



**International
Standard**

ISO 24304

**Textiles — Determination of the
aerobic biodegradation of textile
materials in seawater**

*Textiles — Détermination de la biodégradation aérobie dans
l'eau de mer des matériaux textiles*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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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 38, *Textiles*.

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.

Introduction

This document was developed in response to worldwide demand for evaluation of biodegradability of textile materials as these products release fibre fragments after washing and thus, contribute to pollution of oceans. In addition to fibres shed from garments and home textiles, there are fibre fragments found in marine environments released from textile bodies. In order to address the environmental impact of textile and fibre fragments in marine environments and to carry out a proper product design, it is important to know how a textile material biodegrades in a specified environment.

Test methods for measuring the level of marine biodegradation are available for plastic materials, however, there is no standard test method available for the evaluation of marine biodegradability of textile materials. This test method fills that knowledge gap and aims to analyse the biodegradation of textile materials based on oxygen and carbon dioxide contents.

This test method is intended for comparative laboratory studies on textile materials and is not intended to be used for product claims or labelling.

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Textiles — Determination of the aerobic biodegradation of textile materials in seawater

1 Scope

This document specifies a laboratory test method for the determination of the aerobic biodegradability of textile materials in seawater by measuring the biochemical oxygen demand (BOD) or the amount of evolved carbon dioxide.

This method involves a test under an aerobic condition, which is intended to replicate the sea surface area conditions. It applies to textile materials, such as staple fibres, tops, yarns and fabrics. This test method is not intended for evaluating anaerobic biodegradation of textile materials, as simulating deep sea environments is out of the scope of this document.

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 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 5667-3, *Water quality — Sampling — Part 3: Preservation and handling of water samples*

ISO 8245, *Water quality — Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)*

ISO 10523, *Water quality — Determination of pH*

ISO 11261, *Soil quality — Determination of total nitrogen — Modified Kjeldahl method*

ISO 20743:2021, *Textiles — Determination of antibacterial activity of textile products*

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 <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 pelagic zone

water body above the seafloor

Note 1 to entry: It is also referred to as the open water or the water column.

Note 2 to entry: The surface of the pelagic zone is moved by wind-driven waves, is in contact with the atmosphere and exposed to sunlight. With increasing depth pressure increases, temperature decreases, and light and surface wave energy are attenuated.