BS EN ISO 24187:2023

BSI Standards Publication

# Principles for the analysis of microplastics present in the environment

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The UK participation in its preparation was entrusted to Technical Committee PRI/89, Plastics - Environmental Aspects.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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# EN ISO 24187

September 2023

ICS 13.020.01; 83.080.01

English Version

# Principles for the analysis of microplastics present in the environment (ISO 24187:2023)

Principes d'analyse des microplastiques présents dans l'environnement (ISO 24187:2023)

Grundsätze für die Analyse von Mikroplastik in der Umwelt (ISO 24187:2023)

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## European foreword

This document (EN ISO 24187:2023) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with Technical Committee CEN/TC 249 “Plastics” the secretariat of which is held by SIS.

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of an identical text or by endorsement, at the latest by March 2024, and conflicting national standards shall be withdrawn at the latest by March 2024.

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## Endorsement notice

The text of ISO 24187:2023 has been approved by CEN as EN ISO 24187:2023 without any modification.

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# Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 14, *Environmental aspects,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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# Introduction

The analysis of plastics and microplastics is a new field in relation to other areas of environmental analysis. A large number of scientific publications exist, but they do not apply a uniform analysis, which makes it difficult to compare the results.

This document sets out key principles for the investigation of microplastics in the environment, which should be taken into account in the subsequent development of specific procedures for sampling, sample preparation and detection. A large number of the principles described in this document can be applied, analogously, to other matrices and products, including foodstuffs and drinking water. The objective is to present a pool of methods and notes that are as harmonized as possible and to make it available for use in science, businesses and administrations.

What is true for analytics is also true for definitions in the same way. On the one hand, the terms used in this document are based on existing definitions in the subject area, but on the other hand, analytical requirements are also taken into account. This applies, for example, to the term “large microplastics”. The particle size to be investigated is closely related to the detection method to be selected. In the course of future specific work, it can be necessary to modify existing definitions slightly and adapt them to new knowledge and requirements.

With regard to the definitions, including the idea of size classes, it is pointed out that discussion is ongoing in various technical committees in ISO and other standardization bodies. The definitions in this document show the status in ISO TC 61/SC 14. The definitions chosen in this document are adapted from ISO/TR 21960:2020. The basis of the classification is based on the metric sizes and the associated designations. Microplastics is thus derived from micrometres.

NOTE Microplastics can also stem from different sources not specifically mentioned in this document, such as textiles, paints and tyres.

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# Principles for the analysis of microplastics present in the environment

## 1 Scope

This document describes the principles to be followed in the analysis of microplastics in various environmental matrices. This includes the unique particle size classification of plastics, the use of certain apparatus with regard to sampling, sample preparation, and the determination of representative sample quantities.

The purpose of this document is to specify minimum requirements until specific standards for the different case situations are available. This is important to ensure that the development of the specific standards is done on a consistent basis to ensure that comparison or correlation of results is possible.

This document does not include requirements for monitoring actions.

## 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.

ISO 472, *Plastics — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 and the following 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**
**large microplastic**
any solid plastic particle insoluble in water with any dimension between 1 mm and 5 mm

Note 1 to entry: Microplastics may show various shapes.

Note 2 to entry: Typically, a large microplastics object represents an item consisting of plastics or a part of an end-user product or a fragment of the respective item.

[SOURCE: ISO/TR 21960:2020, 3.10, modified — term number in Note 1 to entry was removed.]

**3.2**
**microplastic**
any solid plastic particle insoluble in water with dimension between 1 µm and 1 000 µm (= 1 mm)

Note 1 to entry: Primary microplastics object represents a particle intentionally added to end-user products for example cosmetic means, coatings, paints etc. Secondary microplastics object can also result as a fragment of the respective item.

Note 2 to entry: Microplastics have regular and irregular shapes (see ISO 9276-6:2008).

Note 3 to entry: The defined dimension is related to the longest length of the particle.

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