PRODUCT CATEGORY RULES (PCR)
DATE 2024-05-28

# SWEATERS, JERSEYS, PULLOVERS, CARDIGANS, FLEECES AND SIMILAR GARMENTS

## PRODUCT CATEGORY CLASSIFICATION: UN CPC 282

PCR 2019:05
VERSION 1.0.5

VALID UNTIL: 2024-08-01

# TABLE OF CONTENTS



 

# 1 INTRODUCTION

This document constitutes Product Category Rules (PCR) developed in the framework of the International EPD® System: a programme for type III environmental declarations[1] according to ISO 14025:2006. Environmental Product Declarations (EPD) are voluntary documents for a company or organisation to present transparent information about the life cycle environmental impact for their goods or services.

The rules for the overall administration and operation of the programme are the General Programme Instructions, publicly available at www.environdec.com. A PCR complements the General Programme Instructions and the standards by providing specific rules, requirements and guidelines for developing an EPD for one or more specific product categories (see Figure 1). A PCR should enable different practitioners using the PCR to generate consistent results when assessing products of the same product category.

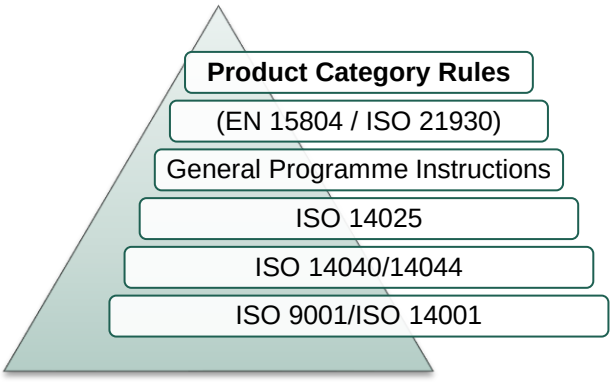


*Figure 1 Illustration PCR in relation to the hierarchy of standards and other documents.*

Within the present PCR, the following terminology is adopted:

- The term “shall” is used to indicate what is obligatory.
- The term “should” is used to indicate a recommendation, rather than a requirement.
- The term “may” or “can” is used to indicate an option that is permissible

For the definition of terms used in the document, see the normative standards.

A PCR is valid for a pre-determined period of time to ensure that it is updated at regular intervals. The latest version of the PCR is available via www.environdec.com. Stakeholder feedback on PCRs is very much encouraged. Any comments on this PCR document may be given via the PCR Forum at www.environdec.com or sent directly to the PCR moderator during its development or during the period of validity.

Any references to this document should include the PCR registration number, name and version.

The programme operator maintains the copyright of the document to ensure that it is possible to publish, update when necessary, and available to all organisations to develop and register EPDs. Stakeholders participating in PCR development should be acknowledged in the final document and on the website.

[1] Type III environmental declarations in the International EPD® System are referred to as EPD, Environmental Product Declarations.

 

# 2 GENERAL INFORMATION

## 2.1 ADMINISTRATIVE INFORMATION

| | |
|---|---|
| Name: | Sweaters, jerseys, pullovers, cardigans, fleeces and similar garments |
| Registration number and version: | 2019:05, version 1.0.5 |
| Programme: | The International EPD® System |
| Programme operator: | EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden.<br><br>Website: www.environdec.com<br>E-mail: info@environdec.com |
| PCR moderator: | Sandra Roos, Kappahl AB, sandra.roos@kappahl.com |
| PCR Committee: | PRé Sustainability<br>Fristads AB<br>Outdoor Industry Association (OIA)<br>(Sandra Roos' affiliation in the development of version 1.0) |
| Date of publication and last revision: | 2024-05-28 (Version 1.0.5) |
| Valid until: | 2024-08-01 |
| Schedule for renewal: | A PCR is valid for a pre-determined period of time to ensure that it is updated at regular intervals. When the PCR is about to expire the PCR moderator shall initiate a discussion with the Secretariat how to proceed with updating the document and renewing its validity.<br><br>A PCR document may be revised during its period of validity provided significant and well-justified proposals for changes or amendments are presented. See www.environdec.com for up-to-date information and the latest version. |
| Standards conformance: | ▪ General Programme Instructions of the International EPD® System, version 3.0, based on ISO 14025 and ISO 14040/14044<br>▪ PCR Basic Module, CPC Division 28 Knitted or crocheted fabrics, wearing apparel, version 3.0, dated 2018-05-03 |
| PCR language(s): | This PCR was developed and is available in English. In case of translated versions the English version takes precedence in case of any discrepancies. |

## 2.2 SCOPE OF PCR

### 2.2.1 PRODUCT CATEGORY DEFINITION AND DESCRIPTION

This document provides Product Category Rules (PCR) for the assessment of the environmental performance of sweaters, jerseys, pullovers, cardigans, fleeces and similar garments corresponding to the Combined Nomenclature (CN) code 6110, the NACE/CPA codes C14.12 and 14.39.1, and the declaration of this performance by an EPD®. The product category is a sub-category to the UN CPC code 282 Wearing apparel, except fur apparel corresponding to the two-digit C 14.1 CPA code.

The products included in the scope are sweaters, jerseys, pullovers, cardigans, fleeces and similar garments to cover, adorn and protect the upper body and possibly some or all of the lower body:

- sweaters, jerseys, pullovers, cardigans, fleeces and similar garments for indoor use,
- sweaters, jerseys, pullovers, cardigans, fleeces and similar garments in knitted wool,
- sweaters and fleeces for workwear and sports activities

This product group excludes:

- garments primarily constructed for the lower body
- garments primarily for outdoor use

### 2.2.2 GEOGRAPHICAL REGION

This PCR is applicable to be used globally.

### 2.2.3 EPD VALIDITY

An EPD based on this PCR shall be valid from its registration and publication at www.environdec.com and for a five year period starting from the date of the verification report ("approval date"), or until the EPD has been de-registered from the International EPD® System.

An EPD shall be updated and re-verified during its validity if changes in technology or other circumstances have led to:

- an increase of 10% or more of any of the indicators listed in Section 5.4.5.1,
- errors in the declared information, or
- significant changes to the declared product information, content declaration, or additional environmental information.

If such changes have occurred, but the EPD is not updated, the EPD owner shall contact the Secretariat to de-register the EPD.

 

# 3 PCR REVIEW AND BACKGROUND INFORMATION

This PCR was developed in accordance with the process described in the General Programme Instructions of the International EPD® System, including PCR review and open consultation.

## 3.1 PCR REVIEW

### 3.1.1 VERSION 1.0

| | |
|---|---|
| PCR review panel: | The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. The review panel may be contacted via info@environdec.com.<br><br>Members of the Technical Committee were requested to state any potential conflict of interest with the PCR moderator or PCR committee and were excused from the review. |
| Chair of the PCR review: | Hüdai Kara |
| Review dates: | 2018-11-22 until 2019-02-21 |

## 3.2 OPEN CONSULTATION

### 3.2.1 VERSION 1.0

This PCR was available for open consultation from 2018-06-20 until 2018-08-20, during which any stakeholder was able to provide comments by posting on the PCR forum on www.environdec.com or by contacting the PCR moderator. Two meetings for suggestions and comments will be held:

- **June 26th at 4-5 pm CEST** - Webinar for open consultation (information about the process and content of PCR)
- **July 11th at 9-10 am CEST and again at 4-5 pm CEST** - Open meeting for open consultation (web/phone)

Stakeholders were invited via e-mail or other means to take part in the open consultation and were encouraged to forward the invitation to other relevant stakeholders. The following stakeholders provided comments during the open consultation, and agreed to be listed as contributors to the PCR and at www.environdec.com:

- Marcus Wendin, Miljögiraff AB, Sweden

## 3.3 EXISTING PCRS FOR THE PRODUCT CATEGORY

As part of the development of this PCR, existing PCRs were considered in order to avoid overlaps in scope. The existence of such documents was checked in the public PCR listings of the following programmes based on ISO 14025 or similar:

- International EPD® System. www.environdec.com.
- IERE. http://iere.org.
- The GEDnet programme. http://gednet.org.
- European Commission (2017). Product Environmental Footprint (PEF) Category Rules (PEFCR) Pilot T-shirts. Draft of the final T-shirts PEFCR within the context of the EU Product Environmental Footprint Category Rules Pilots. Technical Secretariat of the T-shirts PEFCR pilot. January 2017.

Product category rules concerning textile products and, more specifically, garments, have been looked for considering the above mentioned initiatives and programmes. In all the mentioned contexts textile-related PCRs are either expired or still under development. No existing PCRs with overlapping scope were identified.

The following references were taken into account while editing this PCR:

- UN CPC 267 “Woven fabrics of man-made filaments and staple fibres” PCR 2012:14 version 1.0 – date 2012-12-07

 

- UN CPC GROUPS 263 & 264 “Textile yarn and thread of natural fibres, man-made filaments or staple fibres” PCR 2013:12 version 1.01
- European Commission Product Environmental Footprint T-shirt PEFCR draft in 2017 – process delayed
- IERE / Earthsure / Sustainable Apparel Coalition (expired)
  - Style T-shirts (2013)
  - Performance T-Shirts (2013)
  - Style Trousers, Slacks and Shorts (2013)
  - Performance Trousers, Slacks and Shorts (2013)
  - Style Coats and Jackets (2013)
  - Performance Coats and Jackets (2013)
- UN CPC 2651 ”Woven fabrics of silk and silk-like fibers” DRAFT PCR VERSION FOR OPEN CONSULTATION
- UN CPC GROUPS 266 & 2656 “Woven, knitted and crocheted fabrics of naturals fibres except silk” PCR UNDER DEVELOPMENT (will be taken into account after the open consultation is launched)

## 3.4 REASONING FOR DEVELOPMENT OF PCR

This PCR was developed in order to enable publication of Environmental Product Declarations (EPD) for this product category based on ISO 14025, ISO 14040/14044 and other relevant standards to be used in different applications and target audiences.

## 3.5 UNDERLYING STUDIES

The methodological choices made during the development of this PCR (functional unit/declared unit, system boundary, allocation methods, impact categories, data quality rules, etc.) in this PCR were primarily based on the following underlying studies:

- European Commission (2003). Integrated Pollution Prevention and Control (IPPC) Reference Document on Best Available Techniques for the Textiles Industry. Seville, Spain: European IPPC Bureau.
- European Commission (2007). Reference Document on Best Available Techniques in the Production of Polymers. Seville, Spain.
- European Commission (2016). Environmental Footprint Guidance document - Guidance for the development of Product Environmental Footprint Category Rules (PEFCRs), version 6.3, May 2018
- European Commission (2017). Product Environmental Footprint (PEF) Category Rules (PEFCR) Pilot T-shirts. Draft of the final T-shirts PEFCR within the context of the EU Product Environmental Footprint Category Rules Pilots. Technical Secretariat of the T-shirts PEFCR pilot. January 2017
- Fimreite, L. A., & Blomstrand, K. (2009). Beräkning av textila produkters CO2-avtryck. Högskolan i Borås.
- Idemat. (2012). Database Idemat version 2.2. The Swiss Centre for Life Cycle Inventories.
- IES. (2015). EPD Dinamica. Recycled PET microfibre for the internal coverings for the automotive sector. Retrieved from http://www.dinamicamiko.com/static/media/uploads/files/NEW_EPD_for_automotive_rev_2_ENG.pdf
- Koç, E., & Çinçik, E. (2010). Analysis of Energy Consumption in Woven Fabric Production. Fibres & Textiles in Eastern Europe, 18(2), 14–20.
- Koç, E., & Kaplan, E. (2007). An Investigation on Energy Consumption in Yarn Production with Special Reference to Ring Spinning. Fibres & Textiles in Eastern Europe, 15(4), 63.
- Laursen, S. E., Hansen, J., Knudsen, H. H., Wenzel, H., Larsen, H. F., & Kristensen, F. M. (2007). EDIPTEX – Environmental assessment of textiles, (24).
- Posner, S., Olsson, E., Roos, S., Jönsson, C., & Fransson, K. (2018). Chemicals Guidance. Information on authorization and restrictions of substances used in textile and leather processes and products. Edition: January 2018. Gothenburg, Sweden.
- Quantis/ClimateWorks Foundation. (2018). Measuring fashion. Environmental Impact of the Global Apparel and Footwear Industries Study. Lausanne, Switzerland.

 

- Roos, S. (2012). Livscykelanalys av Tencelfiber. Mölndal, Sweden: Swerea IVF Report 23497, Swerea IVF AB.
- Roos, S. (2016). Advancing life cycle assessment of textile products to include textile chemicals. Inventory data and toxicity impact assessment. Chalmers University of Technology. Retrieved from http://publications.lib.chalmers.se/publication/246361
- Roos, S., & Posner, S. (2011). Rekommendationer för hållbar upphandling av textilier (Swerea IVF). Mölndal, Sweden: Stockholms Läns Landsting (SLL).
- Roos, S., Posner, S., Jönsson, C., Peters, G. M. G. M., Jönsson, C., & Peters, G. M. G. M. (2015). Is unbleached cotton better than bleached? Exploring the limits of life cycle assessment in the textile sector. Clothing and Textiles Research Journal, 33(4). https://doi.org/10.1177/0887302X15576404
- Roos, S., Sandin, G., Zamani, B., & Peters, G. M. (2015). Environmental assessment of Swedish fashion consumption. Five garments - sustainable futures. Stockholm, Sweden: Mistra Future Fashion. Retrieved from http://mistrafuturefashion.com/en/PublishingImages/Single-use pictures/Environmental assessment of Swedish fashion consumption - LCA.pdf
- Swerea IVF. (2018). Swerea IVF's LCA database. Mölndal, Sweden: Swerea IVF AB.
- van der Velden, N. M., Patel, M. K., & Vogtländer, J. G. (2013). LCA benchmarking study on textiles made of cotton, polyester, nylon, acryl, or elastane. The International Journal of Life Cycle Assessment. https://doi.org/10.1007/s11367-013-0626-9
- Wendin, M. (2007). Underlag för miljöstrategi för Dem Collective – Livscykelanalys av t-shirt 2006. Gothenburg, Sweden.
- Wendin M. (2016) Life Cycle Assessment of recycling cotton (mechanically). Miljögiraff commissioned by H&M, Gothenburg, Sweden. Critical review made by Niels Jungbluth, ESU-services.

 

# 4 GOAL AND SCOPE, LIFE CYCLE INVENTORY AND LIFE CYCLE IMPACT ASSESSMENT

The goal of this section is to provide specific rules, requirements and guidelines for developing an EPD for the product category as defined in Section 2.2.1.

## 4.1 DECLARED UNIT

The declared unit is defined as 1 unit of the product.

The functional unit cannot be defined since the possible downstream applications (and thus functions) of the garment are extremely variable. The function of each specific product will be defined via the product information given in section 5.4.3.

The declared unit shall be stated in the EPD. The environmental impact shall be given per declared unit. A description of the function of the product should be included in the EPD®, if relevant.

## 4.2 REFERENCE SERVICE LIFE (RSL)

Not applicable for this product category.

## 4.3 SYSTEM BOUNDARY

The International EPD® System uses an approach where all attributional processes from “cradle to grave” should be included using the principle of “limited loss of information at the final product”. This is especially important in the case of business-to-consumer communication.

The scope of this PCR and EPDs based on it is cradle-to-gate. Textile products have in general several end-users’ typologies being included in many different product typologies. The use phase and end-of-life phase of the product will be voluntary to include. It should be stated on which basis the assumptions for the downstream processes are made, see chapter 4.3.1.3.

### 4.3.1 LIFE CYCLE STAGES

For the purpose of different data quality rules and for the presentation of results, the life cycle of products is divided into three different life cycle stages:

- Upstream processes (from cradle-to-gate);
- Core processes (from gate-to-gate);
- Downstream processes (from gate-to-grave).

In the EPD, the environmental performance associated with each of the three life-cycle stages above shall be reported separately. The processes included in the scope of the PCR and belonging to each life cycle stage are described in Sections 4.3.1.1–4.3.1.3.

#### 4.3.1.1. Upstream processes

The following attributional processes are part of the product system and classified as upstream processes:

- Growing extraction or synthesis of the raw material:
  - Extraction or synthesis of the raw materials (e.g. caprolactam, polyol, MDI, …);
  - Production of materials (all fibres);
- Raw Materials entering the system shall be split into:
  - Virgin raw materials;
  - Recycled raw materials;
- Production of semiproducts used in the core process, if applicable;
- Production of auxiliary products used such as detergents for cleaning, etc.:

 

- Production of ancillaries used in the up-stream and core processes;
- Production of pigments and dyes used in the up-stream and core processes;
- Production of packaging, if applicable;

- Impacts due to the production of electricity and fuels used in the upstream module;
- Manufacturing of primary and secondary packaging;
- Manufacturing of accessories and other materials;
- Preparation of fibres (e.g. wool scouring or fibre bleaching);

The following processes shall NOT be included:

- Transportation of raw materials;
- Building of the production site or other infrastructures (capital equipment);
- Personnel activities as well as the contribution of travel to work;
- Scraps coming from demolition of building or other infrastructures.

Upstream processes not listed may also be included. All elementary flows at resource extraction shall be included, except for the flows that fall under the general cut-off rule in Section 4.5.

#### 4.3.1.2. Core processes

The following attributional processes are part of the product system and classified as core processes:

- External transportation to the core processes;
- Preparation of the material (e.g. yarning, spinning, knitting, warping, sizing, and ennoblement);
- Manufacturing of the final product;
- The quality control and packaging of garments and waste generated from these processes;
- Internal transportation of fabric to stockroom or warehouse;
- End of life treatment of manufacturing waste, if applicable;
- Waste water treatment of the manufacturing facility, if applicable;
- Maintenance (e.g. of the machines);
- Impacts due to the production of electricity and fuels used in the core module.

Manufacturing processes not listed may also be included. The production of the raw materials used for production of all product parts shall be included. A minimum of 99% of the total weight of the declared product including packaging shall be included.

The technical system shall not include:

- Manufacturing of production equipment, buildings and other capital goods;
- Business travel of personnel;
- Travel to and from work by personnel;
- Research and development activities.

#### 4.3.1.3. Downstream processes

The following attributional processes are part of the product system and classified as downstream processes:

- Transportation from preparation to an average retailer/distribution platform.

It is voluntary to include:

- The use phase, including the number of uses. It should be stated on which basis the assumptions for the downstream processes are made, e.g. ‘use of the standard life span in the PEFCR’, ‘number of uses and end-of-life scenario based on country statistics’, or ‘use and end-of-life scenario based on study of the own value chain’;

 

- Retail, either in store or online;
- Customer travel, that is, customers' round trip from his/her home to the stores or the delivery points. The transportation modes taken into account are: car, scooter, bicycle, public transports (such as tram and bus), walking and home/pick-up point delivery;
- The consumer use of the product; the EPD may contain information about the environmental impact related to the usage phase: washing, drying, ironing;
- Recycling or handling of packaging waste/materials after use;
- Product's end of life.

The voluntary phases should be accounted for separately.

## 4.3.2 OTHER BOUNDARY SETTING

#### 4.3.2.1. Boundary towards nature

Boundaries to nature are defined as flows of material and energy resources from nature into the system. Emissions to air, water and soil cross the system boundary when they are emitted from or leaving the product system.

#### 4.3.2.2. Boundaries in the life cycle

See Section 4.3.1. The EPD may present the information divided into additional sub-divisions.

#### 4.3.2.3. Boundaries towards other technical systems

See Section 4.6.2.

 

## 4.4 SYSTEM DIAGRAM

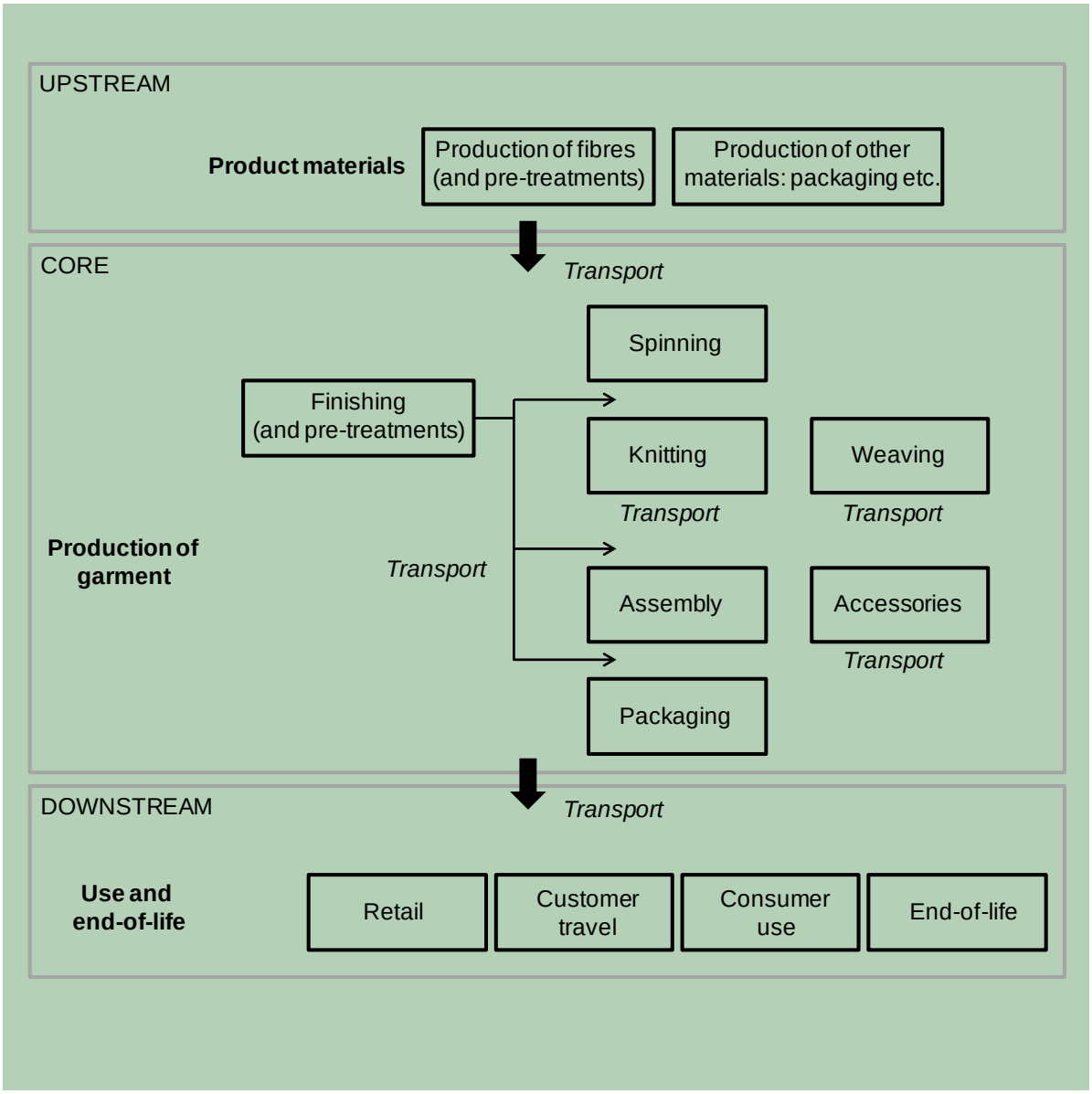


Figure 2 *System diagram illustrating the processes that are included in the product system, divided into upstream, core and downstream processes. Based on European Commission (2017). Product Environmental Footprint (PEF) Category Rules (PEFCR) Pilot T-shirts. Draft of the final T-shirts PEFCR within the context of the EU Product Environmental Footprint Category Rules Pilots. Technical Secretariat of the T-shirts PEFCR pilot.*

## 4.5 CUT-OFF RULES

Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts shall be included (not including processes that are explicitly outside the system boundary as described in Section 4.3).

The check for cut-off rules in a satisfactory way is through the combination of expert judgment based on experience of similar product systems and a sensitivity analysis in which it is possible to understand how the un-investigated input or output could affect the final results.

## 4.6 ALLOCATION RULES

An allocation problem occurs when a process results in multiple output products and where there is only aggregate information available about the emissions. The priorities suggested by ISO 14040 shall be considered in the procedure definition, however, the method of avoiding allocation by expanding the system boundaries is not applicable within the framework of the International EPD® System due to the rationale of the book-keeping LCA approach (attributional LCA) used and the concept of modularity.

### 4.6.1 CO-PRODUCT ALLOCATION

The following step-wise procedure shall be applied for multifunctional products and multiproduct processes:

1. Allocation shall be avoided, if possible, by dividing the unit process into two or more sub-processes and collecting the environmental data related to these sub-processes.
2. If allocation cannot be avoided, the inputs and outputs of the system shall be partitioned between its different products or functions in a way that reflects the underlying physical relationships between them; i.e. they should reflect the way in which the inputs and outputs are changed by quantitative changes in the products or functions delivered by the system.
3. Where physical relationships alone cannot be established or used as the basis for allocation (or they are too time consuming), allocation problems shall be solved by allocating inputs to the products and functions in a way that reflects other relationships between them.
   For example, input and output data might be allocated between co-products in proportion to the revenue of the products. If economic allocation has been used, a specific sensitivity analysis shall be provided to the verifier and the monitoring of the relationship between results and current economic value shall be documented and updated. It is recommended to take the average price over at least one year for the various product outputs or functions. In case of economic allocation, the EPD shall explain the adopted allocation method and sources of the reference values used.

### 4.6.2 REUSE, RECYCLING, AND RECOVERY

In the framework of the International EPD® System, the methodological choices for allocation for reuse, recycling and recovery have been set according to the polluter pays principle (PPP). This means that the generator of the waste shall carry the full environmental impact until the point in the product's life cycle at which the waste is transported to a scrapyard or the gate of a waste processing plant (collection site). The subsequent user of the waste shall carry the environmental impact from the processing and refinement of the waste but not the environmental impact caused in the "earlier" life cycles. See General Programme Instruction for further information and examples.

## 4.7 DATA QUALITY REQUIREMENTS

An LCA calculation requires two different kinds of information:

- data related to the **environmental aspects** of the considered system (such materials or energy flows that enter the production system). These data usually come from the company that is performing the LCA calculation.
- data related to the **life cycle impacts** of the material or energy flows that enter the production system. These data usually come from databases.

Data on environmental aspects shall be as specific as possible and shall be representative of the studied process.

Data on the life cycle of materials or energy inputs are classified into three categories – specific data, selected generic data, and proxy data, defined as follows:

- **specific data** (also referred to as "primary data" or "site-specific data") – data gathered from the actual manufacturing plant where product-specific processes are carried out, and data from other parts of the life cycle traced to the specific product system under study, e.g. materials or electricity provided by a contracted supplier that is able to provide data for the actual delivered services, transportation that takes place based on actual fuel consumption, and related emissions, etc.,
- **generic data** (sometimes referred to as "secondary data"), divided into**:**
  - **selected generic data** – data from commonly available data sources (e.g. commercial databases and free databases) that fulfil prescribed data quality characteristics for precision, completeness, and,
  - **proxy data** – data from commonly available data sources (e.g. commercial databases and free databases) that do not fulfil all of the data quality characteristics of "selected generic data".

 

As a general rule, specific data shall always be used, if available, after performing a data quality assessment[2]. It is mandatory to use specific data for the core processes as defined above. For the upstream processes, downstream processes, and infrastructure, generic data may also be used if specific data are not available.

Any data used should preferably represent average values for a specific reference year. However, the way these data are generated could vary, e.g. over time, and in such cases they should have the form of a representative annual average value for a specified reference period. Such deviations should be declared.

### 4.7.1 RULES FOR USING GENERIC DATA

The attributional LCA approach in the International EPD® System forms the basic prerequisites for selecting generic data. To allow the classification of generic data as "selected generic data", they shall fulfil selected prescribed characteristics for precision, completeness, and representativeness (temporal, geographical, and technological), such as:

- the reference year must be as current as possible and preferably assessed to be representative for at least the validity period of the EPD,
- the cut-off criteria to be met on the level of the modelled product system are the qualitative coverage of at least 99% of energy, mass, and overall environmental relevance of the flows,
- completeness in which the inventory data set should, in principle, cover all elementary flows that contribute to a relevant degree of the impact categories, and
- the representativeness of the resulting inventory in the given temporal, technological, and geographical reference should, as a general principle, be better than ±5% of the environmental impact of fully representative data.

Section 4.8 provides a list of recommended databases/data sets to be used for generic data.

If selected generic data that meets the requirements of the International EPD® System are not available as the necessary input data, proxy data may be used and documented. The environmental impacts associated with proxy data shall not exceed 10% of the overall environmental impact from the product system.

The EPD may include a data quality declaration to demonstrate the share of specific data, selected generic data and proxy data for the environmental impacts.

## 4.8 RECOMMENDED DATABASES FOR GENERIC DATA

Table 1 lists recommended databases for generic data. Please note that this listing does not imply that other data that fulfil the data quality requirements may not be used and that data quality assessment shall also be performed for the data sets in the recommended database by an LCA practitioner.

| PROCESS | GEOGRAPHICAL SCOPE | RECOMMENDED DATASET | DATABASE |
|---|---|---|---|
| Textile processes | Global | Latest | GaBi databases - Extension database XV: Textiles finishing |
| Textile processes | Global | Latest | ecoinvent |
| Steel | Global | IISI (International Iron and Steel Institute) | Latest |
| Steel | Global | World steel | Latest |
| Stainless steel | Global | Eurofer | Latest |
| Zinc | Global | IZA (International Zinc Association) | Latest |
| Copper | Global | ICA (International Copper Association) | Latest |
| Aluminium | Global | EAA (European Aluminium Association) | Latest |

[2] It is recommended to use the data quality requirements from the "Environmental Footprint Guidance document, - Guidance for the development of Product Environmental Footprint Category Rules (PEFCRs), version 6.0, November 2016"

 

| | | | |
|---|---|---|---|
| Plastics | Global | Plastics Europe | Latest |
| Chemicals | Global | Plastics Europe ; GaBi databases; ecoinvent | Latest |
| Transport | Global | CORINAIR ; GaBi databases; ecoinvent | Latest |

*Table 1 Recommended databases for generic data.*

## 4.9 IMPACT CATEGORIES AND IMPACT ASSESSMENT

The EPD shall declare the default impact categories as described in the General Programme Instructions. The characterisation models and factors to use for the default impact categories are available on www.environdec.com and shall be updated on a regular basis based on the latest developments in LCA methodology and ensuring the market stability of EPDs. The source and version of the characterisation models and the factors used shall be reported in the EPD. Alternative regional life cycle impact assessment methods and characterisation factors are allowed to be calculated and displayed in addition to the default list. If so, the EPD shall contain an explanation of the difference between the different sets of indicators, as they may appear to the reader to display duplicate information.

### 4.9.1 DEFAULT IMPACT CATEGORIES

Please note that the General Programme Instructions for the International EPD® System decides the defaults impact categories which are the same regardless of product groups.

The current characterisation models and factors to use for the default impact categories from the General Programme Instructions are available in Table 2 below:

| IMPACT CATEGORY (UNIT) | CHARACTERISATION FACTORS | ORIGINAL REFERENCE(S) | EXAMPLES |
|---|---|---|---|
| Acidification potential<br><br>(kg SO2 eq.) | AP, CML 2001 **non-baseline** (fate not included), Version: January 2016.<br><br>*Please notice the use of non-baseline characterisation factors for acidification potential.* | Hauschild & Wenzel (1998) | 1 kg ammonia = 1.88 kg SO2 eq.<br><br>1 kg nitrogen dioxide = 0.7 kg SO2 eq.<br><br>1 kg sulphur dioxide = 1 kg SO2 eq. |
| Eutrophication potential<br><br>(kg PO43- eq.) | EP, CML 2001 **baseline** (fate not included), Version: January 2016. | Heijungs et al. (1992) | 1 kg phosphate = 1 kg PO43- eq.<br><br>1 kg ammonia = 0.35 kg kg PO43- eq.<br><br>1 kg COD (to freshwater) = 0.022 kg kg PO43- eq. |
| Global warming potential<br><br>(kg CO2 eq.) | GWP100, CML 2001 **baseline** Version: January 2016. | IPCC (2013)<br><br>*Updated January 2016* | 1 kg carbon dioxide = 1 kg CO2 eq.<br><br>1 kg methane = 28* kg CO2 eq.<br><br>1 kg dinitrogen oxide = 265 kg CO2 eq. |
| Photochemical oxidant formation potential<br><br>(kg NMVOC eq.) | POFP, LOTOS-EUROS as applied in ReCiPe 2008 | Van Zelm et al 2008<br><br>ReCiPe 2008 | 1 kg carbon monoxide = 0.046 kg NMVOC eq.<br><br>1 kg nitrogen oxides = 1 kg NMVOC eq. |
| Water Scarcity Footprint (WSF)<br><br>(m3 H2O eq) | AWARE Method: WULCA Recommendations on characterization model for WSF 2015, 2017. | Boulay et al (2017) | AWARE method is based on 1/AMD(*), the inverse of the difference between water availability per area and demand per area(**). |

 

| | | | |
|---|---|---|---|
| | CF at country level can be download (Excel files) from: www.wulca-waterlca.org/aware.html<br><br>Cut-off rules can have important implications on the results. WULCA applies as cut-off rule: the maximum value for CF is set to 100 when Demand ≥ Availability (AWARE100).<br><br>(But, it has been proposed also two other cu-toff rules for the AWARE Methods:<br>- Maximum CF of 10 (AWARE10);<br>- Maximum CF of 1000 (AWARE1000)) | | It quantifies the potential of water deprivation, to either humans or ecosystems, and serves in calculating the impact score of water consumption at midpoint in LCA or to calculate a water scarcity footprint as per ISO 14046. It is based on the available water remaining (AWARE) per unit of surface in a given watershed relative to the world average, after human and aquatic ecosystem demands have been met.<br><br>The resulting characterization factor (CF) ranges between 0.1 and 100, and can be used to calculate WSF as defined in the ISO standard 14046:2015.<br><br>The local AWARE factor is meant to be multiplied with the local water consumption inventory.<br><br>Example: 582 m3 H2O consumed per ton of grapes produced in Mendoza, Argentina :<br>WSF = 582 m3H2O x 54.15 (CFAgriAWARE100) = 31,518 m3eq/ton grape |
| (*) 1/AMD: the inverse of [Availability - Demand ]<br>(**) What is the potential to deprive another user (human or ecosystem) when consuming water in this area?" | | | |

*Table 2 Characterisation models and factors to use for the default impact categories for the International EPD® System. * Please note that the original source, IPCC (2013), differentiates "Fossil methane" from methane.*

4.9.1.1. Details on global warming potential (carbon footprint)

The carbon footprint is calculated using Global Warming Potential 100 years (GWP100). The General Program Instructions provides further clarifications on the complexities that may be encountered during the calculation procedures.

## 4.9.2 VOLUNTARY IMPACT CATEGORIES

For textile products, other impact categories than the default impact categories for the International EPD® System are relevant to add. If additional impact categories are reported, it is recommended to follow the latest version of the EF impact categories.

Table 3 provides a list of all Environmental Footprint (EF) impact categories (15 in total) from the “Environmental Footprint Guidance document - Guidance for the development of Product Environmental Footprint Category Rules (PEFCRs), version 6.3, May 2018” in relation with the assessment methods that shall be used. For each impact category, the following information is provided:

- EF impact assessment model,
- Unit,
- Source.

Fore more detailed information, see the “Environmental Footprint Guidance document - Guidance for the development of Product Environmental Footprint Category Rules (PEFCRs), version 6.3, May 2018” or a later version.

 

| EF IMPACT CATEGORY | EF IMPACT ASSESSMENT MODEL | UNIT | SOURCE |
|---|---|---|---|
| Climate change* | Radiative forcing as Global Warming Potential (GWP100) | kg CO2 eq. | Intergovernmental Panel on Climate Change, 2013 |
| Ozone depletion | EDIP model based on the ODPs of the World Meteorological Organization (WMO) over an infinite time horizon | kg CFC-11 eq. | WMO, 1999 |
| Human toxicity, cancer effect** | USEtox model | CTUh | Rosenbaum et al., 2008 |
| Human toxicity, non-cancer effect** | USEtox model | CTUh | Rosenbaum et al., 2008 |
| Acidification | Accumulated Exceedance model | mol H+ eq. | Seppälä et al.,2006; Posch et al., 2008 |
| Particulate matter/Respiratory Inorganics | PM method recommended by UNEP | Disease incidence | UNEP 2016 |
| Ecotoxicity, freshwater** | USEtox model | CTUe | Rosenbaum et al., 2008 |
| Ionising radiations – human health effects | Human Health effect model | kBq $U^{235}$ eq. (to air) | Dreicer et al., 1995 |
| Photochemical ozone formation | LOTOS-EUROS model | kg NMVOC eq. | Van Zelm et al., 2008 as applied in ReCiPe |
| Eutrophication - terrestrial | Accumulated Exceedance model | mol N eq. | Seppälä et al.,2006; Posch et al., 2008 |
| Eutrophication - freshwater | EUTREND model | kg P eq. | Struijs et al., 2009 as implemented in ReCiPe |
| Eutrophication - marine | EUTREND model | kg N eq. | Struijs et al., 2009 as implemented in ReCiPe |
| Land use change | •Soil Organic Matter (SOM) model<br>•Biotic production<br>•Erosion resistance<br>•Mechanical filtration<br>•Groundwater replenishment | •Dimension-less (pt)<br>•kg biotic production<br>•kg soil<br>•$m^3$ water<br>•$m^3$ groundwater | Becket al., 2010 and Bos et al. 2016 |
| Water use | Available Water Remaining (AWARE). Use deprivation potential (deprivation-weighted water consumption) | m3 world eq. | UNEP, 2016 |
| Resource use, minerals and metals*** | CML2002 model. Abiotic resource depletion (ADP ultimate reserves) | kg Sb eq. | van Oers et al., 2002 |
| Resource use, fossils | CML2002 model. Abiotic resource depletion – fossil fuels (ADP-fossil) | MJ | van Oers et al., 2002 |

* The 'climate change' impact category comprises three sub-indicators in the t-shirt PEFCR:
1) Climate change –fossil,
2) Climate change – biogenic and
3) Climate change – land use and land transformation.

| |
|---|
| The total climate change (= sum of the three sub-indicators) shall be reported to comply with the PEFCR. The sub-indicators 'Climate change - biogenic' and 'Climate change - land use and land transformation' shall be reported separately for those contributing more than 5% each to the total score.<br><br>** Long-term emissions (occurring beyond 100 years) shall be excluded from the toxic impact categories. Toxicity 1485 emissions to this sub-compartment have a characterisation factor set to 0 in the EF LCIA (to ensure consistency). If 1486 included by the applicant in the LCI modelling, the sub-compartment 'unspecified (long-term)' shall be used.<br><br>*** In the ILCD flow list, and for the current recommendation, Uranium is included in the list of energy carriers, and it is measured in MJ. |

*Table 3 Characterisation models and factors to use for the default impact categories.*

However, both PEF screening and supporting studies (Annex II) identify the following EF impact categories as most relevant for the product category:

- - Climate change (CC)
- - Particulate matter (PM)
- - Freshwater eutrophication (FE)
- - Marine eutrophication (ME)

In addition to this, human toxicity-cancer effect, human toxicity-non-cancer effect, freshwater ecotoxicity, water resource depletion, resource depletion mineral, fossil & renewable and land use change indicators are pre-selected subject to improved characterization factors.

## 4.10 OTHER CALCULATION RULES AND SCENARIOS

### 4.10.1 UPSTREAM PROCESSES

The following requirements apply to the upstream processes:

- Data referring to processes and activities upstream in a supply chain over which an organisation has direct management control shall be specific and collected on site.
- Data referring to contractors that supply main parts, packaging, or main auxiliaries should be requested from the contractor as specific data, as well as infrastructure, where relevant.
- The transport of main parts and components along the supply chain to a distribution point (e.g. a stockroom or warehouse) where the final delivery to the manufacturer can take place based on the actual transportation mode, distance from the supplier, and vehicle load.
- In case specific data is lacking, selected generic data may be used. If this is also lacking, proxy data may be used.
- For the electricity used in the upstream processes, electricity production impacts shall be accounted for in this priority when specific data are used in the upstream processes:
    1. Specific electricity mix as generated, or purchased, from an electricity supplier, demonstrated by a Guarantee of Origin (or similar, where reliability, traceability, and the avoidance of double-counting are ensured) as provided by the electricity supplier. If no specific mix is purchased, the residual electricity mix from the electricity supplier shall be used.[3]
    2. National residual electricity mix or residual electricity mix on the market
    3. National electricity production mix or electricity mix on the market.

    The mix of electricity used in upstream processes shall be documented in the EPD, where relevant.
- Packaging: specific data shall be used for the consumer packaging production if it is under the direct control of the organization or if the environmental impact related to the consumer packaging production is more than 10% of the total product environmental indicators. In other cases, generic data may be used. When consumer packaging shows the organization's logo,

[3] The residual electricity mix is the mix when all contract-specific electricity that has been sold to other customers has been subtracted from the total production mix of the electricity supplier.

 

the LCA report should report the exerted/non exerted direct control on the production of consumer packaging by the organization.

### 4.10.2 CORE PROCESSES

The following requirements apply to the core processes:

- Specific data shall be used for the assembly of the product and for the manufacture of main parts as well as for on-site generation of steam, heat, electricity, etc., where relevant.
- For the electricity used in the core processes, electricity production impacts shall be accounted for in this priority:
    1. Specific electricity mix as generated, or purchased, from an electricity supplier, demonstrated by a Guarantee of Origin (or similar, where reliability, traceability, and the avoidance of double-counting are ensured) as provided by the electricity supplier. If no specific mix is purchased, the residual electricity mix from the electricity supplier shall be used.[4]
    2. National residual electricity mix or residual electricity mix on the market
    3. National electricity production mix or electricity mix on the market.

    The mix of electricity used in the core processes shall be documented in the EPD, where relevant.
- Transport from the final delivery point of raw materials, chemicals, main parts, and components (see above regarding upstream processes) to the manufacturing plant/place of service provision should be based on the actual transportation mode, distance from the supplier, and vehicle load, if available.
- Waste treatment processes of manufacturing waste should be based on specific data, if available.

### 4.10.3 DOWNSTREAM PROCESSES

The following requirements apply to the downstream processes (e.g. washing, drying, ironing by the consumer):

- Data for the use stage are usually based on scenarios, but specific data should be used when available and relevant.
- Data on the pollutant emissions from the use stage should be based on documented tests, verified studies in conjunction with average or typical product use, or recommendations concerning suitable product use. Whenever applicable, test methods shall be internationally recognised.
- The use of electricity in the region/country where the product is used (as specified in the geographical scope of the EPD) shall be accounted for in the following priority:
    1. National residual electricity mix or residual mix on the market
    2. National electricity production mix or electricity mix on the market

    The mix of electricity used in the downstream processes shall be documented in the EPD, where relevant.
- The transport of the product to the customer shall be described in the reference PCR, which should reflect the actual situation to the best extent possible. The following priority should be used:
    1. Actual transportation distances and types.
    2. Calculated as the average distance of a product of that product type transported by different means of transport modes.
    3. Calculated as a fixed long transport, such as 1 000 km transport by lorry or 10 000 km by airplane, according to product type.
- Scenarios for the end-of-life stage shall be technically and economically practicable and compliant with current regulations in the relevant geographical region based on the geographical scope of the EPD. Key assumptions regarding the end-of-life stage scenario shall be documented.

[4] The residual electricity mix is the mix when all contract-specific electricity that has been sold to other customers has been subtracted from the total production mix of the electricity supplier.

 

# 5 CONTENT AND FORMAT OF EPD

EPDs based on this PCR shall contain the information described in this section. Flexibility is allowed in the formatting and layout provided that the EPD still includes the prescribed information. A generic template for EPDs is available via www.environdec.com

As a general rule the EPD content:

- shall be in line with the requirements and guidelines in ISO 14020 (Environmental labels and declarations - General principles),
- shall be verifiable, accurate, relevant and not misleading, and
- shall not include rating, judgements or direct comparison with other products.

An EPD should be made with a reasonable number of pages for the intended audience and use.

## 5.1 EPD LANGUAGES

EPDs should be published in English, but may also be published in additional languages. If the EPD is not available in English, it shall contain an executive summary in English including the main content of the EPD. This summary is part of the EPD and thus subject to the same verification procedure.

## 5.2 UNITS AND QUANTITIES

The following requirements apply for units and quantities:

- The International System of Units (SI units) shall be used, e.g., kilograms (kg), Joules (J) and metres (m). Reasonable multiples of SI units may be decided in the PCR to improve readability, e.g., grams (g) or megajoules (MJ). The following exceptions apply:
  - Resources used for energy input (primary energy) should be expressed as kilowatt-hours (kWh) or megajoules (MJ), including renewable energy sources, e.g., hydropower, wind power and geothermal power.
  - Water use should be expressed in cubic metres ($m^3$)
  - Temperature should be expressed in degrees Celsius (°C),
  - Time should be expressed in the units most practical, e.g., seconds, minutes, hours, days or years.
- Three significant figures[5] should be adopted for all results, The number of significant digits shall be appropriate and consistent.
- The thousand separator and decimal mark in the EPD shall follow one of the following styles (a number with six significant figures shown for illustration):
  - SI style (French version): 1 234,56
  - SI style (English version): 1 234.56

  In case of potential confusion or intended use of the EPD in markets where different symbols are used, the EPD shall state what symbols are used for thousand separator and decimal mark.
- Dates and times presented in the EPD should follow the format in ISO 8601. For years, the prescribed format is YYYY-MM-DD, e.g., 2017-03-26 for March 26th, 2017.
- The result tables shall:
  - Only contain values or the letters “INA” (Indicator Not Assessed). It is not possible to specify INA for mandatory indicators. INA shall only be used for voluntary parameters that are not quantified because no data is available.[6]
  - Contain no blank cells, hyphens, less than or greater than signs or letters (except “INA”).

[5] Significant figures are those digits that carry meaning contributing to its precision. For example with two significant digits, the result of 123.45 shall be displayed as 120, and 0.12345 shall be displayed as 0.12. In scientific notation, these two examples would be displayed as $1.2*10^2$ and $1.2*10^{-2}$.

[6] This requirement does not intend to give guidance on what indicators are mandated (“shall”) or voluntary.

 

- Use the value 0 only for parameters that have been calculated to be zero.
- Footnotes shall be used to explain any limitation to the result value.

## 5.3 USE OF IMAGES IN EPD

Images used in the EPD, especially pictures featured on the cover page, may in themselves be interpreted as an environmental claim. Images such as trees, mountains, wildlife that are not related to the declared product should therefore be used with caution and in compliance with national legislation and best available practices in the markets in which the EPD is intended to be used.

## 5.4 EPD REPORTING FORMAT

The reporting format of the EPD shall include the following sections:

- Cover page (see Section 5.4.1)
- Programme information (see Section 5.4.2)
- Product information (see Section 5.4.3)
- Content declaration (see Section 5.4.4)
- Environmental performance (see Section 5.4.5)
- Additional environmental information (see Section 5.4.6)
- References (see Section 5.4.9)

The following information shall be included, when applicable:

- Information related to Sector EPDs (see Section 5.4.7)
- Differences versus previous versions (see Section 5.4.8)
- Executive summary in English (see Section 5.4.10)

### 5.4.1 COVER PAGE

The cover page shall include:

- Product name and image,
- Name and logotype of EPD owner,
- The text “Environmental Product Declaration” and/or “EPD”,
- *Programme: The International EPD® System, www.environdec.com,*
- *Programme operator: EPD International AB,*
- Logotype of the International EPD® System,
- EPD registration number as issued by the programme operator[7],
- *Date of publication (issue): 20XX-YY-ZZ,*
- *Date of revision: 20XX-YY-ZZ*, when applicable,
- *Date of validity; 20XX-YY-ZZ,*
- A note that “*An EPD should provide current information, and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com*.”,

[7] The EPD shall not include a “registration number” if such is provided by the certification body, as this may be confused with the registration number issued by the programme operator.

 

- A statement of conformity with ISO 14025.

The type of fibre used likely has major effects on the results. To make sure comparability is made properly, the EPD should show in the first page what type of yarn (cotton/polyester/linen/viscose etc. or any of these mixes) is used in manufacturing the sweater.

- E.g. the EPD is for 1 sweater, the EPD should clearly state that “EPD for 100% cotton sweater” or “EPD for 90% cotton/10% polyester sweater.

### 5.4.2 PROGRAMME INFORMATION

The programme information section of the EPD shall include:

- Address of programme operator: *EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com*
- The following mandatory statement from ISO 14025: “*EPDs within the same product category but from different programmes may not be comparable*.”
- A statement that the EPD owner has the sole ownership, liability and responsibility of the EPD
- Information about verification[8] and reference PCR in a table with the following format and contents:

| |
|---|
| Product category rules (PCR): *<name, registration number, version and UN CPC code(s)>* |
| PCR review was conducted by: *<name and organisation of the review chair, and information on how to contact the chair through the programme operator>* |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006:<br><br>☐ EPD process certification ☐ EPD verification |
| Third party verifier: *<name, organisation and signature of the third party verifier>*<br><br>*In case of certification bodies:*<br>Accredited by: *<name of the accreditation body and accreditation number, if applicable>.*<br><br>*In case of individual verifiers:*<br>Approved by: The International EPD® System Technical Committee, supported by the Secretariat |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br>☐ Yes ☐ No |

### 5.4.3 PRODUCT INFORMATION

The product information section of the EPD shall include:

- Address and contact information to EPD owner,
- Description of the organisation. This may include information on products- or management system-related certifications (e.g. ISO 14024 Type I environmental labels, ISO 9001- and 14001-certificates and EMAS-registrations) and other relevant work the organisation wants to communicate (e.g. SA 8000, supply-chain management and social responsibility),
- Name and location of production site,
- Product identification by name, and an unambiguous identification of the product by standards, concessions or other means,

[8] If the EPD has been verified by an approved individual verifier who has received contractual assistance from a certification body that is not accredited, this certification body shall not be included in this table.

 

- Identification of the product according to the UN CPC scheme system. Other relevant codes for product classification may also be included, e.g.
  - Common Procurement Vocabulary (CPV),
  - United Nations Standard Products and Services Code® (UNSPSC),
  - Classification of Products by Activity (NACE/CPA) or
  - Australian and New Zealand Standard Industrial Classification (ANZSIC),
- Description of the product, its application/intended use and technical functions, e.g. expected service life time,
- The technical and functional characteristics of the fabric measured in accordance with the tests listed in Table 4 (Recognized standards should be use when referring to specific technical issues). More information can be added on voluntary basis.

| CHARACTERISTICS | REFERENCE STANDARD | UNITS |
|---|---|---|
| **CONSTRUCTIVE CHARACTERISTICS** | | |
| Composition | Regulation EU No 1007/2011 | % |
| For woven materials: Weave | Woven fabrics<br>ISO 3572 | - |
| For knitted materials: Fabric | Knitted fabrics<br>ISO 8388<br>EN ISO 4921 | - |
| Mass per unit area | ISO 3801<br>EN 12127 | $g/m^2$ |
| Width | EN 1773 | cm |
| **DYEING** | | |
| Colour Index | - | - |
| **PERFORMANCE CHARACTERISTICS** | | |
| For woven materials: Abrasion strength (Martindale) | ISO 12947-2<br>(report the weight applied for the method in the EPD (9 kPa or 12 kPa)) | grade |
| For woven materials: Tear strength | ISO 13937<br>(report whether version 1, 2, 3 or 4 in the EPD) | grade |
| For woven materials: Tensile strength | ISO 13934-1 | grade |
| Voluntary: For woven materials: seam slippage | ISO 13936-2 | grade |
| For knitted materials: Bursting strength | ISO 13938<br>(report whether version 1 or 2 in the EPD) | Grade |
| For knitted materials: Pilling test (Martindale) | EN ISO 12945-2 | Grade |
| For knitted materials: Stretch properties | EN 14704-1 | % |
| Voluntary: Dimensional change to washing | EN ISO 6330 (Household laundry)<br>EN ISO 15797 (Industrial laundry)<br>EN ISO 3759<br>EN ISO 5077 | % |
| pH of water extract | EN ISO 3071 | - |

| **COLOUR FASTNESS** | | |
|---|---|---|
| Colour fastness to artificial light: Xenon arc fading lamp test | EN ISO 105 B02 | Grade |
| Voluntary: Washing<br>with mild detergent at 40°C<br>with commercial household detergent at 50°C<br>hand washing at 30°C | EN ISO 105 C10<br>EN ISO 105 C06<br>10994 | Grade |
| Acid and alkaline perspiration | EN ISO 105 E04 | Grade |
| Dry and wet rubbing | EN ISO 105 X12 | Grade |

*Table 4 Technology description.*

- Product certification, if any
- Geographical scope of the EPD, i.e., for which geographical location(s) of use and end-of-life the product's performance has been calculated,
- Functional unit or declared unit,
- Reference service life (RSL), if applicable,
- Declaration of the year(s) covered by the data used for the LCA calculation and other relevant reference years,
- Reference to the main database(s) for generic data and LCA software used, if applicable,
- System diagram of the processes included in the LCA, divided into the life cycle stages,
- Description if the EPD system boundary is "cradle-to-gate", "cradle-to-gate with options" or "cradle-to-grave",
- Information on which life cycle stages are not considered (if any), with a justification of the omission,
- Relevant websites for more information or explanatory materials.

This section may also include:

- Name and contact information of organisation carrying out the underlying LCA study,
- Additional information about the underlying LCA-based information, such as assumptions, cut-off rules, data quality and allocation.

### 5.4.4 CONTENT DECLARATION

The content declaration shall have the form of a list of materials and chemical substances including information on their environmental and hazardous properties. The gross weight of material shall be declared in the EPD at a minimum of 99 % of one unit of product.

Information on the hazardous properties of materials and chemical substances should follow the requirements given in the latest revision of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)[9], issued by United Nations or national or regional applications of the GHS.

As an example, the following regulations should be used for EPDs intended to be used in the European Union:

- Regulation (EC) No 1907/2006 of the European parliament and of the council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
  - All materials/substances submitted to legal requirements (in any quantity);

[9] The GHS document is available on www.unece.org.

 

- All candidate materials/substances of very high concern for authorisation (above 0.1 w%).

- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures
  - All materials/substances hazardous to health and the environment, being allergenic, carcinogenic, mutagenic or toxic to reproduction if present in such a concentration in the product that it meets requirements for being subjects to labelling according to the legislation (e.g. the European Directives on substances and preparations) (in any quantity);

Analytical and sampling methods shall be clearly indicated.

#### 5.4.4.1. Information about recycled materials

When a product is made in whole or in part with recycled materials, the provenience of the materials (pre-consumer or post-consumer) shall be presented in the EPD as part of the content declaration.

To avoid any misunderstanding about which material may be considered “recycled material”, the guidance given in ISO 14021 shall be taken into account. In brief, the standard states that:

- only pre-consumer or post-consumer materials (scraps) shall be considered in the accounting of the recycled materials, and
- materials coming from scrap reutilisation (such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it) shall not be considered as recycled content.

#### 5.4.4.2. Information about packaging

As packaging is strongly connected with the product, the producer shall provide information about packaging in the EPD, when applicable. Packaging may be classified as:

- Distribution Packaging: packaging designed to contain one or more articles or packages, or bulk materials, for the purposes of transport, handling and/or distribution (ISO 21067-1:2016, Par. 2.2.6)
- Consumer Packaging: packaging constituting, with its content, a sales unit for the final user or consumer at the point of retail (ISO 21067-1:2016, Par. 2.2.7).

Consumer packaging is generally the outcome of eco-design processes, or other activities, under direct control of the organisation. Many critical categories with strict legal requirements belong to consumer packaging category like food contact packaging and pharmaceutical packaging.

The type and function of packaging shall be reported in the EPD.

A statement of the source of the materials (pre-consumer or post-consumer) shall be presented in the EPD when the packaging is made in whole or in part by recycled materials.

## 5.4.5 ENVIRONMENTAL PERFORMANCE

#### 5.4.5.1. Environmental impacts

The indicators related to potential environmental impact listed in Table 5 shall be declared per functional unit or declared unit, and per life cycle stage.

| PARAMETER | | UNIT | UPSTREAM | CORE | DOWNSTREAM | TOTAL |
|---|---|---|---|---|---|---|
| Global warming potential (GWP) | Fossil | kg $CO_2$ eq. | | | | |
| | Biogenic | kg $CO_2$ eq. | | | | |
| | Land use and land transformation | kg $CO_2$ eq. | | | | |
| | TOTAL | kg $CO_2$ eq. | | | | |
| Acidification potential (AP) | | kg $SO_2$ eq. | | | | |
| Eutrophication potential (EP) | | kg $PO_4^{3-}$ eq. | | | | |

 

| | | | | | |
|---|---|---|---|---|---|
| Formation potential of tropospheric ozone (POCP) | kg $C_2H_4$ eq. | | | | |
| Abiotic depletion potential – Elements | kg Sb eq. | | | | |
| Abiotic depletion potential – Fossil fuels | MJ, net calorific value | | | | |
| Water scarcity potential | $m^3$ eq. | | | | |

*Table 5 Indicators describing potential environmental impacts[10].*

Notes:

- Abiotic depletion potential is calculated and displayed as two separate indicators. ADP-fossil fuels include all fossil resources, while ADP-elements include all non-renewable material resources.

5.4.5.2. Use of resources

The indicators for resource use based on the life cycle inventory (LCI) listed in Table 6 shall be declared per functional unit or declared unit, and per life cycle stage.

| PARAMETER | | UNIT | UPSTREAM | CORE | DOWNSTREAM | TOTAL |
|---|---|---|---|---|---|---|
| Primary energy resources – Renewable | Use as energy carrier | MJ, net calorific value | | | | |
| | Used as raw materials | MJ, net calorific value | | | | |
| | TOTAL | MJ, net calorific value | | | | |
| Primary energy resources – Non-renewable | Use as energy carrier | MJ, net calorific value | | | | |
| | Used as raw materials | MJ, net calorific value | | | | |
| | TOTAL | MJ, net calorific value | | | | |
| Secondary material | | kg | | | | |
| Renewable secondary fuels | | MJ, net calorific value | | | | |
| Non-renewable secondary fuels | | MJ, net calorific value | | | | |
| Net use of fresh water | | $m^3$ | | | | |

*Table 6 Indicators describing use of primary and secondary resources.*

Notes:

- In order to identify the primary energy used as an energy carrier (and not used as raw materials), the parameter may be calculated as the difference between the total input of primary energy and the input of energy resources used as raw materials.
- Energy content of biomass used for feed or food purposes shall not be considered.
- The net use of fresh water does not constitute a “water footprint” as potential environmental impacts due to the water use in different geographical locations is not captured. For this indicator:

[10] Please check www.environdec.com for the latest list of default impact categories, units and characterisation factors as they may have been updated compared to this table.

 

- Evaporation, transpiration, product integration, release into different drainage basins or the sea, displacement of water from one water resource type to another water resource type within a drainage basin (e.g. from groundwater to surface water) is included.
- In-stream water use is not included.
- For water used in closed loop processes (such as cooling system) and in power generation only the net water consumption (such as reintegration of water losses) should be considered.
- Seawater shall not be included
- Tap water or treated water (e.g. from a water treatment plant), or wastewater that is not directly released in the environment (e.g. sent to a wastewater treatment plant) are not elementary water flows, but intermediate flows from a process within the technosphere.
- Additional transparency in terms of geographical location, type of water resource (e.g. groundwater, surface water), water quality and temporal aspects may be included as additional information.

#### 5.4.5.3. Waste production and output flows

Waste generated along the whole life cycle production chains shall be treated following the technical specifications described in the Genera. When the amount of waste or the output flows is from the life cycle inventory (LCI) are declared, the indicators in Table 7 and Table 8 shall be reported per functional unit or declared unit, and per life cycle stage.

| PARAMETER | UNIT | UPSTREAM | CORE | DOWNSTREAM | TOTAL |
|---|---|---|---|---|---|
| Hazardous waste disposed | kg | | | | |
| Non-hazardous waste disposed | kg | | | | |
| Radioactive waste disposed | kg | | | | |

*Table 7 Indicators describing waste production.*

| PARAMETER | UNIT | UPSTREAM | CORE | DOWNSTREAM | TOTAL |
|---|---|---|---|---|---|
| Components for reuse | kg | | | | |
| Material for recycling | kg | | | | |
| Materials for energy recovery | kg | | | | |
| Exported energy, electricity | MJ | | | | |
| Exported energy, thermal | MJ | | | | |

*Table 8 Indicators describing output flows.*

Notes:

- The parameters are calculated on the gross amounts leaving the system boundary of the product system in the LCI. If e.g. there is no gross amount of “exported energy, electricity” leaving the system boundary, this indicator is set to zero,
- The parameter “Materials for energy recovery” does not include materials for waste incineration. Waste incineration is a method of waste processing, when R1<60% (European Guideline on R1 energy interpretation), and is allocated within the system boundary.
- In case there are never any flows of these types leaving the system boundary for a product category, the indicators may be removed by the PCR.

#### 5.4.5.4. Other environmental indicators

The reference PCR may add other environmental indicators to include for the product category from the inventory or impact assessment. Such indicators should be based on international standards or similar methodologies developed in a transparent procedure. Reference to the chosen indictors and methodologies shall be reported.

 

### 5.4.6 ADDITIONAL INFORMATION

Additional environmental information such as impact on biodiversity, impact on health, technical life length, maintenance, final use of product, hazard and risk assessment, preferred waste management option for used products, etc. shall be included in the EPD on a voluntary basis.

### 5.4.7 INFORMATION RELATED TO SECTOR EPDS

For sector EPDs, the following information shall also be included:

- a list of the contributing manufacturers that the Sector EPD covers,
- a description of how the selection of the sites/products has been done and how the average has been determined, and
- a statement that the document covers average values for an entire or partial product category (specifying the percentage of representativeness) and, hence, the declared product is an average that is not available for purchase on the market.

### 5.4.8 DIFFERENCES VERSUS PREVIOUS VERSIONS

For EPDs that have been updated, the following information shall also be included:

- a description of the differences versus previously published versions, e.g. a description of the percentage change in results and the main reason for the change;
- a revision date on the cover page

### 5.4.9 REFERENCES

This section shall include a list of references, including the General Programme Instructions (including version number), standards and PCR (registration number, name and version).

### 5.4.10 EXECUTIVE SUMMARY IN ENGLISH

For EPDs published in another language than English, an executive summary in English shall be included.

The executive summary should contain relevant summarised information related to the programme, product, environmental performance, additional information, information related to sector EPDs, references and differences versus previous versions.

 

# 6 GLOSSARY

| | |
|---|---|
| $CO_2$ | Carbon dioxide |
| CPC | Central product classification |
| EPD | Environmental product declaration |
| ISO | International Organization for Standardization |
| kg | kilogram |
| LCA | Life cycle assessment |
| PCR | Product Category Rules |
| SI | The International System of Units |
| $SO_2$ | Sulphur dioxide |
| UN | United Nations |

 

# 7 REFERENCES

CEN (2013), EN 15804:2012+A1:2013, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

EPD International (2017) General Programme Instructions for the International EPD® System. Version 3.0, dated 2017-12-11. www.environdec.com

European Commission (2016). Environmental Footprint Guidance document - Guidance for the development of Product Environmental Footprint Category Rules (PEFCRs), version 6.3, May 2018

European Commission (2017). Product Environmental Footprint (PEF) Category Rules (PEFCR) Pilot T-shirts. Draft of the final T-shirts PEFCR within the context of the EU Product Environmental Footprint Category Rules Pilots. Technical Secretariat of the T-shirts PEFCR pilot. January 2017

ISO (2000), ISO 14020:2000, Environmental labels and declarations – General principles

ISO (2004), ISO 8601:2004 Data elements and interchange formats – Information interchange – Representation of dates and times

ISO (2006a), ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures

ISO (2006b), ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework

ISO (2006c), ISO 14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines

ISO (2013), ISO/TS 14067:2013, Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification and communication

ISO (2014), ISO 14046:2014, Environmental management – Water footprint – Principles, requirements and guidelines

ISO (2017), ISO 21930:2017, Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services

 

# 8 VERSION HISTORY OF PCR

## VERSION 1.0, 2019-02-25

The first version of the PCR was published.

## VERSION 1.01, 2019-08-18

- Clarified terms of use
- Editorial changes

## VERSION 1.02, 2020-03-04

- Terms of use added on each page
- Cover image added

## VERSION 1.03, 2021-05-10

- Changed declared unit, from “1 sweater” to “1 unit of the product”, as the PCR covers not only sweaters.
- Editorial changes

## VERSION 1.0.4, 2022-10-28

- Updated affiliation and contact information of the PCR Moderator.
- The validity of this PCR has been until 2024-02-01, as an updating process has been initiated.

## VERSION 1.0.5, 2024-05-28

The validity of this PCR has been extended with another 6-month period, until 2024-08-01, due to the delay in the development process for PCR 2024:03 Apparel, except fur and leather apparel, in line with rules in upcoming GPI 5.0.0. This allows for a transition period to facilitate for ongoing EPD development projects based on this PCR.

 

SWEATERS, JERSEYS, PULLOVERS, CARDIGANS, FLEECES AND SIMILAR GARMENTS
PRODUCT CATEGORY CLASSIFICATION: UN CPC 282