

**Water quality - Guidance on quantitative and qualitative investigations of marine phytoplankton**

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 15972:2011 sisaldab Euroopa standardi EN 15972:2011 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.09.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 07.09.2011.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 15972:2011 consists of the English text of the European standard EN 15972:2011.

This standard is ratified with the order of Estonian Centre for Standardisation dated 30.09.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 07.09.2011.

The standard is available from Estonian standardisation organisation.

ICS 13.060.70

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English Version

## Water quality - Guidance on quantitative and qualitative investigations of marine phytoplankton

Qualité de l'eau - Guide pour l'étude quantitative et qualitative du phytoplancton marin

Wasserbeschaffenheit - Anleitung für die quantitative und qualitative Untersuchung von marinem Phytoplankton

This European Standard was approved by CEN on 29 July 2011.

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# Contents

Page

Foreword.....	4
Introduction .....	5
1 Scope .....	5
2 Normative references .....	6
3 Terms and definitions .....	6
4 Aim and strategy for sampling phytoplankton .....	7
4.1 Sampling programme.....	7
4.2 Types of surveys.....	7
4.3 Sampling stations .....	8
4.4 Sampling depth .....	9
4.5 Sampling frequency and duration.....	10
4.6 Parallel water samples .....	10
5 Equipment .....	10
5.1 Equipment for quantitative sampling .....	10
5.2 Equipment for qualitative sampling.....	10
5.3 Sample bottles .....	11
5.4 Fixatives and preservatives.....	11
6 Survey procedures .....	12
6.1 Description of procedures .....	12
6.2 Preparation .....	12
6.3 Defining the position of sampling stations.....	12
6.4 Operating the sampling device .....	12
6.5 Sample fixation .....	13
6.6 Samples for analysis of living material .....	13
6.7 Sample labelling and recording of additional information.....	13
6.8 Sample storage .....	14
6.9 Equipment maintenance .....	14
6.10 Requirements for personnel.....	14
7 Species identification and sample processing.....	14
7.1 Species identification.....	14
7.2 Methods for quantification.....	15
7.3 Methods for qualitative analysis .....	16
7.4 Determination of biomass.....	17
7.5 Qualification requirements for personnel responsible for identification .....	17
7.6 Literature .....	17
7.7 Reporting of result.....	17
7.8 Data storage .....	18
Annex A (informative) Sampling and sample depth .....	19
A.1 General.....	19
A.2 Sampling depth .....	19
A.3 Integrated samples .....	19
A.4 Combined samples .....	20
Annex B (informative) Water samplers .....	21
Annex C (informative) Plankton net samples .....	22
Annex D (informative) Preservatives.....	23

<b>Annex E</b> (informative) <b>Counting chambers for quantification without concentration of the phytoplankton cells</b> .....	<b>25</b>
<b>E.1</b> <b>Sedgwick – Rafter</b> .....	<b>25</b>
<b>E.2</b> <b>Palmer – Maloney</b> .....	<b>25</b>
<b>E.3</b> <b>Haemocytometre</b> .....	<b>25</b>
<b>Annex F</b> (informative) <b>Utermöhl method</b> .....	<b>26</b>
<b>Bibliography</b> .....	<b>27</b>

## Foreword

This document (EN 15972:2011) has been prepared by Technical Committee CEN/TC 230 "Water analysis", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2012, and conflicting national standards shall be withdrawn at the latest by March 2012.

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## Introduction

Investigations of phytoplankton are an important part of marine environment monitoring. Phytoplankton responds rapidly to environmental changes (supply of nutrient salts, climate, light access etc.), and monitoring of occurrence, species composition and biomass may therefore in many cases be used to characterise the environment and the degree of impacts. The European Union Water Framework Directive therefore requires monitoring of marine phytoplankton as a part of assessments of ecological conditions. Investigations of phytoplankton are also included in monitoring programmes connected with other European directives (Urban Waste Water Treatment Directive, Habitats Directive), international conventions and national regulations. Monitoring of harmful/toxic phytoplankton is carried out both for the aquaculture industry and in connection with authorities' control of organisms for human consumption (shellfish). This requires uniform procedures for collection and quantification of phytoplankton.

Most principles for characterisation of environmental conditions based on phytoplankton require the use of quantitative methods, i.e. that the occurrence of species and quantities can be related to a known water mass. Data interpretation further requires information on the physical and chemical properties of the water body (supporting parameters). In order for environmental authorities to utilise the information, it is important that the investigations are comparable in space and time and that the data is of high scientific quality. This European Standard focuses on a limited selection of methods that can be documented precisely, reproduced and which have been in use for some time. This European Standard does not comprise chlorophyll determination. For chlorophyll determination see ISO 10260 [1].

**WARNING — Persons using this European Standard should be familiar with normal laboratory and fieldwork practice. This European Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the users to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.**

## 1 Scope

This European Standard gives guidance for sampling, preservation, storage, quantification and qualitative analysis of phytoplankton from marine waters. Guidance for quantification is limited to the use of light microscopy with phase-contrast and epifluorescence.

This European Standard specifies:

- the development of the sampling programme;
- requirements for sampling equipment;
- procedures for sampling and treatment of samples in the field;
- methods for quantification;
- qualitative analysis.

This European Standard describes minimum requirements for environmental monitoring.

## 2 Normative references

The following referenced documents are necessary for the application of this document. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15204, *Water quality — Guidance standard on the enumeration of phytoplankton using inverted microscopy (Utermöhl technique)*

## 3 Terms and definitions

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

**3.1**  
**euphotic zone**  
upper zone of a water body which is penetrated by light, and where the primary production over one or more days is equal to or greater than the respiration, i.e. a positive net production

NOTE Empirically, the euphotic zone is considered to extend down to the depth where 1 % of the surface light is present.

**3.2**  
**phytoplankton**  
community of free-living, suspended, mainly photosynthetic organisms in aquatic systems comprising Cyanobacteria and microscopic algae

[EN 15204:2006, 3.10]

**3.3**  
**phytoplankton biomass**  
mass of living matter comprising phytoplankton

NOTE The phytoplankton biomass can be expressed in terms of chlorophyll content, the carbon content of the algae (algal carbon) or the volume of the phytoplankton (biovolume).

**3.4**  
**qualitative sample**  
phytoplankton sample collected by plankton net, i.e. a concentrated sample where the size of the phytoplankton is mainly larger than the mesh diameter

NOTE Allows for recordings of taxon/taxa occurring in low concentrations.

**3.5**  
**quantitative sample**  
phytoplankton sample where a part of a body of water is enclosed so that the density of each taxon and their relative abundance per unit volume may be recorded

**3.6**  
**receiving water body**  
water body that receives an input of material, of either natural or anthropogenic origin

NOTE The term often appears in the context of anthropogenic input, for example, effluent from municipal waste water outlets or industrial processed water.

[EN ISO 16665:2005, 2.4]