

Textiles - Determination of certain flame retardants -
Part 2: Phosphorus flame retardants (ISO
17881-2:2016)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 17881-2:2016 sisaldab Euroopa standardi EN ISO 17881-2:2016 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 17881-2:2016 consists of the English text of the European standard EN ISO 17881-2:2016.
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 24.02.2016.	Date of Availability of the European standard is 24.02.2016.
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.

ICS 59.080.01

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Aru 10, 10317 Tallinn, Eesti; koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

EUROPEAN STANDARD

EN ISO 17881-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2016

ICS 59.080.01

English Version

Textiles - Determination of certain flame retardants - Part 2: Phosphorus flame retardants (ISO 17881-2:2016)

Textiles - Détermination de certains retardateurs de
flamme - Partie 2: Retardateurs de flamme phosphorés
(ISO 17881-2:2016)

Textilien - Bestimmung einiger Flammenschutzmittel -
Teil 2: Phosphororganische Flammenschutzmittel (ISO
17881-2:2016)

This European Standard was approved by CEN on 11 December 2015.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

This document (EN ISO 17881-2:2016) has been prepared by Technical Committee ISO/TC 38 “Textiles” in collaboration with Technical Committee CEN/TC 248 “Textiles and textile products” the secretariat of which is held by BSI.

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 August 2016, and conflicting national standards shall be withdrawn at the latest by August 2016.

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, 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 17881-2:2016 has been approved by CEN as EN ISO 17881-2:2016 without any modification.

Contents

	Page
Foreword	iv
1 Scope	1
2 Principle	1
3 Reagents	1
4 Apparatus	1
5 Procedure	2
5.1 Preparation of standard solutions.....	2
5.1.1 Stock standard solution.....	2
5.1.2 Working solution.....	2
5.2 Preparation of test specimen.....	2
5.3 Ultrasonic wave extraction.....	2
5.4 Flame retardants determination.....	2
6 Calculation	3
7 Test report	3
Annex A (informative) Test parameters by HPLC-MS/MS	4
Annex B (informative) Round Robin test	6

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 38, *Textiles*.

ISO 17881 consists of the following parts, under the general title *Textiles — Determination of certain flame retardants*:

- *Part 1: Brominated flame retardants*
- *Part 2: Phosphorus flame retardants*

Textiles — Determination of certain flame retardants —

Part 2:

Phosphorus flame retardants

WARNING — This International Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage. It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

1 Scope

This part of ISO 17881 specifies a test method for determining some phosphorous flame retardants in textiles by high performance liquid chromatography – tandem mass spectrometry (HPLC-MS/MS).

The method is applicable to all kinds of textile products.

NOTE For tris (1-aziridinyl) phosphineoxide (TEPA), only unbonded TEPA is extractable.

2 Principle

The flame retardants are extracted from textile specimen by ultrasonic generator with acetone. The flame retardants in the specimen are identified and quantified by HPLC-MS/MS.

3 Reagents

Unless otherwise specified, use only reagents of recognized analytical grade.

3.1 Tris (2,3-dibromopropyl) phosphate (TRIS), CAS no. 126-72-7.

3.2 Tris (1-aziridinyl) phosphineoxide (TEPA), CAS no. 545-55-1.

3.3 Tris (2-chloroethyl) phosphate (TCEP), CAS no. 115-96-8.

3.4 Acetone.

3.5 Acetonitrile (ACN).

3.6 Ammonium acetate solution, 10 mmol/l.

4 Apparatus

4.1 High performance liquid chromatography – tandem mass spectrometry (HPLC-MS/MS).

4.2 Ultrasonic generator, with a frequency from 35 kHz to 45 kHz.

4.3 Evaporator device, with water bath at 40 °C.