



Issue brief

# ISO definitions of key terms for plastic pollution



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Ambiguous terminology on plastic pollution results in confusion and miscommunication that compromises progress in research and mitigation measures<sup>1</sup>. For the United Nations' International Legally Binding Instrument (ILBI) on plastic pollution to be effective in its control measures, and for its text to be interpreted unequivocally, ***a common operating language is essential.***

Certain key terms are already defined in multilateral environmental agreements and conventions. Others do not yet have international legally binding definitions. In the latter case, standards developed by ISO can offer solutions as they provide vocabulary on various topics related to plastic production, use and waste management.

ISO's International Standards are developed through a transparent, open and consensus-based process and their text is agreed by a diverse set of stakeholders, including developing countries and non-industry professionals. Using definitions from ISO standards can also help to future-proof the ILBI as standards are reviewed and updated regularly; this means the definitions they contain always reflect the state of the art.

The UNEP/PP/INC.1/6 *Glossary of key terms*, prepared for the first session of the Intergovernmental Negotiating Committee (INC) on Plastic Pollution, already cited two ISO definitions: "life cycle" (ISO 14040:2006) and "reuse" (ISO 21067-1:2016).

This publication highlights key areas in which ISO standards provide useful terminology applicable to the plastics field. The short overview is presented together with a list of full definitions taken from the relevant standards (see [Annex 1](#)).

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<sup>1</sup> Hartmann, N.B., Hüffer, T. et al., "Are We Speaking the Same Language? Recommendations for a Definition and Categorization Framework for Plastic Debris", ACS, 2019



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## Packaging

A deep understanding of the industry's language is vital to implement circularity and zero-waste practices in the packaging sector. A foundational standard, *ISO 21067-1:2016, Packaging – Vocabulary – Part 1: General terms*, specifies a classification of the different types of packaging according to their particular role in the supply chain. Terms detailed therein include primary packaging, secondary packaging, consumer packaging, reclosable package, and others. In addition, *ISO 21067-2:2015, Packaging – Vocabulary – Part 2: Packaging and the environment terms*, provides more specific terms on the environmental aspects of packaging. It defines concepts such as packaging optimization, reusable packaging and reconditioning.

## Waste management

Like any industry, waste management has developed its own unique terminology borne from years of growth and specialized knowledge. *ISO 24161:2022, Waste collection and transportation management – Vocabulary*, defines foundational concepts such as waste treatment and packaging waste. These definitions can be seen as a complement to the Basel Convention and its Plastic Waste Amendments. The standard also specifies terms such as remanufacturing, pay-as-you-throw (PAYT), and informal recycler. It is important for these terms to be established early on to ensure sound waste management throughout the life cycle of plastics and account for the views of all stakeholders and industry professionals.

## Recycling

The multiple facets within the plastic recycling and reprocessing industry mean that there are variations when it comes to the terminology used. A number of ISO standards, such as *ISO 15270:2008, Plastics – Guidelines for the recovery and recycling of plastics waste*, specify terms and definitions on the different types of recycling, reprocessing and disposal of plastic. ISO 15270 includes terms such as energy recovery, feedstock recycling and biological recycling, the latter being of particular relevance since it was cited as one of the key components in the fight against plastic pollution. Finally, *ISO 17088:2021, Plastics – Organic recycling – Specifications for compostable plastics*, provides specialized definitions pertaining to composting, including industrial and home composting.

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## Plastic particles

As plastic waste proliferates, it releases tiny plastic particles – called microplastics – to the environment. Terms such as microplastic, macroparticle, nanoplastic, microparticle, etc. have several definitions across scientific literature and legislation. The ISO technical report *ISO/TR 21960:2020, Plastics – Environmental aspects – State of knowledge and methodologies*, offers a size classification of plastic particles. It is worth noting that ISO's definitions of microplastic align with the existing definition of the United Nations Environment Programme (i.e. less than 5 mm in size)<sup>2</sup>.

## Polymers and chemicals

Concern is growing around the composition of plastic products, including the potentially hazardous chemicals they contain. Making plastics composition more transparent through the use of robust definitions is one of the core obligations of the High Ambition Coalition<sup>3</sup>. ISO standards can serve as the foundation for a universal operating language on the composition of plastic feedstock and products. For example, the four-part series *ISO 1043, Plastics – Symbols and abbreviated terms*, includes commonly used abbreviations for polymers and additives such as flame retardants and plasticizers. *ISO/TR 18568:2021, Packaging and the environment – Marking for material identification*, gives a list of abbreviations for packaging materials by country along with examples of symbols for recyclable packaging. These standards have the potential to increase transparency in the market with the prospect of eventually eliminating hazardous and unnecessary plastics. In this regard, they usefully complement such instruments as the Stockholm Convention on Persistent Organic Pollutants.

## Other terms

ISO standards also offer vocabulary related to topics such as environmental management, life-cycle assessment, conformity assessment, ecodesign, and water quality.

2 UNEP, "Compilation of United Nations Environment Assembly Resolutions on Marine Litter and Microplastics" [website]

3 UNEP, *Proposed response template (16 December 2022) / INC on Plastic Pollution* [pdf]

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# Annex 1

The following is a list of terms and definitions already defined in ISO standards which complement the glossary provided by the INC Secretariat (UNEP/PP/INC.1/6 *Glossary of key terms*). Vocabularies can be freely accessed on [iso.org/obp](https://www.iso.org/obp).



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## ISO 472:2013, *Plastics – Vocabulary*

**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

**Biological recycling:** aerobic (composting) or anaerobic (digestion) treatment of biodegradable plastics waste under controlled conditions using microorganisms to produce, in the presence of oxygen, stabilized organic residues, carbon dioxide and water or, in the absence of oxygen, stabilized organic residues, methane, carbon dioxide and water

## ISO 15270:2008, *Plastics – Guidelines for the recovery and recycling of plastics waste*

**Energy recovery:** production of useful energy through direct and controlled combustion

*Note 1 to entry:* Solid-waste incinerators producing hot water, steam and/or electricity are a common form of energy recovery.

**Feedstock recycling:** conversion to monomer or production of new raw materials by changing the chemical structure of plastics waste through cracking, gasification or depolymerization, excluding energy recovery and incineration

*Note 1 to entry:* Feedstock recycling and chemical recycling are synonyms.

**Post-consumer:** descriptive term covering material, generated by the end-users of products, that has fulfilled its intended purpose or can no longer be used (including material returned from within the distribution chain)

*Note 1 to entry:* The term “post-use” is sometimes used synonymously.

**Pre-consumer:** descriptive term covering material diverted during a manufacturing process

*Note 1 to entry:* This term excludes re-utilized material, such as rework, regrind or scrap that has been generated in a given process and is capable of being reclaimed within that same process.

*Note 2 to entry:* The term “post-industrial material” is sometimes used synonymously.

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**ISO 24161:2022, Waste collection and transportation management  
– Vocabulary**

**Incinerable waste:** waste that can be destroyed, rendered inert or reduced to ash through a process of controlled, high-temperature combustion

**Informal recycler (rag and bone man):** unlicensed individual collecting recyclables and second-hand goods for reuse or recycling

**Litter:** waste of a smaller size that is discarded improperly by an individual in a public environment

**Packaging waste:** waste from all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer

**Pay-as-you-throw (PAYT):** usage-based pricing system for waste whereby residents pay a variable waste fee based on the quantity of waste handled

**Refurbished part:** part that is disassembled from waste products or equipment and can be recycled or prepared for reuse after inspection, detection and simple treatment

**Remanufacturing:** process of creating a like-new product through dismantling, cleaning, salvaging and replacing worn components before reassembling and testing

**Note 1 to entry:** The quality of this product should be equal to or better than the original.

**Waste treatment:** single step or a combination of multiple steps in which waste is handled via mechanical, chemical, thermal or biological processes with the aim of recovering material or energetic value and/or reducing the volume and environmental impact of the waste



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## ISO 21067-1:2016, *Packaging – Vocabulary – Part 1: General terms*

**Bulk packaging:** packaging intended to contain loose articles, large masses of solids or granular materials, or liquids for transport or storage

**Commercial packaging:** methods and materials used by a supplier to satisfy the requirements of the distribution system

*Note 1 to entry:* Commercial packaging includes industrial packaging and consumer packaging and may be applicable for certain levels of military packaging.

**Consumer packaging/retail packaging/sales packaging:** packaging constituting, with its contents, a sales unit for the final user or consumer at the point of retail

**Distribution packaging/transport packaging/tertiary packaging:** packaging designed to contain one or more articles or packages, or bulk material, for the purposes of transport, handling and/or distribution

**Industrial packaging:** packaging for raw materials, components and partially manufactured or finished goods, for distribution from manufacturer to manufacturer and/or other intermediaries such as processor or assembler

**Inner packaging:** packaging for which an outer packaging is required for transport

**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; or operations involved in the preparation of goods for containment, protection, handling, delivery, storage, transport and presentation of goods, from raw materials to processed goods, from the producer to the user or consumer

*Note 1 to entry:* The term includes preservation, packing, marking and unitization.

**Primary packaging:** packaging designed to come into direct contact with the product

**Reclosable package:** package which, after it has been initially opened, is capable of being reclosed with a similar degree of security and is capable of being used a sufficient number of times to dispense the total contents without loss of security

**Secondary packaging:** packaging designed to contain one or more primary packages together with any protective materials where required

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**ISO 21067-2:2015, Packaging – Vocabulary – Part 2: Packaging and the environment terms**

**Critical area(s):** specific performance criterion/criteria which prevents further reduction of weight or volume without endangering functional performance, safety and user/consumer acceptability

**Disintegration:** physical breakdown of a material into fragments

**Packaging optimization:** process for the achievement of a minimum adequate weight or volume (source reduction) for meeting the necessary requirements of primary or secondary or transport packaging, when performance and user/consumer acceptability remain unchanged or adequate, thereby reducing the impact on the environment

**Packaging unit:** unit which serves a packaging function such as the containment, protection, handling, delivery, storage, transport and presentation of goods

**Primary raw material/virgin raw material:** material which has never been processed into any form of end-use product

**Reusable packaging:** packaging or packaging component which has been designed to accomplish or proves its ability to accomplish a minimum number of trips or rotations in a system for reuse

**Reuse:** operation by which packaging is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling the packaging to be refilled

*Note 1 to entry:* Non reusable items that support packaging reuse, such as labels or closures, are considered to be part of that packaging.

**Reconditioning:** operations necessary to restore a reusable packaging to a functional state for further reuse

**Ultimate biodegradability:** breakdown of an organic chemical compound by micro-organisms in the presence of oxygen to carbon dioxide, water and mineral salts of any other elements present (mineralization) and new biomass or in the absence of oxygen to carbon dioxide, methane, mineral salts and new biomass

**Used packaging:** packaging that has been used by the final consumer or end user and which is destined for reuse or recovery

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## ISO/TR 21960:2020, *Plastics – Environmental aspects – State of knowledge and methodologies*

**Large microplastic:** any solid plastic particle insoluble in water with any dimension between 1 mm and 5 mm

**Note 1 to entry:** Microplastic may show various shapes.

**Note 2 to entry:** Typically, a large microplastic object represents an article consisting of plastic or a part of an end-user product or a fragment of the respective article.

**Note 3 to entry:** Microplastics in this size range are, for example, plastic pellets as intermediates for further down-stream processing such as moulding, extrusion, etc. resulting to semi-finished products which are not final end-user products.

**Macroplastic:** any solid plastic particle or object insoluble in water with any dimension above 5 mm

**Note 1 to entry:** Typically, a macroplastic object represents an article consisting of plastic or a part of an end-user product or a fragment of the respective article, such as cups, cup covers.

**Note 2 to entry:** The defined dimension is related to the longest distance of the particle.

**Microparticle:** solid particle insoluble in water in the dimension between 1 µm and 1 000 µm (= 1 mm)

**Note 1 to entry:** There is currently no specific distinction between nanoparticles and microparticles.

**Microplastic:** any solid plastic particle insoluble in water with any dimension between 1 µm and 1 000 µm (= 1 mm)

**Note 1 to entry:** This term relates to plastic materials within the scope of ISO/TC 61. Rubber, fibres, cosmetic means, etc. are not within the scope.

**Note 2 to entry:** Typically, a microplastic object represents a particle intentionally added to end-user products, such as cosmetic means, coatings, paints, etc. A microplastic object can also result as a fragment of the respective article.

**Note 3 to entry:** Microplastics may show various shapes.

**Note 4 to entry:** The defined dimension is related to the longest distance of the particle.

**Nanoplastic:** plastic particles smaller than 1 µm

**Note 1 to entry:** According to OECD nanoparticles are up to 100 nm.

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## **ISO 17088:2021, *Plastics – Organic recycling – Specifications for compostable plastics***

**Compostable plastic:** plastic that undergoes degradation by biological processes during composting to yield CO<sub>2</sub>, water, inorganic compounds and biomass at a rate consistent with other known compostable materials and leave no visible, distinguishable or toxic residue

*Note 1 to entry:* “Hazardous” is used synonymously to “toxic”.

**Home composting:** practice performed by a private individual with the aim of producing compost for his own use

**Industrial composting:** composting process performed under controlled conditions on industrial scale with the aim of producing compost for the market

*Note 1 to entry:* In some regions industrial composting is referred to as professional composting.

**Well-managed industrial composting process:** composting process performed under controlled conditions where the temperature, water content, aerobic conditions, carbon/nitrogen ratio and other conditions are optimized

## **ISO 16304:2018, *Ships and marine technology – Marine environment protection – Arrangement and management of port waste reception facilities***

**Port reception facility/PRF:** any facility or facilities operating in, or provided by, a port or terminal which is fixed, floating or mobile and is capable of receiving ship generated waste and cargo residues

## **ISO 6107:2021, *Water quality – Vocabulary***

**Non-point source pollution/diffuse source pollution:** pollution of surface or ground waters which arises not from a single point but rather in a widespread manner

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**ISO 14015:2022, *Environmental management – Guidelines for environmental due diligence assessment***

**Environmental due diligence assessment (EDD assessment):** comprehensive, proactive process to identify the actual and potential consequences, risks and opportunities for an agreed scope related to an asset or assets and as appropriate to an organization’s decisions and activities

**Note 1 to entry:** The determination of business consequences is optional, at the discretion of the client.

**ISO 14006:2020, *Environmental management systems – Guidelines for incorporating ecodesign***

**Ecodesign:** systemic approach that considers environmental aspects in design and development with the aim to reduce adverse environmental impacts throughout the life cycle of a product

**Note 1 to entry:** Other terminology used worldwide includes “environmentally conscious design (ECD)”, “design for environment (DfE)”, “green design” and “environmentally sustainable design”.

**ISO 14050:2020, *Environmental management – Vocabulary***

**Upgradability:** characteristic of a product that allows its modules or parts to be separately upgraded or replaced without having to replace the entire product

**ISO 14040:2006, *Environmental management – Life cycle assessment – Principles and framework***

**Life cycle:** consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal



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ISO has published more than 24 700\* International Standards and related documents covering almost every industry, from technology to food safety, to agriculture and healthcare.

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