



SLOVENSKI STANDARD
SIST EN ISO 9509:2007
01-januar-2007

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Water quality - Toxicity test for assessing the inhibition of nitrification of activated sludge microorganisms (ISO 9509:2006)

Wasserbeschaffenheit - Toxizitätstest zur Bestimmung der Nitrifikationshemmung in Belebtschlamm (ISO 9509:2006)

Qualité de l'eau - Essai de toxicité pour l'évaluation de l'inhibition de la nitrification des micro-organismes des boues activées (ISO 9509:2006)

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Ta slovenski standard je istoveten z: EN ISO 9509:2006

ICS:

13.060.70	Preiskava bioloških lastnosti vode	Examination of biological properties of water
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en,fr,de

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English Version

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This European Standard was approved by CEN on 30 June 2006.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Foreword

This document (EN ISO 9509:2006) 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 January 2007, and conflicting national standards shall be withdrawn at the latest by January 2007.

This document supersedes EN ISO 9509:1995.

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

Endorsement notice

The text of ISO 9509:2006 has been approved by CEN as EN ISO 9509:2006 without any modifications.

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**Water quality — Toxicity test for
assessing the inhibition of nitrification of
activated sludge microorganisms**

*Qualité de l'eau — Essai de toxicité pour l'évaluation de l'inhibition de la
nitrification des micro-organismes des boues activées*

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Published in Switzerland

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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 2.

The main task of technical committees is to prepare International Standards. 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.

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

ISO 9509 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 9509:1989), which has been technically revised.

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Introduction

Nitrification is an important process in the treatment of waste waters, since it is necessary to reduce the polluting effects of ammonium in treated discharges to receiving waters. It is further necessary to convert ammonium to nitrate in order to allow the subsequent process of denitrification (producing nitrogen gas) in the anoxic stage of the modified activated sludge process, thus considerably reducing the potential for eutrophication in the receiving waters. The nitrification process is generally performed by two separate groups of autotrophic bacterial species. This International Standard describes a method for assessing the inhibition of the production of oxidized nitrogen (nitrite plus nitrate), or of the removal of ammonium, by nitrifying activated sludge.

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Water quality — Toxicity test for assessing the inhibition of nitrification of activated sludge microorganisms

WARNING — Sewage and activated sludge contain potentially pathogenic organisms. Appropriate precautions are necessary when handling them.

Toxic test substances and those with unknown properties are to be handled with care.

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 standard be carried out by suitably trained staff.

1 Scope

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This International Standard specifies a method for assessing the short-term inhibitory effect of waters, waste waters or test substances on nitrifying bacteria in activated sludge. The inhibitory effect is estimated over an exposure period of usually 3 h or up to 24 h with weakly nitrifying sludge.

The method is applicable to nitrifying activated sludge derived from domestic and synthetic sewage and also to sludges from industrial and mixed domestic and industrial waste waters.

The nitrifying activity of the sludge is verified by testing in the presence and absence of a specific inhibitor (e.g. *N*-allylthiourea; see Annex A). If the nitrification rate is within a suitable range for the test, i.e. 2 mg of nitrogen per gram of suspended solid and hour to 6,5 mg of nitrogen per gram of suspended solids and hour, the sludge may be used directly. If not, adjustments are necessary (see Clause 9).

The method is applicable to water-soluble, non-volatile chemicals, and to waste waters

Sludges from different sources respond differently to a given concentration of an inhibitor mainly due to reaction between the inhibitor and components of the sludge. This results in a partial neutralisation of the toxic effect. Also, since the test lasts only hours, any inhibitory effects may diminish or increase over a longer period, e.g. in the continuous activated sludge system (see ISO 5667-16).

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 5667-16, *Water quality — Guidance on biotesting of samples*

ISO 6777, *Water quality — Determination of nitrite — Molecular absorption spectrometric method*

ISO 7150-1, *Water quality — Determination of ammonium — Part 1: Manual spectrometric method*