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# VEE ANALÜÜS. JUHISED ÜLDORGAANILISE SÜSINIKU (TOC) JA LAHUSTUNUD ORGAANILISE SÜSINIKU (DOC) MÄÄRAMISEKS

# Water analysis - Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

## EESTI STANDARDI EESSÕNA

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# EUROPEAN STANDARD
# NORME EUROPÉENNE
# EUROPÄISCHE NORM

EN 1484

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**English version**

## Water analysis

Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)

Analyse de l'eau – Lignes directrices pour le dosage du carbone organique total (TOC) et carbone organique dissous (COD)

Wasseranalytik – Anleitungen zur Bestimmung des gesamten organischen Kohlenstoffs (TOC) und des gelösten organischen Kohlenstoffs (DOC)

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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 the Technical Committee CEN/TC 230 "Water analysis", the secretariat of which is held by DIN.

This European Standard contains three informative annexes.

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of an identical text or by endorsement, at the latest by November 1997, and conflicting national standards shall be withdrawn at the latest by November 1997.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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## Introduction

It is absolutely essential that tests conducted according to this standard are carried out by suitably qualified staff.

Total organic carbon (TOC) is a measure of the carbon content of dissolved and undissolved organic matter present in the water. It does not give information on the nature of the organic substance.

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## 1 Scope

This European Standard gives guidance for the determination of organic carbon in drinking water, ground water, surface water, sea water and waste water. It deals with definitions, interferences, reagents, and the sample pretreatment of water samples with a content of organic carbon ranging from 0,3 mg/l to 1000 mg/l while the lower value is only applicable in special cases, for example drinking water, measured with instruments capable of measuring these low levels. Higher concentrations may be determined after appropriate dilution. This European Standard does not deal with the instrument-dependent aspects.

In addition to organic carbon the water sample may contain carbon dioxide or ions of carbonic acid. Prior to the TOC determination, it is essential that this inorganic carbon is removed by purging the acidified sample with a gas which is free from $CO_2$ and organic compounds. Alternatively, both total carbon (TC) and total inorganic carbon (TIC) may be determined and the organic carbon content (TOC) may be calculated by subtracting the total inorganic carbon from the TC. This method is particularly suitable for samples in which the total inorganic carbon is less than the TOC.

Purgeable organic substances, such as benzene, toluene, cyclohexane, and chloroform may partly escape upon stripping. In presence of these substances the TOC contrentration is determined separately, or the differential method (TC - TIC = TOC) may be applied. By using the differential method, the value of the TOC *should* be higher than the TIC, or at least of similar size.

Cyanide, cyanate, and particles of elemental carbon (soot) when present in the sample, will be determined together with the organic carbon.

NOTE: In presence of humic material low values may occur when UV-radiation is used.

## 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 reference, 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 reference the latest edition of the publication referred to applies.

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

## 3 Definitions

For the purposes of this European Standard the following definitions apply:

### 3.1 Total carbon (TC)

The sum of organically bound and inorganically bound carbon present in water, including elemental carbon.

### 3.2 Total inorganic carbon (TIC)

The sum of carbon present in water, consisting of elemental carbon, total carbon dioxide, carbon monoxide, cyanide, cyanate, and thiocyanate. TOC instruments mostly register as TIC only the $CO_2$ originating from hydrogen carbonates and carbonates.