SLOVENSKI STANDARD
SIST EN 17615:2022

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Polimerni materiali - Okoljski vidiki - Slovar

Plastics - Environmental Aspects - Vocabulary

Kunststoffe - Umweltaspekte - Vokabular

Plastiques - Aspects environnementaux - Vocabulaire

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English Version

Plastics - Environmental Aspects - Vocabulary

Plastiques - Aspects environnementaux - Vocabulaire

Kunststoffe - Umweltaspekte - Vokabular

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 17615:2022) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2022, and conflicting national standards shall be withdrawn at the latest by December 2022.

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Introduction

The need for harmonized terms and definitions in the field of plastics relating to environmental aspects is growing. This document intends to give a common set of terms and definitions and thus strives to facilitate the communication and development of standards in this area.

The term “bioplastic” is not defined in this text, since EN 17228 states the following:

The terms “biopolymers” and “bioplastics” are commonly used to identify polymers and plastics that are either bio-based, biodegradable, or feature both properties. While these definitions are quite widespread and used by industry, it is recognized that they are susceptible to misunderstanding and thus inappropriate for standardization purposes.

The terms oxo-degradable and oxo-biodegradable are generally used to indicate plastic products made of conventional plastics (mostly polyolefins) supplemented in the transformation phase with catalysts that accelerate oxidation of the polymer. There are no European Standards that clarify how the potential of oxo-biodegradation can be measured and classified. However, the terms “oxo-degradable” and “oxo-biodegradable” have been widely used, sometimes arousing controversy. The use for market purposes, the lack of international standards, and the disputes raised over the marketing of these products are the reasons for not defining the terms in this document, pending the elaboration of specific standards. It has to be mentioned that the global market of “oxo-biodegradable” materials is deeply fragmented where, for example, countries in the EU have banned these materials, while in countries such as the UEA, Pakistan, Iran, Morocco, Yemen and DR Congo it is forbidden to use certain products like bags and plastic packaging if they are not oxo-biodegradable.

NOTE A definition of oxo-degradable plastic is present in DIRECTIVE (EU) 2019/904, Art. 3, 3.

General terms have the addition “of plastics”, e.g. “recycling of plastics” in this document for clarification. However, in practice they are often used without this addition.

1 Scope

This document specifies terms and definitions in the field of plastics related to environmental aspects and provides a common vocabulary for:

— bio-based plastics;

— biodegradability;

— carbon and environmental footprint;

— circular economy;

— design;

— plastics in natural environments;

— reuse and recycling;

— waste management.

This document aims to provide a comprehensive glossary which uses the applicable definitions providing when appropriate additional notes to make these definitions understandable without reference to other documents. Definitions are as far as possible adopted from existing standards but when the original intention or definition is unclear additional context or definitions are provided.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
accelerated-ageing test
short-term test designed to reach more rapidly the natural ageing state for a material, following an identical mechanism of the physico-chemical processes that occur during longer-term service conditions

3.2
activated sludge
biomass produced in the aerobic treatment of waste water by the growth of bacteria and other microorganisms in the presence of dissolved oxygen

[SOURCE: ISO 14851:2019, 3.2]

3.3
aerobic biodegradation
biodegradation under aerobic conditions

[SOURCE: CEN/TR 15351:2006, c) 2]

3.4
additives
substances which are used to process plastics or to modify end use properties of plastics

Note 1 to entry: Substances are normally included in carrier matrix.

Note 2 to entry: Impact modifiers are rubbery type of additives added to plastics to improve toughness by absorbing or dissipating the energy of impact.

Note 3 to entry: Rheology modifiers, also referred to as thickeners are additives that make a melt to become flowable and easily poured when a force is applied.

Note 4 to entry: Plasticizers are additives that are mixed with polymers to make them softer and more flexible.

3.5
ageing
time-dependent irreversible chemical and physical processes in a plastic material under the influence of one or more environmental factors leading to undesirable change in properties

EXAMPLES Extraction and evaporation.

3.6
agglomerate
larger particles formed by joining or binding together of smaller particles whose original identity can still be visible in the final form

Note 1 to entry: Agglomerates can be supplied for further processing in the form of free-flowing material.

3.7
amorphous polymers
polymers that do not form a crystalline structure but rather form an irregular arrangement and have no long-range order

3.8
anaerobic biodegradation
biodegradation under anaerobic conditions

[SOURCE: CEN/TR 15351:2006, c) 3]

3.9
anaerobic digestion
process of controlled decomposition of biodegradable materials under managed conditions where free oxygen is absent, at temperatures suitable for naturally occurring mesophilic or thermophilic anaerobic and facultative bacteria species, that convert the inputs to a methane rich biogas and digestate

Note 1 to entry: In a second phase, the digestate is typically stabilized by means of a composting (aerobic) process.

[SOURCE: ISO 18606:2013, 3.10]

3.10
antioxidant
substance used to retard deterioration caused by oxidation

[SOURCE: EN ISO 472:2013, 2.56]

3.11
ash content
inorganic mass remaining after complete combustion of a sample under specified conditions expressed as a percentage of the mass of the dry matter in the sample

3.12
assembly
unit or structure composed of a combination of materials or products, or both

[SOURCE: EN ISO 472:2013, 2.1272]

3.13
assimilation
uptake of nutrient molecules from the environment by (micro)organisms and incorporation in the biomass

Note 1 to entry: Assimilation is a key process in biodegradation.

3.14
average molar mass
average relative molecular mass
average of the molar mass or relative molecular mass of a polydisperse polymer

Note 1 to entry: The unit gram per mole is recommended in polymer science for molar mass since then the numerical values of the molar mass and the relative molar mass of a substance are equal.

Note 2 to entry: Four types of average commonly used are number-average, mass-average, viscosity-average and centrifugation-average.

[SOURCE: EN ISO 472:2013, 2.598, modified — In Note 2 to entry “centrifugation-average” was added.]

3.15
bale
compacted plastic waste to facilitate handling, storage and transportation

3.16
baling
process in which plastic waste is compacted and secured as a bundle to facilitate handling, storage and transportation

[SOURCE: EN ISO 472:2013, 2.1678, modified — “plastics waste” was changed to read “plastic waste”.]

3.17
batch
quantity of material regarded as a single unit, and having a unique reference

Note 1 to entry: “Batch” is primarily a processing term.

[SOURCE: EN ISO 472:2013, 2.1679]

3.18
beach plastic litter
subcategory of marine plastic litter found on beaches

Note 1 to entry: Beach plastic litter is not necessarily identical with marine plastic litter. Beach studies may not be representative of marine litter.

3.19
bioavailability
property of a plastic material to be physically and chemically accessible to the action of microorganisms and enzymes released by them

3.20
bio-based
derived from biomass

Note 1 to entry: The correct spelling of “bio-based” is with a hyphen (-). It is however in common usage sometimes spelt without a hyphen.

Note 2 to entry: The term “biomass-based” rarely is used as well.

[SOURCE: EN 17228:2019, 3.1]

3.21
bio-based carbon
biogenic carbon
carbon derived from biomass

[SOURCE: EN 16575:2014, 2.2, modified — Note 1 to entry deleted.]

3.22
bio-based carbon content
fraction of carbon derived from biomass in a product

Note 1 to entry: There are several approaches to express the bio-based carbon content. These include as a percentage of: the mass; the total carbon content, or the total organic carbon content of the sample. These are detailed in the relevant standards of CEN/TC 411.

[SOURCE: EN 16575:2014, 2.3]

3.23
bio-based composite
DEPRECATED: biocomposite
composite material wholly or partly derived from biomass

[SOURCE: EN 17228:2019, 3.3 - modified, alternative term “biocomposite” added.]

3.24
bio-based content
biomass content
fraction of a product that is derived from biomass

Note 1 to entry: Normally expressed as a percentage of the total mass of the product.

Note 2 to entry: For the methodology to determine the bio-based content, see CEN/TR 16721.

[SOURCE: EN 16575:2014, 2.4]

3.25
bio-based plastic
plastic wholly or partly derived from biomass

[SOURCE: EN 17228:2019, 3.4]

3.26
bio-based polymer
polymer wholly or partly derived from biomass

[SOURCE: EN 17228:2019, 3.2]

3.27
biochemical oxygen demand
BOD
mass concentration of the dissolved oxygen consumed under specified conditions by the aerobic biological oxidation of a chemical compound or organic matter in water

[SOURCE: ISO 14851:2019, 3.4, modified — Note 1 to entry removed.]

3.28
biocompatible
compatible with human or animal tissues and suitable for medical therapy

[SOURCE: EN 17228:2019, 3.5]

3.29
biodegradability
ultimate biodegradability
potential for a polymeric material to undergo a biodegradation process

Note 1 to entry: Has to be demonstrated in accordance with a suitable standard.

Note 2 to entry: Biodegradable is the adjective of biodegradability.

3.30
biodegradation
process leading to the breakdown of an organic compound by microorganisms in the presence of oxygen to carbon dioxide, water, mineral salts and new biomass, or in the absence of oxygen to carbon dioxide, methane, mineral salts and new biomass

Note 1 to entry: Breakdown of organic compounds by microorganisms into inorganic compounds is called mineralization.

3.31
biodegradation phase
time, measured in days, from the end of the lag phase of a test until about 90 % of the maximum level of biodegradation has been reached

[SOURCE: EN ISO 472:2013, 2.1726]

3.32
bio-disintegration
physical breakdown of a material into fragments with all dimensions below 2 mm resulting from the action of microorganisms

Note 1 to entry: The early phase of bio-disintegration is usually called “fragmentation”.

3.33
bioerosion
erosion resulting from biodegradation

3.34
biological treatability
potential of a material to be aerobically composted or anaerobically biogasified

[SOURCE: EN ISO 472:2013, 2.1727]

3.35
biomass
material of biological origin excluding material embedded in geological formations or transformed to fossilized material and excluding peat

Note 1 to entry: Biomass includes organic material (both living and dead) from above and below ground, e.g. trees, crops, grasses, tree litter, algae, animals and waste of biological origin, e.g. manure.

[SOURCE: EN ISO 14021:2016, 3.1.1]

3.36
biomass origin
geographic origin(s) of the biomass used for the production a bio-based plastic

EXAMPLES Country, territory or water body.

[SOURCE: EN 16848:2016, 3.1, modified — “product” was replaced by “plastic”.]

3.37
biomass type
type of biomass used to produce a bio-based product

EXAMPLES Plants, trees, algae, animals.

Note 1 to entry: Definition based on EN 16848:2016, 4.2.4.

3.38
bio-mineralization
mineralization caused by microorganisms

3.39
blowing agent
substance used to cause expansion in the manufacture of hollow or cellular articles

Note 1 to entry: Blowing agents can be compressed gases, volatile liquids or chemicals that decompose or react to form a gas.

[SOURCE: EN ISO 472:2013, 2.82]

3.40
blow moulding
method of forming hollow objects by inflating a parison into a mould with compressed gas

[SOURCE: EN ISO 472:2013, 2.81]

3.41
blown film extrusion
manufacturing process in which molten polymer is extruded through a tubular die and blown into a film tube with a multiple of the original diameter, which is then collapsed and further processed as a film tube, half tube or flat film

3.42
bulk biodegradation
faster degradation inside than at the surface resulting from biodegradation

[SOURCE: CEN/TR 15351:2006, e) 6]

3.43
by-product
co-product from a process that is incidental or not intentionally produced and which cannot be avoided, but which will certainly be further used without any further processing other than normal industrial practice

Note 1 to entry: Waste is not a by-product.

Note 2 to entry: In-house scrap is a by-product.

Note 3 to entry: For legal definition refer to the European Waste Framework Directive 2008/98/EC article 5.

3.44
calender
machine that has a series of heated rolls, arranged in pairs, the rolls in each pair turning in opposite directions

Note 1 to entry: A calender is used to produce film, sheeting, coated substrates or laminates, the thickness being determined by adjustment of the gap between the last pair of rolls.

[SOURCE: EN ISO 472:2013, 2.112]

3.45
carbon content
amount of carbon in the constituent, material or product as a percent of the mass

[SOURCE: ISO 16620-1:2015, 3.1.6, modified — “weight (mass)” was replaced by “mass”.]