epd-norge

Product category rules

EN 15804 +A2

NPCR 026
PCR - Part B for Furniture
version 2.0

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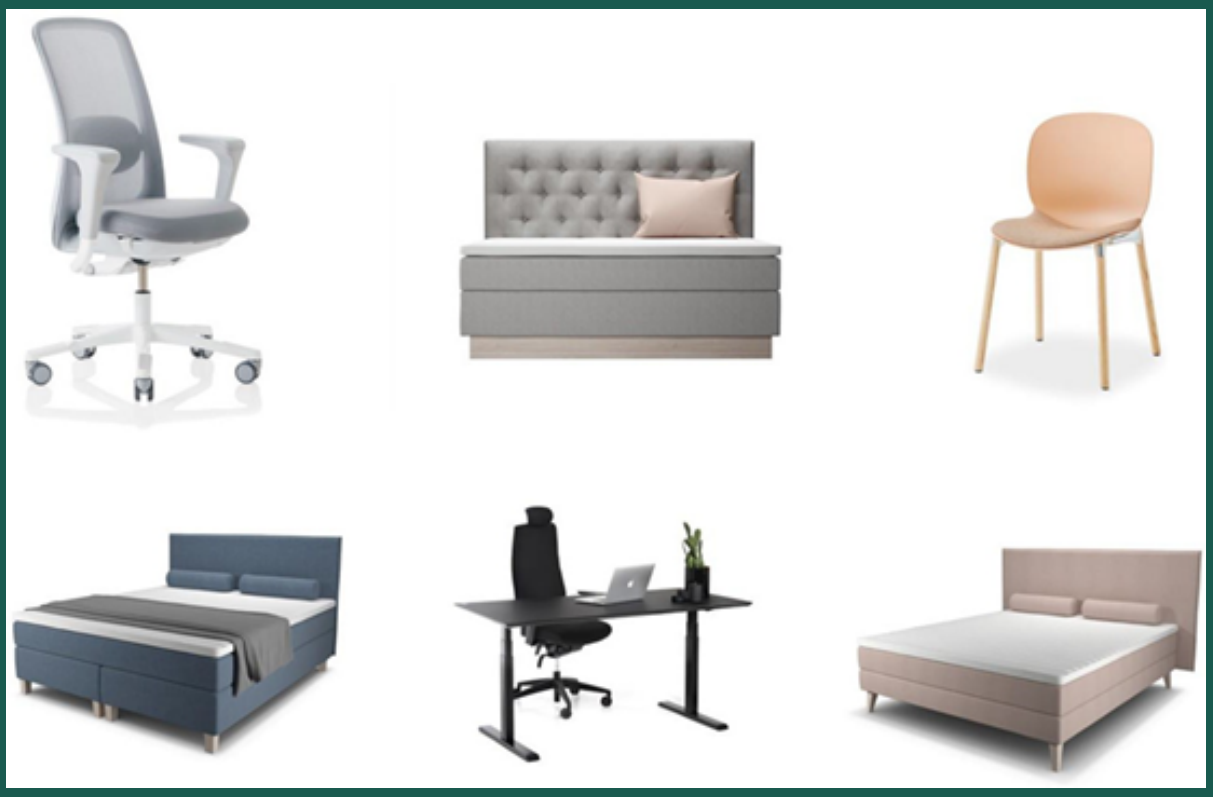

REVISION LOG

This is an overview of the changes made to this PCR. Typology of changes:

- Editorial (ed): Text or layout edited, with no change in content.
- Technical (te): Existing content has been changed.
- Addendum (ad): New content has been added.

Naming convention: Version x.y, where x is a major revision and y is a minor revision.

Date (2018-10-18)	Type	Description of change
Version 1.0		
2018.10.18	te	First version of PCR for Furniture. This document replaces PCR 003:2015 Seating version 2.1 and PCR and 021:2012 Plate furniture
2022.xx.xx	ed	Editorial update according to EN15804:2012 + A2:2019

2023.10.17 te Validity has been extended until 2024.07.01

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Table of Contents

Introduction

These product category rules (PCR) are intended for companies preparing an environmental product declaration (EPD) for all types of furniture for domestic, non-domestic, educational and professional use, for users of all ages (see chapter 6.1 for a definition of the product group).

This PCR complies with ISO14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines and ISO14025: 2006, Environmental management – Type III environmental declarations – Principles and procedures. Furniture are here seen in a building context and the PCR for furniture therefore consist of two parts. PCR part A are the common requirements for construction products and services. PCR part B are the requirements that are specific to furniture. When preparing an EPD for furniture, all requirements outlined in part A and part B must be followed. In PCR part B, the requirements for PCR part A are referred to in each section where they occur. The purpose of this document is to define clear guidelines for performing the underlying life cycle assessment (LCA) to ensure comparability between EPDs.

This PCR was developed from August 2017 to February 2018, by a Norwegian PCR work group (WG) with representatives from the furniture industry and with aid from Ostfold Research (Østfoldforskning), SINTEF Building and Infrastructure and the EPD program operator The Norwegian EPD Foundation. An editorial update was made by the secretariat according to EN15804:2012+A2:2019 in Q2:2022.

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1 Scope

This document complements the core rules for the product category of construction products as defined in EN 15804:2012+A2:2019 and PCR part A, and is intended to be used in conjunction with those standards.

In addition to EN 15804:2012+A2:2019 and PCR part A; this PCR:

- defines the system boundaries
- defines the modelling and assessment of material-specific characteristics
- defines allocation procedures for multi-output processes along the production chain
  defines allocation procedures for reuse and recycling
- includes the rules for calculating the LCI and the LCIA underlying the EPD
- provides guidance/specific rules for the determination of the reference service life (RSL) gives guidance on the establishment of default scenarios
- gives guidance on default functional units for furniture

The intended application of this product category rule (PCR) is to give guidelines for the development of environmental product declarations (EPD) for furniture; for either a cradle to gate with options EPD or a cradle to grave EPD; and to further specify the underlying requirements of the life cycle assessment (LCA). The core rules valid for all construction products are given in standard EN 15804 and PCR Part A, and are expected to be known by those preparing the EPD.

2 Normative references

NPCR Part A: Construction products and services. Ver. 2.0. March 2021. Oslo: EPD-Norge

3 Terms and Definitions

As in PCR part A.

4. Abbreviations

As in PCR part A, including the following additions

RSL Reference service life

ESL Estimated service life

5. General Aspects

5.1 Objective of PCR Part A and B

As in PCR part A, including the following clarification:

The objective of this PCR (part B) for furniture is to:

- define the mandatory parameters
- define how the mandatory parameters are to be collated and reported
- describe which stages of a product's life cycle are to be considered in the EPD, and which processes are to be included in the life cycle stages
- define rules for the development of scenarios, including the rules for calculating the life cycle inventory and the life cycle impact assessment underlying the EPD, including a specification of the data quality to be applied
- identify different types of EPD according to the life cycle stages covered

5.2 Types of EPD in respect to life cycle stages covered

The EPDs for furniture follow the modules and life cycle stages in PCR Part A.

For a type 3 EPD, the EPD for furniture products should declare the whole life cycle of the product, including life cycle modules A1 to C4 and D. (EPD 3).

EPD 3 - Cradle to grave, as a minimum A1 to C4 and D:

- Mandatory: Information modules A1 - A3
- Mandatory: Information modules A4 - A5
- Mandatory: Information modules B1 – B7
- Mandatory: Information modules C1-C4
- Mandatory: Information module D

However, if you declare a component or part of a piece of furniture it may be more appropriate to prepare a type 2 EPD, which considers modules A1-A3, A4, C1-C4 and D (EPD 2).

EPD 2 - Cradle to gate with options, as a minimum A1-A3, A4, C1-C4 and D:

- Mandatory: Information modules A1 – A3
- Mandatory: Information module A4
- Optional: Information module A5
- Optional: Information modules B1-B7
- Mandatory: Information modules C1-C4
- Mandatory: Information module D

5.3 Comparability of EPD OF furniture products

As in PCR part A, including the following clarification:

Comparison of the environmental performance of furniture using EPD information, shall be based on the product's ability to serve a function over a specified amount of time, and shall consider the complete life cycle from cradle to grave. For comparability, EPDs of different products must be calculated using the same basic assumptions and methodological choices, e.g. allocation, cut-off, scenarios, etc. A justification shall be given for any aspects excluded.

5.4 Additional information

As in PCR part A.

5.5 Ownership, responsibility, and liability for the EPD

As in PCR part A.

5.6 Communication format

As in PCR part A.

6. Product Category Rules for LCA

As in PCR part A.

6.1 Product Category

As in PCR part A, including the following clarification:

The product group "furniture" comprises of all kinds of furniture for domestic -, non-domestic-, educational and professional use, for users of all ages (NS ICS 97.140 Furniture). The furniture is prepared for trade and may be made of different materials. Furniture is not limited to the furniture described in 6.1.1. to 6.1.8.

6.1.1 Indoor Seating

- EN 50085 Cable trunking systems and cable ducting systems for electrical installations -- Part 1: General requirements
- EN 61386 Conduit systems for cable management - Part 1: General requirements

6.1.2 Indoor Tables

Coffee tables, dining tables, conference tables, office work tables and desks, tables for educational purposes, tables for special purpose workstations, work top counters and similar. Indoor tables also include tables to be used in a seated, sit-stand or standing position.

6.1.3 Indoor Storage

Kitchen storage, bathroom storage, living room storage, book shelves, dressers, wardrobes, cabinets, office storage, industrial storage, retail storage, laboratory storage, brochure stands and similar.

6.1.4 Beds and mattresses

Beds, single beds, double beds, mattresses, folding beds, bunk beds, high beds, adjustable beds, sofa beds, hospital beds and similar. Water beds and air beds are not included.

6.1.5 Children's and nursery furniture

Children's cots, folding cots, travel cots, suspended baby beds, playpens, folding playpens, cribs, cradles and similar.

6.1.6 Screens and sound absorbing elements, not included in PCR part B for building boards

Screens, desk screens and floor-standing screens. The screens and sound-absorbing elements may be aimed at partitioning only, or aimed at both partitioning and absorption of indoor sounds.
This also includes interior acoustic products; as single objects, as furniture, or as a part of a piece of furniture, which is aimed at absorbing indoor sounds.

6.1.7 Writing boards

Wall mounted and free-standing writing boards.

6.1.8 Outdoor furniture

Outdoor seating and tables for camping, domestic and contract for use by adults. It does not apply to seating for spectator facilities.

6.1.9 Street furniture, seating, and tables

Outdoor furniture used in public space, permanently fixed to the ground or any structure (e.g. bus stop, wall...) or not manually removable.

Furniture includes litterbins, planters, cycle parking posts and racks, tree guards, bollards, fences, urban partitions and gratings.

6.2 Life cycle stages and their information modules to be included

6.2.1 Indoor Seating

As in PCR part A, including the following clarification:

Transport shall include the following:

- Direct emissions during transport (exhaust, tyres, etc.)
- Upstream emissions from fuel extraction, processing and distribution
- Life cycle emissions of vehicles (raw materials, manufacturing, maintenance and disposal)
- Life cycle emissions of infrastructure (raw materials, manufacturing, maintenance and disposal)

The modules or life cycle stages that should be included is dependent on the type of EPD (EPD type 3 or EPD type 2). EPDs based on this PCR should include the following life cycle stages:

EPD 3 - Cradle to grave, as a minimum A1 to C4 and D:

- Mandatory: Information modules A1 - A3
- Mandatory: Information modules A4 - A5
- Mandatory: Information modules B1 – B7
- Mandatory: Information modules C1-C4
- Mandatory: Information module D

EPD 2 - Cradle to gate with options, as a minimum A1-A3, A4, C1-C4 and D:

- Mandatory: Information modules A1 – A3
- Mandatory: Information module A4
- Optional: Information module A5
- Optional: Information modules B1-B7
- Mandatory: Information modules C1-C4
- Mandatory: Information module D

6.2.2 A1-A3, Product stage, information modules

As in PCR Part A

6.2.3 Module A4-A5, Construction/installation stage, life cycle information modules

As in PCR part A, including the following further clarification:

Life cycle module A4 includes the transportation of furniture, to the place in where it is to be used.

Life cycle module A5 includes, if relevant, assembly and/or installation of declared product at the place in where it is to be used. The installation phase includes all materials and activities connected to the installation of the furniture with the necessary accessories included (e.g., screws, fasteners, and adhesives etc.).

6.2.4 B1-B5, Use stage, life cycle information modules

As in PCR part A, including the following clarifications:

The use stage shall include a scenario for EPD Cradle to gate with options (Type 2) and/or EPD Cradle to grave (Type 3).

- Module B1 Use, includes, if any, the emission, or uptake taking place during the use phase,
- e.g., emissions of VOC from painted surface, and the uptake of CO2 for exposed concrete products
- Module B2, includes maintenance, e.g., energy and water use in cleaning, and recommended repainting during the RSL
- Module B3, repair includes, if any, repairs during the RSL
- Module B4, replacement, if any, recommended during the RSL
- Module B5, refurbishment. If relevant

6.2.5 B6-B7 Use stage, life cycle information modules related to operation

- Module B6, Operational energy use, if relevant
- Module B7, Operational water use, if relevant

6.2.6 C1-C4 End-of-life stage, life cycle information modules

As in PCR Part A, including the following clarifications:

The end-of-life stage shall include:

- Module C1, includes the demolition of the furniture
- Module C2, includes the transport of the furniture to final waste treatment.
- Module C3, includes all activities regarding reuse, recovery and/or recycling after transportation.
- Module C4 includes disposal, i.e., waste handling that does not give a useful product (the end-of- waste criteria are fulfilled). Examples include landfilling and incineration without energy recovery.

6.2.7 Benefits and loads beyond the system boundary, information module

As in PCR Part A.

6.3 Calculation rules for the LCA

The scope and variations of products must be declared according to EPD-Norway's guidelines. As of 2019, similar products in the same EPD can only be included if the variation in results for each LCIA category does not exceed +/- 10 %. The level of variation shall be stated in the EPD.

6.3.1 Functional Unit

The functional unit for EPD Cradle to grave (type 1) is defined as:

The production of one unit of the declared product provided and maintained for an estimated service life (ESL) for the product declared.

Results should be displayed both per functional unit and per life cycle module A4-A5, B1-B7, C1- C4 and D.

Tests and/or guaranties shall be used to define the RSL, and necessary measures for the maintenance and repair of the product must be described (e.g., repainted every XX years, change of parts etc.).

6.3.2 Declared Unit

The declared unit (cradle to gate with options, type 2) is defined as:

One produced unit of furniture ready to leave the factory gate

The declared unit as a minimum includes all processes up to the point in which the declared product leaves the manufacturer's gate (A1-A3), including scenarios for transport to customer (A4), end of life (C1-C4) and reuse/recovery potential (D).

6.3.3 Reference service life (RSL)

Furniture shall be planned and constructed according to a reference service life as

provided and documented by the manufacturer. A reference service life (RSL) is mandatory for all Type 3 EPD's. Tests and/or guaranties shall be used to define the reference service life of the product.

A list of typical reference and estimated service lifetimes for different types of furniture is given in Table 3.

Table 1 Typical reference and estimated service lifetimes for different types of pf furniture is given in table 3

	Reference Service Life (RSL)	Estimated Service Life (ESL)
Indoor seating	Declared by producer and related to intended use (e.g. airport, residential)	15 years
Indoor tables	Declared by producer and related to intended use (e.g. airport, residential)	15 years
Indoor storage	Declared by producer and related to intended use (e.g. airport, residential)	15 years
Beds and mattresses	Declared by producer and related to intended use (e.g. hotels, residential)	15 years
Children's and nursery furniture	Declared by producer and related to intended use (e.g., nursery, residential, schools)	15 years
Screens and sound absorbing elements	Declared by producer and related to intended use (e.g. office, residential, schools)	15 years
Writing boards	Declared by producer and related to intended use (e.g.office, residential, schools)	15 years
Outdoor furniture	Declared by producer and related to intended use	15 years
Street furniture	Declared by producer (ref to documentation in bibliography)	30 years

6.3.4 System boundary

As in PCR part A.

6.3.5 Criteria for the extension of inputs and outputs (cut-off)

As in PCR part A, including the following clarifications:

A list of hazardous and toxic materials and substances shall be included in the inventory. The general cut-off rules do not apply to such substances. However, substances included in amounts below the limits for chemical products health and environment hazard classification do not have to be declared.

Exceptions apply for substances on the REACH candidate list and Norwegian priority list, whereby a cut-off of 0.1 % applies. All REACH candidate list substances occurring in amounts exceeding 0.1

% of the finished product must be declared. The same limit applies to all substances on the Norwegian priority list.

6.3.6 Selection of data

As in PCR part A.

6.3.6.1 Data for electricity

As in PCR part A.

6.3.6.2 Losses considered by different users and the installed voltage supplied

As in PCR part A.

6.3.7 Data quality requirements

As in PCR part A.

6.3.8 Scenarios at the product level

As in PCR part A, with the following additions:

6.3.8.1 Product stage

As in PCR part A.

6.3.8.2 A4 Transport from the factory gate to the customer

As in PCR part A.

6.3.8.3 A5 Installation

As in PCR part A with the following additions:

The installation phase includes all materials and activities connected to assembly and/or installation of the declared product. This is by default only manual labour. If the installation scenario for furniture deviates from the predefined scenarios, this shall be clearly stated and justified. Personnel activities and transport of personnel shall not be included. Environmental impacts from the production of capital goods shall also be excluded.

6.3.8.4 Use stage

As in PCR part A, including the following additions:

Life cycle modules B1 – B5: information required for the use, maintenance, repair, replacement, and refurbishment scenarios deviate from EN15804 as this is a consumer product and not a building product.

Table 4 describes the relevant input to B-modules for all furniture product groups.

Table 3 Use scenario description for all furniture product groups

	B1	B2	B3	B4	B5	B6	B7
	Use	Maintanance (incl. production and transport of necessary	Repair (incl. production and transport of necessary materials)	Replacement (incl. production and transport of necessary	Refurbishment (incl. production and transport of necessary	Operational energy use	Operational water use
Indoor seating		Vacuum cleaning		Change of textile covering			
Indoor tables		Cleaning					
Indoor storage		Cleaning					
Beds and mattresses		Vacuuming or cleaning (wet or dry)		Replacement of top mattress, replacement of			
Children's and nursery furniture		Vacuum cleaning of		Replacement of mattress.			
Screens and sound absorbing elements		Vacuum cleaning of					
Writing boards		Cleaning					
Outdoor furniture		Vacuum cleaning of					
Street furniture		Cleaning	Oiling or varnishing				

6.3.8.5 End of life stage

As in PCR part A.

6.3.8.6 Benefits and loads beyond the system boundary

As in PCR part A.

6.3.9 Units

As in PCR part A.

6.4 Inventory analysis

As in PCR part A.

6.4.1 Collecting data

As in PCR part A.

6.4.2 Calculation procedures

As in PCR part A.

6.4.3 Allocation of input flows and output emissions

As in PCR part A.

6.4.4 Information on biogenic carbon content

As in PCR part A.

6.5 Impact Assessment

As in PCR part A.

7. Content of the EPD

7.1 Declaration of general information

As in PCR part A, with the following additions:

The following information about the product shall be declared:

- Product description
- Technical data (including weight and measurements, etc.)
- Market where the declared product is distributed
- Estimated service life
- Table showing the material composition of the declared product

Table 4 A table of selected key indicators from the general information page

Key environmental performance indicators	Unit	Cradle to Gate A1-A3	Transport A4	Installation A5	Use B1-B7	End of Life C1 – C4	Reuse recovery D
Global warming (GWP-total)	kg CO2 eq.	[value]	[value]	[value]/NA	[value]/NA	[value]	[value]
Energy use[1]	MJ	[value]	[value]	[value]/NA	[value]/NA	[value]	[value]
Optional indicator(s) if desired	[Unit]	[value]	[value]	[value]/NA	[value]/NA	[value]	[value]

7.2 Declaration of environmental parameters derived from LCA

7.2.1 General

As in PCR part A.

7.2.2 Rules for declaring LCA information per module

As in PCR part A.

7.2.3 Indicators describing environmental impacts based on Life Cycle Impact Assessment (LCIA)

As in PCR part A.

7.2.4 Indicators describing resource use and environmental information based on Life Cycle Inventory (LCI)

As in PCR part A.

7.2.5 Information on biogenic carbon content

As in PCR part A.

[1] Energy use includes the sum of RPEE, NRPE, RSF and NRSF

7.3 Scenarios and additional technical information

7.3.1 General

As in PCR part A.

7.3.2 Construction process stage

7.3.2.1 A4, Transport from the production site to the construction site

As in PCR part A, including the following additions:

Transport from the production gate to the construction site is typically carried out using trucks. The distance, type of vehicle, fuel consumption and degree to which the transport capacity is utilised may have a large impact on transport emissions, thus these factors must be stated.

Capacity utilisation is calculated as a percentage (%) of the total load capacity of the vehicle. The percentage given shall be the average of the capacity utilisation including the return trip.

7.3.2.2 A5, Installation

As in PCR part A, including the following clarification:

The installation phase includes all materials and activities connected to installation and user

assembly of the piece of furniture. This is by default only manual labour. Waste handling of any product packaging dealt with by the consumer must be declared here.

If the EPD deviates from the predefined scenario, then this shall be clearly stated and justified.

7.3.3 Use stage

As in PCR part A, with the following additional information:

Maintenance, replacement, and other relevant modules shall be stated in the EPD. E.g., “The use stage is represented by a scenario for each life cycle module, whereby the maintenance scenario includes vacuum cleaning textiles once a month”.

7.3.4 End of life

As in PCR part A.

7.3.5 Reuse, recovery, and recycling

As in PCR part A.

7.4 Additional information

As in PCR part A.

7.4.1 Additional information on release of dangerous substances to indoor air, soil, and water: Indoor air

As in PCR part A.

7.4.2 Additional information on release of dangerous substances to indoor air, soil, and water: soil and water

As in PCR part A.

7.4.3 Additional Norwegian requirements

As in PCR part A.

7.4.3.1 Greenhouse gas emissions from electricity use in A3 Manufacturing

As in PCR part A.

7.4.3.2 Dangerous substances and content declaration

As in PCR part A

7.4.3.3 Carbon footprint

As in PCR part A

7.4.3.4 Additional LCIA indicators such as GWP IOBC

As in PCR part A

7.5 Aggregation of information modules

As in PCR part A.

7.6 Additional Environmental Information

Additional information about the furniture can be added in the "Product description field". This must be relevant, objective and verifiable information.

This clause has a wider scope compared to other standards, and includes additional information not derived from LCA or information about product variations or markets (e.g. a table that describes climate footprint for different models).

It is important to state in the EPD, that any additional information on product variations cannot be considered as a full EPD since not all indicators are included.

8. Project Report

As in PCR part A.

9. Verification and Validity of an EPD

As in PCR part A.

Approved 29.09.2022 valid until 18.10.2023

Norwegian EPD Foundation, Technical committee

Christofer Skaar

Leader of the Technical committee

10. Bibliography

As in PCR part A, including the following additions:

BIFMA PCR for Seating: UNCPC 3811, Version 3, 2014 NSF Sustainability, National Center for Sustainability Standards (www.nsf.org).

PCR 2008:03, Seating solution, extended version, The Norwegian EPD Foundation (www.epd- norge.no)

ELCD. European Life Cycle Database version 3.1. European Commission.

PCR 2007: Product category rules for preparing an environmental declaration for Electricity, Steam, Hot and cold water, generation and distribution, PCR CPC 17, Version 1.1.

Candidate List of Substances of Very High Concern for authorisation, https://echa.europa.eu/candidate-list-table

List of Priority Substances. Norwegian Environment Agency, published 02.03.2017, Norwegian: http://www.miljostatus.no/Tema/Kjemikalier/Kjemikalielister/Prioritetslisten English: http://www.environment.no/topics/hazardous-chemicals/lists-of-hazardous- substances/list-of-priority-substances/

NS-EN 15251:2007: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics. Standards Norway.

NS-EN 97.140: International Classification for Standards ICS 97.140. Furniture. https://www.iso.org/ics/97.140/x/

EN 1130-1:1996 (W1=00207012), Furniture – Cribs and cradles for domestic use – Part 1 Safety requirements

EN 1130-2:1996 W100207013), Furniture – Cribs and cradles for domestic use – Part 2 Test methods

EN 12227:2010 (W1=00207191), Playpens for domestic use – Safety requirements and test methods

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