Water quality - Evaluation of the "ready", "ultimate" aerobic biodegradability of organic compounds in an aqueous medium - Method by analysis of dissolved organic carbon (DOC) (ISO 7827:2010)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 7827:2012 sisaldab Euroopa standardi EN ISO 7827:2012 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 7827:2012 consists of the English text of the European standard EN ISO 7827:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.12.2012.	Date of Availability of the European standard is 19.12.2012.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 7827

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Supersedes EN ISO 7827:1995

English Version

Water quality - Evaluation of the "ready", "ultimate" aerobic biodegradability of organic compounds in an aqueous medium - Method by analysis of dissolved organic carbon (DOC) (ISO 7827:2010)

Qualité de l'eau - Évaluation de la biodégradabilité aérobie "facile", "ultime" des composés organiques en milieu aqueux - Méthode par analyse du carbone organique dissous (COD) (ISO 7827:2010)

Wasserbeschaffenheit - Bestimmung der leichten, vollständigen aeroben biologischen Abbaubarkeit organischer Stoffe in einem wässrigen Medium - Verfahren mittels Analyse des gelösten organischen Kohlenstoffs (DOC) (ISO 7827:2010)

This European Standard was approved by CEN on 8 December 2012.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

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Ref. No. EN ISO 7827:2012: E

Foreword

The text of ISO 7827:2010 has been prepared by Technical Committee ISO/TC 147 “Water quality” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 7827:2012 by 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 June 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 7827:1995.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 7827:2010 has been approved by CEN as a EN ISO 7827:2012 without any modification.

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WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

IMPORTANT — It is absolutely essential that tests conducted according to this International Standard be carried out by suitably trained staff.

SAFETY PRECAUTIONS — Activated sludge and sewage contain potentially pathogenic organisms. Therefore take appropriate precautions when handling them. Handle toxic test compounds and those whose properties are unknown with care.

1 Scope

This International Standard specifies a method for the evaluation of the “ready” and “ultimate” biodegradability of organic compounds at a given range of concentrations by aerobic microorganisms. In this context, this International Standard also gives specific definitions for the terms “ready” and “ultimate”.

The method applies to organic compounds which are:

a) soluble at the concentration used under the conditions of the test [dissolved organic carbon (DOC) concentrations of 10 mg/l to 40 mg/l];

b) non-volatile or having a negligible vapour pressure under the conditions of the test;

c) not significantly adsorbable on glass and activated sludge;

d) not inhibitory to the test microorganisms at the concentration chosen for the test.

The method is not suitable for waste waters, as they usually contain significant amounts of water-insoluble organic carbon, which is not included in DOC measurements.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 9408, *Water quality — Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium by determination of oxygen demand in a closed respirometer*

ISO 9439, *Water quality — Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium — Carbon dioxide evolution test*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
degradation time
t_2
time from the end of the lag time, t_1, until the time that about 90 % of the maximum level of biodegradation has been reached

NOTE Degradation time is expressed in days.

3.2
inherent biodegradation
level of biodegradation achieved which indicates the test compound is unlikely to be persistent in the environment

NOTE See Annex B.

3.3
lag time
t_1
time from the start of the test until 10 % biodegradation has been reached

NOTE Lag time is expressed in days.

3.4
maximum level of biodegradation
degree of biodegradation of a chemical compound or organic matter in a test above which no further biodegradation takes place during the test

3.5
primary biodegradation
structural change (transformation) of a chemical compound by microorganisms resulting in the loss of a specific property of that compound

3.6
"ready" biodegradation
level of biodegradation achieved under defined conditions which indicates the test compound is considered likely to degrade rapidly and completely under aerobic aquatic environmental conditions

NOTE See Annex B.

3.7
suspended solids
⟨activated sludge⟩ solid material within activated sludge with a particle diameter of >45 µm

NOTE The concentration of suspended solids is obtained by filtration or centrifugation of a known volume of sludge under specified conditions, drying at 105 °C, and correcting for the volume of sample. The concentration of suspended solids is expressed in milligrams per litre.

3.8
"ultimate" biodegradation
breakdown of a chemical compound or organic matter by microorganisms to carbon dioxide, water and mineral salts of any other elements present (mineralization), and the production of new biomass