

Harmonizing the EPD practice in the lighting industry

Dee Denteneer – Chair TF Ecopassport

Get Started

Revision of EPD Product Specific Rules for Luminaires

Brussels, 16 January 2024 – LightingEurope supports the successful revision of PEP Ecopassport's PSR0014 for luminaires.

LightingEurope and our members have continuously shown their commitment to sustainability and to the reduction of the environmental impact of lighting products. With the support of LightingEurope experts, the PSR0014 environmental declaration method for luminaires for general lighting has recently been revised¹, further demonstrating this ongoing commitment. We believe that the PSR0014 rules, published by PEP Ecopassport, can lead the way in further improving the environmental profile of the lighting industry.

With the efforts put in revising PSR0014, LightingEurope is not just responding to the increased interest in the market and among regulators in Lifecycle Assessments (LCAs) and Environmental Product Declarations (EPDs), but it is also providing a viable tool to deliver comparable and verifiable information on the environmental impact of lighting products in a cost-effective way by enabling EPDs per product family. Comparability of product EPDs is enhanced by the introduction of a so-called 'Functional Unit' concept that normalizes impacts based on lumen output and lifetime of a luminaire.

The revised Product Specific Rules (PSR) take into consideration the nature and market circumstances of the lighting industry. General lighting luminaires are used in many different application environments and the market consists of an impressive variety of products from various suppliers and manufacturers. The PSR0014 method is comprehensive, mature, and it addresses this diversity of luminaires.

We further strive for PSR0014 to serve as the basis for a standardized set of rules to be established at a global level. In this regard, representatives of LightingEurope Members have already taken the first steps towards standardizing global PSR rules on luminaires in relevant IEC committees.

PSR0014 can support the comprehensive and transparent delivery of information on the lifecycle analysis of luminaires and should therefore serve as an essential guide for all EPD operators involved and interested in the creation and application of LCAs concerning lighting products around the world.



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Background: A little quiz



Acronym Quiz: Entry Level

LCA

Who knows these acronyms?

EPD

Acronym Quiz: Entry Level

LCA

Who knows these acronyms?

EPD

Life Cycle Assessment (LCA)

Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle

Environmental Product Declaration (EPD)

Providing verified and quantified environmental data using predetermined parameters and, where relevant, additional environmental information



Acronym Quiz: Intermediate Level

PCR

Who knows these acronyms?

PSR

Acronym Quiz: Intermediate Level

PCR

Product Category Rules (PCR)

A set of specific rules, requirements and guidelines for developing EPDs for one or more product categories

Who knows these acronyms?

PSR

Product Specific rules (PSR)

A set of specific rules, requirements and guidelines, based upon and complementing the PCR, for a specific product family



Acronym Quiz: Advanced Level

PEP

Who knows these acronyms?

PSR 0014

Acronym Quiz: Advanced Level

PEP

Who knows these acronyms?

PSR 0014

Product Environmental Profile (PEP)

P.E.P. Association develops international environmental declaration program for electronics

Product Specific Rules (PSR) 0014

PSR number 14 “for luminaires” jointly developed by LightingEurope and the P.E.P. Association

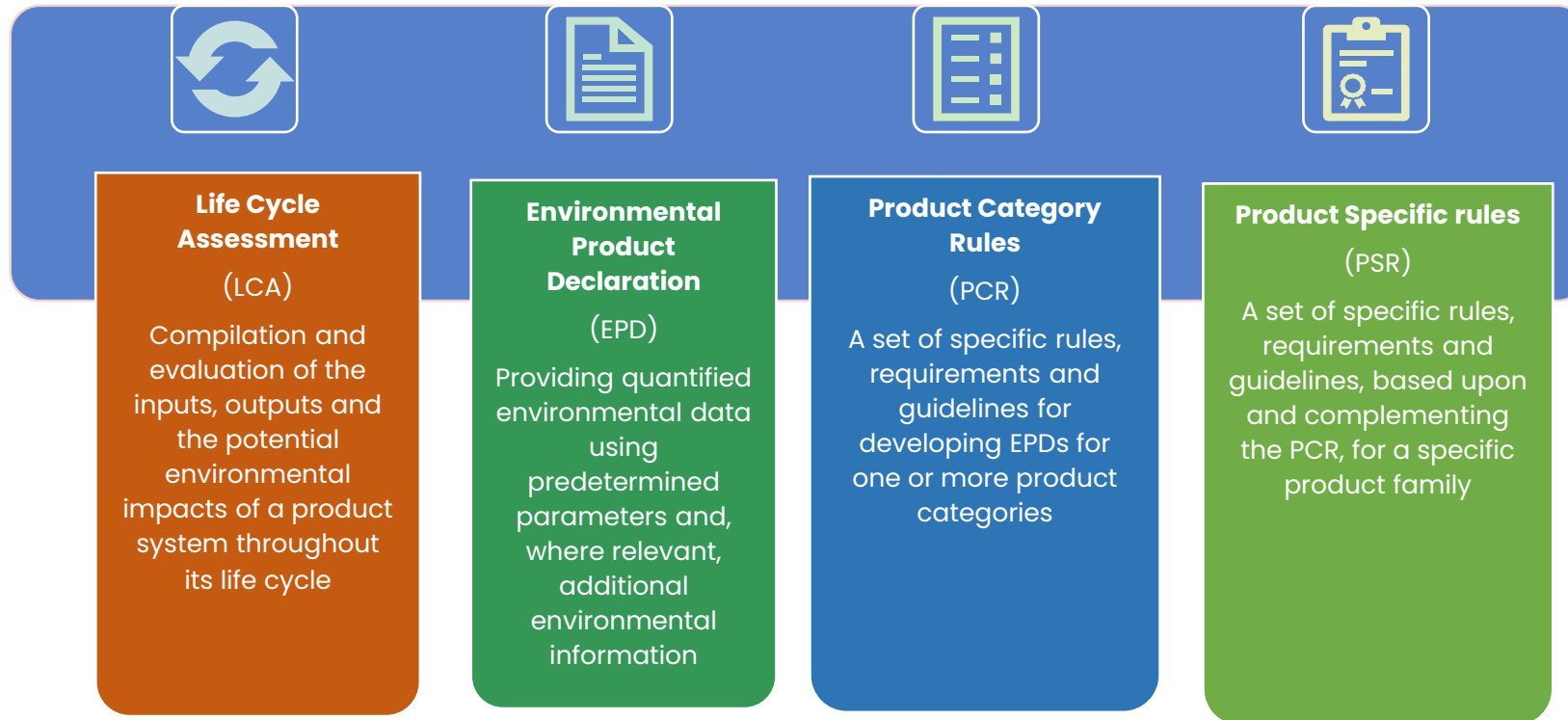


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LightingEurope's LCA Journey



Background



Identified concern: lack of harmonization of LCA/EPD practice in the lighting industry

To address: LightingEurope to support a harmonised LCA approach for lighting by joining PEP Ecopassport and participating in the review of the PEP PSR for luminaires

The revision process

Preparation

- LCA training
- Setting objective
- LightingEurope joins PEP Association

February 2022
LightingEurope joins PEP
Association

Commenting

- TF ecopassport started
- with small team of experts to work with PEP
- March 2022–July 2022

Comment resolution

- July 2022: face-to-face with PEP
- Supported by external consultant
- July 2022–September 2022

July 2022
F2F Meeting of
LightingEurope delegates and
PEP Association

Critical review

- By experts in COTEC and external experts
- September 2022–December 2022

Finalization

- Comment resolution
- Endorsement by LightingEurope

January 2024
LightingEurope endorses
PSR0014 Ed. 2.0



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PSR0014 Deep dive



Deep Dive into PSR0014

Definitions & terminology in alignment with Ecodesign and IEC standards

Definition of the "functional unit" for luminaires

Consideration of lighting control scenarios and energy saving reductions

Homogeneous product families and extrapolation

Deep dive into PSR0014: definition of the "functional unit" (ISO14025) for luminaires

Definition of Functional Unit

Using the Functional Unit, the environmental impacts allow a fair comparison of luminaires of:

- different luminous fluxes
- different lifetimes

Functional Unit" (ISO14025) for luminaires:

"Provide lighting that delivers an outgoing artificial luminous flux of 1,000 lumens during a reference lifetime of 35,000 hours"

"Comparability of product EPDs is enhanced by the introduction of a so-called 'Functional Unit' concept that normalizes impacts based on lumen output and lifetime of a luminaire."

Deep dive into PSR0014: Consideration of lighting control scenarios and energy saving reductions

Overview of light management functions, Including sensing and luminaire capable of communicating with an external lighting control system.

Harmonized approach for energy savings developed and implemented.

| Light management function nomination | Theoretical reduction of energy consumption | Theoretical coefficient of energy consumption |
|---|---|---|
| Variation or extinction system according to the brightness of day Light | -25% | 0.75 |
| Variation or extinction system according to the presence and absence | -25% | 0.75 |
| Combination of presence detection function and luminosity function | -45% | 0.55 |
| Luminaire capable of communicating with an external Light Management System | -50% | 0.50 |

Table 2 – Energy saving coefficients according to light management function

Any other light management function shall be described with its energy saving coefficient justified in the LCA report.

“EPDs can reflect the advantages of light management in a harmonized way”

Deep dive into PSR0014: Homogeneous product families and extrapolation

Definition of homogeneous product families Specification of extrapolation rules

Extrapolation rules enable fast & cost-efficient generation of PEP EPDs declaration for a large product portfolio

3.6.9. Example of application of the extrapolation rules and the related calculations at product and FU level

As an application example for the extrapolation rules two panel luminaires are considered as reference and extrapolated products and the extrapolation coefficients are calculated accordingly. The luminaires differ in luminous flux, size and weight. The reference product can be connected via DALI and energy saving according table 2 can be applied. For the extrapolated products there are no energy saving functions applied.



| Luminaire parameter | Reference product | Product for extrapolation |
|-------------------------|-------------------|---------------------------|
| Product weight | 1.85kg | 1.65kg |
| Product size | 620mm x 620mm | 600mm x 600mm |
| Package weight | 0.87kg | 0.81kg |
| Luminous flux | 3000lm | 4320lm |
| Power | 25W | 36W |
| Lifetime | 100000h | 100000h |
| Energy saving functions | DALI | - |
| Weight of control gear | 0.19kg | 0.19kg |

The extrapolation coefficient at the FU level shall be calculated using the following formula

$$\text{Extrapolation coefficient at the product level} \times \left(\frac{3000\text{lm}}{4320\text{lm}} \right)$$

The extrapolation coefficients at product level are:

Fabrication stage (see 3.6.3)

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“To deliver comparable and verifiable information on the environmental impact in a cost-effective way by enabling EPDs per product family.”





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Conclusion & next steps



Next Steps: Technical Harmonization



Product specific rules for drivers and light sources



Product specific rules for emergency luminaires



IEC Standardization Track



Next Steps: Industry Alignment



External communication and promotion,
Green Light Alliance, webinar



Training for members



Possible LE Guidelines or Software on
PSR0014-ed2



Conclusion

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We believe that the PSR0014 rules can lead the way in further improving the environmental profile of the lighting industry.



Q&A Session





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THANK YOU



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