

## **Vee kvaliteet. Anioonaktiivsete ainete sisalduse määramine metüleensinise indeksi, MBAS-i mõõtmise teel**

Water quality. Determination of anionic surfactants  
by measurement of the methylene blue index MBAS

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 903:1999 sisaldab Euroopa standardi EN 903:1993 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 12.12.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 903:1999 consists of the English text of the European standard EN 903:1993.</p> <p>This document is endorsed on 12.12.1999 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>Looduslike ja sünteetiliste anioonsete pindaktiivsete ainete sisaldust saab määrata kui metüleensinise suhtes aktiivsete ainete sisaldust (MBAS); nad esitatakse MBAS-indeksina, kokkuvõtlike parameetrite meetodina.</p> <p>Eksperimentaaltingimustes on peamiselt mõõdetavateks ühenditeks sulfonaadid ja sulfaadid. Meetod on kohaldatav nii joogiveele, pinnaveele kui ka heitveele, näiteks primaarse degradatsiooni määramiseks pindaktiivsetel ainetel, mida uuritakse looduslikku või kunstlikult saadud heitvett sisaldavates katsesüsteemides. See kehtib nii laboratoorse tasemega heitvee kui ka tehnilise heitvee kohta.</p>	<p><b>Scope:</b></p>
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ICS 13.060.50

**Võtmesõnad:** anioonsed pindaktiivsed ained, keemiline analüüs, kvaliteet, pindaktiivsed ained, proovivõtmine, sisalduse määramine, spektrofotomeetriline analüüs, vee omaduste kontrollimine, vesi

UDC 628.1/.3 : 620.1 : 543.3 : 661.185.1

Descriptors: Water, quality, water testing, chemical analysis, determination of content, anionic surfactants, analysis by spectrophotometry, sampling.

**English version**

Water quality

**Determination of anionic surfactants by  
measurement of the methylene blue index MBAS  
(ISO 7875-1 : 1984, modified)**

Qualité de l'eau; dosage des agents de  
surface anioniques par mesurage de l'in-  
dix au bleu de méthylène SABM  
(ISO 7875-1 : 1984, modifiée)

Wasserbeschaffenheit; Bestimmung von  
anionischen oberflächenaktiven Stoffen  
durch Messung des Methylenblau-Index  
MBAS (ISO 7875-1 : 1984, modifiziert)

This European Standard was approved by CEN on 1993-10-15.

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

**CEN**

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

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

## Foreword

The text of International Standard

ISO 7875-1:1984 Water quality, determination of surfactants; determination of anionic surfactants by the methylene blue spectrometric method

was submitted to Formal Vote and approved by CEN 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 April 1994 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 7875-1:1984 was approved by CEN as a European Standard with agreed common modifications as given below:

- 1) The title was changed and specified in order to clarify that the determination deals with the sum parameter MBAS index (Methylene blue active substances index).
- 2) The clauses 'Scope' and 'Field of application' are unified under one number and the wording was adjusted in order to meet with the title.
- 3) In clause 5.2 (in ISO: 6.2), the optical path length of the cells is given as 10 and 50 mm (in ISO: 10 to 50 mm).
- 4) In clause 7.1 (in ISO: 8.1), the wording is adjusted in order to meet with the title.
- 5) In clause 7.2 as well as in clause 7.3 (in ISO: 8.2), the subscripts of  $A_0$  and  $A_1$  were corrected.
- 6) In clause 7.3 (in ISO: 8.3), the wording of the calibration was adjusted in order to meet with the title.
- 7) In clause 8.1 (in ISO: 9.1), the given anionic surfactant mass concentration was changed into the MBAX index. Furthermore, the subscripts of  $A_0$  and  $A_1$  were corrected.

## 0 Introduction

Natural and synthetic anionic surface-active substances may be determined as methylene-blue active substances (MBAS); they are referred to as MBAS-index, a summary parameter method.

## 1 Field of application

Under the experimental conditions, sulfonates and sulfates are the compounds chiefly measured, but some positive and negative interferences can occur (see clause 9).

The method is applicable to drinking water, surface water as well as waste water, e.g. for the determination of the primary degradation of surfactants being under investigation in test systems containing natural or synthetic waste water. This applies for both laboratory scaled and technical waste water treatment plants.

In the case of effluents originating from municipal waste water treatment plants, the MBAS index comprises not only synthetic but to a considerable extent also natural anionic surface active substances.

The range of this method is applicable to concentrations of 0,1 to 5,0 mg/l and the limit of detection about 0,05 mg/l for solutions of standard surfactants in distilled water.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendment to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 25667-2:1993 Water quality - Sampling - Part 2: Guidance on sampling techniques

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

## 3 Principle

Formation of salts from methylene blue and anionic surfactants in an alkaline medium. Extraction of these salts with chloroform and acid treatment of the chloroform solution. Elimination of any interferences by extraction of the anionic surfactant-methylene blue complex from alkaline solutions and shaking with acidic methylene blue solution. Measurement of the absorbance of the separated organic phase at the maximum absorption wavelength of 650 nm. Evaluation by means of a calibration curve. For reasons of purity and stability the preferred standard is dodecyl benzene sulfonic acid methyl ester (tetrapropylene type, relative molecular mass 340), although other calibration standards may be used (see the note to 4.11). The calibration standard is prepared from the standard dodecyl benzene sulfonic acid ester after saponification to the sodium salt. Calculation of the MBAS index as sodium dodecyl benzene sulfonate (see 8.1).