made—while also touching briefly on the design-side decisions that help concrete contribute to LEED v5.

Concrete's Contributions Across LEED v5

Although the Materials and Resources category is where concrete has the most direct influence, its contributions extend across nearly every LEED v5 category. Understanding these opportunities helps design teams leverage concrete's full potential.

Integrative Process, Planning and Assessment (IP)

LEED v5 requires three assessments early in design:

- Climate resilience assessment
- Human impact assessment
- Carbon assessment

Concrete supports all three.

		New Construction	Core and Shell
Integrative Process, Planning and Assessments (IP)		**1**	**7**
IPp1	Climate Resilience Assessment	Required	Required
IPp2	Human Impact Assessment	Required	Required
IPp3	Carbon Assessment	Required	Required
IPp4	Tenant Guidelines	-	Required
IPc1	Integrative Design Process	1	1
IPc2	Green Leases	-	6

Concrete is known to be very resilient against natural hazards. Its ability to withstand wind, fire, and flooding strengthens hazard mitigation strategies. In carbon assessments, concrete is almost always one of the top three contributors to embodied carbon, making it a priority for reduction strategies.

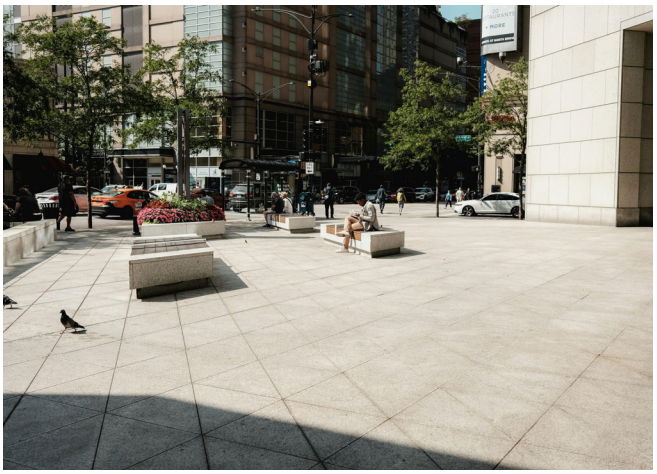
Location and Transportation (LT)

In the Location and Transportation credit category, concrete doesn't have many direct pathways for contribution. However, credit LTc3: Compact and Connected Development emphasize dense, walkable, transit-served communities.

		New Construction	Core and Shell
Location and Transportation (LT)		**15**	**15**
LTc1	Sensitive Land Protection	1	1
LTc2	Equitable Development	2	2
LTc3	Compact and Connected Development	6	6
LTc4	Transportation Demand Management	4	4
LTc5	Electrical Vehicles	2	2

Concrete plays a natural role here: it enables high-rise and mid-rise construction, supports compact urban development patterns, and provides the structural systems that make density possible. While the credit isn't about concrete, concrete is an essential material in the types of projects that achieve it.

High-rise construction supports LTc3, Compact and Connected Development



Light colored hardscapes support SSc5, Urban Heat Island Reduction

Sustainable Sites (SS)

Concrete plays a direct role in several Sustainable Sites strategies:

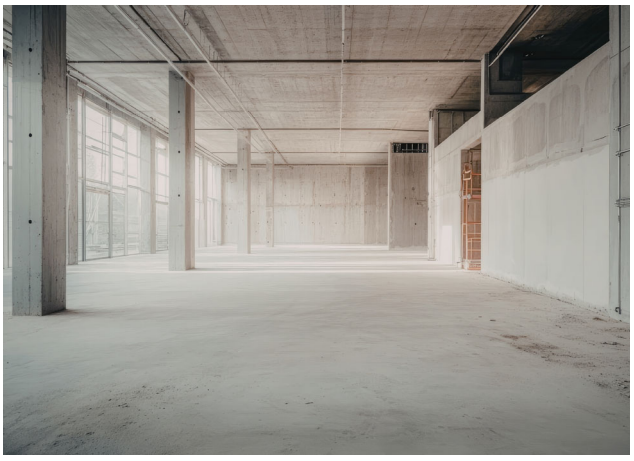
- Rainwater management: Pervious concrete supports infiltration and reduces runoff.
- Resilient site design: Durable hardscape materials help mitigate flood and storm impacts.
- Heat island reduction: Light-colored concrete pavements reduce surface temperatures.

		New Construction	Core and Shell
Sustainable Sites (SS)		**11**	**11**
SSp1	Minimized Site Disturbance	Required	Required
SSc1	Biodiverse Habitat	2	2
SSc2	Accessible Outdoor Space	1	1
SSc3	Rainwater Management	3	3
SSc4	Enhanced Resilient Site Design	2	2
SSc5	Heat Island Reduction	2	2
SSc6	Light Pollution Reduction	1	1

Water Efficiency (WE)

This credit category is mostly focused on water efficient plumbing fixtures to conserve water. However, concrete is frequently used for cisterns, rainwater harvesting tanks, and greywater storage. LEED v5's enhanced water efficiency credit recognizes these applications.

		New Construction	Core and Shell
Water Efficiency (WE)		**9**	**8**
WEp1	Water Metering and Reporting	Required	Required
WEp2	Minimum Water Efficiency	Required	Required
WEc1	Water Metering and Leak Detection	1	1
WEc2	Enhanced Water Efficiency	8	7



Concrete's thermal mass properties can support EAc3, Enhanced Energy Efficiency

Thermal mass properties can also support EQc4, Resilient Spaces

Energy and Atmosphere (AE)

Concrete's thermal mass is one of its most valuable contributions to energy performance. It supports passive solar design, load shifting, and reduced HVAC demand.

		New Construction	Core and Shell
Energy and Atmosphere (EA)		**33**	**27**
EAp1	Operational Carbon Projection and Decarb. Plan	Required	Required
EAp2	Minimum Energy Efficiency	Required	Required
EAp3	Fundamental Commissioning	Required	Required
EAp4	Energy Metering and Reporting	Required	Required
EAp5	Fundamental Refrigerant Management	Required	Required

EAc1	Electrification	5	4
EAc2	Reduce Peak Thermal Loads	5	5
EAc3	Enhanced Energy Efficiency	10	7
EAc4	Renewable Energy	5	4
EAc5	Enhanced Commissioning	4	3
EAc6	Grid Interactive	2	2
EAc7	Enhanced Refrigerant Management	2	2

A knowledgeable designer can incorporate concrete thermal mass properties into passive solar design techniques to meet the Minimum Energy Design prerequisite and the Enhanced Energy Efficiency Credit.

Environmental Quality (EQ)

Concrete contributes to resilient interior environments. During power outages, its thermal mass moderates indoor temperatures, supporting passive survivability and keeping people comfortable during power outages.

		New Construction	Core and Shell
Indoor Environmental Quality (EQ)		**13**	**11**
EQp1	Construction Management	Required	Required
EQp2	Fundamental Air Quality	Required	Required
EQp3	No Smoking or Vehicle Idling	Required	Required
EQc1	Enhanced Air Quality	1	1
EQc2	Occupant Experience	7	7
EQc3	Accessibility and Inclusion	1	1
EQc4	Resilient Spaces	2	2
EQc5	Air Quality Testing and Monitoring	2	-

Materials and Resources (MR)

The Materials and Resources (MR) category along with associated credits in the Project Priorities (PR) category is where concrete professionals can have the greatest influence. Five credits are especially important:

- MRp2 – Quantify and Assess Embodied Carbon (Prerequisite)
- MRc2 – Reduce Embodied Carbon (1-6 points)
- MRc4 – Building Product Selection and Procurement (1-5 points)
- MRpc181 – Multi-Attribute Structure, Enclosure, Hardscape, and Other Building Materials (Project Priority Credit, 1-2 points)
- MRpc182 – Innovative Low-Carbon Concrete (Project Priority Credit, 1 point)

		New Construction	Core and Shell
Materials and Resources (MR)		**18**	**21**
MRp1	Planning for Zero Waste Operations	Required	Required
MRp2	Quantify and Assess Embodied Carbon	Required	Required
MRc1	Building and Materials Reuse	3	5
MRc2	Reduce Embodied Carbon	6	8
MRc3	Low-Emitting Materials	2	1
MRc4	Building Product Selection and Procurement	5	5
MRc5	Construction and Demolition Waste Diversion	2	2

MRp2: Quantify and Assess Embodied Carbon

This prerequisite sets the foundation for embodied carbon reduction across the project. The intent of this prerequisite is to quantify embodied carbon impacts of structure, enclosure, and hardscape, and identify the top three sources and reduction strategies.

Concrete is almost always one of the top three sources of embodied carbon even when concrete is not the main structural system. Concrete is often used for foundations, slabs and hardscapes. Concrete producers support this prerequisite by providing product-specific EPDs and low-carbon mix designs. Whole-building LCA tools already include concrete datasets, making modeling relatively straightforward.

MRc2: Reduce Embodied Carbon (1–6 Points)

MRc2 is the most consequential credit for concrete. It rewards projects that reduce embodied carbon in structure, enclosure, and hardscape materials per the table below.

Points for Embodied Carbon Reductions in Option 1 and Option 2 for New Construction Projects

	Option 1. Whole-building Life-cycle Assessment		**Option 2. EPD Analysis**		
			Path 1. Project Average Approach		**Path 2. Materials-type Approach**
Meet baseline or industry average	2	**AND/ OR**	1	**OR**	Three material categories for 1 point OR Five or more material categories for 2 points
10% reduction in GWP	3		-		-
20% reduction in GWP	4		2		-
30% reduction in GWP	5		-		-
40%+ reduction in GWP	6		3		-

There are three options, and they are additive.

Option 1: Whole Building Lifecycle Assessment (WBLCA)
WBLCA compares the proposed design to a baseline and evaluates reductions in global warming potential (GWP). Achieving a 10% or 20% reduction for the entire building is difficult and achieving 30% or 40% reduction is extremely difficult. However, 10–20% is increasingly feasible with optimized concrete mixes for a concrete building.

Concrete contributes significantly because it is a major component of structural systems and mix designs can be optimized for lower carbon. WBLCA is a long and expensive process but software tools are making it more accessible .

Option 2: EPD Analysis

Path 1: Project Average Approach

This path compares all structure, enclosure and hardscape materials to industry benchmarks. It is difficult because every material that is used for structure, enclosure and hardscapes must have an EPD and meet or beat the benchmark.

Path 2: Material Type Approach

This is the most practical path for concrete.

To earn points:

- Demonstrate that three material categories meet their benchmarks achieves 1 point
- Demonstrate that five categories meet benchmarks achieves 2 points

Concrete is often the easiest material to optimize because:

- EPDs are widely available
- Mix designs can be adjusted
- Benchmarks are well established

Option 3: Construction Emissions Tracking

Although concrete contractors contribute to construction emissions, this option is less directly tied to concrete mix design and product specific EPDs.

Example 1: WBLCA and EPD Analysis Option 1

A project team conducts a WBLCA and does an EPD Analysis using Option 1: Project Average Approach. After the analysis, they demonstrate a 10% reduction from the baseline for WBLCA and 10% reduction from the baseline for the EPD Analysis per the tables below.

WBLCA

GWP Reduction	Points
Meets baseline	2
10%	3
20%	4
30%	5
40%	6

EPD Analysis: Project Average Approach

GWP Reduction	Points
Meets baseline	1
10%	-
20%	2
30%	-
40%	3

Since the WBLCA showed a 10% reduction from the baseline, worth 3 points, and the EPD Analysis showed a 10% reduction from the baseline, worth 1 point, the total points achieved for this credit:

Total Points = 3 (WBLCA) + 1 (EPD Analysis) = 4

Example 2: EPD Analysis Option 2

A project team uses the material type approach and concrete is included in the calculations along with steel and glass. The key point of this approach is that it evaluates each material against its average carbon footprint benchmark instead of an overall building baseline.

For concrete, each structural element—foundations, slabs, columns, walls, and others—has an estimated production volume. Benchmarks for each concrete class (shown in the second column in the table below) are taken directly from the published benchmark report. To calculate the total benchmark GWP, you multiply the volume of each concrete class by its benchmark GWP per cubic yard.

Application	Est. Volume, yd^3	Benchmark GWP, per yd^3	Benchmark Total GWP	Target GWP, per yd^3	Target Total GWP	Reduction%
Foundation	4,000	289	1,156,000	210	840,000	27%
Slabs	5,000	306	1,530,000	260	1,300,000	15%
Columns and Walls	1,000	349	349,000	275	275,000	21%
Total	10,000	304	3,035,000	242	2,415,000	20%

Material	Comparison to baseline
Concrete	20% below baseline
Steel	Meets baseline
Glass	**Meets baseline**

Projects also establish reduction targets, such as achieving a 20% decrease below the benchmark. The same volume-based calculation is applied to the target values. This allows you to compare the benchmark GWP to the proposed design's GWP and determine the percent reduction across all concrete used on the project.

In practice, most projects include far more than the three concrete classes shown in this simplified example. But if the concrete package achieves a 20% reduction below the baseline—while steel and glass simply meet their baselines—then all three materials meet the minimum threshold, resulting in one point under this credit. If a project can show that 5 different structural, enclosure and hardscape materials are at or below their product category benchmarks, the project would achieve 2 points for this credit.

MRpc182: Innovative Low Carbon Concrete

This project priority credit rewards the use of pilot, next generation low carbon concrete products. Requirements include:

- Use at least 15 cubic yards (structural) or 30 cubic yards (non structural)
- Provide a survey describing the product
- Publish a public case study
- Provide an EPD demonstrating low carbon performance

This credit, worth 1 point, is relatively easy to participate in and allows producers to experiment with innovative products so long as the design team is open to piloting innovative materials and concrete producers are willing to experiment and do the necessary quality control work to implement innovative concrete mixtures.

MRc4: Building Product Selection and Procurement (1–5 Points)

MRc4 is one of the most complex and impactful credits in LEED v5. It promotes procurement of nonstructural building products that demonstrate achievement in one or more of five sustainability criteria:

- Climate health
- Human health
- Ecosystem health
- Social health and equity
- Circular economy

Concrete can contribute to MRc4 when it is used as a finished material—for example, exposed floors, walls, or ceilings. However, concrete is rarely used as an exposed material, and when it is, it is usually covered with a sealer or other protective finish. Another credit called MRpc181 in the Project Priority credit category is more suited for concrete since it addresses structure, enclosure and hardscapes. The way products qualify for the MRpc181 credit are similar to MRc4.

Points are achieved for this credit by multiplying the value of each product in a product category by a Multi-Attribute Score (MAS), summing across all products in the category and determining if the multi-attribute adjusted value is greater than 100%.

The equation shown in LEED v5 is as follows:

$$\text{Product category adjusted value for LEED} = 100 \times \left[\frac{\begin{array}{c}\text{(Product A MAS x Product A value) +} \\ \text{(Product B MAS x Product B value) +} \\ \text{(Product C MAS x Product C value) ...}\end{array}}{\text{(Total value of all products in the product category}} \right]$$

The MAS for each product is calculated from a table in the LEED v5 manual which shows which product documentation (certifications) achieve multi-attribute scores from 1 to 5. The table below provides an excerpt of the product document scores in LEED v5 for concrete related certifications.

	Criteria Area					
Eligible Product Documentation	**Human Health**	**Climate Health**	**Ecosystem Health**	**Social Health & Equity**	**Circular Economy**	**LEED Multi-Attribute Score (max = 5**
Concrete Sustainability Council: Concrete Plant Certification, Bronze	-	-	-	**1**	-	**1**
Concrete Sustainability Council: Concrete Plant Certification, Silver	-	-	**1**	**1**	-	**2**
Concrete Sustainability Council: Concrete Plant Certification, Gold or Platinum	-	-	**1**	**2**	-	**3**
Concrete Sustainability Council: Concrete Mix with CO_2 Module Score of 1 Star	-	**1**	-	-	-	**1**
Concrete Sustainability Council: Concrete Mix with CO_2 Module Score of 2, 3 or 4 Stars	-	**2**	-	-	-	**2**
EPD: Product Specific Type III	-	**1**	-	-	-	**1**
EPD: Optimized (>20% reduction in GWP)	-	**2**	**1**	-	-	**3**
EPD: Optimized (>40% reduction in GWP and >10% reduction in three additional impact categories	-	**3**	**2**	-	-	**5**

Product categories include:

- Paints and coatings
- Adhesives and sealants
- Flooring
- Walls
- Ceilings
- Insulation
- Furniture
- Composite wood
- Plumbing fixtures

Concrete can contribute to this credit significantly through Concrete Sustainability Council (CSC) responsible sourcing certification and through optimized EPDs. There are other certifications such as Cradle to Cradle, Declare, Health Product Declarations, among others that concrete producers could also demonstrate achievement, but CSC certification and EPDs are likely the easiest path.

The Multi Attribute Score (MAS): How MRc4 Is Calculated

The MAS is the heart of MRc4 and MRpc181. It determines how much a product contributes to the credit.

Step 1: Assign a Multi Attribute Score to Each Product

Each product receives a score based on its certifications. For concrete, the most relevant certifications are:

- CSC certification
- EPDs (standard or optimized)
- Cradle to Cradle, Declare, Health Product Declarations, etc. (if applicable)

For example, if a concrete producer is supplying concrete on a project and has the following certifications:

- CSC Silver certification + EPD optimized to 20%, the concrete MAS = 4
- CSC Silver certification + standard EPD the concrete MAS = 3

These scores are derived from the LEED v5 scoring table (see above for excerpt from the LEED v5 table). Multi-attribute scores are across each row are additive, but scores in each column are not. Only the maximum score withing a column can be used. The example below shows how multi-attribute scores calculated for concrete with different levels of certification.

Step 2: Multiply MAS by Product Value

For each product in the category (e.g., flooring), multiply:

MAS × product value

This yields the adjusted value.

Step 3: Sum All Adjusted Values

Add the adjusted values for all products in the category.

Step 4: Divide by Total Product Value

Divide the total adjusted value by the total value of all products in the category.

If the result exceeds 100%, the category earns one point.

In credit MRc4, the project can achieve up to 5 points depending on the number of product categories exceeding an adjusted MAS of more than 100% per the following table:

Number of Product Categories	Points
1 Product Category	1
2 Product Categories	2
3 Product Categories	3
4 Product Categories	4
5 Product Categories	5

Example: Flooring Product Category with Exposed Concrete Floors and Tile

The table below shows an example with exposed concrete flooring with different levels of certifications along with tile flooring with no certifications:

Product	Multi-attribute Documentation	Value	MAS	Adjusted Value
Slab on Grade	CSC Silver, EPD Optimized 20%	$20,000	4	$80,000
First floor slab	CSC Silver, EPD	$30,000	3	$90,000
Floors 1-6 slabs	CSC Silver, EPD	$180,000	3	$540,000
Floors 7-15 tile	X	$270,000	0	$0
TOTALS		$500,000		$710,000

The three concrete floor systems have MAS values of 3 or 4 and tile has an MAS of 0. The following tables show how the MAS was calculated for the different concrete exposed products:

Slab on Grade: CSC Silver, EPD Optimized 20%

Concrete Sustainability Council: Concrete Plant Certification, Silver	-	-	1	1	-	**2**
EPD: Optimized (>20% reduction in GWP)	-	2	1	-	-	**3**

MAS = 1 + 1 + 2 = 4

First Floor Slab: CSC Silver, EPD

Concrete Sustainability Council: Concrete Plant Certification, Silver	-	-	1	1	-	2
EPD: Product Specific Type III	-	1	-	-	-	1

MAS = 1 + 1 + 1 = 3

Floors 1-6 Slabs: CSC Silver, EPD

Concrete Sustainability Council: Concrete Plant Certification, Silver	-	-	1	1	-	2
EPD: Product Specific Type III	-	1	-	-	-	1

MAS = 1 + 1 + 1 = 3

$$\text{Adjusted Value} = 100\% \times \left[\frac{(\$20{,}000 \times 4) + (\$30{,}000 \times 3) + (\$180{,}000 \times 3) + (\$270{,}000 \times 0)}{\$500{,}000} \right]$$

Adjusted Value = 142%

The total adjusted value reached 142%, exceeding the 100% threshold and earning one point for the flooring category. Although the tile has significant value compared to the exposed concrete floors, the MAS of the concrete adjusts their values upwards significantly such that the entire product category exceeds the 100% threshold.

MRpc181: Multi-Attribute Structure, Enclosure, Hardscape, and Other Building Materials

MRpc181 is a project priority credit specifically designed to recognize responsible sourcing of structural, enclosure and hardscape materials. It is distinct from MRc4, which focuses on non-structural materials.

The intent of this credit is to reward procurement of structural, enclosure, and hardscape materials that demonstrate responsible sourcing across environmental, social, and governance (ESG) dimensions or multi-attributes, which are identical to MRc4. In fact, the MRpc181 credit references the same MAS table and documentation requirements as MRc4.

Concrete's Pathway to Compliance

Concrete can contribute through:

- Concrete Sustainability Council (CSC) certification
- Optimized EPDs
- Cradle to Cradle, Declare, Health Product Declarations (less common but possible)

CSC certification is a major pathway to achieving this credit and that concrete is now on par with Wood in its ability to contribute to responsible sourcing credits (there are several wood certifications which are recognized in the MAS table).

Points for MRpc181 are calculated differently than in MRc4. For a product to qualify, it must achieve an MAS of at least 3. Concrete, which normally as many products on a project (since each mix design is a unique product) can contribute significantly. However, LEED v5 limits the number of products from a single product category (in this case concrete, steel, glass, etc.) to a maximum of 10 products from a single manufacturer. To achieve 1 point in this credit, 15 products must achieve MAS of 3 or higher. To achieve 2 points, 30 products must achieve MAS of 3 or higher.

There are several combinations of CSC certifications and EPDs that can achieve MAS of 3 or more for concrete. Some examples are:

- CSC Bronze (1) + EPD Optimized 20% (2) = 3
- CSC Silver (2) + EPD (1) = 3
- CSC Platinum = 3
- CSC Silver (2) + CSC CO2 Module 1 Star (1) = 3
- Other combinations

About EPDs and Low-Carbon Concrete

Environmental Product Declarations (EPDs) and low-carbon concrete have become central to modern sustainable construction, reshaping how architects, engineers, and owners evaluate material performance. As the building sector accelerates its focus on embodied carbon, these tools provide both the transparency and the technical pathways needed to meaningfully reduce the climate impact of concrete—the most widely used building material in the world.

Environmental Product Declarations: Data That Drives Decisions

EPDs are third-party-verified documents that quantify the environmental impacts of a product. For concrete, this includes upstream processes such as cement production, aggregate sourcing, admixture manufacturing, transportation, and batching. The core metric—global warming potential (GWP)—allows project teams to compare mixes on a consistent, standardized basis.

What makes EPDs so powerful is their dual role. First, they provide transparency, enabling designers to understand the carbon implications of their material choices. Second, they create market signals: producers who invest in optimized mix designs, supplementary cementitious materials (SCMs), and other improved manufacturing practices can demonstrate measurable reductions in GWP. This transparency is increasingly required in public procurement, green building programs, and corporate ESG reporting.

Industry-wide EPDs establish baseline performance for typical concrete classes, while product-specific EPDs capture the actual performance of a producer's mix designs. As more producers generate digital EPDs, project teams gain access to granular, mix-level data that supports whole-building LCA, LEED v5 credit achievement, and carbon-aware procurement.

Low-Carbon Concrete: Strategies for Real Emissions Reductions

Low-carbon concrete refers to mixes engineered to reduce GWP relative to conventional benchmarks or baselines. The most impactful strategies target the cement content, since cement production is responsible for the majority of concrete's embodied carbon. Common approaches include:

- Optimizing mix proportions to reduce cement while maintaining performance
- Increasing SCM use, such as fly ash, slag cement, natural pozzolans, or calcined clays
- Incorporate admixtures such as water reducers, strength enhancers, and viscosity modifiers
- Using performance-based specifications that allow producers to innovate

These strategies can reduce GWP by 20–50% or more, depending on project requirements and regional material availability. Importantly, low-carbon concrete is not a single product—it is a design philosophy supported by data, innovation, and continuous improvement.

How EPDs and Low-Carbon Concrete Work Together

EPDs provide the measurement framework; low-carbon concrete provides the reduction pathway. Together, they create a feedback loop that rewards producers for innovation and gives designers confidence in specifying lower-impact materials. As LEED v5, Buy Clean policies, and owner-driven carbon targets become more prevalent, the combination of EPD transparency and low-carbon mix optimization is becoming a standard expectation rather than an optional enhancement.

Ultimately, EPDs and low-carbon concrete are not just compliance tools—they are catalysts for a more resilient, responsible, and future-ready built environment.

About CSC Responsible Sourcing Certification

The Concrete Sustainability Council (CSC) certification system is the leading global standard for responsible sourcing across the concrete value chain. It brings transparency, accountability, and continuous improvement to cement, aggregates, ready-mixed concrete, and precast production. Its overarching goal is to ensure that concrete is produced in ways that support climate objectives, protect communities, and uphold ethical business practices.

Core Pillars of CSC Certification

CSC certification is built around four foundational pillars that collectively define responsible sourcing:

- **Environmental Stewardship** This pillar addresses the environmental impacts of concrete production, including CO_2 emissions, energy efficiency, water use, biodiversity protection, and circular economy practices. Producers must demonstrate responsible resource management, emissions reduction strategies, and long-term environmental improvement plans such as quarry rehabilitation and waste minimization.
- **Social Responsibility** CSC evaluates how producers support the well-being of workers and surrounding communities. Requirements include compliance with international labor standards, strong health and safety programs, respect for human rights, and meaningful community engagement. This ensures that sustainability extends beyond environmental metrics to include social equity and worker protections.

- **Governance and Ethical Conduct** Governance criteria focus on transparency, legal compliance, and ethical business practices. Certified producers must maintain robust management systems, anti-corruption policies, and supply-chain traceability. These measures strengthen trust and ensure that materials are sourced responsibly throughout the entire value chain.
- **Economic Resilience** Sustainability also depends on long-term business viability. CSC evaluates risk management, operational stability, innovation capacity, and workforce development. This pillar encourages producers to invest in technologies and processes that support continuous improvement and adaptability in a rapidly evolving market.

Certification Levels and Optional Modules

CSC certification is awarded at four levels—Bronze, Silver, Gold, and Platinum—each representing progressively higher performance. Optional modules allow producers to demonstrate leadership in specific areas:

- R-Module: Recognizes the use of recycled materials and circularity practices
- CO_2-Module: Highlights carbon performance and low-carbon concrete strategies

These modules align with global climate goals and emerging procurement policies that prioritize low-embodied-carbon materials and circularity.

Alignment With Green Building Programs

CSC certification is recognized by major sustainability frameworks, including LEED and Envision. It contributes to credits related to responsible sourcing, embodied carbon reduction, and ESG performance. As owners and designers increasingly require transparent sustainability data, CSC provides a credible, internationally harmonized system that supports informed material selection.

Industry Impact and Value

Ultimately, CSC certification strengthens confidence in the concrete supply chain. It empowers producers to demonstrate leadership, gives architects and engineers a reliable basis for specifying responsibly sourced materials, and helps the construction sector advance toward a more sustainable and resilient built environment.

Conclusion

LEED v5 represents a major evolution in sustainable building design, with a clear emphasis on embodied carbon reduction, resilience, and responsible sourcing. Concrete—already central to structural performance, durability, and thermal efficiency—now plays an even more critical role in achieving these goals.

By providing EPDs, optimizing mix designs, pursuing CSC responsible sourcing certifications, and collaborating closely with design teams, concrete professionals can significantly influence LEED v5 outcomes across multiple credit categories. The Materials and Resources section, in particular, offers substantial opportunities for concrete to contribute to decarbonization and transparency. Concrete contributes most in the following credits:

- MRp2 – Quantify and Assess Embodied Carbon (Prerequisite)
- MRc2 – Reduce Embodied Carbon (1-6 points)
- MRc4 – Building Product Selection and Procurement (1-5 points)
- MRpc181 – Multi-Attribute Structure, Enclosure, Hardscape, and Other Building Materials (Project Priority Credit, 1-2 points)
- MRpc182 – Innovative Low-Carbon Concrete (Project Priority Credit, 1 point)

As the industry continues to innovate with low-carbon technologies, alternative binders, and advanced modeling tools, concrete's potential to support high-performance, low-carbon buildings will only grow. LEED v5 provides the framework—and the incentive—to accelerate that progress.

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