SLOVENSKI STANDARD
oSIST prEN 18120-1:2024

01-oktober-2024

Embalaža - Načrtovanje, ki omogoča recikliranje plastične embalaže - 1. del: Definicije in načela za načrtovanje, ki omogoča recikliranje plastične embalaže

Packaging - Design for recycling of plastic packaging - Part 1: Definitions and principles for design-for-recycling of plastic packaging

Verpackung - Recyclingorientierte Gestaltung von Kunststoffverpackungsprodukten - Teil 1: Definitionen und Grundsätze für die recyclingorientierte Gestaltung von Kunststoffverpackungen

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Ta slovenski standard je istoveten z: **prEN 18120-1**

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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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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 18120-1

September 2024

ICS 13.030.50; 55.020; 83.080.20

English Version

Packaging - Design for recycling of plastic packaging - Part 1: Definitions and principles for design-for-recycling of plastic packaging

Verpackung - Recyclingorientierte Gestaltung von Kunststoffverpackungsprodukten - Teil 1: Definitionen und Grundsätze für die recyclingorientierte Gestaltung von Kunststoffverpackungen

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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 18120-1:2024) 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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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: Sorting 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.

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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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1 Scope

This document provides a process that manages the identification of the level of compatibility of plastic packaging features with collection, sorting and recycling, describing the level of compatibility as fully, limited, and not recyclable.

This standard covers any plastic packaging where the main body is made of plastic material. It targets to harmonize the design for recycling standard approach for each resin.

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 18120-3, *Packaging — Design for recycling of plastic packaging — Part 3: Sorting evaluation process for plastic packaging*

prEN 18120-10, *Packaging — Design for recycling of plastic packaging — Part 10: Recyclability evaluation process for plastic packaging — Protocols for PET bottles*

prEN 18120-11, *Packaging — Design for recycling of plastic packaging — Part 11: Recyclability evaluation process for plastic packaging — Protocols for PET rigid packaging (except bottles)*

prEN 18120-12, *Packaging — Design for recycling of plastic packaging — Part 12: Recyclability evaluation process for plastic packaging — Protocols for PE and PP rigid packaging*

prEN 18120-13, *Packaging — Design for recycling of plastic packaging — Part 13: Recyclability evaluation process for plastic packaging — Protocols for PE and PP flexible packaging*

prEN 18120-14, *Packaging — Design for recycling of plastic packaging — Part 14: Recyclability evaluation process for plastic packaging — Protocols for PS and XPS packaging*

prEN 18120-15, *Packaging — Design for recycling of plastic packaging — Part 15: Recyclability evaluation process for plastic packaging — Protocols for EPS packaging*

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3 Terms and definitions

For the purposes of this document, the following terms and definitions 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/

3.1
sales packaging
packaging conceived so as to constitute a sales unit consisting of products and packaging to the end user at the point of sale

3.2
grouped packaging
packaging conceived so as to constitute a grouping of a certain number of sales units at the point of sale whether the latter is sold as such to the end user or it serves only as a means to replenish the shelves at

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the point of sale or create a stock-keeping or distribution unit, and which can be removed from the product without affecting its characteristics

3.3
transport packaging
packaging conceived so as to facilitate handling and transport of one or more sales units or grouped packages, including e-commerce packaging but excluding road, rail, ship and air containers, in order to prevent damage to the product from physical handling and transport

3.4
unit of packaging
means a unit as a whole, including any integrated or separate components, which together serve a packaging function such as the containment, protection, handling, delivery, storage, transport and presentation of products, and including independent units of grouped or transport packaging where they are discarded prior to the point of sale

3.5
green category
category for identifying components or constituents of a plastic packaging that is in the scope of the design for recycling guidelines of a given packaging type that are recognized as compatible with state-of-the-art collection, sorting and recycling or are demonstrated as suitable for recycling through technical evaluation and can fully meet the quality requirements of secondary raw material in the recycling process

3.6
yellow category
category for identifying components or constituents of a plastic packaging that is in the scope of the design for recycling guidelines of a given packaging type are recognized as acceptable with limited compatibility with state-of-the-art collection, sorting and recycling, or are demonstrated as having limited compatibility through technical evaluation or will not meet all quality requirements of secondary raw material in the recycling process

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3.7
red category
category for identifying components or constituents of a plastic packaging that is in the scope of the design for recycling guidelines of a given packaging type generally leads to rejection of the packaging item in sorting or recycling processes or are generally recognized as detrimental (disrupting) for recycling or are demonstrated as disrupting for recycling through technical evaluation or are demonstrated as unacceptable downgrading the yield or the quality of recycled plastic

3.8
state of the art
generally recognised good practice in the European market, fulfilling the following non-exhaustive criteria: proven and commercially available, technology at TRL9, delivering sufficient results in terms of yield and quality, already in use in the European market, affordable to relevant economic operators in the EU

Note 1 to entry: Preferably non-proprietary technology (i.e. technology that is openly available to the packaging users) is considered.

3.9
integrated component
packaging component that may be distinct from the main body of the packaging unit, and may be of a different material, but is integral to the packaging unit and its functioning and does not need to be

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separated from the main packaging unit in order to consume the product and is typically discarded at the same time as the packaging unit, although not necessarily in the same disposal route

3.10
separate component
packaging component that is distinct from the main body of the packaging unit, which may be of a different material, that needs to be disassembled completely and permanently from the main packaging unit in order to access the product, and that is typically discarded prior to and separately from the packaging unit

3.11
high quality recycled plastic
recycled plastic from any recovery operation by which plastic waste are reprocessed into secondary raw material with comparable quality to feed a closed material loop scheme

3.12
packaging
product to be used for the containment, protection, handling, delivery, storage, transport and presentation of goods, from raw materials to processed goods, from the producer to the user or consumer, including processor, assembler or other intermediary

[SOURCE: ISO 21067-1:2016, definition 2.1.1]

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3.13
packaging component
part of packaging that can be separated by hand or by using simple physical means

[SOURCE: ISO 21067-2:2015, definition 2.1.1]

3.14
packaging constituent
part from which packaging or its components are made and which cannot be separated

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by hand or by using simple physical means

[SOURCE: ISO 21067-2:2015, definition 2.1.2]

3.15
packaging main component
component with the heaviest weight in the packaging composition

3.16
rigid plastic packaging
collective description for packaging types that are assigned to the so-called “rigid plastic fractions” in the waste classification, for example bottles, cups, trays, tubes, tins, buckets, canisters, pots, cosmetic jars, jerrycans, drums, IBCs and boxes

3.17
flexible plastic packaging
collective description for packaging types that are assigned to the so-called ‘flexible plastic fractions” in the waste classification, for example bags, pouches, envelopes, sachets, removable lidding/liners, wraps and similar flexible packaging items

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Note 1 to entry: Flexible packaging structures can be single or multi-layered using a variety of materials including plastic film, paper, aluminium foil or any combination of these. The construction may be plain, printed, coated and/or laminated.

Note 2 to entry: Flexible packaging structures are generally used to package and protect consumer and other products. These can include Fast Moving Consumer Goods (FMCG) products such as confectionery, snack foods, frozen foods, produce, bakery, meat, dairy, pet foods, processed food, cosmetics, personal care, household detergents, beverage bottle/can wrapping, pharmaceuticals, medical and other technical products such as utensils and tools which might not be included in the definition of FMCG.

3.18
semi-rigid/semi-flexible packaging
all packaging that cannot be clearly categorised by type as either rigid or flexible packaging, such as two-piece packaging with a thick but flexible bottom film or pouches with dimensionally stable closure systems. (Supplement: As this packaging behaves diffusely in the separation processes used to separate the flexibles (air classifying and ballistic separation), it is recommended that the requirements for flexibles and rigids are both applied to such packaging when assessing recyclability)

3.19
polyethylene
PE
thermoplastic polymer principally composed of CH2– repeating units with a density of typically (0,85 to 0,97) grams/cubic centimetres

Note 1 to entry: PE materials can include additional polymers such as polyethylene copolymers.

Note 2 to entry: Additives often play a critical role as they can deliver improved performance including features such as enhanced thermal stability, easier processing, slip, antiblock properties, UV protection or simply change in density. Additives can be added during manufacturing of the polymer (typically antioxidants, polymer processing aids, antiblock and/or slip) and during downstream converting. Some additives added during further processing steps have a profound effect on the density of the material such as inorganic fillers or foaming agents.

Note 3 to entry: Foaming (both chemical and physical) can decrease the density of a PE component compared to the intrinsic density value of the polymer itself.

Note 4 to entry: Melting temperatures of PE typically range from (55 to 135) °C.

3.20
low-density polyethylene
PE-LD
LDPE
polyethylene which is highly branched (short and long chains) and has a density of typically 0,910 grams/cubic centimetre to 0,940 grams/cubic centimetre

Note 1 to entry: Upper density limit changed compared to the definition in the source.

Note 2 to entry: Melting temperatures of LDPE typically range from (105 to 125) °C.

[SOURCE: EN ISO 472:2013, definition 2.1371, modified -- upper density limit changed compared to the definition in the source; note 2 added; ‘typically’ added]

3.21
very low-density polyethylene
VLDPE
polyethylene which is highly branched and has a density of typically (0,850 to 0,910) grams/cubic centimetre