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**Textiles — Determination of certain  
flame retardants —**

**Part 2:  
Phosphorus flame retardants**

*Textiles — Détermination de certains retardateurs de flamme —  
Partie 2: Retardateurs de flamme phosphorés*



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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](http://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](http://www.iso.org/patents)).

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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-aziridiny) 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-aziridiny) 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.