International Standard

ISO 16636

Plastics — Disintegration field test of plastics under water environmental conditions

Plastiques — Essai sur site de désintégration des plastiques dans les conditions d'un environnement aquatique

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Foreword

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This document was prepared by Technical Committee ISO/TC 61, *Plastics,* Subcommittee SC 14, *Environmental aspects*.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Marine plastic litter has been continuously increasing. Plastic waste released in the environment eventually reaches the rivers, the lakes and the sea, floats on the water surface, and some of them sink to the riverbed, lakebed and seabed. Floating plastic litter has a significant negative impact on aquatic life due to accidental ingestion or entangling. To minimize the risk of plastic waste, it is recommended that plastics become low molecular weight by microbial action, lose strength, and disintegrate. Biodegradable plastics are designed to disintegrate in this way. The biodegradation of plastics in the marine environment is defined in laboratory tests, such as ISO 18830, ISO 19679, ISO 22404, ISO 23977-1 and ISO 23977-2. ISO 23832 describes a test method for the determination of the degradation rate and disintegration degree. However, these test methods do not measure disintegration under environmental conditions. ISO 22766 applies to disintegration only in the sandy sublittoral and the sandy eulittoral zone.

This document provides a test method for determining the disintegration degree of biodegradable plastic materials floating on the water surface. It can only apply if the biodegradation test according to the ISO standard, for example ISO 18830, ISO 19679, ISO 23977-1 and ISO 23977-2, has been carried out and has given a positive result. This test method is simplified so that it can be conducted in various coastal area. The disintegration is thought to be due to combination of bio-action, non-biochemical action, and physical degradation, but it is not specified by this method.

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Plastics — Disintegration field test of plastics under water environmental conditions

1 Scope

This document specifies test methods for the determination of the degree of disintegration of plastic materials floating in water.

NOTE The disintegration test is a field test performed under natural environmental conditions in a part of the sublittoral zone, the shores of lakes or rivers, and the test samples are immersed to a depth between 1,5 m to 3 m from water surface.

This document specifies the general requirements of the apparatus and the procedures for using the test methods described.

This document is not suitable for the assessment of disintegration caused by heat or light exposure.

The described field test is a disintegration test and not a biodegradation test. Therefore, it cannot be used for demonstrating biodegradation or for making unqualified claims such as "biodegradable in marine environment" and similar.

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 4591, *Plastics — Film and sheeting — Determination of average thickness of a sample, and average thickness and yield of a roll, by gravimetric techniques (gravimetric thickness)*

ISO 4593, *Plastics — Film and sheeting — Determination of thickness by mechanical scanning*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

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:

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

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

3.1
biodegradation
degradation (3.2) caused by biological activity, especially by enzymatic action, leading to a significant change in the chemical structure of a material

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