

**Water quality - Determination of free chlorine and total chlorine - Part 3: Iodometric titration method for the determination of total chlorine**

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 7393-3:2000 sisaldab Euroopa standardi EN ISO 7393-3:2000 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 17.07.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 7393-3:2000 consists of the English text of the European standard EN ISO 7393-3:2000.</p> <p>This document is endorsed on 17.07.2000 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> This part of EN ISO 7393 specifies an iodometric titration method for the determination of total chlorine in water.</p>	<p><b>Scope:</b> This part of EN ISO 7393 specifies an iodometric titration method for the determination of total chlorine in water.</p>
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ICS 13.060

Võtmesõnad:

**English version**

**Water quality –  
Determination of free chlorine and total chlorine  
Part 3: Iodometric titration method for the determination of total chlorine  
(ISO 7393-3 : 1990)**

Qualité de l'eau – Dosage du chlore libre et du chlore total – Partie 3: Méthode par titrage iodométrique pour le dosage du chlore total (ISO 7393-3 : 1990)

Wasserbeschaffenheit – Bestimmung von freiem Chlor und Gesamtchlor – Teil 3: Iodometrisches Verfahren zur Bestimmung von Gesamtchlor (ISO 7393-3 : 1990)

This European Standard was approved by CEN on 2000-01-20.

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.

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**CEN**

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

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

## Foreword

International Standard

ISO 7393-3 : 1990 Water quality – Determination of free chlorine and total chlorine – Part 3: Iodometric titration method for the determination of total chlorine,

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 July 2000 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 7393-3 : 1990 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

## 1 Scope

This part of ISO 7393 specifies an iodometric titration method for the determination of total chlorine in water.

The method is applicable for the measurement of concentrations in terms of chlorine ( $\text{Cl}_2$ ), from 0,01 mmol/l to 0,21 mmol/l (0,71 mg/l to 15 mg/l).

Several substances interfere in the determination (see clause 10).

In annex B a method for direct titration is specified. This is usually applied to the determination of chlorine concentrations above 7  $\mu\text{mol/l}$  (0,5 mg/l) in treated drinking water.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7393. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7393 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 : 1982, *Water quality — Sampling — Part 2: Guidance on sampling techniques.*

## 3 Definitions (see table 1)

For the purposes of this part of ISO 7393, the following definitions apply.

**3.1 free chlorine:** Chlorine present in the form of hypochlorous acid, hypochlorite ion or dissolved elemental chlorine.

**3.2 combined chlorine:** The fraction of total chlorine present in the form of chloramines and organic chloramines.

**3.3 total chlorine:** Chlorine present in the form of "free chlorine" or "combined chlorine" or both.

**3.4 chloramines:** Derivatives of ammonia by substitution of one, two or three hydrogen atoms with chlorine atoms (monochloramine  $\text{NH}_2\text{Cl}$ , dichloramine  $\text{NHCl}_2$ , and nitrogen trichloride  $\text{NCl}_3$ ) and all chlorinated derivatives of organic nitrogen compounds.

Table 1 — Terms and synonyms in relation to actual compounds in the solution

Term	Synonym	Compounds
Free chlorine	Free chlorine	Active free chlorine Elemental chlorine, hypochlorous acid
	Potential free chlorine	Hypochlorite
Total chlorine	Total residual chlorine	Elemental chlorine, hypochlorous acid, hypochlorite, chloramines

## 4 Principle

Reaction in acid solution of total chlorine and potassium iodide with liberation of free iodine. Instantaneous reduction of the iodine by a known excess of thiosulfate standard solution previously added to the solution. Titration of the unreacted thiosulfate with potassium iodate standard reference solution.

## 5 Reagents

During the analysis, use only reagents of recognized analytical grade, and water as specified in 5.1.