Vee kvaliteet. Kergeltlenduvate halogeenitud süsivesinike sisalduse määramine. Gaaskromatograafilised meetodid

Water quality - Determination of highly volatile halogenated hydrocarbons - Gas-chromatographic methods

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 10301:1999 sisaldab Euroopa standardi EN ISO 10301:1997 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 ISO 10301:1999 consists of the English text of the European standard EN ISO 10301:1997. 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 esitab kaks üksikasjalist meetodit kergeltlenduvate halogeenitud süsivesinike määramiseks, kasutades gaaskromatograafiat.	**Scope:**

ICS 13.060.50

Võtmesõnad: gaaskromatograafia, halogeensüsivesinikud, keemiline analüüs, kvaliteet, sisalduse määramine, veereostus, veetestid, vesi

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English version

Water quality

Determination of highly volatile halogenated hydrocarbons
Gas-chromatographic methods
(ISO 10301 : 1997)

Qualité de l'eau – Dosage des hydrocarbures halogénés hautement volatils – Méthodes par chromatographie en phase gazeuse (ISO 10301 : 1997)

Wasserbeschaffenheit – Bestimmung leichtflüchtiger halogenierter Kohlenwasserstoffe – Gaschromatographische Verfahren (ISO 10301 : 1997)

This European Standard was approved by CEN on 1997-03-28.

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.

The European Standards exist 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, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

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

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Foreword

International Standard

ISO 10301:1997 Water quality – Determination of highly volatile halogenated hydrocarbons – Gas-chromatographic methods,

which was prepared by ISO/TC 147 'Water quality' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 230 'Water analysis', the Secretariat of which is held by DIN, 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 October 1997 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

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

Endorsement notice

The text of the International Standard ISO 10301:1997 was approved by CEN as a European Standard without any modification.

Contents

Introduction

Highly volatile halogenated hydrocarbons are used in industrial, commercial and domestic fields, and can enter a water body via waste water and may consequently contaminate drinking water. Furthermore, they can originate from the use of chlorine as an oxidizing agent in water and waste-water treatment. They also can be introduced by inappropriate handling. In addition, they can be formed by decomposition of higher molecular mass organohalogen derivatives.

In uncontaminated ground water and rain water, the concentrations of halogenated hydrocarbons are generally below 0,1 µg/l. In surface water they may be higher, depending on the origin and quality of the water. In untreated waste water the concentrations may reach saturation of the aqueous phase. In general, the solubility of these compounds in organic solvents and in fatty material exceeds their solubility in water.

Section 1 : General

1.1 Scope

This International Standard specifies two methods for the determination of highly volatile halogenated hydrocarbons using gas chromatography.

Section 2 specifies a method for the determination by liquid/liquid extraction of highly volatile halogenated hydrocarbons in drinking water, ground water, swimming pool water, most rivers and lakes and many sewage and industrial effluents. Typical values of "quantification limits" are given in table 1.

Table 1 — Typical values of "quantification limits" for some highly volatile halogenated hydrocarbons using liquid/liquid extraction

Compound	**Quantification limits** µg/l
Dichloromethane	50
Chloroform	0,05 - 0,3
Carbon tetrachloride	0,01 - 0,1
1,1-Dichloroethane	1,0 - 5
1,2-Dichloroethane	5 - 10
1,1,1-Trichloroethane	0,02 - 0,1
1,1,2,2-Tetrachloroethane	0,05 - 0,1
Hexachloroethane	0,01 - 0,05
cis-1,2-Dichloroethylene	5 - 50
trans-1,2-Dichloroethylene	1 - 10
Trichloroethylene	0,05 - 0,1
Tetrachloroethylene	0,1
Hexachlorobutadiene	0,01
Tribromomethane	0,1
1,1,2-Trichlorotrifluoroethane	0,1

Section 3 specifies a method for the determination of highly volatile halogenated hydrocarbons in drinking water, surface waters and ground water by a static head-space method. Typical values of "quantification limits" are given in table 2.

In practise, the head-space method is applicable for industrial effluents as a screening method, but in some cases it is necessary to confirm the result by the liquid-liquid extraction method.

NOTE : When applying this International Standard, the guide on analytical quality control for water analysis (see ISO/TR 13530) should be followed, especially for the calibration steps.

Table 2 — Typical values of "quantification limits" for some highly volatile halogenated hydrocarbons using static head-space method

Compound	Quantification limits µg/l
Dichloromethane	50
Chloroform	0,3
Carbon tetrachloride	0,1
1,1-Dichloroethane	100
1,2-Dichloroethane	100
1,1,1-Trichloroethane	0,1
1,1,2-Trichloroethane	20
1,1-Dichloroethylene	10
cis-1,2-Dichloroethylene	50
trans-1,2-Dichloroethylene	25
Trichloroethylene	0,2
Tetrachloroethylene	0,2
1,2-Dichloropropane	50
1,3-Dichloropropane	200
cis+*trans*-1,3-Dichloropropylene	10
Dibromomethane	0,3
Tribromomethane (Bromoform)	5
1,2-Dibromoethane	2
Bromochloromethane	1
Bromodichloromethane	0,2
Dibromochloromethane	0,3
1,1,3-Trifluoroethane	1

1.2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5667-1:1980, Water quality - Sampling - Part 1 : Guidance on the design of sampling programmes

ISO 5667-2:1991, Water quality - Sampling - Part 2 : Guidance on sampling techniques

ISO/TR 13530:–[1)] Water quality - Guide to analytical quality control for water analysis

[1)] In preparation.