

PCR-EPD: STATUS / UPDATE

JOHN J YZENAS JR.

J YZENAS CONSULTING, LLC

JYZENAS@MSN.COM

(219) 741-6098

Requirements

Year introduced	Source	Bill
2017	California Legislature	<u>Buy Clean California Act</u>
2019	Minnesota Legislature	<u>HF 2204</u>
2020	New York State Senate	<u>S542 (Original)</u>
2021	California Legislature	<u>AB-1365, SB-778</u>
2021	Colorado State Assembly	<u>HB 21-1303</u>
2021	Oregon State Legislature	<u>HB 2688</u>
2021	New Jersey Assembly	<u>AB 5223</u>
2021	Washington State Legislature	<u>HB 1103</u>
2021	House of Representatives, 117th Congress	H.R.1512 <u>CLEAN Future Act</u> – Subtitle C – Federal Buy Clean Program
2022	Government Accountability Office (GOA)	Inflation Reduction Act



FHWA Welcomes EDC-7 EPDs for Sustainable Project Delivery Participants

Source: FHWA

As part of the Every Day Counts Round 7, 40 states have committed to implementing the *Environmental Product Declaration (EPD) for Sustainable Project Delivery* initiative. The program promotes the collection of EPDs on transportation projects. The Sustainable Pavements Program Team will be engaging these states in the coming weeks to identify specific activities to support implementation

PRODUCT CATEGORY RULE (PCR)

- A PCR is a set of product category-specific requirements / rules / **guidelines for developing life cycle assessment** and reporting these findings in an Environmental Product Declaration for one or more product categories. Product category rules are reviewed and improved periodically over time (5-years).
- Product Category Rule (PCR) development can be sponsored by a **group of stakeholders, including associations, manufacturers,** or other interested parties.
- While PCRs must be prepared **in accordance with the requirements set forth in ISO 14025**, additional work may be needed to improve harmonization. PCRs for construction products must **additionally comply with ISO 21930.**
- Copies of the ISO standards can be downloaded from ANSI: <http://www.webstore.ansi.org>.

CONSTRUCTION AGGREGATES PCR

- **Program Operator:** NSF International / National Center for Sustainability Standards
- **Contacts**
- **Characterization**
 - **Co-Product**
 - **Recycled**
- **Allocation**

CONTACTS

- Interest Categories
 - 10 (40%) General Interest
 - 8 (32%) Industry
 - 4 (16%) User
 - 2 (8.0%) Academia / NGO
 - 1 (4.0%) Public Health / Regulatory (FHWA)

ALLOCATION

- PCR (7.1.5.2 Co-product allocation procedure):
- Slag aggregate is a co-product of steel. For each ton of feedstock ore or scrap entering the steelmaking process, about 0.15 tons of slag are created, the rest becoming steel. Significant economic differences exist between these coproducts. Those parts of slag aggregate production that are shared with steel shall be economically allocated (e.g., melting), using the factor given in Annex A. Other operations not shared with steel production (e.g., crushing, washing) shall be directly attributed to slag.

SLAG LCA

- Typical Allocations
- Electricity Usage
- Water Usage
- Fuel Usage
- Wear Parts
- Material Flows (crushers/screens/etc.)

Major Steel Manufacturers	Mill Type	Region?
Nucor Steel	EAF	Across US
Cleveland Cliffs	Integrated	Chicago / Pittsburg
US Steel / Big River	Integrated / EAF	Chicago / Pittsburg / Arkansas
SSAB	EAF	Midwest
CMC	EAF	South
Liberty Steel	EAF	
Steel Dynamics	EAF	Central US (Indiana to Mississippi)

ENVIRONMENTAL PRODUCT DECLARATION (EPD)

- A **verified report used to communicate the environmental impacts of a specific material** (e.g., asphalt binder, portland cement) or product (e.g., asphalt mix, concrete mix).
- EPDs promote more **sustainable use** of finite resources and create less stress on the environment.
- **EPDs are a life-cycle assessment developed by product manufacturers** following the Product Category Rules (PCR) that are developed with industry stakeholders and LCA experts and subjected to a critical review process.
- EPDs can be issued for a **specific product from a specific producer** but may also be issued for a **generic product from a group of manufacturers** (such as an association) that reflects the results of an industry-average LCA.
- EPDs using the same product category rules can be compared to identify materials with improved environmental performance in terms of various environmental and resource use impacts (e.g., energy use, air pollution, global warming, ozone layer depletion).



SLAG EPD

- NSA Program / WAP Sustainability
- Types of EPD
- Questionnaire
 - Data Collection

TYPES OF EPD'S

- Industry
- Regional
- Company
- Plant / Source
- Product Specific

QUESTIONNAIRE / DATA COLLECTION

Company	EPD Contact	Email	Phone Number
Edw C Levy Company	Tom Green	tgreen@edwclevy.net	(313) 690-0139
Harsco Environmental	Glenn Hundtermark	ghundertmark@harsco.com	(724) 741-6662
Phoenix Services	Shawn Hanley	shawn.hanley@phoenixservices.com	(219) 787-1524
TMS International, LLC	Mike Howarth	Mhowarth@tmsinternational.com	(262) 339-4916
National Slag Association	Charles Ochola	cochola@nationalslag.org	(610) 857-5356
J Yzenas Consulting, LLC	John Yzenas Jr	jyzenas@msn.com	(219) 741-6098
WAP Sustainability	Lianna Miller	lianna@wapsustainability.com	(906) 370-4624

STEEL PRODUCTS PCR

- Smart EPD:  Anna Lasso
- Contacts
- Slag as a Co-Product
- Allocation

CONTACTS

- Interest Categories
 - 13 (40%) – Industry
 - 11 (35%) – General Interest
 - 4 (12 %) – Regulatory (FHWA / EPA)
 - 2 (6%) – International
 - 1 (3%) – Academia
 - 1 (3%) - NGO

CO-PRODUCT

- Pretorius: Fundamentals of EAF and Ladle Slags and Ladle Refining Principles”

**“Take care of the slag
and the steel will take care of itself”**



MAKE THE SLAG / THE STEEL WILL FOLLOW MILL

- EAF Furnace Slag
 - Consistent
 - 2019 Data
- LMF / Ladle Slag
 - Consistent by steel Grade

MAKE THE SLAG / THE STEEL WILL FOLLOW PROCESSOR

- EAF Furnace Slag
- LMF / Ladle Slag
- Clean-up



- Products

CO-PRODUCT ALLOCATION APPROACHES

- System expansion – assigns all impact to the product, then takes credits based on what each co-product displaces (outside of the product system)
- Mass allocation – assigns the share of impact based on the ratio of co-product mass to product mass
 - Assigns the highest share of burden to slag of all approaches
- Physical allocation (with partitioning) – assigns the share of impact of each co-product by first subdividing the process (assessing which process steps or inputs are directly related to the product versus the co-product) and then assigning impact based on energy or mass
- Economic allocation – assigns the share of impact based on the ratio of co-product prices to product prices

RELEVANT PCRS – EXISTING PCR (UL PART A)

- UL Part A PCR, version 3.2, 2018:
 - Generally speaking, allocation shall be avoided by dividing unit processes into subprocesses that can be allocated to co-products and by then collecting the input and output data related to these sub-processes.
 - Unless specified otherwise in a sub-category Part B PCR, allocation shall be based on physical properties (e.g. mass, volume) **when the difference in revenue from the co-products is low;**
 - **In all other cases, allocation shall be based on economic values**
 - Material flows carrying specific inherent properties, e.g. energy content, elementary composition (e.g. biogenic carbon content), shall always be allocated reflecting the physical flows, irrespective of the allocation chosen for the processes
 - NOTE 1: Contributions to the overall revenue of the order of 1% or less is regarded as very low. A difference in revenue of more than 25% is regarded as high.

RELEVANT PCRS – EXISTING PCR (UL PART B)

- UL Part B PCR, Steel Construction Product EPD Requirements, 2020 (exp. Aug 2025):
- 3.3. ALLOCATION
- *Part A, Section 3.3 shall be used as the basis for allocation decisions, and mass should be used as the primary basis for co-product allocation in this Part B. Allocation methods deemed more appropriate than on the basis of mass (e.g. economic allocation) may be used but only when justified. The allocations of relevance for calculation (appropriation of impacts across various products) shall be indicated, at least:*
 - *Allocation in the use of recycled and/or secondary raw materials*
 - *Allocation of energy, ancillary and operating materials used for individual products in a factory*
- *whereby reference shall be made to the modules in which the allocations are performed.*

QUESTIONS?

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iyzenas@msn.com

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