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## **Circular economy — Product circularity data sheet**

*Économie circulaire — Fiche de données de circularité des produits*

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## Contents

Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
3.1 Terms related to acquirer and supplier relationship.....	1
3.2 Terms related to product circularity data sheet.....	3
3.3 Terms related to conformity assessment.....	6
4 Abbreviated terms.....	6
5 Governance for managing a PCDS.....	7
5.1 General.....	7
5.2 Acquirer and supplier relationship strategy.....	7
5.3 Acquirer and supplier relationship plan and associated agreement.....	8
5.4 PCDS risk assessment and risk treatment.....	9
6 Establishing and maintaining a PCDS template.....	9
6.1 PCDS template.....	9
6.2 PCDS template structure.....	12
6.3 Category: PCDS template (UID 1.0.0.00).....	14
6.4 Category: Company and product information (UID 2.0.0.00).....	16
6.5 Category: Material inputs (UID 3.0.0.00).....	19
6.6 Category: Circular production (UID 4.0.0.00).....	24
6.7 Category: Durability and extended lifetime (UID 5.0.0.00).....	25
6.8 Category: Circularity at end of product use period (UID 6.0.0.00).....	31
6.9 Category: Circularity benefits (UID 7.0.0.00).....	36
7 Managing a PCDS.....	37
7.1 Prerequisites to the handling of a PCDS.....	37
7.2 Sharing a PCDS.....	38
7.3 DI governance process for PCDS.....	39
7.4 PCDS change process.....	40
7.5 PCDS conformity assessment.....	41
8 Guidance on the specific use of a PCDS.....	42
8.1 General.....	42
8.2 Compiling information in a PCDS.....	42
8.3 Use of ranges.....	42
8.4 Data availability.....	43
Annex A (informative) Relationship table between Clause 6 and statements.....	44
Bibliography.....	47

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 323, *Circular economy*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

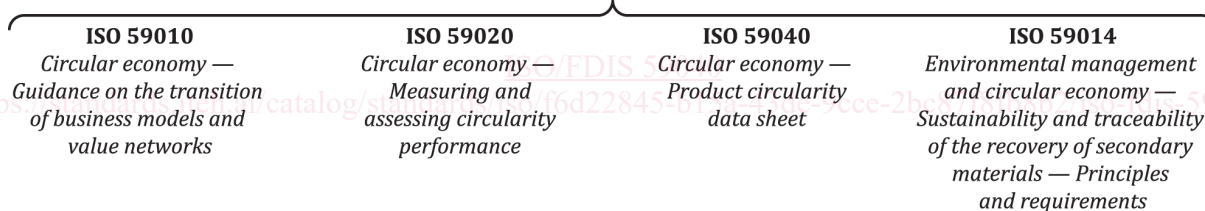
The global economy is “linear” as it is mainly based on extraction, production, use and disposal. This linear economy leads to resource depletion, biodiversity loss, waste and harmful losses and releases, all of which collectively are causing serious damage to the capacity of the planet to continue to provide for the needs of future generations.<sup>[49, [44]]</sup> Moreover, several planetary boundaries have already been reached or exceeded.

There is an increased understanding that a transition towards an economy that is more circular, based on a circular use of resources, can contribute to meeting current and future human needs (welfare, housing, nutrition, healthcare, mobility, etc.). Transitioning towards a circular economy can also contribute to the creation and sharing of more value within society and interested parties, while natural resources are managed to be replenished and renewed and in a sustainable way, securing the quality and resilience of ecosystems.

Organizations recognize many potential reasons to engage in a circular economy (e.g. delivering more ambitious and sustainable solutions; improved relationships with interested parties; more effective and efficient ways to fulfil voluntary commitments or legal requirements; engaging in climate change mitigation or adaptation; managing resource scarcity risks, increasing resilience in the environmental, social and economic systems), while contributing to satisfying human needs.

The ISO 59000 family of standards (see [Figure 1](#)) is designed to harmonize the understanding of the circular economy and to support its implementation and measurement. It also considers organizations, such as government, industry and non-profit, in contributing to the achievement of the United Nations (UN) Agenda 2030 for Sustainable Development.<sup>[50, [45]]</sup>

ISO 59004, *Circular economy — Vocabulary, principles and guidance for implementation*



**Figure 1 — ISO 59000 family of standards**

Organizations throughout the world work with suppliers to acquire products. Many organizations establish multiple supplier relationships to cover a variety of business needs, such as purchasing, development, manufacturing, sales and after sales services. Conversely, suppliers provide products to a range of acquirers.

Acquirers and suppliers willing to enter or having entered a relationship for the purpose of dealing with a variety of products should introduce the product circularity data sheet (PCDS) based on the circular economy principles described in the ISO 59000 family of standards. The PCDS is intended to provide information to support the understanding of the circularity aspects of a product, as aligned to the circular economy principles according to the ISO 59000 family of standards. The PCDS is a method of reporting on the circularity performance of a product using PCDS statements providing verifiable data.

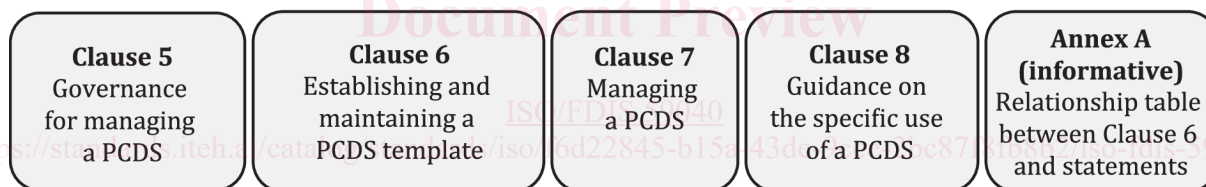
This document:

- a) provides a general methodology for implementing, operating, monitoring, reviewing and maintaining a PCDS when acquiring or supplying products;
- b) specifies requirements for the reporting of information to be used when creating a PCDS template and provides guidance about managing and sharing a PCDS;
- c) contains guidance and requirements on how to exchange product information that supports the circular economy using a PCDS;
- d) is intended to facilitate circular economy business models as specified in ISO 59010, by focusing on the exchange of circularity aspects of products (business to business relationship); ~~and~~
- e) ~~e)~~ is intended to be used by any organization wishing to adopt circular-economy-based practices in their supplier or acquirer relationships.

Data collected by this method can be used for digitalized product documentation.

In order to ensure the application of this ~~standard~~document, it can be beneficial to have in place tested and mature systems that apply the specified methodology for managing product circularity data. In accordance with ISO/IEC Guide 17, suitable solutions for all sizes of enterprises should be accessible to reduce burdens. To ensure that small businesses can effectively manage the systems and ~~comply with the standard~~conform to this document, training ~~programs~~programmes can be established. These ~~programs~~programmes can aim to educate small businesses on how to use the systems and understand the requirements of this ~~standard~~document. Recognizing that small businesses require more time and resources to implement ~~the standard~~this document, a transition period can be provided.

The structure of this document is shown in [Figure 2](#).



**Figure 2 — Structure overview**

[Clause 5](#) provides acquirer and supplier guidance for successfully developing and implementing an acquirer and supplier relationship strategy, plan and the associated agreement. [Clause 5](#) also provides guidance for considering PCDS from a risk management perspective.

The guidance contained in [Clause 5](#) should be followed by an organization in the context of using a PCDS when acquiring products or when supplying them, or both.

[Clause 6](#) provides requirements and guidance for establishing and maintaining a PCDS template. It provides guidance on mandatory and additional statements that can be considered when establishing a PCDS template.

[Clause 7](#) provides requirements and guidance to suppliers on processes to produce and manage a PCDS. A supplier is providing answers to each mandatory statement of a PCDS template in order to claim conformance to this document. The additional statements and supplementary information of a PCDS template are not a requirement of this document, meaning that a supplier may claim conformance to this document without completing them.

[Clause 8](#) provides guidance on specific application and usage of a PCDS.

[Annex A](#) provides a relationship table between [Clause 6](#) and PCDS statements.

In this document, the following verbal forms are used:

- “shall” indicates a requirement;
- “should” indicates a recommendation;
- “may” indicates a permission;
- “can” indicates a possibility or a capability.

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# Circular economy — Product circularity data sheet

## 1 Scope

This document establishes a general methodology for information exchange supporting the interoperability of circular economy related information, based on the use of a product circularity data sheet (PCDS).

This document specifies requirements for completing a PCDS by an organization, regardless of its type, size and nature, when acquiring or supplying products in order to permit the exchange of circular economy related information about those products, without disclosing confidential business information.

This document also specifies requirements for the reporting format to be used when creating a PCDS template, based on the selection and use of various product circularity statements, according to the characteristics of the product.

In addition, this document gives guidance on managing and sharing a PCDS, as well as guidance on creating a PCDS template.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 59004:2024, *Circular economy — Vocabulary, principles and guidance for implementation*

ISO 59020:2024, *Circular economy — Measuring and assessing circularity performance*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 59004 and the following apply.<sup>10</sup>

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1 Terms related to acquirer and supplier relationship

#### 3.1.1

##### **acquirer**

*organization* (3.1.2) that acquires or procures a *product* (3.1.3) from another party that is intended for or required by this organization

EXAMPLE Consumer, client, end-user, retailer, receiver of product or service from an internal process, beneficiary, purchaser.

[SOURCE: ISO/IEC/IEEE 15288:2023, 3.1, modified — ~~The term stakeholder has been replaced by “organization, the term supplier has been”~~ replaced by “stakeholder”, “product from another party that is intended for or required by this organization ~~or individual, and”~~ replaced “system, product or service ~~has been changed from a supplier”~~. Example replace Note 1 to ~~product entry~~.]

### 3.1.2

#### **organization**

person or group of people that has its own functions with responsibilities, authorities, and relationships to achieve its objectives

Note 1 to entry: The concept of organization includes, but is not limited to sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public, or private (e.g. foundation, union, association, agency, municipality, region, country, intergovernmental agencies).

Note 2 to entry: A group of organizations can also be considered as an organization that has, alone or collectively, their own objectives.

[SOURCE: ISO 59004:2024, 3.4.1]

### 3.1.3

#### **product**

physical-based object designed for or utilized with a purpose

- Note 1 to entry: A product can be, for example:
- goods of any type;
- hardware (e.g. engine mechanical part, spare parts, consumables);
- electrical or electronic hardware devices or components (e.g. computers, communication equipment and sensors);
- processed materials (e.g. lubricant, [cement](#)).

[SOURCE: ISO 59004:2024, 3.2.2]

### 3.1.4

#### **risk**

effect of uncertainty

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[SOURCE: ISO 14050:2020, 3.1.7]

### 3.1.5

#### **sensitive information**

information that needs to be protected from unavailability, unauthorized access, modification or public disclosure because of potential adverse effects on an individual, *organization* ([3.1.2](#)), national security or public safety

[SOURCE: ISO/IEC 27002:2022, 3.1.33]

### 3.1.6

#### **supplier**

*organization* ([3.1.2](#)) or an individual that enters into an agreement with another party for the supply of a *product* ([3.1.3](#))

Note 1 to entry: Examples are producer, manufacturer, distributor, retailer or vendor of a product.

Note 2 to entry: Types of suppliers include those organizations that permit agreement negotiation with an *acquirer* ([3.1.1](#)) and those that do not permit negotiation with agreements, (e.g. end-user [license](#)/[licence](#) agreements, terms of use, ~~or~~ open-source products, copyright or intellectual property releases.).

[SOURCE: ISO 9000 and ISO/IEC/IEEE 15288:2023, 3.45, modified — ~~The term *acquirer* has been replaced by “another party”~~ replaced “*acquirer*” and ~~*product* “or service was changed to *product*. Note 1”~~ added in the definition. Notes to entry replaced the example and ~~Note 2~~ note to entry ~~have been replaced.~~]

### 3.1.7

#### supplier relationship

agreement or agreements between *acquirers* (3.1.1) and *suppliers* (3.1.6) to conduct business and deliver *products* (3.1.3)

[SOURCE: ISO/IEC 27036-1:2021, 3.9, modified — “or services, and realize business benefit” has been deleted from the end of the definition.]

## 3.2 Terms related to product circularity data sheet

### 3.2.1

#### chain of custody

process by which inputs and outputs and associated information are transferred, monitored and controlled as they move through each step in the relevant supply chain

[SOURCE: ISO 22095:2020, 3.1.1]

### 3.2.2

#### circular economy

economic system that uses a systemic approach to maintain a circular flow of resources by recovering, retaining or adding to their value, while contributing to sustainable development

Note 1 to entry: Resources can be considered concerning both stocks and flows.

Note 2 to entry: The inflow of virgin resources is kept as low as possible, and the circular flow of resources is kept as closed as possible to minimize waste, losses and releases from the economic system.

[SOURCE: ISO 59004:2024, 3.1.1]

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### 3.2.3

#### demounting

process of removing a *product* (3.1.3) from its mounting or setting, without damaging the product or its performance or contaminating other products or assemblies

EXAMPLE 1 Performance of product such as static or mechanical functions.

EXAMPLE 2 Product being demounted from a building or vehicle.

Note 1 to entry: Clean installation and demounting of products are fundamental for their repair and next use. These can occur at many levels. For example, an assembled product designed to be installed in a more complex product e.g. a battery in a computer. Or the assembled product designed to be installed in a building or vehicle.

### 3.2.4

#### disassembly

process whereby a *product* (3.1.3) is taken apart in such a way that it can subsequently be reassembled and made operational

[SOURCE: IEC 62542:2013, 6.1, modified — “~~could~~~~can~~” replaced by “~~can~~”]“~~could~~”.]

### 3.2.5

#### dismantling

process whereby a *product* (3.1.3) is taken apart in such a way that it is not intended to be reassembled and made operational

Note 1 to entry: After dismantling some parts can be reused.

Note 2 to entry: In some languages or sectors, the term dismantling is used as synonym of disassembly or deinstallation.

[SOURCE: ISO 14009:2020, 3.2.16, modified — Part of the definition ~~was~~ moved to ~~note~~Note 1 to entry ~~and~~ ~~note~~, Note 2 to entry added.]

### 3.2.6

#### **interoperability**

ability of *organizations* (3.1.2) to communicate and interact effectively

Note 1 to entry: Interoperability is considered as significant if the interactions can take place in at least one of the four areas of interoperability concerns: data, service, process and business.

[SOURCE: ISO 11354-1:2011, 2.1, modified — “enterprise” deleted in the term. “organizations” replaced “enterprises and entities within those enterprises” in the definition.]

### 3.2.7

#### **hazardous substance**

substance which can adversely affect human health or the environment with immediate or retarded effect, either by itself or through interaction with other factors

Note 1 to entry: Hazardous substances are typically identified by international or national regulations which guide on proper processing and disposal.

[SOURCE: ISO 59014<sup>1</sup>:2024, 3.9]

### 3.2.8

#### **material**

substance or mixture of substances within a *product* (3.1.3) or product part

[SOURCE: IEC 62474:2018, 3.15]

### 3.2.9

#### **product circularity data sheet**

##### **PCDS**

product declaration which presents standardized information on the circularity aspects of a *product* (3.1.3) that can be used partially or entirely by other interested parties to enable evaluation of product circularity

### 3.2.10

#### **product circularity data sheet statement**

##### **PCDS statement**

information that describes circularity aspects of a *product* (3.1.3) in a True or False format that is verifiable

Note 1 to entry: PCDS statements are either general or sector specific.

Note 2 to entry: Sector-specific statements are used when applicable.

Note 3 to entry: PCDS statements are completed by the reporting organization (i.e. the one supplying products).

### 3.2.11

#### **product circularity data sheet template**

##### **PCDS template**

form consisting of business information, *PCDS statements* (3.2.10) and supplementary information

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<sup>1</sup>Under preparation. Stage at the time of publication: ISO/FDIS 59014:2024.

Note 1 to entry: A PCDS (3.2.9) represents a completed form filled in by a *supplier* (3.1.6) based on a PCDS template.

### 3.2.12

#### **post-consumer recycled material**

*material* (3.2.8) that has been reprocessed from waste from end-users

Note 1 to entry: End-users can be individuals or entities such as households, or commercial, industrial and institutional facilities in their role as end-users.

Note 2 to entry: This includes returns of material from the distribution chain.

[SOURCE: IEC 82474-1<sup>2)</sup>; ~~—, 1)~~ 3.2.134.6]

### 3.2.13

#### **pre-consumer recycled material**

*material* (3.2.8) that has been reprocessed from waste material diverted from manufacturing process

Note 1 to entry: Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Note 2 to entry: Pre-consumer recycled material is sometimes referred to as ~~Postpost~~-industrial recycled material.

[SOURCE: IEC 82474-1~~); —, 3.2.144.4]~~

### 3.2.14

#### **recycled content**

proportion, by mass, of recycled *material* (3.2.8) in a *product* (3.1.3)

[SOURCE: ISO 14009:2020, 3.2.23]

### 3.2.15

#### **renewable energy**

energy generated from a renewable resource [ISO/FDIS 59040](#)

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### 3.2.16

#### **sector**

section of industry or technology where specialized practices are used, requiring specific product-related knowledge, skill, equipment or training

Note 1 to entry: A sector can be interpreted to mean a *product* (3.1.3) (such as welded products) or an industry (such as aerospace, in-service testing).

[SOURCE: ISO 9712:2021, 3.37, modified — “practices” replaced “NDT practices” in the definition. “castings” deleted in Note 1 to entry.]

### 3.2.17

#### **statement**

provision that conveys information

[SOURCE: ISO/IEC 20944-1:2013, 3.1.5.2]

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<sup>2)</sup> Under preparation. Stage at the time of publication: IEC/DIS 82474-1:2023.

<sup>1)</sup> Under preparation. Stage at the time of publication: IEC/FDIS 82474-1:2024.

### 3.3 Terms related to conformity assessment

#### 3.3.1 audit

process for obtaining relevant information about an object of *conformity assessment* (3.3.2) and evaluating it objectively to determine the extent to which specified requirements are fulfilled

Note 1 to entry: The specified requirements are defined prior to performing an audit so that the relevant information can be obtained.

Note 2 to entry: Examples of objects for an audit are management systems, processes, *products* (3.1.3) and services.

Note 3 to entry: For accreditation purposes, the audit process is called “assessment”.

[SOURCE: ISO/IEC 17000:2020, 6.4]

#### 3.3.2 conformity assessment

demonstration that specified requirements are fulfilled

[SOURCE: ISO/IEC 17000:2020, 4.1, modified — Notes 1 to 4 to entry deleted.]

#### 3.3.3 third party

person or body that is recognized as being independent of the parties involved, as concerns the issues in question

[SOURCE: ISO 14050:2020, 3.2.8]

#### 3.3.4 verification

confirmation of a claim, through the provision of objective evidence, that specified requirements have been fulfilled

Note 1 to entry: Verification is considered to be a process for evaluating a claim based on historical data and information to determine whether the claim is materially correct and conforms with specified requirements.

Note 2 to entry: Verification is applied to claims regarding events that have already occurred or results that have already been obtained (confirmation of truthfulness).

Note 3 to entry: Verification can be performed as conformity assessment, including evidence gathering and the following decision on confirming the claim by issuing a verification statement. It can also be performed as determination activity contributing to the evidence gathering of another conformity assessment, such as product certification.

[SOURCE: ISO/IEC 17029:2019, 3.3, modified — Note 3 to entry ~~has been modified~~ replaced.]

## 4 Abbreviated terms

<del>CAS</del>	<del>Chemical Abstracts Service</del>
CMR	<del>Carcinogenic</del> carcinogenic, mutagenic and reprotoxic
DI	<del>Document</del> document information
DOI	<del>Digital</del> digital object identifier
<del>EC</del>	<del>European Commission</del>