



Environmental Product Declaration FAQ

What is an Environmental Product Declaration or EPD?

An EPD is a certified document intended to account for the total environmental impact of manufacturing, installing and using a product following ISO 14025 standards. All EPDs must follow a set of rules, called the Product Category Rule (PCR), established for the specific product. For reinforcing steel, the EPD covers the life cycle of the product from production at the mill, transportation to a fabricator and fabrication of the material. In order to produce an EPD, data must be collected from the mill and the fabricator. An EPD may either be product (company) specific or an industry average.

What is a Product Category Rule or PCR?

A Product Category Rule (PCR) is the set of rules for writing an Environmental Product Declaration (EPD) to ensure that EPDs are generated by the same process, regardless of company, so that EPDs can enable a fairer comparison of environmental impacts between similar products. The PCR must be written before an EPD can be created. A PCR is agreed upon by industry consensus. If a PCR exists for a particular product or geography it must be used.

Reinforcing steel falls under the North American Product Category Rule for Designated Steel Construction Products, dated April 29, 2015. This document is valid for five years. The PCR conforms to the applicable ISO standards: ISO 14025, ISO 14040, ISO 14044, and ISO 21930.

What products are covered under the reinforcing steel section of the PCR?

Products that are covered by the PCR include concrete reinforcing steel used and/or sold in North America, meeting one of the following specifications:

- ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement, or
- ASTM A706/A706M Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
- Other materials, including ASTM A1035, may be included under the current PCR as long as the production method is essentially the same as the covered materials. However, the Program Operator, SCS Global Services, must approve before another ASTM standard(s) may be included.



Will coated reinforcing steel be included in a Product Specific or Industry Average EPD?

Steel reinforcing bar with coating is excluded from the scope of the North American Product Category Rule for Designated Steel Construction Products. In order to produce an EPD for coated material, a PCR would need to be developed for the coating procedure or the referenced PCR may be modified to include coated reinforcing. Reinforcing steel coating manufacturers would then need to produce an EPD following the rules developed.

Where will I use an EPD?

An EPD may provide key environmental information for any product inquiry; however, the most common use will be in projects registered under the new LEED v4 rating system (launched November 2013). Earlier versions of LEED, including LEED 2009, the Material and Resources section included “single attribute” credits for Recycled Content and Regional Material. They allowed fabricators to submit documentation from the mill supplier(s) showing the percentage of recycled content and/or location of fabrication within 500 miles of the project site. The same recycled content calculation is included in the Building Product Disclosure and Optimization – Sourcing of Raw Materials credit under option 2 in the latest LEED v4 rating system. Each of the three MR Building Product Disclosure & Optimization credits now include “regional material” as a value multiplier but have reduced the radius to 100 miles. Well documented structural building materials, along with all other construction materials, may contribute toward several LEED credits.

Fabricators and contractors should take care when reviewing specifications for EPD requirements. There are several projects that require the submittal of EPDs for certain materials (i.e. concrete and reinforcing steel) but are not projects registered under the LEED v4 program. Projects in California that must comply with the State Contracting Manual, reinforcing steel suppliers should be familiar with California Assembly Bill 262 “Buy Clean California Act”. AB262 requires EPDs for rebar, structural steel, mineral wool insulation and flat glass. Similar legislation has been, and is, under consideration in other states too.

How do I get an EPD?

There are two ways to obtain an EPD. The Concrete Reinforcing Steel Institute (CRSI) produced an Industry Average EPD in 2017. This EPD includes data from US domestic mills, average transportation via rail and truck to fabricators and data from CRSI fabricator members representing demographics around the US. All CRSI members in good standing may use the Industry Average EPD for rebar fabrications which was made using domestically sourced reinforcing bar.

The second option for obtaining an EPD is for the fabricator to have a Product Specific EPD. A Product Specific EPD is specific to an individual fabricator company and may include multiple fabrication



shops/locations, as long as the results are representative of the overall operation. The fabricator will first choose a program operator and an LCA expert (which may be the program operator) for the EPD. The LCA expert will develop a questionnaire for material inputs based on consumable materials used over a year, including electricity and any water usage (excluding bathrooms and general office materials). The fabricator will also submit annual tons procured and shipped, including the mill source of rebar, method of transportation and distance from the mill. The majority of US domestic mills have collected data for their consumable uses and should be able to provide data to the program operator upon request. The LCA Expert will model the life cycle analysis. The program operator will review the inputs and results to ensure the EPD follows the Product Category Rule (PCR) and the data is valid. The EPD will be produced with background information of the fabricator company with the Life Cycle Analysis (LCA) results included.

All EPDs are valid for five years. An annual review of the data input should be completed to review if there are significant input changes that may affect the LCA results. Depending on new LCA results, a new EPD may need to be completed.

What is the CRSI Industry Average EPD?

The CRSI Industry Average EPD is a Type III Environmental Product Declaration certified by ASTM as conforming to the requirements of ISO 14025. The EPD represents an industry average of North American fabricated rebar production for a referenced year (2015). Data collected from North American reinforcing steel mills encompasses the majority of the environmental impact for this study.

Transportation between the reinforcing steel mill and the fabrication facilities is a weighted average of distances reported by fabricators for all reported bar purchases in the referenced year. Fabrication data collected is from several geographic locations, however it is such a small share of the impact compared to upstream reinforcing steel manufacturing that the impact is significantly lower than the raw material impacts.

How much will a Product Specific EPD cost my company?

If you are a member in good standing with CRSI, the Industry Average EPD is included in your membership at no additional fee. If your company is going to produce a Product specific EPD, the costs will vary depending on how many facilities you own and which program operator you choose. Inquiries to several program operators have given a range of \$15,000-\$25,000 for a single facility location. Additional facilities may cost an additional \$3,000-\$5,000 each. It is recommended to have multiple program operators quote your EPD project.



How does my fabricated rebar help a project team earn credits in LEED v4?

Structural building materials now fall under LEED v4 Credit MR C2: Building Product Disclosure and Optimization – Environmental Product Declarations. A LEED v4 project looking to achieve 1 point under this credit must collect EPD's for 20 different products from (5) manufacturers in order to satisfy the credit requirement. There are three ways to contribute toward the 20 credits. The two most common methods are:

Product Specific EPDs (this is an EPD held by a specific fabricator/company) which conform to the ISO standards are valued at 1 whole product.

Products with an Industry Average EPD are valued at $\frac{1}{2}$ of a product. CRSI members in good standing may use the CRSI Industry Average EPD to contribute to this credit.

The third method is to develop a Life Cycle Analysis (LCA) only for your product, which is valued at $\frac{1}{4}$ of a product toward the 20 required. Due to the cost of completing an LCA, most companies have opted to forego this process and obtain a product specific EPD to gain 1 whole product value or utilize the Industry Average EPD for $\frac{1}{2}$ of a product value.

LEED v4 also allows you to submit EPDs for various materials under the same PCR to receive multiple credits. Of the 20 products required, they must be sourced from at least five different manufacturers. It may be possible to claim A615 material as one product and an additionally claim for A706 reinforcing steel as a separate product if an EPD includes the two types of steel explicitly and both types of steel are utilized on the project. Different sizes of the rebar would not qualify as multiple products.

Why are construction projects and the LEED rating system requiring EPDs?

Almost every product claims it is sustainable, but what does that really mean? How sustainable is it? In the past, the US Green Building Council and other "Green" certification programs considered only single attributes such as recycled content, regional material, renewable material or alike. An EPD is a multi-attribute study that incorporates the inputs and impacts of a product in a much more transparent way.

What type of environmental information is found in an EPD?

An EPD is the report written after all the data is collected and a Life Cycle Analysis (LCA) is completed. The LCA will calculate and report environmental impact values in the three main environmental categories:



Impact Indicators

- | | | |
|-----------------------------|-----|---------------------------|
| • Global Warming Potential | GWP | kg CO ₂ -equiv |
| • Acidification Potential | AP | kg SO ₂ -equiv |
| • Eutrophication Potential | EP | kg N-equiv |
| • Smog Formation Potential | SFP | kg O ₃ -equiv |
| • Ozone Depletion Potential | ODP | kg CFC 11-equiv |

Resource Use

- Primary Energy Demand
- Non-renewable material resources
- Renewable material resources
- Fresh water

Waste

- Hazardous waste disposed
- Non-hazardous waste disposed
- Materials for recycling

Will my reinforcing steel EPD be compared to other reinforcing steel EPDs on a project?

The goal of an EPD is to be able to provide the transparency needed to include the environmental impact information to purchasers and users of products so that the product's impact on the environment is included in the buying decision. The number of EPD's in the marketplace and improving the ability for the market to understand what information is in an EPD, will help include the impact into the decision. Care must be taken when comparing one EPD to another. EPDs must be produced under the same PCR to include the identical scope before any comparison is attempted.

In LEED v4, you may contribute to a second point under the MR C2 credit if your EPD compares favorably to the Industry Average EPD of the identical product or an older EPD of the same product in at least three of the reported impact categories. This credit category looks at all of the construction materials by cost.