



PRODUCT CATEGORY RULES (PCR)

For preparing an Environmental Product Declaration (EPD)
for the Product Category:

THREE-ZONE MULTI-TEMPERATURE TRANSPORT REFRIGERATION UNITS
PCR 10005

VERSION 1 (APRIL 2017)

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Product Category Rules for Three-Zone Multi-Temperature Transport Refrigeration Units, UL 10005

First Edition, Dated April 25, 2017

Summary of Topics

The first edition of the Product Category Rules for Three-Zone Multi-Temperature Transport Refrigeration Units, UL 10005, has been issued.

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PCR Scope of Validity

This product group includes three (3) zone multi-temperature-controlled transport refrigeration units (TRU) used to achieve and maintain a desired temperature level inside a cargo container, such as when transporting perishable goods in a truck trailer, delivery truck, or rail cargo container. The impacts of the refrigeration unit, and not of the trailer or cargo container, are considered in the PCR.

Program Operator

UL Environment

Interested Parties

Representatives of the following organizations participated in development and funding of the PCR:

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1. General Information

These product category rules (PCR) have been developed under the general program instructions for UL Environment's Environmental Product Declaration (EPD) Program. These PCR are intended for use by manufacturers of transport refrigeration units and other interested parties for preparing EPDs for transport refrigeration units, which in turn, will support more informed purchasing decisions of these units. The EPD will also help to identify the underlying requirements of the life cycle assessment (LCA) pursuant to ISO standards that address appropriate environmental aspects of their life cycle.

These temperature-controlled transport refrigeration units (TRU) are used to achieve and maintain a desired temperature inside a cargo container, such as when transporting perishable goods in a truck trailer, delivery truck, or rail cargo container. Only multi-temperature control units are included; single-temperature control units are out of scope. Installation of additional satellite units, copper tubing and impacts of the refrigeration unit, and not of the trailer or cargo container, are considered in the PCR.

The geographic scope of this PCR is the North American market.

1.1. Goal and Scope

This PCR document specifies rules, requirements, and guidelines for developing cradle-to-grave EPDs for multi-temperature transport refrigeration units and the underlying requirements of related life cycle assessments (LCAs). In the context of this PCR, cradle-to-grave applies to the lifetime of the TRU during the expected first user ownership. This PCR is valid and provides requirements for Business-to-Business (B2B) EPDs.

This PCR is consistent with and conforms to the mandatory requirements contained in the following standards:

- AHRI Standard 1110-2013, Performance Rating of Mechanical Transport Refrigeration Units
- ANSI/ASHRAE Standard 147-2002, Reducing Release of Halogenated Refrigerants from Refrigeration and Air-Conditioning Equipment and Systems.

While not necessarily conforming to the CEN EN 15804 standard, it is referenced in Section 12 and has been consulted with regard to selected requirements and presentation details that go beyond or expand on the above-noted ISO standards and AHRI standard.

1.2. EPD Ownership/Responsibility

- The producers or group of producers who develop an EPD following these PCR maintain sole ownership and have responsibility and liability for their EPD.

2.Period of Validity

These PCR are effective for five (5) years from the latest date of publication. If after five years, relevant changes in the product category or other relevant factors have occurred (for example, LCA methodology), the document will be revised.

An EPD created under these PCR shall be valid for a five (5) year period from the date of issue after which it shall be reviewed and verified. An EPD shall be reassessed and updated after five years as necessary to reflect changes in technology, product design, or other circumstances that could alter the content and accuracy of the declaration. The process for verification and establishing the validity of an EPD shall be in accordance with ISO 14025.

3.Definitions

For the purposes of this document, the definitions given in ISO 14025, ISO 14044, AHRI Standard 1110 and ANSI/ASHRAE Standard 147 apply.

4.Informed Comparison

EPDs are used to assist purchasers and users to make informed comparisons between products but do not themselves compare products (ISO 14025, Sections 4 and 6.7.2). It shall be stated in EPDs created using these PCR that only EPDs prepared from cradle-to-grave life cycle assessment results for a new TRU during its first expected user ownership period, and based on the same function, lifetime usage, quantified by the same functional unit, and meeting all the conditions in ISO 14025, Section 6.7.2; AHRI Standard 1110, Section 5.1; and, ANSI/ASHRAE Standard 147-2002, can be used to assist purchasers and users in making informed comparisons between products.

5.Company/Organization, Product, and Product Category

5.1. Description of Company/Organization

The name(s) of the declaring organization(s) as well as the place(s) of production shall be provided in the EPD. The EPD may also include general information about the organization(s) such as the existence of a quality management system according to ISO 9001, an environmental management system according to ISO 14001, or other relevant certifications.

5.2. Definition of Product Category

These PCR address transport refrigeration units used to achieve and maintain a desired temperature level inside a cargo container, such as when transporting perishable goods in an industry-standard 53 foot refrigerated truck trailer (also known as reefer trailers). Transport refrigeration units for non-standard

refrigerated trailers, such as delivery truck or rail cargo container, may also be declared under these PCR; however, deviations in use phase calculations from the testing protocol described in Section 13 shall be documented and justified.

Only multi-temperature control units are included under this PCR; single-temperature units are out of scope. The impacts of the refrigeration unit, and not of the trailer or cargo container, are considered in the PCR.

The EPD shall provide a narrative description of the product that will enable the user to clearly and unambiguously identify the product. This description shall include, where relevant:

- Product identification by brand name, model number, model year, and a visual representation, which may be by photograph or graphic illustration;
- List of the standards and other product specifications to which the products comply;
- Flow diagram illustrating main unit processes by life cycle stage according to the scope of the declaration;
- Material composition (in mass-%) categorized by material type
- Any additional information that will assist in identifying the product.

Product-specific data that is confidential because of the competitive business environment, intellectual property rights, or similar legal restrictions need not be declared. In these cases, the EPD should briefly describe the general nature of confidential data and the rationale for not disclosing. Note that while this data does not need to be disclosed in the EPD document, it shall still be included within the LCA model and results.

In cases where several similar products are produced by a site or company, these PCR offer the possibility for similar products to be grouped as an average product in the same EPD provided that the difference between their environmental impacts is less than 10% for each environmental impact category. In cases where the difference is greater than 10%, it is still possible to include multiple products in the same EPD (for example, in separate columns in a table). If a single value is chosen for each impact category for all products, the value reported should be the worst performance within the range of variation. It is also permissible to show arithmetically weighted 'averaged data' in an EPD as supplementary information if found relevant. The methodology for the aggregation of multiple products shall be documented.

Technical properties of the declared products in delivery condition shall be indicated with reference to *AHRI Standard 1110, Performance Rating of Mechanical Transport Refrigeration Units*:

- Refrigerant used
- High Temperature Capacity Rating (Btuh)
- High Temperature Compressor Speed (rpm)
- Low Temperature Capacity Rating (Btuh)
- Low Temperature Compressor Speed (rpm)
- Standby Capacity