Irish Standard
I.S. EN ISO 5815-1:2019&LC:2019

Water quality - Determination of biochemical oxygen demand after n days (BODn) - Part 1: Dilution and seeding method with allylthiourea addition (ISO 5815-1:2019)

I.S. EN ISO 5815-1:2019&LC:2019

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN ISO 5815-1:2019&LC:2019 is the adopted Irish version of the European Document EN ISO 5815-1:2019, Water quality - Determination of biochemical oxygen demand after n days (BODn) - Part 1: Dilution and seeding method with allylthiourea addition (ISO 5815-1:2019)

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In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

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Correction Notice

Reference: EN ISO 5815-1:2019

Title: Water quality - Determination of biochemical oxygen demand after n days (BODn) - Part 1: Dilution and seeding method with allylthiourea addition (ISO 5815-1:2019)

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Please include the following minor editorial correction(s) in the document related to:

the following language version(s) :
- ☒ English
- ☒ French
- ☐ German

for the following procedure :
- ☐ PQ/UQ
- ☐ Enquiry
- ☐ 2nd Enquiry
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- ☐ 2nd Parallel Formal Vote
- ☐ UAP
- ☐ TC Approval
- ☐ 2nd TC Approval
- ☐ Publication
- ☒ Parallel Publication

It has been brought to our attention that this document, issued on 2019-09-18, requires modification.

Incorrect superseding link

Please find enclosed the updated English and French version.

We apologise for any inconvenience this may cause.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 5815-1

September 2019

ICS 13.060.50

Supersedes EN 1899-1:1998

English Version

Water quality - Determination of biochemical oxygen demand after n days (BODn) - Part 1: Dilution and seeding method with allylthiourea addition (ISO 5815-1:2019)

Qualité de l'eau - Détermination de la demande biochimique en oxygène après n jours (DBOn) - Partie 1: Méthode par dilution et ensemencement avec apport d'allylthiourée (ISO 5815-1:2019)

Wasserbeschaffenheit - Bestimmung des biochemischen Sauerstoffbedarfs nach n Tagen (BSBn) - Teil 1: Verdünnungs- und Impfverfahren mit Zugabe von Allylthioharnstoff (ISO 5815-1:2019)

This European Standard was approved by CEN on 26 July 2019.

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European foreword

This document (EN ISO 5815-1:2019) 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 March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

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

This document supersedes EN 1899-1:1998.

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

Endorsement notice

The text of ISO 5815-1:2019 has been approved by CEN as EN ISO 5815-1:2019 without any modification.

INTERNATIONAL STANDARD

ISO 5815-1

Second edition
2019-07

Water quality — Determination of biochemical oxygen demand after *n* days (BOD_n) —

Part 1: Dilution and seeding method with allylthiourea addition

Qualité de l'eau — Détermination de la demande biochimique en oxygène après n jours (DBO_n) —

Partie 1: Méthode par dilution et ensemencement avec apport d'allylthiourée

Reference number
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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document 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 5815-1:2003), which has been technically revised. The main changes compared to the previous edition are as follows:

— change of working range: 1 mg/l instead of 3 mg/l as lower limit;

— changes in test procedure;

— in 5.2, option to check seeding water suitability in advance with a CGA control analysis batch;

— in 5.3.2, phosphate buffer solution pH-value: requirement for preparation of a new solution if the pH value is out of the range pH 7 and pH 8;

— in 5.5, range for oxygen consumption of seeded dilution water 0,2 mg/l to 1,5 mg/l instead of upper limit 1,5 mg/l;

— in 5.9, allowable range BOD_5 of the CGA control solution changed to (198 ± 40) mg/l and BOD_7 (206 ± 40) mg/l;

— in 6.5, electrochemical probe option to measure the dissolved oxygen concentration added;

— in 8.4, interferences: subclause on presence of peroxides and peroxide compounds added;

— in 9.4, options to determinate the dilutions elaborated;

— in 9.7, control analysis: elaborated description of procedure;

— in 10.3, "approval of results/validity criteria" added;

— Annex A: title changed and "normative" instead of "informative"

— Annex C "Direct seeding of the analysis batches" added;

— new Annex D "Performance data" included.

A list of all parts in the ISO 5815 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The incubation time specified in this document is 5 d or 7 d. The latter corresponds to the practice in several Nordic countries. Annex A describes an incubation time of (2 + 5) d.

ISO 5815-1 specifies the determination of the biochemical oxygen demand (BOD) of waters with an expected BOD in the range 1 mg/l to 6 000 mg/l using the dilution method. A lower limit of working range may result from validation data in the laboratory. For samples with an expected low BOD in the range of 0,5 mg/l to 6 mg/l ISO 5815-2 provides the option of the determination of the (BOD) of waters using undiluted samples.

Water quality — Determination of biochemical oxygen demand after *n* days (BOD_n) —

Part 1: Dilution and seeding method with allylthiourea addition

WARNING — Persons using this document should be familiar with normal laboratory practice. This document 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.

IMPORTANT — It is absolutely essential that tests conducted in accordance with this document be carried out by suitably qualified staff.

1 Scope

This document specifies the determination of the biochemical oxygen demand of waters by dilution and seeding with suppression of nitrification after 5 d or 7 d incubation time.

It is applicable to all waters having biochemical oxygen demands usually between 1 mg/l and 6 000 mg/l. It applies particularly to waste waters but also suits for the analysis of natural waters. For biochemical oxygen demands greater than 6 000 mg/l of oxygen, the method is still applicable, but special care is needed taking into consideration the representativeness of subsampling for preparation of the dilution steps. The results obtained are the product of a combination of biochemical and chemical reactions in presence of living matter which behaves only with occasional reproducibility. The results do not have the rigorous and unambiguous character of those resulting from, for example, a single, well-defined, chemical process. Nevertheless, the results provide an indication from which the quality of waters can be estimated.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 5667-3, *Water quality — Preservation and handling of water samples*

ISO 5813, *Water quality — Determination of dissolved oxygen — Iodometric method*

ISO 5814, *Water quality — Determination of dissolved oxygen — Electrochemical probe method*

ISO 6060, *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)*

ISO 8467, *Water quality — Determination of permanganate index*

ISO 10523, *Water quality — Determination of pH*

ISO 15705, *Water quality — Determination of the chemical oxygen demand index (ST-COD) — Small-scale sealed-tube method*

ISO 17289, *Water quality — Determination of dissolved oxygen — Optical sensor method*