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**Water quality — Guidelines for the  
selection of sampling methods and  
devices for benthic macroinvertebrates  
in fresh waters**

*Qualité de l'eau — Lignes directrices pour la sélection des méthodes  
et des dispositifs d'échantillonnage des macro-invertébrés benthiques  
dans les eaux douces*



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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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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10870 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 5, *Biological methods*.

This first edition of ISO 10870 cancels and replaces ISO 7828:1985, ISO 8265:1988, and ISO 9391:1993, which have been technically revised.

## Introduction

Macroinvertebrates are an important component of fresh-water ecosystems and are the most widely used biological group to monitor aquatic ecological status (Reference [6]). A wide range of sampling and survey methodologies has been developed for a variety of specific applications as well as ecological assessment including: conservation status, biodiversity assessment, pollution control, and habitat enhancement (Reference [7]).

This International Standard gives guidelines on the selection, design, operation, and performance characteristics of sampling devices for the evaluation of benthic macroinvertebrate taxonomic composition, abundance, and diversity in fresh waters, which can all be components of the applications given in the first paragraph.



# Water quality — Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters

**WARNING** — Working in or around water is inherently dangerous. This International Standard does not purport to address the safety problems associated with its use. It is the responsibility of the user to establish appropriate health and safety practices and to ensure compliance with any national regulatory conditions.

## 1 Scope

This International Standard specifies criteria for the selection of sampling methods and devices (operation and performance characteristics) used to evaluate benthic macroinvertebrate populations in fresh waters (rivers, canals, lakes, and reservoirs). The methods and devices considered in this International Standard are suitable for sampling all major components of the benthic assemblage. They are not suitable for sampling meiofauna.

## 2 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

### 2.1

#### **abundance**

total number of individuals in a taxon, per sampling unit or estimated per unit area

### 2.2

#### **benthic**

dwelling at the bottom of an aquatic environment

### 2.3

#### **canal**

artificial watercourse constructed, usually, to join rivers, lakes or seas, and often of a size suitable for navigation

[SOURCE: ISO 6107-2:2006,<sup>[2]</sup> 15]

### 2.4

#### **deep water**

water from 1 m below the water surface to the limiting depth for efficient sampling

### 2.5

#### **diversity**

species richness of a community and the distribution of individuals across those species

### 2.6

#### **habitat**

area of the environment in which a particular organism or population lives, including its characteristic assemblages of plants and animals

### 2.7

#### **lake**

inland body of water of considerable area

[SOURCE: ISO 6107-2:2006,<sup>[2]</sup> 57]

### 2.8

#### **macroinvertebrate**

invertebrate that is easily visible without magnification (>0,5 mm)