



# SLOVENSKI STANDARD SIST EN ISO 10301:1998

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**Kakovost vode - Določevanje lahko hlapnih halogeniranih ogljikovodikov - Metoda plinske kromatografije (ISO 10301:1997)**

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

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

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

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**ICS:**

13.060.50	Preiskava vode na kemične snovi	Examination of water for chemical substances
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EN ISO 10301

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**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 halogenerter  
Kohlenwasserstoffe - Gaschromatographische  
Verfahren (ISO 10301:1997)

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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.

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

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

Page 2  
EN ISO 10301:1997

## Foreword

The text of the International Standard ISO 10301:1997 has been prepared by Technical Committee ISO/TC 147 "Water quality" in collaboration with 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of an identical text or by endorsement, at the latest by October 1997, and conflicting national standards shall be withdrawn at the latest by October 1997.

According 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 and the United Kingdom.

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Page 2  
EN ISO 10301:1997

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NOTE: Normative references to international Standards are listed in annex ZA (normative).

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**Annex ZA (normative)**  
**Normative references to international publications**  
**with their relevant European publications**

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 5667-1	1980	Water quality - Sampling - Part 1: Guidance on the design of sampling programmes	EN 25667-1	1993
ISO 5667-2	1991	Water quality - Sampling - Part 2: Guidance on sampling techniques	EN 25667-2	1993

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

*Qualité de l'eau — Dosage des hydrocarbures halogénés hautement volatils —  
Méthodes par chromatographie en phase gazeuse*

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## ISO 10301:1997(E)

## Contents

<b>SECTION 1: General</b>	<b>1</b>
1.1 Scope	1
1.2 Normative references	2
1.3 Definition	3
<b>SECTION 2: Liquid/liquid extraction and analysis by gas chromatography</b>	<b>4</b>
2.1 Principle	4
2.2 Interferences	4
2.3 Reagents	4
2.4 Apparatus	6
2.5 Sampling and sample preparation	8
2.6 Procedure	8
2.7 Calibration	11
2.8 Identification and evaluation	16
2.9 Expression of results	18
2.10 Precision data	19
2.11 Test report	21

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<b>SECTION 3: Static headspace method and analysis by gas chromatography</b>	<b>22</b>
3.1 Principle	22
3.2 Interferences	22
3.3 Reagents	22
3.4 Apparatus	22
3.5 Sampling	23
3.6 Procedure	24
3.7 Calibration	26
3.8 Identification and evaluation	29
3.9 Expression of results	31
3.10 Precision data	31
3.11 Test report	33
<b>Annex A (informative) Characteristics of highly volatile halogenated hydrocarbons</b>	<b>34</b>
<b>Annex B (informative) Examples of gas chromatograms for highly volatile halogenated hydrocarbons</b>	<b>41</b>
<b>Annex C (informative) Example of a microseparator</b>	<b>45</b>
<b>Annex D (informative) Sensitivity of electron-capture detector</b>	<b>46</b>
<b>Annex E (informative) Extraction recovery with pentane</b>	<b>47</b>
<b>Annex F (informative) Qualitative method for testing the quality of "penicillin type" stoppers</b>	<b>48</b>
<b>Annex G (informative) Collection of samples</b>	<b>49</b>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10301 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

Annexes A to G of this International Standard are for information only.

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## 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.

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

## 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
<i>cis</i> -1,2-Dichloroethylene	5 - 50
<i>trans</i> -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
<i>cis</i> -1,2-Dichloroethylene	50
<i>trans</i> -1,2-Dichloroethylene	25
Trichloroethylene	0,2
Tetrachloroethylene	0,2
1,2-Dichloropropane	50
1,3-Dichloropropane	200
<i>cis+trans</i> -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:— <sup>1)</sup>	Water quality - Guide to analytical quality control for water analysis

<sup>1)</sup> In preparation.

### 1.3 Definition

For the purposes of this International Standard, the following definition applies :

**1.3.1 highly volatile halogenated hydrocarbons:** Fluorinated, chlorinated, brominated and/or iodinated mainly nonaromatic hydrocarbons composed of one to six atoms of carbon.

NOTE Their boiling points generally fall within the range of 20 °C to 220 °C at atmospheric pressure (see annex A).

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