Water quality - Guidance standard on the enumeration of phytoplankton using inverted microscopy (Utermöhl technique)

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EVS **EESTI STANDARDIKESKUS**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 15204:2006 sisaldab Euroopa standardi EN 15204:2006 ingliskeelset teksti. Käesolev dokument on jõustatud 27.10.2006 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 15204:2006 consists of the English text of the European standard EN 15204:2006. This document is endorsed on 27.10.2006 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala:	**Scope:**
The procedure described in this European Standard is based on the standard settling technique as defined by Utermöhl in 1958 [31]. It describes a general procedure for the estimation of abundance and taxonomic composition of marine and freshwater phytoplankton by using inverted light microscopy and sedimentation chambers, including the preceding steps of preservation and storage. Emphasis is placed on optimizing the procedure for the preparation of the microscopic sample. Many of the general principles of the approach described may also be applied to other techniques of enumerating algae (or other entities) using a (conventional) microscope, some of which are described in Annex E. This guidance standard does not cover field collection of samples or the analysis of picoplankton, quantitative analysis of free-floating mats of Cyanobacteria or specific preparation techniques for diatoms.	The procedure described in this European Standard is based on the standard settling technique as defined by Utermöhl in 1958 [31]. It describes a general procedure for the estimation of abundance and taxonomic composition of marine and freshwater phytoplankton by using inverted light microscopy and sedimentation chambers, including the preceding steps of preservation and storage. Emphasis is placed on optimizing the procedure for the preparation of the microscopic sample. Many of the general principles of the approach described may also be applied to other techniques of enumerating algae (or other entities) using a (conventional) microscope, some of which are described in Annex E. This guidance standard does not cover field collection of samples or the analysis of picoplankton, quantitative analysis of free-floating mats of Cyanobacteria or specific preparation techniques for diatoms.

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Võtmesõnad:

EUROPEAN STANDARD

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EUROPÄISCHE NORM

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English Version

Water quality - Guidance standard on the enumeration of phytoplankton using inverted microscopy (Utermöhl technique)

Qualité de l'eau - Norme guide pour l'analyse de routine de l'abondance et de la composition du phytoplancton par microscopie inversée (méthode d'Utermöhl)

Wasserbeschaffenheit - Anleitung für die Zählung von Phytoplankton mittels der Umkehrmikroskopie (Utermöhl-Technik)

This European Standard was approved by CEN on 14 July 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. 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.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 15204:2006) 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 February 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard : Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The European Water Framework Directive (2000/60/EC) has created a need for a uniform procedure to assess ecological quality of surface waters using phytoplankton abundance and composition. This European Standard will meet this need and will help laboratories improve the quality of their analytical results.

A single standard procedure for the assessment of phytoplankton composition and abundance cannot be given as the questions which drive monitoring programmes are diverse in character and therefore require specific protocols. This European Standard, therefore, aims to provide guidance on basic aspects of microscopic algal analyses and to provide statistical procedures for the design, optimization and validation of methods and protocols. Though mentioned in Annex C, a method for the estimation of biovolume is not included.

WARNING — Persons using this European Standard should be familiar with normal laboratory practice. Long periods of microscopic phytoplankton analysis can cause physical fatigue and affect eyesight. Attention should be given to the ergonomics of the microscope and advice from a health and safety practitioner should be sought to ensure that risks are minimized. The use of chemical products mentioned in this European Standard can be hazardous and users should follow guidelines provided by the manufacturers and take necessary specialist advice.

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 user to establish appropriate health and safety practices and to ensure compliance with any national regulatory guidelines.

1 Scope

The procedure described in this European Standard is based on the standard settling technique as defined by Utermöhl in 1958 [31]. It describes a general procedure for the estimation of abundance and taxonomic composition of marine and freshwater phytoplankton by using inverted light microscopy and sedimentation chambers, including the preceding steps of preservation and storage. Emphasis is placed on optimizing the procedure for the preparation of the microscopic sample. Many of the general principles of the approach described may also be applied to other techniques of enumerating algae (or other entities) using a (conventional) microscope, some of which are described in Annex E. This guidance standard does not cover field collection of samples or the analysis of picoplankton, quantitative analysis of free-floating mats of Cyanobacteria or specific preparation techniques for diatoms.

2 Normative references

Not applicable.

3 Terms and definitions

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

3.1
accuracy
closeness of agreement between a test result or measurement result and the true value

3.2
algal object
unit/cluster of one or more algal cells encountered during the phytoplankton analysis that is discrete from (liable to settle independently of) other particles in the sample

3.3
detection limit
minimum number and/or size of a specific taxon or group of organisms in a sample at which its presence can be detected with a specified probability

NOTE   This definition is analogous to the definition used in chemistry (smallest true value of the measurand which is detectable by the measuring method).

3.4
error
difference between an individual result and the true value

3.5
fixation
protection from disintegration of the morphological structure of organisms

3.6
microscope counting field
delimited area (e.g. a square or grid) in the microscope field of view, used for enumeration

3.7
nanoplankton
small algae between 2 µm and 20 µm in size