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**Marine environment impact  
assessment (MEIA) — Specification for  
marine sediments in seabed areas —  
Survey of interstitial biota**

*Évaluation de l'impact environnemental marin — Spécifications  
relatives aux sédiments marins dans les zones de fonds marins —  
Étude du biote interstitiel*



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## Foreword

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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](http://www.iso.org/directives)).

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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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee 8, *Ships and marine technology*, Subcommittee SC 13, *Marine technology*.

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](http://www.iso.org/members.html).



## Introduction

Interstitial biota in marine sediments refers to the benthic life forms inhabited or deposited in the interstitial spaces between sediment particles, including marine microorganisms, benthic virus, microbenthos and meiobenthos. They cover the six “kingdoms” of life in the three-domain taxonomic system: Archaea, Bacteria, Fungi, Protista, Plantae and Animalia. Interstitial biota in marine sediments are so small that cannot be obtained and analysed by conventional methods for marine biological survey; they are numerous and complex; they have diverse functions, remarkable ecological significances and rich gene resources; they are ubiquitous and make up the basic components of the life system in marine sediments. Sediment interstitial biotas are the most abundant and complex life groups in the estuaries, intertidal zones, shelf shallow seas and deep sea. They play key roles in the regulation of material and energy flows in benthic ecosystems.

In seabed areas, a number of large international research programs have been carried out, such as the ocean drilling program (ODP) and the international ocean discovery program (IODP). Interstitial biota in marine sediments surveys have been key to solve scientific problems in relevant fields, such as marine biodiversity, oil and gas resource exploration, marine carbon cycle, global change, monsoon rainfall, ice melting, ocean acidification and deep-sea biological resources. But so far the lack of an International Standard leads different countries to use different regulations and technologies on the investigations, resulting in barriers to comparing research results in international cooperation.

This document provides relevant technical approaches for the investigation of sediment interstitial biota in seabed areas. Its purpose is to reflect the recent developments of modern marine science and technology to facilitate international cooperation. It is applicable to investigations and evaluations of marine sediment biodiversity in seabed areas, favouring the development and utilization of marine biological resources, the comprehensive environmental exploration, ecological environment assessment, protection and management, etc. The specifications in this document incorporate technical advances and technological key points reflecting current state-of-the-art and international practice.



# Marine environment impact assessment (MEIA) — Specification for marine sediments in seabed areas — Survey of interstitial biota

## 1 Scope

This document provides requirements and recommendations for conducting marine surveys of interstitial biota in marine sediments. It includes the specification of technical methods for the investigation of marine sediments, foraminifera, ostracoda, radiolaria, diatoms, coccoliths, sedimentary sporopollen, benthic viruses, benthic microbes (including bacteria, archaea and fungi), benthic microalgae, benthic protozoa and metazoan meiobenthos.

This document is applicable to marine surveys in diverse benthic habitats at any seabed, such as benthic sediments of coastal zones, shallow seas, or deep-sea waters.

## 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 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

#### **marine sediment**

substances under the action of crustal surface geology, where the original products such as weathered rocks, metamorphic rocks and pre-existing *sedimentary rocks* (3.2) of the parent rocks (i.e. magmatic rocks, metamorphic rocks and sedimentary rocks) are transported, settled or precipitated by biogenic, volcanic and cosmic phenomena as loose unconsolidated deposits on the sea floor

### 3.2

#### **sedimentary rock**

one of the three major types of rocks that make up the lithosphere (the other two are magmatic rocks and metamorphic rocks), which are formed from the weathering products of a parent rock (or any pre-formed rock), biogenic materials, volcanic material, cosmic material and other original material, and sedimentation after the formation of rock diagenesis

### 3.3

#### **interstitial biota**

benthic life forms that inhabit or are deposited in the interstices between sediment particles

Note 1 to entry: It includes *marine microorganisms* (3.6), benthic viruses, *meiobenthos* (3.4), and meiobenthic organisms. In terms of individual sizes, interstitial biota in *marine sediments* (3.1) cover femto-level with a size of less than 0,2 µm, pico-level (0,2 µm to 2 µm), nano-level (2 µm to 20 µm) and micro- and meio-level benthic organisms of more than 20 µm.