EESTI STANDARD EVS-EN 1233:1999

Vee kvaliteet. Kroomisisalduse määramine. Aatomabsorptsioon-spektromeetrilised meetodid

Water quality - Determination of chromium - Atomic absorption spectrometric methods

EESTI STANDARDIKESKUS

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN 1233:1999 sisaldab Euroopa standardi EN 1233:1996 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 1233:1999 consists of the English text of the European standard EN 1233:1996. 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 määrab kindlaks kaks meetodit kroomi määramiseks vees aatomabsorptsioon-spektomeetria abil. Need kaks meetodit on järgmised: leek-aatomabsorptsioon-spektromeetria ja elektrotermiline atomiseerimis-aatomabsorptsioon-spektromeetria vee ja heitvee analüüsimiseks mitmesugustes kontsentratsioonivahemikes.	**Scope:**

ICS 13.060.50

Võtmesõnad: aatomabsorptsioonspektromeetria, keemiline analüüs, kroom, kvaliteet, sisalduse määramine, vesi

EUROPEAN STANDARD
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Descriptors: Water quality, analysis, chromium, AAS.

English version

Water quality

Determination of chromium
Atomic absorption spectrometric methods

Qualité de l'eau; dosage du chrome; méthodes par spectrométrie d'absorption atomique

Wasserbeschaffenheit; Bestimmung von Chrom; Verfahren mittels Atomabsorptionsspektrometrie

This European Standard was approved by CEN on 1996-05-16.

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

Ref. No. EN 1233:1996 E

Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 230 "Water analysis", the secretariat of which is held by DIN.

Annex A is informative.

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 January 1997, and conflicting national standards shall be withdrawn at the latest by January 1997.

In accordance to the CEN/CENELEC Internal Regulations, the national standards organizations of 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, United Kingdom.

On the elaboration of this European Standard, the revision of the International Standard ISO 9174 has been started simultaneously with the intention to harmonize both standards.

Introduction

Chromium occurs in water in the oxidation states III and VI. The two methods described determine chromium in both oxidation states, either as acid soluble chromium or as water soluble chromium, depending on the sample pretreatment. The method chosen depends on the concentration of chromium in the water to be examined.
Some information is given in an informative annex on pretreatment and digestion of chromium from sludges and sediments.

1 Scope

This European Standard specifies two methods for the determination of chromium in water by atomic absorption spectrometry. The two methods are covered in separate clauses as follows:

- Clause 3: Determination of chromium by flame atomic absorption spectrometry;

- Clause 4: Determination of chromium by electrothermal atomization atomic absorption spectrometry.

Clause 3 is applicable to the analysis of water and waste water when the concentration range is between 0,5 mg/l and 20 mg/l of chromium. When the concentration is below 0,5 mg/l the determination can be carried out after carefully evaporating an acidified sample to small volume, taking care to avoid the formation of a precipitate.

> WARNING: The use of evaporation will increase the effect of interfering substances and therefore for concentrations below 0,1 mg/l the method in clause 4 is given.

Clause 4 is applicable to the analysis of water and waste water when the concentration range is between 5 µg/l and 100 µg/l of chromium by injecting a sample volume of 20 µl. It is applicable to the determination of higher concentrations by using a smaller sample volume.

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 5667-2 : 1991).
EN ISO 5667-3 : 1995	Water quality – Sampling – Part 3: Guidance on the preservation and handling of samples (ISO 5667-3 : 1994).

3 Determination of chromium by flame atomic absorption spectrometry

3.1 Principle

The method is based on the atomic absorption spectrometric measurement of the chromium content of the acidified sample in a nitrous oxide/acetylene flame. Measurement at a wavelength of 357,9 nm. Addition of lanthanum salt to reduce matrix interferences is necessary.

3.2 Reagents

3.2.1 General

All reagents shall be of recognized analytical grade. Use deionized water or water distilled from an all glass apparatus. The water used for blank tests and for preparing reagents and standard solutions shall have a chromium content that is negligible compared with the smallest concentrations to be determined in the samples.

3.2.2 Hydrochloric acid, HCl, $\rho \approx 1{,}18$ g/ml.

3.2.3 Nitric acid, HNO_3, $\rho \approx 1{,}42$ g/ml.