GLASS PRODUCTS USED IN AUTOMOTIVE AND TRANSPORT INDUSTRY

PRODUCT CATEGORY CLASSIFICATION: UN CPC 37113, 37115, 37116

PCR 2023:04
VERSION 1.0.0

VALID UNTIL 2027-05-16

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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, ISO 14040:2006, ISO 14044:2006, and product-specific standards such as EN 15804 and ISO 21930 for construction products. Environmental Product Declarations (EPD) are voluntary documents for a company or organisation to present transparent, consistent and verifiable information about the environmental performance of their products (goods or services).

The rules for the overall administration and operation of the programme are the General Programme Instructions (GPI), publicly available at www.environdec.com. A PCR complements the GPI and the normative 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.

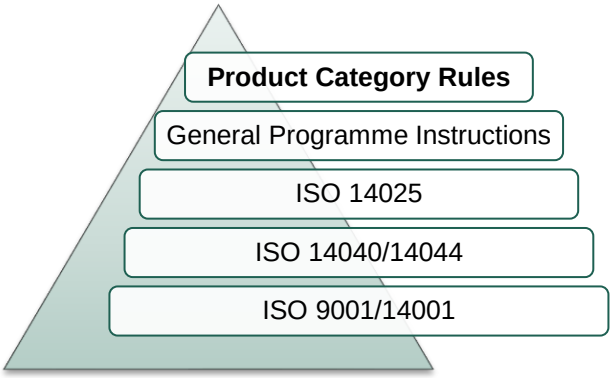

Figure 1. The hierarchy between PCRs, standards and other documents. EN 15804 and ISO 21930 are normative standards for construction products only.

Within the present PCR, the following terminology is adopted:

- The term “shall” is used to indicate what is obligatory, i.e. a requirement.
- The term “should” is used to indicate a recommendation, rather than a requirement. Any deviation from a “should” requirement shall be justified in the PCR development process.
- The terms “may” or “can” is used to indicate an option that is permissible.

For definitions of further 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 at www.environdec.com. Stakeholder feedback on PCRs is very much encouraged. Any comments on this PCR may be sent directly to the PCR Moderator and/or the Secretariat during its development or during its period of validity.

Any references to this document shall 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, and make it 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 EPDs, Environmental Product Declarations.

2 GENERAL INFORMATION

2.1 ADMINISTRATIVE INFORMATION

Name:	Glass Products Used in Automotive and Transport Industry
Registration number and version:	2023:04
Programme:	The International EPD® System
Programme operator:	EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden. Website: www.environdec.com E-mail: info@environdec.com
PCR Moderator:	Ludovic Pavani, Saint-Gobain Sekurit France, ludovic.pavani@saint-gobain.com
PCR Committee:	Marcel Gómez Consultoria Ambiental and Saint-Gobain
Date of publication and last revision:	2023-05-16 (version 1.0.0)
Valid until:	2027-05-16
Schedule for renewal:	A PCR is valid for a pre-determined time period 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 PCR and renewing its validity. A PCR may be also be updated without prolonging its period of validity, provided significant and well-justified proposals for changes or amendments are presented. See www.environdec.com for the latest version of the PCR. When there has been an update of the PCR, the new version should be used to develop EPDs. The old version may however be used for 90 days after the publication date of the new version, as long as the old version has not expired.
Standards conformance:	General Programme Instructions of the International EPD® System, version 4.0, based on ISO 14025 and ISO 14040/14044
PCR language(s):	At the time of publication, this PCR was available in English. If the PCR is available in several languages, these are available at www.environdec.com. 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 “Glass products used in automotive and transport industry” and the declaration of this performance by an EPD. The product category corresponds to the following UN CPC:

- 37113 Float glass and surface ground or polished glass, in sheets.

- 37115 Safety glass.
- 37116 Glass mirrors; multiple walled insulating units of glass.

This PCR is limited to those products that are used in automotive and transport industry. Products used in other applications (e.g. construction) are outside of the scope.

The production of glass products used in automotive and transport industry starts with the flat glass manufacturing, obtained by melting different materials such as silica, soda ash, lime, dolomite and recovered glass (cullet); additives are added to obtain the desired colour and properties. The molten glass is then poured onto a bath of liquid tin and is stretched or pushed to obtain the required thickness and width. After cooling, the glass sheets are cut and ready to be further processed to obtain the following types of glass products used in automotive and transport industry:

- **Laminated glass**: Two sheets of glass are formed in a progressive manner to obtain the desired 3D shape and minimize optical deformations. Then the two sheets are assembled using a polymer interlayer (e.g. PVB, EVA, …). This laminated safety glass contributes to the rigidity of the vehicle's body and preserves visibility in the event of breakage by keeping the pieces of glass attached to the polymer interlayer. This process may vary depending on manufacturer.
- **Tempered glass**: A sheet of glass is formed quickly to obtain the desired 3D shape and then cooled immediately to obtain an air tempering of the glazing surface. This family of products is intended to have a better resistance to shocks than simple glass and in case of breakage not to injure people as the broken tempered glass is in the form of small pieces of glass that can be handled by hand. This process may vary depending on manufacturer.
- **Semi-Tempered Laminated glass**: Two sheets of glass are formed quickly to obtain the desired 3D shape and then cooled immediately to obtain a partial air tempering. The two sheets are then assembled with a polymer interlayer (e.g. PVB, EVA, …). This product family allows the addition of acoustic and anti-intrusion functions for side windows. This process may vary depending on manufacturer.
- **Insulated Glazing Unit (IGU) for transport industry**: Two or more panels combined together with a spacer. Each panel can be made of Laminated, Tempered or Semi-Tempered Laminated Glass.

Depending on its position in the vehicle, the glass product used in automotive and transport industry includes glass configuration design (coating, interlayers, components) and usually is classified by the transport glazing industry as:

BL: Backlite	L0: Lamella	RQ: Rear Quarterlight
CN: Canopy roof	M1: Modular roof part 1	S1: Sidelite or Side Window
FD: Front Door	M2: Modular roof part 2	WS: Windshield
FWQ: Front Quarterlight	RD: Rear Door	

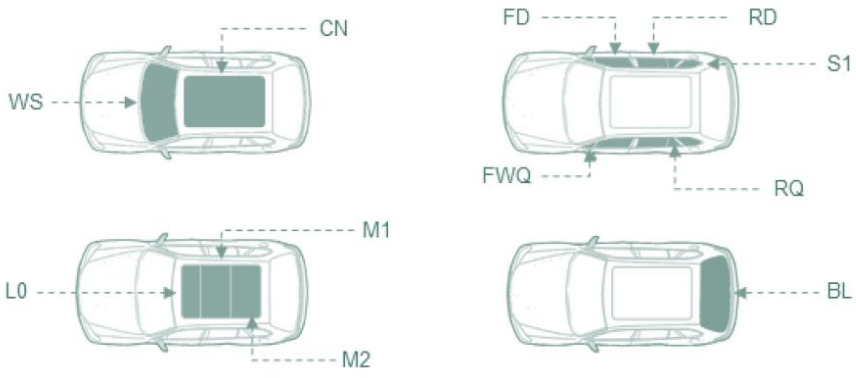

Figure 2. Example of glazing position on a car.

Figure 3. Example of glazing position on a truck.

2.2.2 GEOGRAPHICAL SCOPE

This PCR may be used globally.

2.2.3 EPD VALIDITY

An EPD based on this PCR shall be valid for a 5-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 declared indicators of environmental impact,
- errors in the declared information, or
- significant changes to the declared product information, content declaration, or additional environmental, social or economic 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 PCR development process described in the GPI of the International EPD® System, including open consultation and review.

3.1 OPEN CONSULTATION

3.1.1 VERSION 1.0.0

This PCR was available for open consultation from *2022-07-04* until *2022-09-04*, during which any stakeholder was able to provide comments by contacting the PCR Moderator and/or the Secretariat.

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 in the PCR and at www.environdec.com.

Table 1. List of stakeholder names and affiliations.

ORGANISATION	TYPE OF STAKEHOLDER
RSA	car customer (OEM)
Stellantis	car customer (OEM)
Audi	car customer (OEM)
Porsche	car customer (OEM)
VW	car customer (OEM)
Volvo	car customer (OEM)
BMW	car customer (OEM)
Daimler	car customer (OEM)
CLEPA (European Association of automotive suppliers)	industry association
Glass for Europe	industry association
WBCSD (World Business Councel for Sustainable Development)	industry association
FIEV (Fédération des Industries des Equipements pour Véhicules)	industry association
SIA (Société des Ingénieurs de l'Automobile)	industry association
ARIA (Association Régionale de l'Industrie Automobile)	industry association
GPA (Groupement Plasturgie Automobile)	industry association
PFA (Plateforme Automobile)	industry association
Railsponsible (The rail sustainable procurement intitiative)	Industry association
UITP (The International Association of Public Transport)	Industry association
Construcciones y Auxiliar de Ferrocarriles S.A	Train Customer
Alstom	Train Customer
Scania	Truck Customer
Volvo Bus	Truck and Buses customer

3.2 PCR REVIEW

3.2.1 VERSION 1.0.0

PCR review panel:	The Technical Committee of the International EPD® System. A full list of members is available at www.environdec.com. The review panel may be contacted via info@environdec.com. Members of the Technical Committee were requested to state any potential conflict of interest with the PCR Committee, and if there were conflicts of interest they were excused from the review.
Chair of the PCR review:	Hüdai Kara
Review dates:	2022-10-18 until 2023-03-21

3.3 EXISTING PCRS FOR THE PRODUCT CATEGORY

As part of the development of this PCR, existing PCRs and other internationally standardized methods that could potentially act as PCRs were considered to avoid unnecessary overlaps in scope and to ensure harmonisation with established methods of relevance for the product category. The existence of such documents was checked among the following EPD programmes and international standardisation bodies:

- International EPD® System. www.environdec.com.
- IFT Rosenheim.
- NSF Sustainability and GANA.

Table 2 lists the identified PCRs and other standardized methods.

Table 2 Existing PCRs and other internationally standardized methods that were considered to avoid overlap in scope and to ensure harmonisation with established methods.

NAME OF PCR/STANDARD	PROGRAMME/ STANDARDISATION BODY	REGISTRATION NUMBER, VERSION NUMBER/DATE OF PUBLICATION	SCOPE
PCR for flat glass	NSF Sustainability and Glass Association of North America	Version 2 2020.09.01	Flat Glass, including float and rolled glass. UN CPC 3711, flat glass including subclasses 37112, 37113 (float glass) and 37114.
c-PCR to PCR 2019:14	The International EPD System	Version 2021-01-25 EN 17074:2019	Basic glass products according to EN 572-1:2012+A1:2016. UN CPC 3711 Unworked glass, flat glass and pressed or moulded.
PCR Flat glass in the civil engineering	IFT Rosenheim	Version 2016.11.01	Single glass and single safety glass Coated glass Laminated and laminated safety glass Heat strengthened glass Multi-pane insulating glass Glass ceramic

3.4 REASONING FOR DEVELOPMENT OF PCR

This PCR was developed to enable publication of EPDs for this product category based on ISO 14025 and ISO 14040/14044. The PCR enables different practitioners to generate consistent results when assessing the environmental impact of products of the same product category, and thereby it supports comparability of products within a product category.

3.5 UNDERLYING STUDIES USED FOR PCR DEVELOPMENT

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

- Saint-Gobain Sekurit. LCA report of 3 car glass positions produced in Poland by Saint-Gobain Sekurit (May 2022).
- Saint-Gobain Sekurit. LCA report of Laminated Windshield (WS) and Tempered Rear Door (RD) produced in France by Saint-Gobain Sekurit. (June 2022)

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

This PCR uses a declared unit instead of a functional unit. This is because not all relevant functional aspects are possible to capture in one or a few predefined functional units. All relevant functional aspects shall, however, be taken into consideration when comparing EPDs based on this PCR.

The product refers to an intermediate product which can be installed into different end products.

The declared unit is "1 kg of finished glass product and its packaging to be used in specified market (automotive / train / truck /...)". The type of product (glass family, thickness of main layers and colour) and glass position in the vehicle shall be declared together with the declared unit. The weight of the packaging is not included in this 1 kg of final product. The conversion factor from kg to m^2 shall be declared and calculated according to the equation below.

$$Surface\ area\ (m^2) = \frac{weight\ (kg)}{(density_1 \times thickness_1) + (density_2 \times thickness_2) + (density_x \times thickness_x)}$$

An example of a declared unit is *"1 kg of laminated glass with 2.1 mm thickness of tinted glass combined with 1.6 mm thickness of clear glass and 0,76mm thickness of PVB, defined as windshield in automotive market, and its packaging. The weight of the packaging is not included in this 1 kg of final product. The flat glass conversion factor is 2.5 kg/m2 per mm and the PVB conversion factor is 1.1 kg/m2 per mm."*

The reference flow in the LCA shall be defined at the point where the product exits the manufacturing gate, i.e. any losses occurring before then must be considered.

4.2 TECHNICAL SPECIFICATION, LIFESPAN AND REFERENCE SERVICE LIFE (RSL)

As a declared unit is used in this PCR, it is not relevant to define a RSL.

4.3 SYSTEM BOUNDARY

The scope of this PCR and EPDs based on it is cradle-to-gate plus end-of-life (modules A1 to A3 and C1 to C4). Additionally, A4 (transport to client) and the loads and benefits beyond the system boundaries (module D) may be declared.

As glass products used in automotive and transport industry are intermediate products, the following modules are excluded from the system boundary: A5 (installation into vehicle) and B (use).

4.3.1 LIFE-CYCLE STAGES

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

- Upstream processes: A1 (raw materials and components production)
- Core processes: A2 (transport from raw materials and components providers to final production site) and A3 (manufacturing).
- Downstream processes: A4 (transport to client, optional), C1 (dismantling of product), C2 (waste transport), C3 (waste processing) and C4 (waste final disposal).

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.

In the EPD, the environmental performance associated shall be reported per each module declared (A1, A2, etc.) as well as for each life cycle stage (upstream, core, downstream) and per total life cycle. If module D is declared, its results shall be declared in a separate column and not be included in the total results (see an example in Table 6).

4.3.1.1. Upstream processes (A1)

The following unit processes are part of the product system and shall be classified as upstream processes:

- flat glass manufacturing (including extraction and processing of raw and secondary materials),
- coating application on glass,
- extraction and processing of other raw materials and inputs components (e.g., PVB, enamels, etc.),
- recycling processes of secondary materials from other product life cycles,
- relevant services, such as transport of raw materials and components along the upstream supply chain to a distribution point (e.g., a stockroom or warehouse),
- production of distribution packaging, and
- generation of electricity and production of fuels, steam and other energy carriers used in upstream processes.

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.

For modelling of infrastructure and capital goods, see Section 4.3.2.

4.3.1.2. Core processes (A2 and A3)

The following unit processes are part of the product system and shall be classified as core processes:

- A2: transportation of the flat glass and other materials and components to the manufacturing of the product under study,
- A3: manufacturing of the product under study,
- A3: end-of-life treatment of manufacturing waste, even if carried out by third parties, including transportation, and
- A3: generation of electricity and production of fuels, steam and other energy carriers used in core processes.

Core processes not listed may also be included. Manufacturing of a minimum of 99% of the total weight of the declared product including packaging shall be included.

The following processes shall not be included:

- business travel of personnel,
- travel to and from work by personnel, and
- research and development activities.

For modelling of infrastructure and capital goods, see Section 4.3.2.

4.3.1.3. Downstream processes (A4 as optional, C1, C2, C3 and C4)

The following unit processes are part of the product system and shall be classified as downstream processes:

- A4 (optional): transportation of the product to client (optional)
- end-of-life treatment of the used product and its packaging, including dismantling of product (C1), waste transportation (C2), waste processing (C3) before recycling/reuse and incineration/landfill treatment (C4)
- generation of electricity and production of fuels, steam and other energy carriers used in downstream processes.

The following processes shall not be included:

- installation of the product into a vehicle (A5),
- use stage of the final product (B).

4.3.1.4. Module D (optional)

The potential loads and benefits of the resource recovery stage beyond the system boundaries may be declared. See Section 4.7.4 for further guidance.

For modelling of infrastructure and capital goods, see Section 4.3.2.

4.3.2 INFRASTRUCTURE AND CAPITAL GOODS

In general, the production and end-of-life processes of infrastructure or capital goods[2] used in the product system should not be included within the system boundaries. They may be included when infrastructure and capital goods are known to be relevant in terms of their environmental impact, or when a generic LCI dataset includes infrastructure/capital goods, and it is not possible, within reasonable effort, to subtract the data on infrastructure/capital goods from this dataset. If an infrastructure/capital good is produced with the intention to be used one or a few times only (e.g., a manufacturing plant or machinery constructed to produce only one product), this infrastructure/capital good shall be included.

The inclusion or exclusion of infrastructure/capital goods shall be transparently described for upstream, core and downstream processes in the LCA report and in the EPD.

If infrastructure/capital goods are included, the following disclaimer shall be included in the results sections of the LCA report and in the EPD (land use and toxicity indicators shall only be mentioned if declared in the EPD):

The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, non-cancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.

4.3.3 OTHER BOUNDARY SETTING

4.3.3.1. Boundary towards nature

Boundaries to nature are defined as where the flows of material and energy resources leaves nature and enters the technical system (i.e. the product system). Emissions cross the system boundary to nature when they are emitted to air, soil or water.

4.3.3.2. Boundary towards other technical systems

Boundaries towards other technical systems define the flow of materials and components to/from the product system under study and from/to other product systems. If there is an inflow or outflow of recycled material or recovered energy to the product system. See section 4.6 for further guidance on boundary setting

4.3.3.3. Temporal boundary

The temporal boundary defines the time period for which the life cycle inventory data is recorded, e.g. for how long emissions from waste deposits are accounted. As default, the time period over which inputs to and outputs from the product system is accounted for shall be 100 years from the year that the LCA model best represents, considering the representativeness of the inventory data. This year shall, as far as possible, represent the year of the publication of the EPD.

[2] Examples of infrastructure and capital goods are the building in which the studied product or upstream materials or components are produced, machinery used in the manufacturing of the product or its materials or components, or vehicles used in transports in the product system. For example, if the EPD is on wind power, the power plant itself is considered the studied product and not infrastructure/capital goods. However, the buildings and machinery that make the wind turbine components are considered infrastructure/capital goods. Similarly, if the EPD is on a means of transport, the vehicle is considered the studied product and not infrastructure/capital goods.

4.3.3.4. Geographical boundary

The geographical boundary defines the geographical coverage of the LCA. This shall reflect the physical reality of the product under study, accounting for the representativeness of technology, input materials and input energy. The location of the manufacturing site (A3) shall be declared.

4.4 SYSTEM DIAGRAM

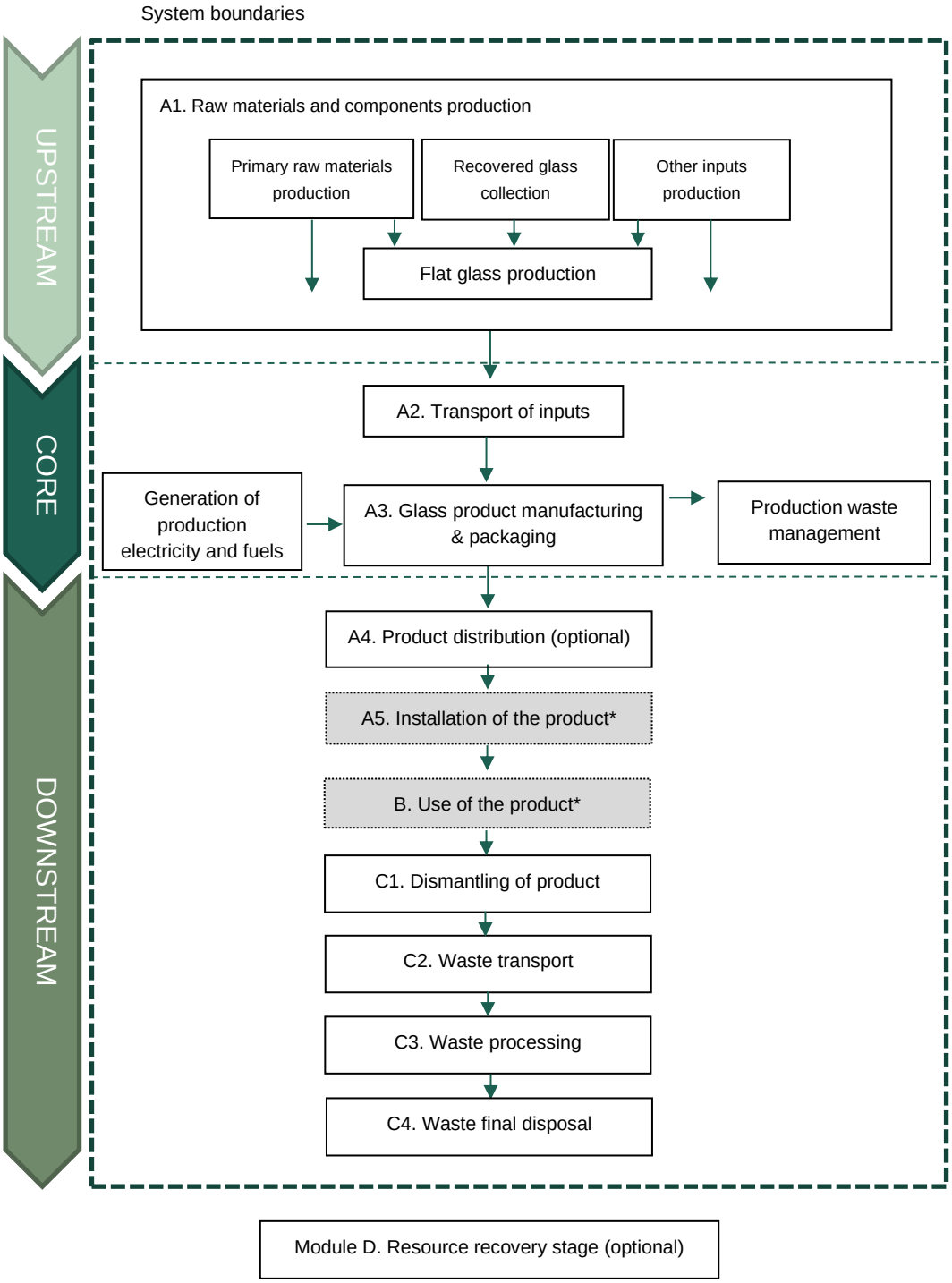

Figure 4 *System diagram illustrating the processes that shall be included in the product system.*
**Processes excluded from the system boundaries*

4.5 CUT-OFF RULES

A cut-off rule of 1% shall be applied. In other words, the included inventory data (not including inventory data of processes that are explicitly outside the system boundary as described in Section 4.3) shall together give rise to at least 99% of the results of any of the environmental impact categories. Also, 99% of the mass of the product content and 99% of the energy use of the product life cycle shall be accounted for. The cut-off of inventory data should, however, be avoided, and all available inventory data shall be used.

The cut-off of inventory data, based on the above cut-off rule, should be an output of a sensitivity analysis, alone or in combination with expert judgment based on experience of similar product systems. Further, the cut-off shall be possible to verified in the verification process, hence the exclusion of inventory data based on the cut-off rule shall be documented in the LCA report, and the EPD developer shall provide the information the verifier considers necessary to verify the cut-off.

4.6 ALLOCATION RULES

Allocation can be divided into allocation of co-products, i.e. allocation of unit processes that generate several products, and allocation of waste, i.e. allocation of unit processes that generate materials that are, for example, landfilled recovered, recycled or reused, and which require further processing to cease being waste and become products (see criteria for end-of-waste state in Section 4.6.2).

The principles for allocation of co-products and allocation of waste are described separately in the following subsections

4.6.1 CO-PRODUCT ALLOCATION

The following hierarchy of allocation methods shall be followed for co-product allocation:

1. Allocation shall be avoided, if possible, by dividing the process to be allocated into sub-processes and collecting the inventory data for each sub-process.
2. If allocation cannot be avoided, the inventory data should be partitioned between the different co-products in a way that reflects the underlying physical relationships between them, i.e., allocation should reflect the way in which the inventory data changes if the quantities of delivered co-products change.
3. If a physical relationship between the inventory data and the delivery of co-products cannot be established, the inventory data should be allocated between the co-products in a way that reflects other relationships between them. For example, inventory data might be allocated between co-products in proportion to their economic values. If economic allocation is used, a sensitivity analysis exploring the influence of the choice of the economic value shall be included in the LCA report.

For key processes in the product system, Table 3 provides specific allocation guidance.

PROCESS	MAIN PRODUCT AND CO-PRODUCTS	ALLOCATION METHOD
Flat glass production	Flat glass from different thicknesses	If allocation cannot be avoided, then a mass allocation shall be applied (EN 17074). Note: glass cullet originated within the flat glass production process shall not be considered a co-product when it is reintroduced in the process as internal cullet.
Automotive and transport glazing manufacturing site	Tempered glazing, Laminated glazing, Semi-Tempered glazing, Insulated Glazing Unit, Cullet	Physical allocation based on the weight of different product outputs when there is no significant difference in revenue generated between the product and its co-products. Economic allocation where there is a significant difference in revenue generated between the product and its co-products (25% or more calculated as revenue per unit of mass of the product under evaluation).

Table 3 Allocation method for key processes in the product system

While the type of allocation method applied (i.e. physical based on weight, or economic based on revenues) shall be declared in the EPD and the LCA Report, the allocation factors can be excluded if they are considered confidential information by the EPD owner.

4.6.2 ALLOCATION OF WASTE TREATMENT PROCESSES

Allocation of waste shall follow the “polluter pays” principle and its interpretation in EN 15804: “processes of waste processing shall be assigned to the product system that generates the waste until the end-of-waste state is reached.” The end-of-waste state is reached when all the following criteria for the end-of-waste state are fulfilled (adapted from EN 15804):

- the recovered material, component or product is commonly used for specific purposes;
- a market or demand, identified e.g. by a positive economic value, exists for such a recovered material, component or product;
- the recovered material, component or product fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products; and
- the use of the recovered material, product or construction element will not lead to overall adverse environmental or human health impacts.

The above outlined principle means that the generator of the waste shall carry the full environmental impact until the point in the product life cycle in which the end-of-waste criteria are fulfilled. Waste may have a negative economic market value, and then the end-of-waste stage is typically reached after (part of) the waste processing and further refinement, at the point at which the waste no longer has a negative market value. This allocation method is (in most cases) in line with a waste generator’s juridical and financial responsibilities. See the GPI for further information and examples.

4.7 DATA QUALITY REQUIREMENTS AND SELECTION OF DATA

Life cycle inventory data are classified into specific data and generic data, where the latter can be selected generic data or proxy data. The data categories are 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;
  - actual data from other parts of the life cycle traced to the product under study, for example site-specific data on the production of materials or generation of electricity provided by contracted suppliers, and transportation data on distances, means of transportation, load factor, fuel consumption, etc., of contracted transportation providers; and
  - LCI data from databases on transportation and energy ware that is combined with actual transportation and energy parameters as listed above.
- generic data (sometimes referred to as “secondary data”), divided into:
  - selected generic data: data (e.g. commercial databases and free databases) that fulfil prescribed data quality requirements for precision, completeness, and representativeness (see below Section 4.7.1),
  - proxy data: data (e.g. commercial databases and free databases) that do not fulfil all of the data quality requirements of “selected generic data”.

Specific data shall be used for the core processes. Specific data shall be used for upstream and downstream processes, when available, otherwise generic data may be used. Generic data should be used in cases in which they are representative for the purpose of the EPD, e.g. for bulk and raw materials on a spot market, if there is a lack of specific data on the final product or if a product consists of many components.

4.7.1 RULES FOR USING GENERIC DATA

For generic data to be classified as “selected generic data”, the following requirements apply:

- datasets shall be based on attributional LCA modelling (e.g., not be based on marginal data and not include credits from system expansion),
- the reference year shall be as current as possible and should be representative for the validity period of the EPD,
- the 1% cut-off rule (as described in Section A.3.3) shall be met on the level of the product system,
- datasets shall represent average values for a specific reference year; however, how data are generated could vary, e.g. over time, and then they should have the form of a representative annual average value for a specified reference period (such deviations shall be justified and declared in the EPD), and

- the representativeness of the data shall be assessed to be better than ±5%, in terms of the environmental impact calculated on the basis of the data, of data that is fully representative for the given temporal, technological and geographical context.

If selected generic data that meets the above data quality requirements are not available, proxy data may be used. The environmental impacts associated with proxy data shall not exceed 10% of the overall environmental impact of the product system.

The EPD may include a data quality declaration to demonstrate the share of specific data, selected generic data and proxy data contributing to the results of the environmental impact indicators.

4.7.2 EXAMPLES OF DATABASES FOR GENERIC DATA

Table 4 lists examples of databases and datasets to be used for generic data. Please note that a data quality assessment shall be performed also for data listed in the table, and that other data that fulfil the data quality requirements may also be used.

PROCESS	GEOGRAPHICAL SCOPE	DATASET	DATABASE
Miscellaneous	Varied	Varied	Ecoinvent

Table 4 Examples of databases and datasets to use for generic data.

4.7.3 DATA QUALITY REQUIREMENTS AND OTHER MODELLING GUIDANCE PER LIFE-CYCLE STAGE

Below are further data quality requirement per life-cycle stage. Exceptions to the requirements may be accepted, if justified in the EPD; such exceptions are subject to the approval by the verifier on a case-to-case basis.

4.7.3.1. Upstream processes (A1 module)

- Data referring to processes and activities upstream in a supply chain over which the EPD owner has direct management control shall be specific and collected on site.
- Data referring to processes of a supplier of flat glass, packaging, or main auxiliaries should be requested from the contractor as specific data, as well as infrastructure, where relevant. The specific recycled content of the flat glass used shall be considered. If the recycled content is not known, it shall be considered as primary material.
- Data on 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, should be specific and 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 (see Section 4.7).
- For upstream processes modelled with specific data, generation of electricity used 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 as provided by the electricity supplier.
    2. Residual electricity mix of the electricity supplier on the market.
    3. Residual electricity mix on the market[3].
    4. Electricity consumption mix on the market[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 consumption mix.

[3] The composition of the residual grid mixes on the market are available for all EU countries and a few additional European countries through the Association for Issuing Bodies (AIB) at https://www.aib-net.org/facts/european-residual-mix.

[4] For electricity markets without trade of Guarantees of Origin (or similar), the residual mix will, however, be identical to the consumption mix.

"The market" in the above hierarchy shall be defined as being the (residual or consumption) grid mix of the country where the electricity is used, with exceptions for specified countries for which a sub-national electricity grid mix shall be used: Australia, Brazil, Canada, China, India, and USA.

The mix of electricity used in upstream processes shall be documented in the EPD, where relevant.

- Packaging: specific data shall be used for production of consumer packaging, if the production is under the direct control of the EPD owner or if the environmental impact of the production is more than 10% of the declared results in any of the environmental performance indicators. In other cases, generic data may be used. When consumer packaging shows the organization's logo, the LCA report should report the exerted/non-exerted direct control on the production of consumer packaging by the organization.

4.7.3.2. Core processes (A2 and A3 modules)

- A2: Transport from the final delivery point of flat glass, raw materials, chemicals, other 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.
- A3: 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. Real yield of process, first input of flat glass component with its own initial surface (= large surface before cutting in 2D shape) and at the end of manufacturing with its real surface (= final product surface to be installed on car, train, bus, etc.) need to be taken into account.
- A3: For electricity used in the core processes, generation of electricity used 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 as provided by the electricity supplier.
    2. Residual electricity mix of the electricity supplier on the market.
    3. Residual electricity mix on the market[5].
    4. Electricity consumption mix on the market[6]. This option shall not be used for electricity used in processes over which the manufacturer (EPD owner) has direct control as long as the composition of the residual grid mix has been publicly disclosed[7].

  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 consumption mix.

  "The market" in the above hierarchy may correspond a national electricity market, if this can be justified. "The market" in the above hierarchy shall be defined as being the (residual or consumption) grid mix of the country where the electricity is used, with exceptions for specified countries for which a sub-national electricity grid mix shall be used: Australia, Brazil, Canada, China, India, and USA.

  The mix of electricity, and its climate impact (GWP-total) per kWh, used in the core processes shall be documented in the EPD, where relevant.

4.7.3.3. Downstream processes (A4 module [optional], and C1, C2, C3 and C4 modules)

- If the transport of the product to the customer (module A4) is declared, then it shall be described in the EPD, and be accounted for in this priority:

    1. Actual transportation modes and distances to a specific customer or market, representing the geographical scope of the EPD.

[5] The composition of the residual grid mixes on the market are available for all EU countries and a few additional European countries through the Association for Issuing Bodies (AIB) at https://www.aib-net.org/facts/european-residual-mix.

[6] For electricity markets without trade of Guarantees of Origin (or similar), the residual mix will, however, be identical to the consumption mix.

[7] If the composition of the residual grid mix has not been publicly disclosed, the second or third options in the above hierarchy are not feasible and thus the fourth option is the only remaining option (if the first option is not chosen).

2. A weighted average of transportation modes and distances, based on transportation to several customers or markets, representing the geographical scope of the EPD.
3. A default transportation scenario of 1000 km by truck.

- Although glass is 100% recyclable, today the authorised treatment facilities of end-of-life (EOL) vehicles do not usually separate the glass before shredding. Considering EN 17074, available statistics (ADEME 2022) and expert knowledge, the following default scenario will be applied for glass:
  - C1 (dismantling of product): the glass is usually shredded together with other materials, being the energy consumption of the process the main environmental aspect to consider. It is considered that this energy consumption is negligible for the glass, and in comparison with the energy consumed in the upstream and core processes of this product. As a consequence, the impact can be considered 0 as a default scenario. However, if data is available for C1, the environmental performance of this stage should be included.
  - C2 (waste transport): as a default scenario, it shall be considered that glass waste is transported 100 km by truck to the authorised treatment facility.
  - C3 (waste processing): the glass is not processed before recycling/landfilling, as a consequence, the value of this stage usually will be 0.
  - C4 (waste final disposal): as a default scenario, it shall be considered that 100% in weight of the waste glass is landfilled.
- For packaging waste, the most probable scenario shall be defined according to available information.
- Additionally, an alternative end-of-life stage scenario for the waste glass product may also be considered based on available specific information. Scenarios for the end-of-life stage shall be technically and economically viable and compliant with current regulations in the relevant geographical region based on the geographical scope of the EPD. Key assumptions regarding this additional end-of-life stage scenario shall be documented in the LCA report and explained in the EPD.
- 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. Residual electricity mix on the market[8].
  2. Electricity consumption mix on the market[9].

  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.

  "The market" in the above hierarchy shall be defined as being the (residual or consumption) grid mix of the country where the electricity is used, with exceptions for specified countries for which a sub-national electricity grid mix shall be used: Australia, Brazil, Canada, China, India, and USA.

  The mix of electricity used in the downstream processes shall be documented in the EPD, where relevant.

4.7.4 SPECIAL CALCULATION RULES: MODULE D - LOADS AND BENEFITS BEYOND THE SYSTEM BOUNDARIES (OPTIONAL)

Module D assesses the impact of the net flows of recovered materials (recycled or reused) from the life cycle stages A and C. The environmental impacts declared in module D can be negative as well as positive depending on the individual scenario and assumptions made. If declared, module D shall be modelled as explained in PCR 2019:14 Construction products.

Any declared net benefits and loads from net flows leaving the product system that have passed the end-of-waste state shall be included in module D, except those which have been allocated as co-products in modules A1-3.

The net flow of glass recovered is then described by the difference between the amount of input glass that has been recovered (recycled or reused) from a previous system and the amount of glass exiting the system to be recovered (recycled or reused) in a

[8] The composition of the residual grid mixes on the market are available for all EU countries and a few additional European countries through the Association for Issuing Bodies (AIB) at https://www.aib-net.org/facts/european-residual-mix.

[9] For electricity markets without trade of Guarantees of Origin (or similar), the residual mix will, however, be identical to the consumption mix.

subsequent system. The loads and benefits associated to the recovery of this net flow may be calculated (according to PCR 2019:14) and declared separately. Results of module D cannot be aggregated with the results of the product life cycle stages (see Table 5).

When assessing the environmental loads of the recovering (recycling or reusing) processes of the waste glass, the particularities of the product type (i.e., waste laminated glass, waste tempered glass, etc.) shall be taken into consideration. Likewise, when estimating the benefits of the material recovery, the specific material displaced shall be considered.

4.7.5 DATA QUALITY DECLARATION

EPDs may include a declaration of the quality of data used in the LCA calculations.

4.8 ENVIRONMENTAL PERFORMANCE INDICATORS

The EPD shall declare the default environmental performance indicators and their methods as described at the website (www.environdec.com/indicators), which includes both inventory indicators and indicators of potential environmental impact. The source and version of the impact assessment methods and characterisations factors used shall be reported in the EPD. Also, other indicators may be declared, if justified, see Section 5.4.5.

The EPD shall declare the default environmental performance indicators and their methods as described at the website (www.environdec.com/indicators), which includes both inventory indicators and indicators of potential environmental impact. The source and version of the impact assessment methods and characterisations factors used shall be reported in the EPD. Alternative regional impact assessment methods and characterisation factors may 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.

If the default list of environmental performance indicators and methods at the website is updated, the previous version of the list is valid in parallel to the new version during a transition period of at least 90 days, as described at the website.

Apart from the required inventory indicators, other inventory data may also be declared in the EPD, if relevant and useful for EPD users. Such data shall not be declared in the main body of the EPD, but in an annex.

4.9 INCLUDING MULTIPLE PRODUCTS IN THE SAME EPD

4.9.1 PRODUCTS FROM THE SAME COMPANY

Several sets of results, reflecting different products, are not allowed to be declared in the same EPD. However, similar products (= same process, same glass position [different colours allowed], same function and same transportation type) from a single or several manufacturing sites covered by the same PCR and manufactured by the same company with the same major steps in the core processes may be grouped and thereby included in the same EPD. For such an EPD, there are three options:

- For each indicator, declare the average results of the included products. This average shall be weighted according to the production volumes of the included products, if relevant. In this option, the average content shall be declared in the content declaration.
- Declare the results of one of the included products – a representative product. The choice of the representative product shall be justified in the EPD, using, where applicable, statistical parameters. For example, the choice may be based on production volumes. In this option, the content of the representative product shall be declared in the content declaration.
- For each indicator, declare the highest result of the included products (i.e., the results of a “worst-case product”, which may be the results of one or several of the included products). In this option, the content declaration shall include the lowest amounts of recycled and biogenic content of the included products and their packaging, respectively, and the information on environmental and hazardous properties of substances shall reflect the highest share and most hazardous such substances contained in the any of the included products.

The first two options are only possible if none of the declared environmental impact indicator results differ by more than 10% between any of the included products. The third option is possible also if variations are larger than 10%.

The option chosen shall be clearly described in the EPD.

4.9.2 SECTOR EPDS

The International EPD® System allows for an industry association to develop an EPD in the form of a Sector EPD. A Sector EPD declares the average product of multiple companies in a clearly defined sector in a clearly defined geographical area. Products covered in a sector EPD shall follow the same PCR and the same declared unit shall be applied.

Any communication of the results from a Sector EPD should contain the information that the results are based on averages obtained from the sector as defined in the EPD. The communication shall not claim that the sector EPD results are representative for a certain manufacturer or its product.

The following information shall also be included a Sector EPD:

- 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 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 at www.environdec.com.

The EPD content shall:

- be in line with the requirements and guidelines in ISO 14020 (Environmental labels and declarations – General principles),
- be verifiable, accurate, relevant and not misleading, and
- not include rating, judgements or direct comparison with other products[10].

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

The content of EPDs published in machine-readable format shall correspond with the content of the underlying EPD.

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, also subject to the verification process.

5.2 UNITS AND QUANTITIES

The following requirements apply for units and quantities:

- The International System of Units (SI units) shall be used where available, 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.

[10] Therefore, results of normalization are not allowed to be reported in the EPD.

- Results of the environmental performance indicators shall be expressed in the units prescribed by the impact assessment methods, e.g. kg CO2 equivalents.

- Three significant figures[11] should be adopted for all results. The number of significant digits shall be appropriate and consistent.
- Scientific notation may be used, e.g. 1.2E+2 for 120, or 1.2E-2 for 0.012.
- 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 “ND” (Not Declared). It is not possible to specify ND for mandatory indicators. ND shall only be used for voluntary parameters that are not quantified because no data is available.[12]
  - Contain no blank cells, hyphens, less than or greater than signs or letters (except “ND”).
  - 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 shall 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)
- Additional social and economic information (see Section 5.4.7)
- References (see Section 5.4.9)

The following sections shall be included, if relevant:

- Differences versus previous versions (see Section 5.4.8)
- Executive summary in English (see Section 5.4.10)

[11] 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 $1.2*10^{-2}$.

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

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[13]
- 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.”*
- A statement of conformity with ISO 14025.
- For EPDs covering multiple products: a statement that the EPD covers multiple products and a list of all products covered by the EPD.
- For Sector EPDs: a statement that the EPD is a Sector EPD.

Where applicable, the cover page shall also include the following information:

- Information about dual registration of EPD in another programme, such as registration number and logotype.
- A statement of conformity with other standards and methodological guides.

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 statement on the requirements for comparability of EPDs, adapted from ISO 14025: *“EPDs within the same product category but from different programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.”*
- A statement that the EPD owner has the sole ownership, liability and responsibility of the EPD
- Information about verification[14] and the PCR in a table with the following format and contents:

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)

[13] 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.

[14] 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.

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>*
Life Cycle Assessment (LCA)
LCA accountability: *<name, organization>*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☐ EPD verification by individual verifier Third-party verifier: *<name, organisation, and signature of the third-party verifier>* Approved by: The International EPD® System
OR
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☐ EPD verification by accredited certification body Third-party verification: *<name, organisation>* is an approved certification body accountable for the third-party verification The certification body is accredited by: *<name of accreditation body & accreditation number, where applicable>*
OR
Independent third-party verification of the declaration and data, according to ISO 14025:2006 via: ☐ EPD verification by EPD Process Certification* Internal auditor: *<name, organisation>* Third-party verification: *<name, organisation>* is an approved certification body accountable for third-party verification Third-party verifier is accredited by: *<name of accreditation body & accreditation number, where applicable>* *For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI v4, Section 7.5.
Procedure for follow-up of data during EPD validity involves third-party verifier: ☐ Yes ☐ No

5.4.3 PRODUCT INFORMATION

The product information section of the EPD shall include:

- address and contact information of the 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,
- 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),
  - Australian and New Zealand Standard Industrial Classification (ANZSIC), or
  - Global Trade Item Number (GTIN).
- a description of the product,
- a description of the technical purpose of the product, including its application/intended use,
- a description of the background system, including the main technological aspects,
- for EPDs covering multiple products: a description of the selection of products/sites, a list of contributing manufacturers (if Sector EPD), etc. (see Section 4.9),
- geographical scope of the EPD, i.e., for which geographical location(s) of production and end-of-life the product's performance has been calculated (see Table 5 for an example),
- declared unit,
- 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 relevant,
- system diagram of the processes included in the LCA, divided into the life cycle stages and information modules (see Table 5 for an example),
- description if the EPD system boundary "cradle-to-gate with options",
- information on which life-cycle stages are not considered, with a justification of the omission, and
- references to any 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,
- any additional information about the underlying LCA-based information, such as cut-off rules, data quality, allocation methods, and other methodological choices and assumptions,
- a description of the material properties of the product with a declaration of relevant physical or chemical product properties, such as density, etc., and
- if end-of-life treatment is not included, the EPD shall contain a statement that it shall not be used for communicating environmental information to consumer/end users of the product.

Table 5 Example for reporting modules and life cycle stages declared, as well as geography and data variation.

LIFE CYCLE STAGES	UPSTREAM	CORE		DOWNSTREAM					
Life Cycle modules	A1 – Raw materials and components production	A2 – Transport of inputs	A3 – Glass product manufacturing and packaging	A4 – Product distribution	C1 – Dismantling of product	C2 – Waste transport	C3 – Waste processing	C4- Waste final disposal	D- Resource recovery stage
Modules declared									
Geography									
Variation - sites				(not applicable)					

Notes: 1) Modules declared shall be noted with "X", modules not declared as "ND". 2) Geographical representation per module shall be reported by the country code(s) (e.g. FR, ES, DE) and/or name of the region(s) (e.g. EU 27). 3) If the EPD is based on multiple manufacturing sites (A3), the difference in GWP indicator results in A1-A3 between the reported average and the results for the underlying sites shall be reported in percentage. If the results are for one manufacturing site, "not relevant" shall be declared.

5.4.4 CONTENT DECLARATION

The content declaration section shall declare the weight of one unit of product, as purchased, and contain information about the content of the product in the form of a list of materials and chemical substances including information on their environmental and hazardous properties. The gross weight of each material/substance shall be declared, including a minimum of 99% of the materials/substances in one unit of product.

The content declaration does not apply to proprietary materials and substances covered by exclusive legal rights including patent and trademarks. In general, an indication that a product is "free" of a specific hazardous material or substance should be done with caution and only when relevant, following the rules in ISO 14021 on self-declared environmental claims.

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),[15] issued by the 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); and
- 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.

5.4.4.1. Information about recycled materials

When a product is made in whole or in part with recycled materials, the provenance 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 that may be considered "recycled material", the guidance given in ISO 14021 shall be considered. In brief, the standard states that:

- only pre-consumer or post-consumer materials (cullet and scraps) shall be considered in the accounting of the recycled materials, and

[15] The GHS document is available at http://www.unece.org.

- materials coming from scrap reutilisation (such as internal cullet, or 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.

5.4.5 ENVIRONMENTAL PERFORMANCE

Below subsections list the mandatory environmental performance indicators to declare in the EPD. LCA results based on additional indicators may be declared, if they are relevant for the product category, their inclusion is justified in the EPD, appropriate methods[16] are used, and the results are verifiable. If the additional indicators appear to the reader to display duplicate information, the EPD shall contain an explanation of the differences between the declared indicators.

5.4.5.1. Environmental impacts

The EPD shall declare the environmental impact indicators, per declared unit, per life-cycle stage, per life-cycle module and in aggregated form (see an example in Table 6), using the default impact categories, impact assessments methods and characterisation factors available at www.environdec.com/indicators. The source and version of the impact assessment methods and characterisation factors used shall be reported in the EPD.

Alternative regional life cycle impact assessment methods and characterisation factors may 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.

5.4.5.2. Use of resources

The EPD shall declare the mandatory, and may declare the optional, indicators for resource use listed at www.environdec.com/indicators per declared unit, per life-cycle stage, per life-cycle module and in aggregated form. Waste production and output flows

Waste generated along the whole life cycle production chains shall be treated following the technical specifications described in the GPI. The EPD may declare the optional indicators for waste production and output flows as listed www.environdec.com/indicators per declared unit, per life-cycle stage, per life-cycle module and in aggregated form.

Table 6 Example for declaring the environmental performance per life cycle stage and information modules.

LIFE CYCLE STAGES	UPSTREAM	CORE			DOWNSTREAM						Total (Upstream to Downstream)	D- Resource recovery stage
Life Cycle modules	A1 – Raw materials and components production	A2 – Transport of inputs	A3 – Glass product manufacturing and packaging	Total Core	A4 – Product distribution	C1 – Dismantling of product	C2 – Waste transport	C3 – Waste processing	C4- Waste final disposal	Total Downstream		
Environmental impacts …												
Use of resources …												

[16] If any of the following impact categories are declared in the EPD, the corresponding characterisation methods listed in EN 15804 should be used: particulate matter emissions, ionizing radiation (human health), eco-toxicity (freshwater), human toxicity (cancer effects), human toxicity (non-cancer effects) and land use related impacts/soil quality. If these impact categories and characterisation methods are used, the corresponding disclaimers listed in EN 15804 shall be declared in the EPD.

Waste production and output flows …												

5.4.6 ADDITIONAL ENVIRONMENTAL INFORMATION

An EPD may declare additional environmentally relevant information not derived from the LCA-based calculations, such as:

- instructions for proper use of the product, e.g. to minimise energy or water consumption or to improve the durability of the product,
- instructions for proper maintenance and service of the product, e.g. to minimise energy or water consumption or to improve the durability of the product,
- information on key parts of the product that determine its durability,
- information on recycling including, e.g. suitable procedures for recycling the entire product or selected parts and the potential environmental benefits gained,
- information on a suitable method of reuse of the product (or parts of the products) and procedures for disposal as waste at the end of its life cycle,
- information regarding disposal of the product, or inherent materials, and any other information considered necessary to minimise the product's end-of-life impacts, and
- a more detailed description of an organisation's overall environmental work, in addition to the information listed under Section 5.4.3, such as:
  - the existence of any type of organised environmental activity, and
  - information on where interested parties may find more details about the organisation's environmental work.

Any additional environmental information declared shall be substantiated and verifiable, and be derived using appropriate methods and be specific, accurate, not misleading, and relevant to the specific product. Quantitative information is preferred over qualitative information.

5.4.7 ADDITIONAL SOCIAL AND ECONOMIC INFORMATION

The EPD may also include other relevant social and economic information as additional and voluntary information. This may be product information or a description of an organisation's overall work on social or economic sustainability, such as activities related to supply chain management or social responsibility.

Any additional social and economic information declared shall be substantiated and verifiable, and be derived using appropriate methods and be specific, accurate, not misleading, and relevant to the specific product. Quantitative information is preferred over qualitative information.

5.4.8 DIFFERENCES VERSUS PREVIOUS VERSIONS

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

- a description of the differences versus previously published versions, and
- a revision date on the cover page.

5.4.9 REFERENCES

A reference section shall be included, including a list of all sources referred to in the EPD, including the GPI (including version number), and PCR (registration number, name, and version) used to develop the EPD.

5.4.10 EXECUTIVE SUMMARY IN ENGLISH

The executive summary, if included (see Section 5.1), shall contain relevant summarised information related to the programme, product, environmental performance, information related to pre-certified EPDs, and information related to sector EPDs. Besides this, further information may be added such as additional environmental, social or economic information, references as well as differences versus previous EPD versions.

6 LIST OF ABBREVIATIONS

ANZSIC	Australian and New Zealand Standard Industrial Classification
CPC	Central product classification
CPV	Common procurement vocabulary
EPD	Environmental product declaration
GPI	General Programme Instructions
GTIN	Global trade item number
ISO	International Organization for Standardization
LCA	Life cycle assessment
LCI	Life cycle inventory
NACE/CPA	Classification of products by activity
ND	Not declared
PCR	Product category rules
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RSL	Reference service life
SI	The International System of Units
UN	United Nations
UNSPSC	United Nations standard products and services code

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.

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EPD International (2021). c-PCR to PCR 2019:14. Version 2021-01-25 (EN 17074:2019).

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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 (2015a) ISO 14001:2015, Environmental management systems – Requirements with guidance for use.

ISO (2015b) ISO 9001:2015, Quality management systems – Requirements.

ISO (2016a) ISO 21067-1:2016, Packaging – Vocabulary – Part 1: General terms.

ISO (2016b) ISO 14021:2016, Environmental labels and declarations - Self-declared environmental claim (Type II environmental labelling).

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

ISO (2018) ISO 14024:2018, Environmental labels and declaration – Type I environmental labelling – Principles and procedures.

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8 VERSION HISTORY OF PCR

8.1. VERSION 1.0.0, 2023-05-16

Original version of the PCR.

GLASS PRODUCTS USED IN AUTOMOTIVE AND TRANSPORT INDUSTRY
PRODUCT CATEGORY CLASSIFICATION: UN CPC 37113, 37115, 37116