



Sustainability Certifications

EPD Environmental Product Declaration

CSC Concrete Sustainability Council

HPD Health Product Declaration

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Why Do We Measure?

- “Marketing in the age of transparency”
- Customers / influencers are investigating the risks from the products or companies
- Effort of making more informed and responsible decisions



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Why Do We Measure?

- Architecture 2030 Challenge
 - All new buildings, developments, and major renovations carbon-neutral by 2030
- AIA 2030 Commitment Program
 - Member firms annually report progress toward carbon neutral design
- SE2050 Challenge
 - Promote/design/construct net zero embodied structures by 2050



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Sustainability Certifications in LEED

Sustainability Certifications



EPD Environmental Product Declaration



CSC Concrete Sustainability Council



HPD Health Product Declaration



LEED Credits

Environmental Product Declarations (1-2 points)

Social Equity within the Supply Chain Pilot Credit (1 point)

Material Ingredients (1-2 points)



Other Green Building Standards



IgCC & ASHRAE 189.1



LIVING BUILDING CHALLENGE



ENVISION™



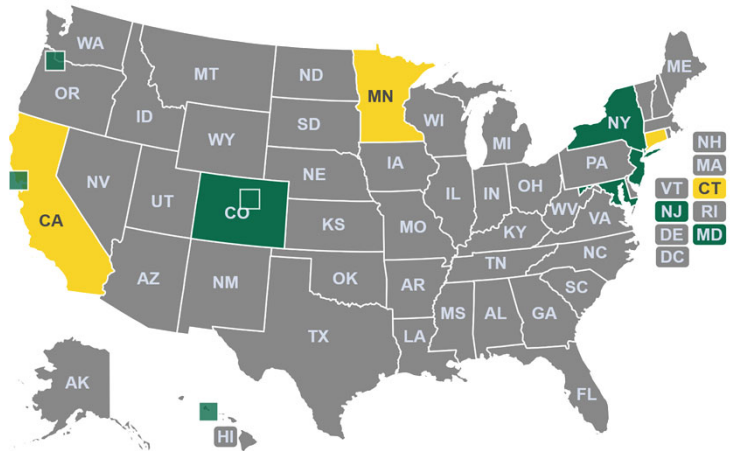
State and Local Buy Clean & Embodied Carbon Policies

Adopted

- Colorado
- Maryland
- New Jersey
- New York
- Marin County, CA
- Denver, CO
- Honolulu, HI
- Portland, OR

In Progress

- California (Concrete in Buy Clean CA)
- Connecticut
- Minnesota

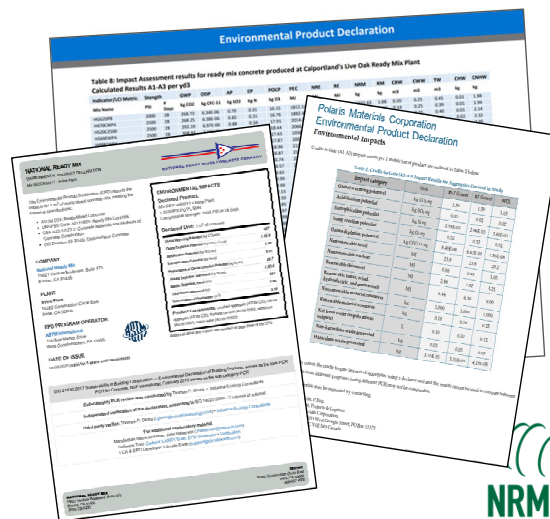


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Environmental Product Declaration (EPD)

3rd party verified & registered documents that communicate environmental impacts

ENVIRONMENTAL IMPACTS	
Declared Product:	
Mix S62C450011 • Irvine Plant	
1 3500PSI PU PL SHR	
Compressive strength: 3500 PSI at 28 days	
Declared Unit: 1 m ³ of concrete	
Global Warming Potential (kg CO ₂ -eq)	427
Ozone Depletion Potential (kg CFC-11 Eq)	1.1E-5
Acidification Potential (kg SO ₂ -eq)	1.38
Eutrophication Potential (kg N-eq)	0.51
Photochemical Ozone Creation Potential (kg O ₃ -eq)	28.7
Abiotic Depletion, non-fossil (kg Sb-eq)	7.5E-5
Abiotic Depletion, fossil (MJ)	681
Total Waste Disposed (kg)	3.66
Consumption of Freshwater (m ³)	3.16
Product Components: crushed aggregate (ASTM C33), natural aggregate (ASTM C33), Portland cement (ASTM C150), admixture (ASTM C494), batch water (ASTM C1602)	



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EPDs Protect Proprietary Information

EPDs disclose product components at the specification level, but protect:

- Quantities in mix design
- Specific products & suppliers

Ingram Ready Mix
 NRMCA EPD: 20090

ENVIRONMENTAL IMPACTS	
Declared Product: Mix 34000HW • Pearland #35 LLC Plant Description: 4000 PSI 1" Agg LS HRWR Winter Compressive strength: 4000 PSI at 28 days	
Declared Unit: 1 m ³ of concrete (1 cyd)	
Global Warming Potential (kg CO ₂ -eq)	295 (218)
Ozone Depletion Potential (kg CFC-11-eq)	6.18E-6 (4.73E-6)
Acidification Potential (kg SO ₂ -eq)	1.11 (0.85)
Eutrophication Potential (kg N-eq)	0.32 (0.24)

Product Components: crushed aggregate (ASTM C33), natural aggregate (ASTM C33), Portland cement (ASTM C150), fly ash (ASTM C618), admixture (ASTM C494), batch water (ASTM C1602)

Product Components: crushed aggregate (ASTM C33), natural aggregate (ASTM C33), Purified cement (ASTM C150), fly ash (ASTM C618), admixture (ASTM C494), batch water (ASTM C1602)

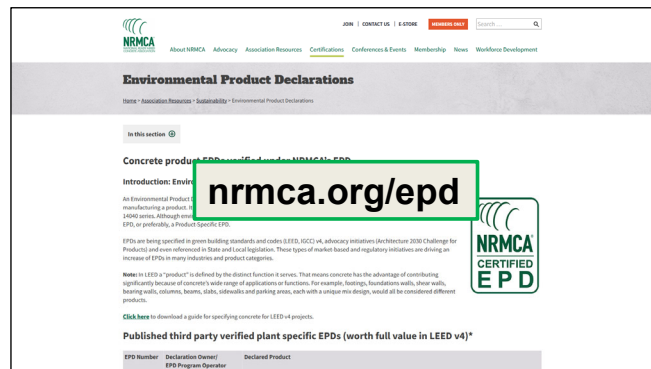
Additional detail and impacts are reported on page three of this EPD



What is an EPD Program Operator?



Facilitates Verification



Publishes EPDs Online



LEED EPD Credit



EPD Credit Option 1: Environmental Product Declarations

- 20 products from 5 manufacturers
 - 1 product: Industry-wide EPD
 - 1.5 products: Verified product-specific EPD

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LEED EPD Credit



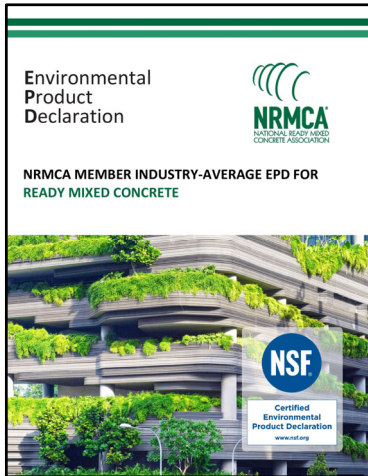
EPD Credit Option 2: Embodied Carbon/LCA Optimization Reports

- 5 products from 3 manufacturers
- Comparison of product-specific EPD to baseline: another EPD or IW-EPD
 - 1 product: <10% GWP reduction
 - 1.5 products: >10% GWP reduction
 - 2 products: >20% GWP reduction from PS-EPD, >5% reduction in two other environmental impacts

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NRMCA Industry Wide/Average EPD



Current edition

- 72 Products:
 - 9 strength classes (6 normal weight, 3 lightweight)
2,500 PSI – 8,000+ PSI
 - 8 SCM ranges 0% – 50%+ fly ash/slag content
- Members and non-members can participate
- Can participate retroactively (add data to current version)

Next edition goal: Report advanced statistics beyond average

- Standard deviation, coefficient of variance, confidence interval, etc.
- Would allow users to model achievable carbon reductions

Download at www.nrmca.org/epd

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NRMCA Regional Benchmarks

Current: 8 Regions

- Average mix designs & impacts for 9 strength classes each
- Matches others NRMCA Survey Regions

Next edition goal: Subregion Averages

- State-level
- Metro-area level
- Flexible: Can be added after publication as needed



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Concrete Sustainability Council (CSC)

A Global Responsible Sourcing Certification System for concrete and its supply chain.

- Founded in 2016
- Global scope
- Certifies concrete, cement, and aggregates at the plant level



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CSC Regional System Operator (RSO)



- NRMCA is the Regional System Operator (RSO) for North America
- Visit us.csc.eco for NA-specific CSC information



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PREREQUISITES

- P1 Ethical and Legal Compliance
- P2 Human Rights
- P3 Indigenous People Rights
- P4 Environmental and Social Impact
- P5 Traced Materials

MANAGEMENT

- M1 Sustainable Purchasing
- M2 Environmental Management
- M3 Quality Management
- M4 Health & Safety Management
- M5 Benchmark

ENVIRONMENTAL

- E1 Life Cycle Impact
- E2 Land Use
- E3 Energy & Climate
- E4 Air Quality
- E5 Water
- E6 Biodiversity
- E7 Secondary Materials
- E8 Transport
- E9 Secondary Fuels

SOCIAL

- S1 Local Community
- S2 Health Product Information
- S3 Occupational Health & Safety
- S4 Labor Practices

ECONOMICS

- B1 Local Economy
- B2 Ethical Business
- B3 Innovation
- B4 Feedback Procedure

CHAIN OF CUSTODY

- C1 Cement
- C2 Aggregates

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CSC in the Global Market

North America:

- NRMCA is the RSO
- 4 certs (2 AZ, 2 WA)

Latin America:

- Unified RSO (FIHP)
- 6 certs

Europe:

- Multiple country-level RSOs
- 775 certificates

Leading countries:

- Germany: 437 certs
- Netherlands: 176 certs
- Belgium: 86 certs
- Italy: 30 certs

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LEED Responsible Sourcing Credit

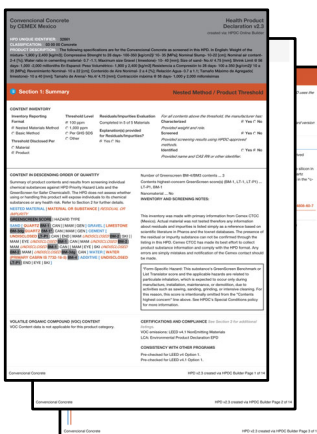


Social Equity in the Supply Chain Pilot Credit

- 3 permanently installed products from 2 manufacturers with verified standards (examples below):
 - Concrete Sustainability Council certification
 - Cradle to Cradle Certification – Silver (v4.0) or Gold (v3.1) in Social Fairness
 - Forest Stewardship Council Chain of Custody certification
 - ResponsibleSteel Certification
- First time non-wood material labels are recognized in LEED



Material Ingredient Disclosure



Example: Cemex Mexico, Conventional Concrete



Health Product Declaration
 Open Standard by
 HPD Collaborative

Other Standards



Declare.



LEED Material Ingredients Disclosure



Material Ingredients Credit

- Option 1: Reporting
 - 20 products from 5 manufacturers, to 1,000 ppm
 - 1.5 products: Third-party verified reports with verification of content inventory
- Option 2: Optimization
 - 5 products from 3 manufacturers to 100 ppm
 - 1 product: 75% by weight assessed by GreenScreen
 - 1.5 products: 95% by weight assessed by GreenScreen

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