PRODUCT CATEGORY RULES (PCR)

for preparing an environmental product declaration (EPD) for

Natural Mineral Water

PCR 2006:07

The Swedish Environmental Management Council

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This PSR-document is in compliance with *Requirements for Environmental Product Declarations, MSR 1999:2*, published by the Swedish Environmental Management Council 2000-03-27, as a part of the EPD® system.

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1. General Information

This Product Category Rules (PCR) document applies to **natural mineral water**.

This PCR document specifies the requirements for the life cycle assessment (LCA) study for the development of an environmental product declaration (EPD) and the format and content of the EPD itself.

The PCR is valid for three (3) years upon final approval after which it will be revised. If suggested changes are considered relevant and necessary the document may be revised within the three years.

This document has been prepared by Stefano Cevenini and Jonna Meyhoff Brink from Ciba Expert Services in cooperation with Cerelia S.p.A. The document is in accordance with ISO 14025 and the adaptation of this Final Draft International Standard by the Swedish Environmental Management Council (www.environdec.com).

2. Product description

The product group referred to in this PCR document is natural mineral water, packaged in containers of any size (e.g. 0.5 litres), format (e.g. plastic bottle) and closure (e.g. plastic caps). This includes both single use and returnable packaging systems.

“Natural mineral water” is defined as “microbiologically wholesome water originating in an underground water table or deposit and emerging from a spring tapped at one or more natural or bore exits”[1].

3. List of materials and chemical substances

The materials and substances listed below must be reported in the environmental product declaration (EPD):

All materials ≥ 0.5% [2] of the total weight used

Any materials or substances hazardous to health and/or the environment and if present in such concentrations in the product and raw materials that they must be labelled on the product according to the Substances and Preparations Directive [3, 4].

The packaging materials must be in compliance with prescribed quality requirements for materials coming into contact with food (e.g. Food Contacts Regulation [5] and/or national

1: Council Directive 80/777/EEC of 15 July 1980 on the approximation of the laws of the Member States relating to the exploitation and marketing of natural mineral waters.

2 Materials shall be considered as the aggregated amount of similar substances for use or chemical characteristics.

3 Council Directive 76/769/EEC of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations, and subsequent amendments.

4 European legislation. Other legal documents may be more valid in other regions of the world.

5 Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC.

regulations).

4. Functional unit

The functional unit (FU) is 1000 litres of natural mineral water packaged in a defined container.

5. System boundaries

The system boundaries for natural mineral water comprise the whole life cycle, i.e. both the manufacturing phase and the use phase, and are illustrated in Figure 1.

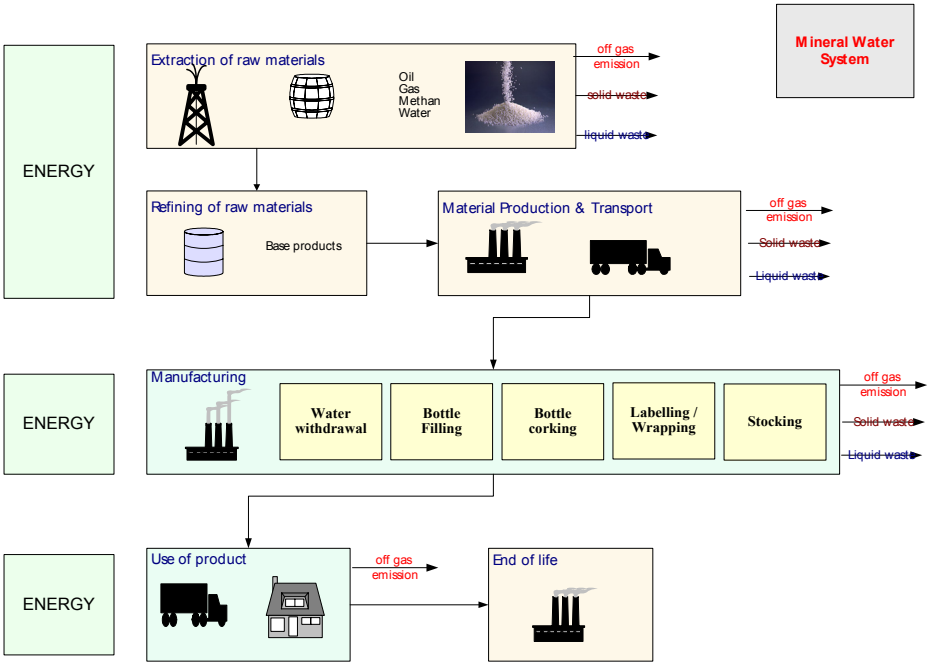

Figure 1 System boundaries for the LCA of natural mineral water.

As this PCR covers natural mineral water packaged in different types of containers, information on the environmental performance of the production of the packaging and the mineral water must be described separately.

5.1 Manufacturing phase

Information about the following unit processes shall be included:

- Manufacturing of the packaging (primary and secondary packaging shall be included. Transit and display packaging may be excluded);
  - Extraction and production of raw materials
  - Primary packaging production (e.g. bottle blowing, closure production, label production and printing)
  - Secondary packaging production (e.g. film blowing)
- Transport of packaging to the natural mineral water producer
- Manufacturing of the product;
  - Water extraction (withdrawal)
  - Filling and packing (filling, corking, labelling, wrapping)

- Storage (stocking)

5.2 Use phase

- Transport of the product to distribution centre
- Waste collection
- Recycling and waste management with regards to the markets where the natural mineral water is sold, i.e. the different fractions of recycling, landfill, and incineration shall be presented

The region where the mineral water is to be delivered and the client's region can be mentioned. Regulations on classification and labelling of mineral water depend on where the product will be used.

Rules on how recycling processes should be handled are described in detail under chapter 7, Allocation Rules.

5.3 Specification of different boundary settings

5.3.1 Boundaries in time

Age requirements for the data shall be average data for the previous year.

Inventory data shall be given as annual mean values and be representative for the production. The period of time when the LCA is carried out shall be stated in the environmental product declaration.

5.3.2 Boundaries towards nature

The boundaries towards nature shall describe the flow of material and energy resources from nature into the system and emissions from the system to air and water and waste out of the system.

5.3.3 Boundaries in the life cycle

The boundaries in the life cycle are illustrated in the flow diagram in Figure 1. The following are *not* included:

- The construction of factory buildings and infrastructure;
- Production of manufacturing equipment;
- Maintenance and production of spare parts with a life cycle of more than three years;
- Packaging of raw materials; and
- Personnel activities.

5.3.4 Boundaries towards other technical systems

If there is an inflow of recycled material to the product 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 to the recycling process shall be included. The material going to recycling is then an outflow from the product system.

5.3.5 Boundaries regarding geographical coverage

The EPD must include a description of the geographical coverage and different regional aspects in the supply chain must be explained, if applicable.

Data used must reflect the geographic locations of production sites (e.g. materials and electricity).

6. Cut-off rule

Processes and activities that altogether do not contribute with more than 1% of the total environmental impact for any impact category can be omitted from the inventory analysis. Parts and materials not included in the LCA must be documented.

7. Allocation rules

Some processes may yield more than one product. When this occurs, material and energy flows, as well as environmental burdens, should be allocated to the different products according to clearly stated procedures. Collection of product specific process information by subdividing processes into sub-processes is always to be preferred.

The method of avoiding allocation by expanding the system boundaries, as specified in the international standard ISO 14041[6], is not applicable within the framework of environmental product declarations.

Where allocation is not possible or practical, the following principles of allocation can be recommended:

- Multi-input processes: Allocation based on physical causal relationships i.e. the mass balance of the inputs.
- Multi-output processes: Allocation based on the economical relationships between the output products.
- Open loop recycling: No allocation should be made for materials subject to recycling. The recycling processes are included when recycled materials are used as inputs. Outputs subject to recycling are regarded as outputs to the next life cycle.

The principles for allocation as listed here are in accordance with MSR 1999:2, appendix A. Deviation from these allocation rules must be documented and justified.

8. Units

The following units shall be used:

- SI unit;
- Preferred power and energy units:
    - KW (MW) for power
    - KWh (MWh) for energy

[6] ISO 14041:1998 Environmental management – Life cycle assessment – Goal and scope definition and inventory analysis.

9. Calculation rules and data quality requirements

As a general rule, specific data should always be used. Generic data (e.g. data from databases) should be used in cases where they are representative for the purpose of the study e.g. purchase of bulk and raw materials on a spot market and in the use or waste handling phases. Generic data may also be used if there is a lack of specific data possibly having a negligible influence on the final result.

Generic data may be regarded as specific data if they fulfil the following requirements:

- Representative of the geographical area, i.e. from areas with same legislative framework and same energy mix;
- Technological equivalence;
- Boundaries towards nature, i.e. all the quantitative information (resources, emissions, etc.) necessary for producing the EPD shall be reported;
- Boundaries towards technical systems must be identical.

As a general rule, the sum of the contribution from processes described by generic data instead of specific data must not exceed 10% of the contribution to the separate impact categories.

9.1 Data quality requirements

- Site-specific data shall be used for the manufacturing process.
- The mix of electricity used during the manufacturing phase can be approximated as the official one in the country of manufacture if site-specific data can not be obtained. The mix of electricity shall be documented.
- Transport of packaging to the natural mineral water producer shall be based on actual transportation mode and distance.
- All declarations shall include a presentation of the environmental impacts from transport to the customer. Data should be presented for the transport of 1,000 kg of the product per a distance of 100 km between the packer/filler and the customer. Data shall be presented for each of the relevant means of transport in question. For returnable packaging system, this shall include the collection as well. When specific data is not available, data from “ntm” (Network for Transport and Environment), shall be used..
- Waste is defined by EU directive 91/156/EEC. Packaging waste is defined by EU Directive 94/62/EC. Hazardous waste is defined by EU Directives 91/689/EEC and 75/442/EEC.
- All assumptions regarding waste management shall be documented and declared.

9.2 Use of generic data

The table below assigns data sources for *selected generic data* describing material flows connected to a number of input materials. When applying data for these materials these sources shall be used. If these data sources do not supply the necessary data, *other generic data* may be used and documented. The environmental impact associated to other generic data must not exceed 10% of the overall environmental impact from the product system. market.

Material	Database	Last version
Aluminium	EAA (European Aluminum Association)	Rel. 2002
Chemicals	PlasticsEurope (Association of Plastics Manufacturers)	Rel. 2003
Chemicals	ECOinvent	Rel. 1.3 – 2006
Electricity	ETH (Eidgenössische Technische Hochschule) Data combined with IEA (International Energy Agency) statistics 1998	ETH-ESU Rel. 1996
Electronic components	EIME (Environmental Information and Management Explorer) EcoBilan	Rel. 1999
Energy	ECOinvent	Rel. 1.3 – 2006
Glass	BUWAL (Bundesamt für Umwelt, Wald and Landschaft)	Rel. 250
Paper and board	BUWAL (Bundesamt für Umwelt, Wald and Landschaft)	Rel. 250
Plastics	PE – Plastics Europe	1999

10. Parameters to be declared in the EPD

10.1 Mandatory information

The following parameters shall be declared. As this PCR covers natural mineral water packaged in different types of containers, information on the environmental performance of the production of the packaging and the mineral water must be described separately.

Resource use

- Use of non-renewable resources
  - without energy content
  - with energy content
- Use of renewable resources
  - without energy content
  - with energy content
- Electricity consumption

Pollutant emissions expressed as potential environmental impact

- Global warming — kg CO_2 equivalents
- Ozone depletion — kg CFC-11 equivalents
- Acidification — kmol H^+
- Photochemical oxidant formation — kg ethene-equivalents
- Eutrophication — kg O_2

The characterisation factors to use for converting data from the life cycle inventory analysis into impact categories for global warming (emissions of green-house gases), stratospheric ozone depletion (emissions of ozone-depleting gases), acidification (emissions of acidifying gases), photochemical oxone creation (emissions of gases contributing to ground-level ozone formation) and eutrophication (emissions of substances

to water contributing to oxygen depletion) are listed in Appendix A of “Requirements for Environmental Product Declarations, EPD” available on www.environdec.com.

10.2 Additional information

- Waste
    - Hazardous waste
    - Other waste
        - including describing the different recovery or disposal destinations.

Note: Waste to declare includes both solid and semi-solid waste.

10.3 Additional environmental information

Other environmental information that are important in order to fully understand the environmental performance of the product may be included. In particular:

- environmental activities of the organization, such as participation in recycling or recovery programmes.

11. References

The EPD shall refer to:

- Requirements for Environmental Product Declarations, EPD, (MSR 1999:2) published by the Swedish Environmental Management Council at www.environdec.com.
- This PCR document.
- The underlying LCA report.