

Characterization of sludges - Determination of trace elements and phosphorus - Aqua regia extraction methods

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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| <p>Käesolev Eesti standard EVS-EN 13346:2001 sisaldab Euroopa standardi EN 13346:2000 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 15.01.2001 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p> | <p>This Estonian standard EVS-EN 13346:2001 consists of the English text of the European standard EN 13346:2000.</p> <p>This document is endorsed on 15.01.2001 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>Käsitlusala:</p> <p>This standard specifies methods for the extraction, with aqua regia, for trace elements and phosphorus from sludges and sludge products. The resulting solution is suitable for the determination of As, Cd, Cr, Hg, Ni, Pb, Se, Zn and P using spectrometric techniques.</p> | <p>Scope:</p> <p>This standard specifies methods for the extraction, with aqua regia, for trace elements and phosphorus from sludges and sludge products. The resulting solution is suitable for the determination of As, Cd, Cr, Hg, Ni, Pb, Se, Zn and P using spectrometric techniques.</p> |
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ICS 13.030.20

Võtmesõnad:

English version

Characterization of sludges

Determination of trace elements and phosphorus – Aqua regia
extraction methods

Caractérisation des boues –
Détermination des éléments traces et
du phosphore – Méthodes
d'extraction à l'eau régale

Charakterisierung von Schlämmen –
Bestimmung von Spurenelementen
und Phosphor – Extraktionsverfahren
mit Königswasser

This European Standard was approved by CEN on 2000-08-05.

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CEN

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 308 "Characterization of sludges", the secretariat of which is held by AFNOR.

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 2001, and conflicting national standards shall be withdrawn at the latest by February 2001.

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

The annexes A to D are informative.

Introduction

Elements extractable in aqua regia cannot be described as "total" ; conversely they cannot be regarded as the "bio-available" fraction, as the extraction procedure is too vigorous to represent all biological processes.

One extraction method is proposed, using aqua regia. Four heating processes are described, they use the same reagents therefore the same principle of chemical reaction.

Method A is a vigorous digestion procedure allowing larger test portions.

Method B is a fast procedure carried out in a single vessel, smaller test portions are used.

Method C and D are microwave heating procedures using closed and open systems respectively.

1 Scope

This standard specifies methods for the extraction, with aqua regia, of trace elements and phosphorus from sludges and sludge products. The resulting solution is suitable for the determination of As, Cd, Cr, Cu, Hg, Ni, Pb, Se, Zn and P using spectrometric techniques.

NOTE 1 With high solute concentrations in extract solutions, spectral interferences and background enhancement should be expected.

NOTE 2 This method can be used for other elements except that portion of the elements bonded to silica.

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 amendments 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 1233, *Water quality - Determination of chromium - Atomic absorption spectrometric methods.*

EN 1483, *Water quality - Determination of mercury.*

EN 12880, *Characterization of sludges - Determination of dry residue and water content.*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods* (ISO 3696:1987).

EN ISO 5961, *Water quality - Determination of cadmium by atomic absorption spectrometry* (ISO 5961:1994).

EN ISO 11885, *Water quality - Determination of 33 elements by inductively coupled plasma atomic emission spectroscopy* (ISO 11885:1996).

EN ISO 11969, *Water quality - Determination of arsenic - Atomic absorption spectrometric method (hydride technique)* (ISO 11969:1996).

ISO 5725-2, *Accuracy (trueness and precision) of measurement methods and results - Part 2 : Basic method for the determination of repeatability and reproducibility of a standard measurement method.*

ISO 8288, *Water quality - Determination of cobalt, nickel, copper, zinc, cadmium and lead - Flame atomic absorption spectrometric methods.*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

3.1

aqua regia

digestion solution obtained by mixing one volume of nitric acid and three volumes of hydrochloric acid

3.2

dry mass (dry matter)

the mass of solids obtained after the specified drying process. It is expressed as grams or kilograms [EN 12880]