



SLOVENSKI STANDARD
oSIST prEN 18120-4:2024
01-oktober-2024

**Embalaža - Načrtovanje, ki omogoča recikliranje plastične embalaže - 4. del:
Smernica za plastenke iz polietilen tereftalata (PET-plastenke)**

Packaging - Design for recycling of plastic packaging - Part 4: Guideline for PET bottles

Verpackung - Recyclingorientierte Gestaltung von Kunststoffverpackungsprodukten - Teil
4: Leitfaden und Protokolle für Flaschen aus PET

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ICS:

13.030.50	Recikliranje	Recycling
55.020	Pakiranje in distribucija blaga na splošno	Packaging and distribution of goods in general
83.080.20	Plastomeri	Thermoplastic materials

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English Version

Packaging - Design for recycling of plastic packaging - Part 4: Guideline for PET bottles

Verpackung - Recyclingorientierte Gestaltung von
Kunststoffverpackungsprodukten - Teil 4: Leitfaden
und Protokolle für Flaschen aus PET

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 261.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 18120-4:2024) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

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prEN 18120-4:2024 (E)**Introduction**

EN 18120 consisting of 15 parts aims via a series of guidelines and protocols to establish consistency and improvement for the Design for recycling of household, industrial and commercial plastic packaging.

- Part 1: Definitions and principles for design-for-recycling of plastic packaging
- Part 2: Process and governance to evaluate the recyclability of plastic packaging
- Part 3: Sortability evaluation process for plastic packaging
- Part 4: Guideline for PET bottles
- Part 5: Guideline for PET other rigid packaging
- Part 6: Guideline for PE and PP rigid packaging
- Part 7: Guideline and protocols for PE and PP flexible packaging
- Part 8: Guideline for PS and XPS packaging
- Part 9: Guideline for EPS packaging
- Part 10: Recyclability evaluation process for plastic packaging — Protocols for PET bottles
- Part 11: Recyclability evaluation process for plastic packaging — Protocols for PET other rigid packaging
- Part 12: Recyclability evaluation process for plastic packaging — Protocols for PE and PP rigid packaging
- Part 13: Recyclability evaluation process for plastic packaging — Protocols for PE and PP flexible packaging
- Part 14: Recyclability evaluation process for plastic packaging — Protocols for PS and XPS packaging
- Part 15: Recyclability evaluation process for plastic packaging — Protocols for EPS packaging

Design for recycling guidelines are a common way of describing compatibility with plastic packaging collection, sorting and recycling into high quality recycled plastic into state-of-the-art facilities. They provide guidance on the level compatibility, defined as:

- green: Packaging constituents with full compatibility with recycling;
- yellow: Packaging constituents with limited compatibility with recycling;
- red: Packaging constituents which are not compatible with recycling.

Recyclability guidelines will require regular review and improvement to reflect innovations in design, collection, sorting and recycling.

The design for recycling guidelines provided in this series of standards are representative of the state of the art in Europe and cover all steps from design for recycling, packaging waste collection, sorting, recycling into recycled plastic and to use in a new application.

Packaging recyclability is the combination of five parameters: packaging designed for recycling, packaging waste collection, sorting when necessary, recycling and use of recycled plastic in a new application. This series of standards covers one parameter: the design for recycling.

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prEN 18120-4:2024 (E)**1 Scope**

This document covers the design of PET bottles with respect to compatibility of the design with the collecting, sorting, and recycling processes.

Packaging constituents and packaging components made of other materials than PET are also covered by this standard as they need to be evaluated on compatibility with polymer recycling.

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.

prEN 18120-1, *Packaging — Design for recycling of plastic packaging — Part 1: Definitions and principles for design-for-recycling of plastic packaging*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 18120-1 apply.

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/>

4 Compatibility of PET Bottles with recycling**4.1 General**

Generic aspects for design compatibility with recycling are covered in prEN 18120-1, *Packaging — Design for recycling of plastic packaging — Part 1: Definitions and principles for design-for-recycling of plastic packaging*.

4.2 General characteristics for PET bottles

PET rigid packaging is designed to be lightweight and highly functional, to provide protection for sensitive goods. PET Bottles should be designed in a way that the recycled material can go back into the highest possible application and ideally to stay in the packaging loop (e.g. bottle-to-bottle).

When it is designed for a food contact application (which is the most prominent use of PET bottles) it should be done in a way that the recycled material can go back into food contact applications.

When it is designed for a non-food application it should be designed in a way that it does not harm the recycling of food contact rigid packaging into food contact applications i.e./e.g. by preventing the use of unwanted substances.

There are many non-food packaging items where the inclusion of recycled material can be accommodated. All the different applications of PET rigid packaging (food and beverage, medical, personal care, homecare, industrial and others) need to be considered.

The following bottle constituents and components should be addressed in standard design for recycling guidelines:

- material;
- colour;

- barrier layer (material and % of inclusion);
- additives (material and % of inclusion);
- closures (material type);
- liners, seals and valves (material type);
- labels (material, % surface coverage);
- sleeve (material, % surface coverage);
- inks for labels and sleeves and direct printing;
- adhesives for labels and sleeves;
- direct print;
- tamper evidence;
- other components (handles, base-cups...).

Besides the main bottle body made from PET, closures, labels, and sleeves (including inks used and varnishes) along with adhesives are indispensable since they play an essential role in providing information to consumers required by law such as nutritional information, health and safety warnings, manufacturers address and recycling information as well as barcodes and branding.

Full body sleeves, coloured bottle and/or additives and barrier layers can also be necessary to protect the packaged product, e.g. from UV radiation or to increase shelf life considerably. The functions of these mentioned additional constituents need to be considered when setting thresholds of allowed amounts and components.

The following general principles should be followed when designing rigid PET bottle:

- prefer unpigmented PET bottles;
- make the package of mono material PET unless a second material is strictly necessary for technical reasons e.g. to avoid product waste;
- if the package needs additives or barrier layers, make sure they do not contaminate and/or disrupt recycling for the intended use targeted by the design guidelines;
- label should be minimized, easily removable and be compatible with recycling processes. The standard provides guidance on partial and full coverage labels and sleeves, the definition of “partial” and “full” are available in part 1 of this series of standards;
- adhesives should be minimized, compatible with the recycling process and have no impact on food safety;
- the closure or lidding system, label and/or components should be of materials and design allowing easy separation in the recycling process (e.g. via sink/float, air elutriation, delabeller, ballistic, ...) from the main container in order to avoid interfering with PET recycling;
- the bottle should be designed in such a way it eases emptying of its content to minimize residual content;

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- for all components and constituents, current bio-/oxo-/photodegradable and compostable materials are banned from usage;
- for sleeves prefer perforated solutions to ease the removal during the collection, sorting and recycling process and/or if needed by the consumer (other rules might apply for deposit return systems).

4.3 Sorting

The sorting testing procedures of PET bottles are covered in prEN 18120-3, *Packaging — Design for recycling of plastic packaging — Part 3: Sortability evaluation process for plastic packaging*.

4.4 Design guidelines summary table

All the below design guidelines have been established reflecting collection, sorting and recycling state of the art in Europe.

The table below describes the characteristics that are applicable to all PET bottles independently of their colour. The colour specific characteristics are in the Tables 1, 2, 3, 4 and 5.

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