

THE INTERNATIONAL EPD COOPERATION (IEC)



**PCR BASIC MODULE**

**CPC Division 43:  
General-purpose machinery**

VERSION 1.0 DATED 2008-12-19

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## HOW TO USE PCR BASIC MODULES BASED ON THE UN CPC STRUCTURE

CPC is a complete product classification scheme covering goods and services. It is based on the physical characteristics of goods or on the nature of the services rendered. Each type of good or service distinguished in the CPC is defined in such a way that it is normally produced by only one activity as defined in the International Standard Industrial Classification of all economic activities (ISIC Rev. 3).

The use of the CPC system leads to a structure for PCR documents in two dimensions:

- a “horizontal” dimension describing the product’s value chain divided according to business sectors, i.e. building on CPC-coded information modules, and
- a “vertical” dimension defining each information module (with a further delineation of each such section into subclasses).

The CPC concept forms the basis for a PCR structure to:

- provide a structure for industry specific PCR core modules, or rather the PCR core module and up-streams modules as well as down-streams modules within the product group system boundary, and
- open up for differentiated, but defined levels of requirements in the PCR document, i.e. part of the requirements may be applicable on a generic product group level, part of the requirements may be limited to selected individual products.

PCR Basic Modules make use of this option provided by the CPC concept, and are close to ready-made draft PCR documents with some information still lacking, but the lacking information is identified in the document.

The PCR Basic Module document includes:

1. Text which is common for all full PCR documents regardless of product group, e.g. the introduction section
2. Text including requirements which are common for all products which belong to the specified product group on UN CPC code two digit level, e.g. CPC Division 01: Products of agriculture, horticulture and market gardening. PCR requirements valid on two digit level are specified (marked with CPC XX).
3. Identified specific requirements or information, written in *italic*, which must be decided upon on a more detailed level than the CPC Division level. In the final PCR document this detailed level could be anything from CPC three digit level to five digit level dependent on the level of the final PCR document. Thus, the information requested in *italic* shall be replaced by the relevant text, e.g. instead of the text “product group” in the PCR Basic Module document the final PCR document may read “transformers” in a PCR for transformers

The PCR Basic Module document provides a close to ready-made PCR document. Just decide upon and add the relevant information requested in *italic*

## DIVISION 43: GENERAL-PURPOSE MACHINERY

### [431](#) - Engines and turbines and parts thereof

[4311](#) - Internal combustion piston engines, other than for motor vehicles and aircraft

[4312](#) - Internal combustion engines of a kind used for motor vehicles

[4313](#) - Motors and engines for aircraft and spacecraft; aircraft launching gear, deck-arrestor or similar gear, and ground flying trainers

[4314](#) - Steam turbines and other vapor turbines; hydraulic turbines and water wheels; gas turbines other than turbo-jets and turbo-propellers

[4315](#) - Parts for the goods of classes 4311 to 4314

### [432](#) - Pumps, compressors, hydraulic and pneumatic power engines, and valves, and parts thereof

[4321](#) - Hydraulic and pneumatic power engines and motors

[4322](#) - Pumps for liquids; liquid elevators

[4323](#) - Air or vacuum pumps; air or other gas compressors

[4324](#) - Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like

[4325](#) - Parts for the goods of classes 4321 to 4324

### [433](#) - Bearings, gears, gearing and driving elements, and parts thereof

[4331](#) - Ball or roller bearings

[4332](#) - Transmission shafts and cranks; bearing housings and plain shaft bearings; gears and gearing; ball or roller screws, gear boxes and other speed changers; flywheels and pulleys; clutches and shaft couplings; articulated link chain

[4333](#) - Parts for the goods of classes 4331 and 4332

### [434](#) - Ovens and furnace burners and parts thereof

[4341](#) - Furnace burners for liquid fuel, for pulverised solid fuel or for gas; mechanical stokers, mechanical grates, mechanical ash dischargers and similar appliances

[4342](#) - Industrial or laboratory furnaces and ovens, except non-electric bakery ovens; other industrial or laboratory induction or dielectric heating equipment

[4343](#) - Parts for the goods of subclasses 43410 and 43420; parts of non-electric bakery ovens

[435](#) - Lifting and handling equipment and parts thereof

[4351](#) - Pulley tackle and hoists other than skip hoists; winches and capstans; jacks

[4352](#) - Derricks; cranes; mobile lifting frames, straddle carriers and works trucks fitted with a crane

[4353](#) - Fork-lift trucks; other works trucks whether or not fitted with lifting or handling equipment; tractors of the type used on railway station platforms

[4354](#) - Lifts, skip hoists, escalators and moving walkways

[4355](#) - Pneumatic and other continuous action elevators and conveyors, for goods or materials

[4356](#) - Other lifting, handling, loading or unloading machinery

[4357](#) - Parts for the goods of subclasses 43510 to 43560

[4358](#) - Buckets, shovels, grabs and grips for cranes, excavators and the like

[439](#) - Other general-purpose machinery and parts thereof

[4391](#) - Gas generators; distilling plant; air conditioning and refrigerating equipment; filtering machinery

[4392](#) - Machinery for cleaning bottles, packing, and weighing; spraying machinery

[4393](#) - General-purpose machinery n.e.c.

[4394](#) - Parts for the goods of classes 4391 to 4393

## GENERAL INTRODUCTION

*(This section shall be included in all PCR- documents)*

The international EPD® system is based on a hierarchic approach following the international standards ISO 9001 (**Quality management systems**), ISO 14001 (**Environmental management systems**), ISO 14040 (**LCA - Principles and procedures**), ISO 14044 (**LCA - Requirements and guidelines**), ISO 14025 (**Type III environmental declaration**s) and ISO 21930 (**Environmental declaration of building products**) upon which the General Programme Instructions are based, as well as instructions for developing Product Category Rules (PCR).

The documentation to the International EPD® system includes three separate parts ([www.environdec.com](http://www.environdec.com)):

**Introduction, intended uses and key programme elements**  
**General Programme Instructions**  
**Supporting annexes**

This PCR-document specifies further and additional minimum requirements on EPDs of the product group defined below complementary to the above mentioned general requirement documents.

Principle programme elements concerning the Product Category Rules (PCR) included in International EPD® system are presented below.

Purpose	Element identification and principal approach
Complying with principles set in ISO 14025 on modularity and comparability	1. "Book-keeping LCA approach" 2. A Polluter-Pays (PP) allocation method
Simplifying work to develop Product Category Rules (PCR)	3. PCR Module Initiative (PMI) in order to structure PCR in modules according to international classification 4. PCR moderator for leadership and support of the PCR work
Secure international participation in PCR work	5. Global PCR Forum for open and transparent EPD stakeholder consultation
Facilitating, identification and collection of LCA-based information	6. Selective data quality approach for specific and generic data

Product Category Rules (PCR) are specified for specified information modules "gate-to-gate", so called core modules. The structure and aggregation level of the core modules is defined by the United Nation Statistics Division - Classification Registry CPC codes (<http://unstats.un.org>). The PCR also provides rules for which methodology and data to use in the full LCA, i.e. life cycle parts up-streams and down-streams the core module. The PCR

also has requirements on the information given in the EPD, e.g. additional environmental information. A general requirement on the information in the EPD is that all information given in the EPD, mandatory and voluntary, shall be verifiable.

In the EPD, the environmental performance associated with each of the three life-cycle stages mentioned above are reported separately:

## 1 GENERAL INFORMATION

*(This section shall after editing be included in all PCR document)*

This document provides Product Category Rules (PCR) for the assessment of the environmental performance of UN CPC 43XXX *product group* and the declaration of this performance by an EPD.

This PCR document was developed by *names of companies*.

The appointed PCR moderator is *name, e-mail address*

The PCR document was subject to an open consultation on the Global PCR Forum ([www.environdec.com](http://www.environdec.com)) from *date* until *date*

*Date of approval and version number of the PCR shall be documented on the front page.*

This PCR document is valid for *geographical representativeness* until *date*. Any comments to this PCR document may be given on the Global PCR Forum or directly to the PCR moderator during the period of validity.

The PCR document is a living document. If relevant changes in the LCA methodology or in the technology for the product category occur, the document will be revised and any changes will be published on the international website: [www.environdec.com](http://www.environdec.com).

The EPD shall refer to a specific PCR version number. The production of new PCR versions does not affect the EPD certification period.

## 2 DEFINITION OF THE PRODUCT GROUP

*The products and services included in the product group shall be described. Examples on products included and not included may be given for assistance to the EPD developer.*

The product group and CPC code shall be specified in the EPD. (CPC 43)

### 2.1 SPECIFICATION OF MANUFACTURING COMPANY

*The PCR shall specify the information on the manufacturing/producing company that is required in the EPD, separated into mandatory and voluntary information.*

Example:

Mandatory information	Example of voluntary information
Name of the company	Specific aspects regarding the production
Production site(s)	Environmental policy
Issuer and Contacts	
Information on environmental management system	

## 2.2 SPECIFICATION OF THE PRODUCT

*The PCR is a template for one of the products in the product group, including e.g. engines, turbines, pumps, compressors, hydraulic and pneumatic power engines, valves, bearings, gears, gearing and driving elements, ovens, furnace burners, lifting and handling equipment and other general-purpose machinery and parts thereof. Type of product shall be specified at a more detailed CPC level.*

*The PCR shall specify the information on the product required in the EPD.*

## 3 FUNCTIONAL UNIT

The functional unit shall be one product unit (CPC 43).

*If not relevant the functional unit shall be defined at a more detailed CPC level. The CPC code shall be given in the PCR document*

The functional unit shall be declared in the EPD (CPC 43).

## 4 CONTENT OF MATERIALS AND CHEMICAL SUBSTANCES

The gross weight of material shall be declared in the EPD at a minimum of 99% of one product unit (CPC 43). *Deviations from this requirement shall be justified at a more detailed CPC level, which shall be given in the PCR document.*

Content of regulated substances within the geographical regions for which the EPD is valid shall be declared as well as the geographical validity of the EPD. (CPC 43)

## 5 UNITS AND QUANTITIES

SI units shall be used (CPC 43).



A maximum of three value numbers shall be used when reporting LCA results (CPC 43)

*Other units may be regulated on a more detailed CPC level, if relevant.*

## 6 GENERAL SYSTEM BOUNDARIES

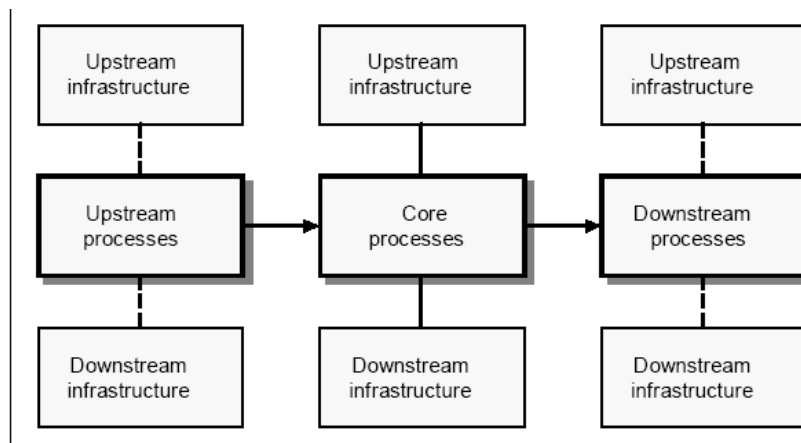


Figure 1. Presentation of Core Module (core process) and upstream and downstream processes.

### 6.1 UPSTREAM PROCESSES

The upstream processes include the following inflow of raw materials and energy wares needed for the production of *the product* (CPC 43):

- Extraction and production of raw material for all main parts and components (*to be defined at a more detailed CPC level*)
- Transportation of raw material

### 6.2 CORE PROCESSES

The core processes include:

- Manufacturing process for main parts and components according to a further specification below (7.1.1)
- Assembly of the *final product*
- The manufacture of primary and secondary packaging
- Treatment of waste generated from the manufacturing of main parts and assembly of the product
- The core process includes external transportation of materials to the factory and internal transportation within the factory.

### 6.3 DOWNSTREAM PROCESSES

The downstream processes include:

- Transportation from final manufacturing to customer
- Lifetime operation of the product including power losses and emissions
- Maintenance, replacements of parts, during life time
- Recycling of material after end of life
- Recycling or handling of packaging materials after use

In the EPD, the environmental performance associated with each of the three life-cycle stages above are reported separately.

## 7 CORE MODULE

### 7.1 SYSTEM BOUNDARIES

#### 7.1.1 TECHNICAL SYSTEM

The manufacturing of the parts listed below and the assembly process shall be included. The manufacturing processes for other parts may be included. However, the raw material used for production of other parts shall be included.

**Parts for which manufacturing is mandatory to include:**

*Xxxxxx*

*Yyyyyy*

*Etc.*

A minimum of 99% of the material content of the declared product shall be included. (CPC 43)

Waste that is deposited in landfill shall not be included in the system boundaries, but accounted for as an outflow. (CPC 43)

Waste that is deposited in landfill shall be declared as kg of waste and kg of hazardous waste. (CPC 43)

The manufacturing of production equipment with an expected lifetime over three years, buildings and other capital goods shall not be included (CPC 43).

Maintenance activities more frequent than every three years shall be included. (CPC43)

Business travel of personnel may be included (CPC 43). Travel to and from work by personnel should not be included (CPC 43).

*Research and development activities may be included if relevant. This should be regulated on more detailed CPC levels, given in the PCR document.*

### 7.1.2 GEOGRAPHICAL BOUNDARIES

The data for the core module shall be representative for the actual production processes and representative for the site/region where the respective process is taking place. (CPC 43)

### 7.1.3 TIME BOUNDARIES

The data shall be representative for the year/time frame for which the EPD is valid (maximum three years). (CPC 43)

### 7.1.4 BOUNDARIES TO NATURE

Boundaries to nature are defined as flows of material and energy resources from nature into the system. Emissions to air, water and soil cross the system boundary when they are emitted from or leaving the product system (CPC 43).

### 7.1.5 BOUNDARIES TO OTHER PRODUCT LIFE CYCLES

If there is an inflow of recycled material to the production system in the production/manufacturing phase, the recycling process and the transportation from the recycling process to where the material is used shall be included. If there is an outflow of material to recycling, the transportation of the material to the recycling process shall be included. The material going to recycling is then an outflow from the production system. (CPC43) (See supporting annex A)

## 7.2 CUT OFF RULES

Life Cycle Inventory data for a minimum of 99 % of total inflows to the core module shall be included. Parts and materials not included in the LCA shall be documented in the EPD. (CPC 43)

## 7.3 ALLOCATION RULES

Allocation between different products and co-products shall be based on product mass (CPC 43).

*As an alternative, allocation rules may be given at a more detailed level, given in the PCR document. The choice of functional unit may provide guidance.*

## 7.4 DATA QUALITY RULES

Specific data (often called site specific data) shall be used for the Core Module (CPC 43).

Specific data are data gathered from the sites where specific processes are carried out.

The requirement for specific data also include actual product weights, amounts of raw materials used and amounts of waste etc

Specific data for the generation of electricity bought shall be used if possible. The data should be verifiable by invoice or similar.

If specific data are not available or if the electricity bought is not specified for parts of the Core Module, the electricity mix used in those parts shall be approximated as the official electricity mix in the country of manufacture. The mix of energy shall be documented. (CPC 43)

## 7.5 OTHER CALCULATION RULES

*These may be given at a more detailed level, if relevant.*

# 8 UPSTREAM MODULE

## 8.1 SYSTEM BOUNDARIES

All elementary flows at resource extraction shall be included, except for the flows that falls under the general 1% cut off rule. Production of all raw materials shall be included (CPC 43)

## 8.2 DATA QUALITY RULES

Selected generic data shall be used, e. g. data from commonly available data sources such as commercial databases and free databases, describing specific raw materials or processes usually referring to the system under study or to other systems equivalent from a technical point of view.

For allowing the use of selected generic data, a number of pre-set characteristics must be fulfilled and demonstrated:

- *Representativeness of the geographical area* should adhere to “Data deriving from areas with the same legislative framework and the same energetic mix”,
- *Technological equivalence* adhere to “Data deriving from the same chemical and physical processes or at least the same technology coverage (nature of the technology mix, e.g. weighted average of the actual process mix, best available technology or worst operating unit)”,
- *Boundaries towards nature* adhere to “Data shall report all the quantitative information (resources, solid, liquid, gaseous emissions; etc.) necessary for the EPD”, and
- *Boundaries towards technical systems* adhere to “The boundaries of the considered life cycle stage shall be equivalent”.

*Recommendations for certain databases for selected generic data which describe material flows connected to a number of input materials may also be used. If recommendations are given to use such selected generic data, such data sources shall be listed in a table in the PCR document.*

### 8.3 RULES FOR GENERIC DATA

If these data sources do not supply the necessary data, other generic data may be used and documented. The environmental impact of the processes where the other generic data are used must not exceed 10% of the overall environmental impact from the product system. (CPC 43)

## 9 DOWNSTREAM MODULE

*Distribution scenarios shall be defined at a more detailed CPC level.*

### 9.1 USE PHASE SCENARIO

*Use phase scenarios shall be defined in PCR for more detailed product CPC levels for product categories where there is an environmental impact from the use phase. Maintenance at use may also be included in the use phase scenarios.*

### 9.2 RECYCLING DECLARATION AND WASTE TREATMENT

*Recommendations for source separation and recycling shall be given, as well as recommendations for other waste treatment of product parts if relevant. The PCR may define after use scenarios for recycling quotas and waste treatment methods. The potential benefit of recycling and waste treatment of the products according to the specified scenarios shall be presented in the EPDs.*

## 10 ENVIRONMENTAL PERFORMANCE RELATED INFORMATION

### 10.1 USE OF RESOURCES

The consumption of natural resources and resources shall be reported in the EPD

Input parameters, extracted resources:

- Non-renewable resources
  - Material resources
  - Energy resources (used for energy conversion purposes)
- Renewable resources
  - Material resources
  - Energy resources (used for energy conversion purposes)
- Water use

- Electricity consumption (electricity consumption during manufacturing and use of goods, or during service provision).

## 10.2 POTENTIAL ENVIRONMENTAL IMPACT

The following environmental impact categories shall be reported in the EPD:

- The emissions of greenhouse gases (expressed in global warming potential, GWP, in 100 year perspective)
- Emission of ozone-depleting gases (expressed as the sum of ozone-depleting potential in CFC 11-equivalents, 20 years)
- Emission of acidification gases (expressed as the sum of acidification potential expresses in SO<sub>2</sub>-eq. )
- Emissions of gases that contribute to the creation of ground level ozone (expressed as the sum of ozone-creating potential, ethene-equivalents)
- Emission of substances to water contributing to oxygen depletion (expressed as PO<sub>4</sub>-eq.).

The tables from the annex shall be used.

## 10.3 OTHER INDICATORS

The following indicators shall be reported in the EPD:

- Material subject for recycling
- Hazardous waste, kg (as defined by regional directives)
- Other waste, kg
- Toxic emissions: to be decided in more detailed PCRs

## 10.4 OTHER ENVIRONMENTAL INFORMATION

*The other environmental information shall be specified at a more detailed CPC level. , e.g. field of application, impact on health, technical life length, maintenance, the final use of product, fire risks, risks at fire*

# 11 CONTENT OF THE EPD (CPC 43)

### PROGRAMME RELATED INFORMATION

The programme related part of the EPD shall include:

- Name of the programme and programme operator
- The reference PCR document
- Registration number

- Date of publication and validity
- Geographical scope of application of EPD
- Information about the year or reference period of the underlying data to the EPD
- Reference to the homepage – [www.environdec.com](http://www.environdec.com) – for more information

## PRODUCT RELATED INFORMATION

Specification of the manufacturing company

See 2.1

Specification of the product

See 2.2

Functional unit

See 3

Content of materials and chemical substances

See 4

## COMPARISONS OF EPDS WITHIN THIS PRODUCT CATEGORY

*To be able to compare EPDs within this product category, they have to be based on this particular PCR. The user of the EPD information should be made aware of this by the inclusion of this statement in the EPD:*

“EPDs from different programmes may not be comparable”

## VALIDITY OF THE EPD

The validity of the EPD shall be reported in the EPD.

## ENVIRONMENTAL PERFORMANCE-RELATED INFORMATION

### ENVIRONMENTAL PERFORMANCE DECLARATION - MINIMUM SET OF PARAMETERS FROM THE LCA STUDY, REPORTED PER FUNCTIONAL UNIT

Upstream module, Core module and downstream module shall be reported separately.

#### Use of Resources

In this category the consumption of natural resources and resources shall be reported

See 10.1

#### Potential Environmental impact

In this category the potential environmental impacts shall be reported.

See 10.2

#### Other indicators

In this category relevant indicators shall be reported

See 10.3

## OTHER ENVIRONMENTAL INFORMATION

See 10.4

## DIFFERENCES VERSUS PREVIOUS VERSIONS OF THE EPD

The main causes for changes in environmental performance in comparison with previous EPD versions shall be described shortly.

## VERIFICATION

The EPD shall also include information about the verification procedure practised inserted in the following box.



11.1 PCR REVIEW, WAS CONDUCTED BY:

11.2

11.3 < NAME AND ORGANIZATION OF THE CHAIR, AND INFORMATION ON HOW TO CONTACT THE CHAIR THROUGH THE PROGRAMME OPERATOR >

**Independent verification of the declaration and data, according to ISO 14025:**

Internal  external

**(Where appropriate) Third party verifier:**

<name of the third party verifier>

## REFERENCES

The EPD shall refer to (CPC 43):

- The underlying LCA
- The PCRs used
- Other documents that verify and complement the EPD
- Instruction for recycling
- Programme instructions

## 12 VALIDITY OF THE EPD

If changes in any of the environmental impacts are larger than +- 5% the EPD shall be adjusted. (CPC 43). Regardless, the EPD shall be reviewed every three years.