



# SLOVENSKI STANDARD SIST EN ISO 9888:2000

01-januar-2000

Nadomešča:  
SIST EN 29888:1996

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**Kakovost vode – Vrednotenje aerobne biorazgradljivosti organskih spojin v vodi – Statični preskus – (Zahn-Wellensova metoda) (ISO 9888:1999)**

Water quality - Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium - Static test (Zahn-Wellens method) (ISO 9888:1999)

Wasserbeschaffenheit - Bestimmung der aeroben biologischen Abbaubarkeit organischer Stoffe im wäßrigen Medium - Statischer Test (Zahn-Wellens-Test) (ISO 9888:1999)

Qualité de l'eau - Evaluation, en milieu aqueux, de la biodégradabilité aérobie des composés organiques - Essai statique (méthode Zahn-Wellens) (ISO 9888:1999)

**Ta slovenski standard je istoveten z: EN ISO 9888:1999**

**ICS:**

13.060.70	Preiskava bioloških lastnosti vode	Examination of biological properties of water
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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN ISO 9888

June 1999

ICS 13.060.00

Supersedes EN 29888:1993

English version

Water quality - Evaluation of ultimate aerobic biodegradability of  
organic compounds in aqueous medium - Static test (Zahn-  
Wellens method) (ISO 9888:1999)

Qualité de l'eau - Evaluation, en milieu aqueux, de la  
biodégradabilité aérobie ultime des composés organiques -  
Essai statique (méthode Zahn-Wellens) (ISO 9888:1999)

Wasserbeschaffenheit - Bestimmung der aeroben  
biologischen Abbaubarkeit organischer Stoffe im wäßrigen  
Medium - Statischer Test (Zahn-Wellens-Test) (ISO  
9888:1999)

This European Standard was approved by CEN on 20 May 1999.

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.

This European Standard exists 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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EN ISO 9888:1999

## Foreword

The text of the International Standard ISO 9888:1999 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 supersedes EN 29888:1993.

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 December 1999, and conflicting national standards shall be withdrawn at the latest by December 1999.

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.

### Endorsement notice

The text of the International Standard ISO 9888:1999 was approved by CEN as a European Standard without any modification.

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# INTERNATIONAL STANDARD

**ISO**  
**9888**

Second edition  
1999-06-01

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## Water quality — Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium — Static test (Zahn-Wellens method)

*Qualité de l'eau — Évaluation, en milieu aqueux, de la biodégradabilité  
aérobie ultime des composés organiques — Essai statique  
(méthode Zahn-Wellens)*

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Reference number  
ISO 9888:1999(E)

## ISO 9888:1999(E)

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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 9888 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 5, *Biological methods*.

This second edition cancels and replaces the first edition (ISO 9888:1991), which has been technically revised.

Annex A of this International Standard is for information only.

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# Water quality — Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium — Static test (Zahn-Wellens method)

**WARNING** — Activated sludge and sewage may contain potentially pathogenic organisms. Take appropriate precautions when handling them. Handle with care toxic test compounds and those with unknown properties.

## 1 Scope

This International Standard specifies a method for the evaluation in aqueous medium of the ultimate biodegradability and, as additional information, the primary biodegradability and the total elimination from water, of organic compounds at a given concentration by aerobic microorganisms.

The conditions described in this International Standard normally correspond to optimal conditions for allowing the maximum value of biodegradation to occur with the chosen inoculum in the test time. These conditions may even be more favourable than in full-scale wastewater treatment plants, especially if their hydraulic retention time, sludge age or the adaptation of the activated sludge is not optimal.

The method applies to organic compounds which are

- a) water-soluble at the concentration used under the test conditions and not expected to be transformed to insoluble metabolites if biodegradation and not elimination only shall be determined;
- b) nonvolatile, or which have a negligible vapour pressure under the test conditions;
- c) not lost by foaming from the test solution;
- d) not inhibitory to the test microorganisms at the concentration chosen for the test. Inhibitory effects can be determined using a suitable test method (e.g. see ISO 8192). If the test compound is toxic, the test concentration must be lowered, or a pre-exposed inoculum can be used.

This International Standard is also applicable to the measurement of biodegradation and elimination of dissolved organic compounds in wastewater (also called "test compound" in the method).

**NOTE** If more information is required to predict the behaviour of test compounds or wastewater in a treatment plant, a simulation test (e.g. the activated sludge simulation test ISO 11733) should be performed. For appropriate use of this method and for alternative biodegradation methods, see ISO 15462.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 6060:1989, *Water quality — Determination of the chemical oxygen demand*.

ISO 8245, *Water quality — Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)*.