



SLOVENSKI STANDARD
SIST EN ISO 15181-4:2009
01-januar-2009

6 Ufj Y]b`U_]!`8 c`c Ub`Y`fUna Yf`U`gdfcgh]j YV]cW]Xcj `]n`VUfj `j `c`c`Y!` ("XY.
 8 c`c Ub`Y`_cbW]b]fUW]Y`d]f]X]b]!f]Z]b]VcfUbUfDHD6Łj `]nj`Y `i `]b`]nfU i bUj Ub`Y`
 fUna Yf`U`gdfcgh]j Yf]GC`%`%`% (.&\$\$, Ł

Paints and varnishes - Determination of release rate of biocides from antifouling paints - Part 4: Determination of pyridine-triphenylborane (PTPB) concentration in the extract and calculation of the release rate (ISO 15181-4:2008)

iTeh STANDARD PREVIEW
 (standards.iteh.ai)

Beschichtungsstoffe - Bestimmung der Auswaschrates von Bioziden aus Antifouling-Beschichtungen - Teil 4: Bestimmung der Konzentration von Pyridintriphenylboran (PTPB) im Extrakt und Berechnung der Auswaschrates (ISO 15181-4:2008)

[SIST EN ISO 15181-4:2009](https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-100003203209/iso-15181-4:2008)

<https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-100003203209/iso-15181-4:2008>

Peintures et vernis - Détermination du taux de lixiviation des biocides contenus dans les peintures antisalissures - Partie 4: Détermination de la concentration de pyridine-triphenylborane (PTPB) dans l'extrait et calcul du taux de lixiviation (ISO 15181-4:2008)

Ta slovenski standard je istoveten z: EN ISO 15181-4:2008

ICS:

87.040 Barve in laki Paints and varnishes

SIST EN ISO 15181-4:2009 en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 15181-4:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 15181-4

August 2008

ICS 87.040

English Version

Paints and varnishes - Determination of release rate of biocides from antifouling paints - Part 4: Determination of pyridine-triphenylborane (PTPB) concentration in the extract and calculation of the release rate (ISO 15181-4:2008)

Peintures et vernis - Détermination du taux de lixiviation des biocides contenus dans les peintures antisalissures - Partie 4: Détermination de la concentration de pyridine-triphenylborane (PTPB) dans l'extrait et calcul du taux de lixiviation (ISO 15181-4:2008)

Beschichtungsstoffe - Bestimmung der Auswaschrates von Bioziden aus Antifouling-Beschichtungen - Teil 4: Bestimmung der Konzentration von Pyridintriphenylboran (PTPB) im Extrakt und Berechnung der Auswaschrates (ISO 15181-4:2008)

This European Standard was approved by CEN on 26 July 2008.

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 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 Management Centre has the same status as the official versions.

<https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf>

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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.



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

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

Contents

Page

Foreword.....3

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST EN ISO 15181-4:2009](https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009)

<https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009>

Foreword

This document (EN ISO 15181-4:2008) has been prepared by Technical Committee ISO/TC 35 "Paints and varnishes" in collaboration with Technical Committee CEN/TC 139 "Paints and varnishes" 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 February 2009, and conflicting national standards shall be withdrawn at the latest by February 2009.

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.

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, 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 the United Kingdom.

iTeh STANDARD PREVIEW Endorsement notice (standards.iteh.ai)

The text of ISO 15181-4:2008 has been approved by CEN as a EN ISO 15181-4:2008 without any modification.

[SIST EN ISO 15181-4:2009](https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009)

<https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 15181-4:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009>

INTERNATIONAL
STANDARDISO
15181-4First edition
2008-08-01

**Paints and varnishes — Determination of
release rate of biocides from antifouling
paints —**

Part 4:

**Determination of pyridine-
triphenylborane (PTPB) concentration in
the extract and calculation of the release
rate**

*Peintures et vernis — Détermination du taux de lixiviation des biocides
contenus dans les peintures antisalissures —*

Partie 4: Détermination de la concentration de pyridine-triphénylborane

(PTPB) dans l'extrait et calcul du taux de lixiviation

Reference number
ISO 15181-4:2008(E)

© ISO 2008

ISO 15181-4:2008(E)**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN ISO 15181-4:2009](https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009)

<https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009>

**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Principle	2
4 Supplementary information	2
5 Apparatus	2
6 Reagents and materials	3
7 Test samples	3
8 Procedure	3
9 Calculation and expression of results	5
10 Validation of the method	8
11 Test report	8
Annex A (normative) Supplementary information	10
Annex B (informative) Additional information on PTPB	11
Bibliography	12

<https://standards.iteh.ai/catalog/standards/sist/a7d63aba-ab18-43c8-a9cf-010eed013a9e/sist-en-iso-15181-4-2009>
 iTeh STANDARD PREVIEW
 (standards.iteh.ai)

ISO 15181-4:2008(E)

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 15181-4 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

ISO 15181 consists of the following parts, under the general title *Paints and varnishes — Determination of release rate of biocides from antifouling paints*:

- Part 1: *General method for extraction of biocides*
- Part 2: *Determination of copper-ion concentration in the extract and calculation of the release rate*
- Part 3: *Calculation of the zinc ethylene-bis(dithiocarbamate) (zineb) release rate by determination of the concentration of ethylenethiourea in the extract*
- Part 4: *Determination of pyridine-triphenylborane (PTPB) concentration in the extract and calculation of the release rate*
- Part 5: *Calculation of the tolylfluanid and dichlofluanid release rate by determination of the concentration of dimethyltolylsulfamide (DMST) and dimethylphenylsulfamide (DMSA) in the extract*

The following part is under preparation:

- Part 6: *Determination of tralopyril release rate by quantification of its degradation product in the extract*

Introduction

By using standard conditions of temperature, salinity and pH at low biocide concentrations in the surrounding artificial seawater, a repeatable value of the release rate under the specified laboratory conditions can be determined using the method given in this part of ISO 15181, which can be used for quality assurance and material selection purposes. The actual release rate of biocides from antifouling paints on ships' hulls into the environment will, however, depend on many factors, such as ship operating schedules, length of service, berthing conditions, paint condition, as well as the temperature, salinity, pH, pollutants and biological community in a particular area.

The results of this test do not reflect environmental biocide release rates for antifouling products and are not suitable for direct use in the process of generating environmental-risk assessments, producing environmental-loading estimates or for establishing release rate limits for regulatory purposes. In comparison with copper and organotin release rates obtained either by direct or indirect measurements of the copper and organotin release rate from ships' hulls and from measurements made on panels exposed in harbours, all available data indicate that the results of this generic test method significantly overestimate the release rate of biocides under in-service conditions. Published results demonstrate that the results of this test method are generally higher than direct *in situ* measurements of copper and organotin release rates from in-service ship hulls by a factor of about 10 or more for several commercial antifouling coatings [1, 2]. A similar relationship is expected to be found for other biocides. Realistic estimates of the biocide release rate from a ship's hull under in-service conditions can only be obtained from this test method if this difference is taken into account.

Where the results of this test method are used in the process of generating environmental-risk assessments, producing environmental-loading estimates or for regulatory purposes, it is most strongly recommended that the relationship between laboratory release rates and actual environmental inputs be taken into account to allow a more accurate estimate of the biocide release rate from antifouling coatings under real-life conditions to be obtained. This can be accomplished through the application of appropriate correction factors [2].