Environmental Product Declarations and Buy Clean Policies

Northeast Asphalt User Producer Group

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Vision: Sustainable communities and commerce, connected by net zero carbon emission asphalt pavements

Mission: Engage, educate, and empower the U.S. asphalt community to produce and construct net zero carbon emission asphalt pavements

Learn more at asphaltpavement.org/climate
Production and Construction

Supply Chain

Electricity

Quality, Durability, Longevity, Efficiency

Net Zero Strategy
Asphalt Plant Energy Performance Peer Exchange (APEX)

• Partner with U.S. EPA
• Market and promote your company’s partnership
• Learn best practices to manage energy
• Get assistance from an experienced industrial energy advisor

https://www.asphaltpavement.org/expertise/sustainability/tools/energy-star-apex-program
Introduction to EPDs
Understanding Carbon

Embodied Carbon
Manufacture, transport and installation of construction materials

Operational Carbon
Building Energy Consumption

What is an EPD?

• Environmental Product Declaration
  - Quantified environmental information on the life cycle of a product to enable comparisons between products fulfilling the same function*

• “Nutrition label” for environmental impacts
  • ISO Type III Environmental Label

• Independently verified

*Source: ISO 14025:2006. **EPDs from different Product Categories should NOT be compared to each other.**
EPDs for asphalt mixtures have a **Cradle-to-Gate** scope

- **Included:**
  - Materials
  - Transport
  - Production

- **Other life cycle stages are not included**
  - Mix producers have little control over them
How and Why are Pavement Owners Using EPDs?
Jurisdictions with Buy Clean policies that include asphalt mixtures

- Caltrans
- Colorado
- Oregon
- Port Authority of New York and New Jersey
- Illinois, Minnesota, other states are considering policies
Environmentally Preferable Asphalt and Standard

• Federal office buildings, courthouses, and land ports of entry

• Requirements
  • Submit an EPD for each mix
  • Use 2 environmentally preferable techniques
    • At least 20% RAP content
    • Warm mix technology (reduced onsite mix temperature)
    • Non-pavement recycled content (roof shingles, rubber, or plastic)
    • Improved energy/carbon efficiency of plants or equipment (e.g., natural gas)
    • Other environmentally preferable techniques (contractor can propose)

https://www.gsa.gov/real-estate/design-construction/engineering-and-architecture/facilities-standards-p100-overview
Buy Clean Task Force

• Coordinating across 17 Federal agencies
  • 90% of federally financed and purchased construction materials
• U.S. DOT Buy Clean Policy Statement
  • Explore the use of EPDs
  • Develop a Buy Clean Policy based on EPDs
• Partnering with State DOTs to align Buy Clean Policies
Carbon Reduction Program

President Biden, USDOT Announce New Guidance and $6.4 Billion to Help States Reduce Carbon Emissions Under the Bipartisan Infrastructure Law

Thursday, April 21, 2022

Key program will fund projects that help fight climate change and save Americans money on gas

• Focus is on vehicle fuel consumption/emissions
• FHWA Guidance made “paving activities” eligible
  • Projects must use LCA to quantify carbon emissions reductions
• Enhanced pavement smoothness may also be eligible
EPA

- $250 million to standardize EPDs and help industry develop EPDs
- $100 million to develop “low-embodied carbon construction material labeling program”

*** How will low-embodied carbon materials be defined ???

DOT/FHWA

- $2 billion to procure low carbon construction products
  - Federal-aid Highways, Federal Lands, etc.
  - Differential Cost or Incentive
Overview of Using Emerald Eco-Label to Develop an EPD for Asphalt Mixtures
Key Components of NAPA’s EPD Program

General Program Instructions

Underlying Life Cycle Assessment

Product Category Rules (PCR)

EPD Software

Learn more at www.asphaltpavement.org/epd
Emerald Eco-Label Software

- NAPA’s web-based software tool
- Asphalt mix producers use it to develop verified EPDs
- EPDs are plant-specific & mix-specific
- Can be used for asphalt plants located in the U.S.
- Simplified process that saves mix producers time and money

Independent Verification
Upstream datasets

- The PCR requires the use of **public datasets** for upstream energy and materials
  - Fuels and electricity
  - Aggregates
  - Asphalt binder

- **Data gaps are noted in the EPD**
  - Binder additives (polymers, ground tire rubber, etc.)
  - Mix additives (WMA, rejuvenators, fibers, etc.)

- Cannot develop EPD if data gap >1% (individual material) or 5% (total) of mix by weight
Company Information
Test Organization is an asphalt mixture producer.
Baseline Natural Gas asphalt plant
101 W Lakeshore Dr
Houghton, MI 49931
USA

Product Description
This EPD reports the potential environmental impacts and additional environmental information for an asphalt mixture, which falls under the United Nations Standard Products and Services Code 301111509. Asphalt mixtures are typically incorporated as part of the structure of a roadway, parking lot, driveway, airfield, bike lane, pedestrian path, railroad track bed, or recreational surface.
Mix Name: Baseline with Terminal Blended Binder Additive Data Gap
Specification Entity: DOT
Specification: N/A
Gradation Type: dense
Mix Design Method: None
Nominal Maximum Aggregate Size: 0.75 inches
Performance Grade of Asphalt Binder: PG 64-22
Customer/Project/Contract Number: Not Reported

This mix producer categorizes this product as a Hot-Mix Asphalt (HMA) asphalt mixture. This asphalt mixture was produced within a temperature range of 149 to 154°C (300.0 to 310.0°F). Energy and environmental impacts are based on a plant’s average performance on a 12-month period and are not adjusted for mix-specific production temperatures.

Data Completeness Statement: Upstream data for one or more of the ingredients representing less than 1% (individually) or 5% (total) of the total mass of this asphalt mixture is not available. The upstream environmental impacts associated with manufacturing these ingredients are not accounted for in this EPD. See Table 1 for more information.

This declaration is an EPD in accordance with ISO 14025:2006 and ISO 21930:2017. The PCR is Product Category Rules for Asphalt Mixtures. This EPD transparently describes the potential environmental impacts associated with the identified life cycle stages of the described product.
Declaration Number: 1.145.306 v4
Software Version: 2.0.0
Date of Issue: March 16, 2022
Period of Validity: March 31, 2027

This EPD is valid for asphalt mixtures produced at the location indicated on this page. Data used to inform this EPD reflect plant operations from a 12-month period beginning on March 6, 2021. This EPD can be found at http://epd.asphaltmp.org/epd/d/495/
LCA performed by: Van Clavola, PHD
Common Questions About EPDs
What is the time and cost of developing EPDs?

Pricing Schedule as of Apr. 1, 2022

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<th>Year</th>
<th>Member Rate</th>
<th>Non-member Rate</th>
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- Initial data collection and plant setup takes most companies a couple of weeks
- New mixes typically take 10-15 minutes
Does the EPD give credit for Warm Mix?

https://www.fhwa.dot.gov/publications/focus/08apr/03.cfm
• What are the biggest contributors to GHG emissions?
• Burner fuel consumption
• Asphalt binder content
• Sometimes, aggregate hauling exceeds everything else
Can EPDs be Used for Pavement Type Selection?

- Not directly – different PCRs
- As data inputs to full LCA?
  - Harmonization issues
  - Lots of uncertainty in use stage modeling
  - Scarce knowledge, experience, and capacity at agencies
Where are we going with EPDs?
Policy Considerations

• Each agency spec is a different “product”

• GWP Limits/Benchmarks/Thresholds
  • Prequalification?
  • Incentive?
  • A + B + C?

• Regional variations
  • Climate
  • Aggregate supply
  • Availability of fuels / grid location

• Impact of getting better data
  • GWP may go up or down
Key Takeaways

• EPDs provide verified data to quantify environmental impacts

• **Buy Clean** policies are spreading quickly

• **Inflation Reduction Act** will accelerate demand for low carbon materials

• Emission reductions can be achieved with existing practices and technologies

• **Prepare your company** by developing EPDs
  • Start with one plant
  • Expand to other plants, benchmark your operations
Thank You

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