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Responsible committee: GEL/111 Electrotechnical environment committee

Interested committees:

Title: Draft BS IEC 63209-11 Ed.1.0 Determination of certain substances in electrotechnical products. Part 11: TCEP in polymers by gas chromatography-mass spectrometry and liquid chromatography-mass spectrometry.

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- ii) affects other national standard(s)
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Introduction

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For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



111/557/CD

COMMITTEE DRAFT (CD)

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DATE OF CIRCULATION:

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CLOSING DATE FOR COMMENTS:

2020-02-07

SUPERSEDES DOCUMENTS:

111/472/NP, 111/492/RVN

IEC TC 111 : ENVIRONMENTAL STANDARDIZATION FOR ELECTRICAL AND ELECTRONIC PRODUCTS AND SYSTEMS

SECRETARIAT:

Italy

SECRETARY:

Mr Andrea Legnani

OF INTEREST TO THE FOLLOWING COMMITTEES:

PROPOSED HORIZONTAL STANDARD:

☒

Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☒ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

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Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Determination of certain substances in electrotechnical products – Part 11: TCEP in polymers by gas chromatography-mass spectrometry and liquid chromatography-mass spectrometry

NOTE FROM TC/SC OFFICERS:

This CD was prepared by IEC TC111/ISO TC61/SC5 JWG 14 "Test methods of certain substances in polymers" as result of the task to merge IEC 62321-11 project and the approved ISO TC61/SC5 NWIP on TCEP on plastics (ISO/NP 23822).

The project is an IEC/ISO double logo standard, IEC leader.

This CD will be circulated in parallel by ISO TC61/SC5

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Documents
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1 **Determination of certain substances in electrotechnical products – Part 11:**
2 **TCEP in polymers by Gas Chromatography-Mass Spectrometry (GC-MS) and**
3 **Liquid Chromatography – Mass Spectrometry (LC-MS)**
4
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Determination of certain substances in electrotechnical products – Part 11: TCEP in polymers by Gas Chromatography-Mass Spectrometry (GC-MS) and Liquid Chromatography – Mass Spectrometry (LC-MS)

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The text of this International Standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

– reconfirmed,

- 136 – withdrawn,
137 – replaced by a revised edition, or
138 – amended.

139 The National Committees are requested to note that for this document the stability date is 20XX..

140 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE
141 PUBLICATION STAGE.

142

INTRODUCTION

144 Tris(2-chloroethyl) phosphate (TCEP) is one of phosphorous-based flame retardants which is restricted
145 as Substance of Very High Concern (SVHC) as it is classified as toxic to reproduction category 2 (R60)
146 and was included in the candidate list for authorisation on 13 January 2010, following ECHA's decision
147 ED/68/2009.

148 TCEP is used as a flame retardant in plastics such as polyester and polyurethane foam, and as a
149 plasticizer in polyvinylchloride. Additionally, TCEP is used as an alternative for brominated flame
150 retardants that have been restricted. no applicable testing standard exists for TCEP analysis in plastics.

151 In result, analysis criteria based on IEC/TC 111/WG 3 is set up through international standardization.
152 Accordingly, the purposes of this analysis criteria are to provide test method that will allow the industry
153 to determine the levels of TCEP.

154 **WARNING — Persons using this international standard should be familiar with normal**
155 **laboratory practice. This standard does not purport to address all of the safety problems, if**
156 **any, associated with its use. It is the responsibility of the user to establish appropriate safety**
157 **and health practices and to ensure compliance with any national regulatory conditions.**

1. Scope

This international standard specifies two different techniques for the determination of TCEP tris(2-chloroethyl) phosphate (TCEP) in plastics, the GC-MS or LC-MS method is used for a determination. GC-MS and LC-MS both techniques are suitable for quantitative analysis of TCEP in plastics.

These two techniques have been evaluated for use with polyurethane, polyvinylchloride and polyethylene materials containing TCEP between 200 mg/kg to 2 000 mg/kg. Use of the methods described in this document for other polymers and concentration ranges has not been specifically evaluated.

Py-TD-GC-MS technique is described in informative part. This technique is suitable for screening of TCEP.

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.

IEC 62321-1:2013, *Determination of certain substances in electrotechnical products – Part 1: Introduction and overview*

IEC 62321-2:2013, *Determination of certain substances in electrotechnical products – Part 2: Disassembly, disjointment and mechanical sample preparation*

3. Terms, definitions and abbreviations

3.1. Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1.

Screening

analytical procedure to determine the presence or absence of substances in the representative part or section of a product, relative to the value or values chosen as the criterion for presence, absence or further testing

Note 1 to entry: If the screening method produces values that are not conclusive, then additional analysis or other follow-up actions may be necessary to make a final presence/absence decision.

[SOURCE: IEC 62321-1:2013, 3.1.10]

3.2. Abbreviations

ACN	Acetonitrile
API-ES	Atmospheric pressure ionization- Electrostatic
BSA	<i>N,O</i> -Bis(trimethylsilyl)acetamide
BSTFA	<i>N,O</i> -Bis(trimethylsilyl)trifluoroacetamide
CCC	continuing calibration check standard (CCC)
CRM	Certified reference material
DIP	Direct injection probe
DMDCS	Dimethyldichlorosilane