Vee kvaliteet. Proovivõtmine sügavates veekogudes elunevate selgrootute loomade määramiseks. Koloniseerivate, kvalitatiivsete ja kvantitatiivsete proovide võtmise varustuse kasutamise juhised

Water quality - Sampling in deep waters for macro-invertebrates - Guidance on the use of colonization, qualitative and quantitative samplers

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 9391:1999 sisaldab Euroopa standardi EN ISO 9391:1995 ingliskeelset teksti. Käesolev dokument on jõustatud 12.12.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 9391:1999 consists of the English text of the European standard EN ISO 9391:1995. This document is endorsed on 12.12.1999 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: Standard annab juhised koloniseerivate proovivõtmisseadmete kasutamiseks selgrootute loomade määramisel, kasutades sügavate jõgede jaoks kohaldatud kvalitatiivsete ja kvantitatiivsete proovide võtmise varustust.	**Scope:**

ICS 13.060.10

Võtmesõnad: jõed, kvaliteet, proovivõtmine, proovivõtmise seadmed, proovivõtmisvarustus, selgrootud loomad, sügav vesi, vesi

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English version

Water quality

Sampling in deep waters for macro-invertebrates

Guidance on the use of colonization, qualitative and quantitative samplers
(ISO 9391 : 1993)

Qualité de l'eau; échantillonnage de macro-invertébrés en eaux profondes; guide d'utilisation des échantillonneurs de colonisation, qualitatifs et quantitatifs (ISO 9391 : 1993)

Wasserbeschaffenheit; Probenahme von Makro-Invertebraten aus tiefen Gewässern; Anleitung zum Einsatz von qualitativen und quantitativen Sammlern und Besiedlungskörpern (ISO 9391 : 1993)

This European Standard was approved by CEN on 1994-11-03 and is identical to the ISO Standard as referred to.

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

International Standard

ISO 9391:1993 Water quality; sampling in deep waters for macro-invertebrates; guidance on the use of colonization, qualitative and quantitative samplers,

which was prepared by ISO/TC 147 'Water quality' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 230 'Water analysis' as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by July 1995 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of the International Standard ISO 9391:1993 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

Introduction

A major problem when using benthic macro-invertebrate communities as indicators of water quality in rivers is the inherent natural differences in community structure caused by factors other than water quality, for example current velocity and the nature of the substratum. In upland rivers, riffles provide suitable comparable sampling sites where differences in water quality can be detected biologically. In lowland rivers, suitably located riffles may not be available, and in larger deeper rivers riffles may be totally absent. In addition, methods suitable in shallow waters are not practicable for deeper, waters where alternative methods have to be used. Therefore, although desirable for purposes of comparison, it is not possible to adopt a standard method of sampling for the benthos of all rivers.

In lowland rivers, riffles are not always available for sampling and therefore a corresponding standard benthic biotope for comparison using water quality is not always available. Although the smaller, slow-flowing lowland rivers with a depositing substratum and rooted plants support a characteristic rich macro-invertebrate fauna, such biotopes are not always available in the lower stretches of larger rivers. In such rivers, the benthic macro-invertebrate fauna may be severely restricted by adverse physical conditions such as a strong current flowing over a substratum of bed-rock, or an unstable substratum of deposited silt which is subject to frequent scouring by high river currents. It is therefore necessary to use an alternative biotope for the assessment of the biological quality of lowland rivers, which is independent of the natural substratum. This need is fulfilled by the colonization sampler, which provides an artificial substratum, although it is accepted that this may be more selective of the flora and fauna present in the habitat.

If the location is suitable for actual sampling, the choice of the type of sampler to be used is largely dictated by one of the following three broad objectives.

a) List of taxa, for example families, with no measure of relative or absolute abundance. (The minimum requirement is a sampler that adequately collects material from all types of micro-habitat on the river bottom. A dredge would suffice.)

b) The relative abundance of species. For this purpose, the sampler has to be operated in a standard manner for all the types of substrata that are to be investigated. Although a qualitative sampler, for example a dredge, is adequate, quantitative samplers are preferable because their performance is less affected by the operator.

c) The number or biomass of invertebrates per unit area. Only quantitative samplers, for example grabs, corers, air-lift samplers, can be used for this purpose and many replicate sampling units need to be taken for each type of habitat.

WARNING — SAFETY PRECAUTIONS

Working alone is not recommended, particularly with high current velocities, deep waters, unstable beds and with boats. Boats should be equipped to meet at least the minimum national safety requirements. Users of compressed air should ensure that appropriate pressure regulators, piping and hoses are installed.

1 Scope

This International Standard provides guidance on the use of colonization samplers and the sampling of macro-invertebrates using qualitative and quantitative samplers for deep rivers.

Colonization samplers allow water quality to be assessed by providing a collection of macro-invertebrates indicative of the water quality at the sites of concern. They do not sample the natural invertebrate fauna, which may be restricted by physical conditions unrelated to water quality. They are to be used when studying lowland river waters of depth over 1 m. They are not recommended when they could be subjected to debris accumulation, floods, exposure above the water level, vandalism or anchorage problems.

The deep water samplers are for use in rivers deeper than 1 m and on substrata ranging from mud to stones. They are unsuitable when sampling over macrophytes or stones of sizes greater than about 15 cm, or in very fast flowing water.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9391. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9391 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5667-3:1985, *Water quality — Sampling — Part 3: Guidance on the preservation and handling of samples.*

ISO 7828:1985, *Water quality — Methods of biological sampling — Guidance on handnet sampling of aquatic benthic macro-invertebrates.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 7828 and the following definition apply.

3.1 deep water: Water from 1 m below the water surface to the limiting depth for efficient sampling.

4 Colonization samplers

4.1 Principle

Standard artificial substrata are positioned in deep rivers and left for a period of several weeks. The artificial substrata are colonized by macro-invertebrates during this period. The artificial substrata are then removed from the river to allow qualitative or quantitative assessment of the colonization.