

Determination of certain substances in electrotechnical products - Part 3-3: Screening - Polybrominated biphenyls, polybrominated diphenyl ethers and phthalates in polymers by gas chromatography-mass spectrometry using a pyrolyser/thermal desorption accessory **(Py/TD-GC-MS)**

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ICS 13.020.01, 43.040.10

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Determination of certain substances in electrotechnical products  
- Part 3-3: Screening - Polybrominated biphenyls,  
polybrominated diphenyl ethers and phthalates in polymers by  
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(IEC 62321-3-3:2021)

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électrotechniques - Partie 3-3: Détection - Diphényles  
polybromés, diphényléthers polybromés et phthalates dans  
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(IEC 62321-3-3:2021)

Verfahren zur Bestimmung von bestimmten Substanzen in  
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The text of document 111/626/FDIS, future edition 1 of IEC 62321-3-3, prepared by IEC/TC 111 “Environmental standardization for electrical and electronic products and systems” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62321-3-3:2021.

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- IEC 62321-1:2013 NOTE Harmonized as EN 62321-1:2013 (not modified)
- IEC 62321-2:2013 NOTE Harmonized as EN 62321-2:2014 (not modified)
- IEC 62321-8:2017 NOTE Harmonized as EN 62321-8:2017 (not modified)
- IEC 62321-3-1:2013 NOTE Harmonized as EN 62321-3-1:2014 (not modified)
- IEC 62321-3-2:2020 NOTE Harmonized as EN IEC 62321-3-2:2020<sup>1</sup> (not modified)
- IEC 62321:2008<sup>2</sup> NOTE Harmonized as EN 62321:2009<sup>3</sup> (not modified)
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<sup>3</sup> Withdrawn.

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**DETERMINATION OF CERTAIN SUBSTANCES  
IN ELECTROTECHNICAL PRODUCTS –**
**Part 3-3: Screening – Polybrominated biphenyls,  
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by gas chromatography-mass spectrometry using a  
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FDIS	Report on voting
111/626/FDIS	111/632/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

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## INTRODUCTION

The widespread use of electrotechnical products has drawn increased attention to their impact on the environment. In many countries all over the world, this has resulted in the adaptation of regulations affecting wastes, substances and energy use of electrotechnical products.

The use of polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs) and certain phthalates in electrotechnical products is of concern in many regions of the world.

The purpose of this document is therefore to provide a test method that will allow the electrotechnical industry to determine the levels of polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs), di-isobutyl phthalate (DIBP), di-n-butyl phthalate (DBP), benzylbutyl phthalate (BBP), di-(2-ethylhexyl) phthalate (DEHP), di-n-octyl phthalate (DNOP), di-isononyl phthalate (DINP) and di-isodecyl phthalate (DIDP) in electrotechnical products on a consistent global basis.

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## DETERMINATION OF CERTAIN SUBSTANCES IN ELECTROTECHNICAL PRODUCTS –

### Part 3-3: Screening – Polybrominated biphenyls, polybrominated diphenyl ethers and phthalates in polymers by gas chromatography-mass spectrometry using a pyrolyser/thermal desorption accessory (Py/TD-GC-MS)

#### 1 Scope

This part of IEC 62321 specifies the screening analysis of polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs), di-isobutyl phthalate (DIBP), di-n-butyl phthalate (DBP), benzylbutyl phthalate (BBP), di-(2-ethylhexyl) phthalate (DEHP), di-n-octyl phthalate (DNOP), di-isononyl phthalate (DINP), and di-isodecyl phthalate (DIDP) in polymers of electrotechnical products using the analytical technique of gas chromatography-mass spectrometry using a pyrolyser/thermal desorption accessory (Py/TD-GC-MS).

This test method has been evaluated through the analysis of PP (polypropylene), PS (polystyrene), and PVC (polyvinyl chloride) materials containing deca-BDE between 100 mg/kg and 1 000 mg/kg and individual phthalates between 100 mg/kg to 4 000 mg/kg as depicted in Annex J. Use of the methods described in this document for other polymer types, PBBs (mono-deca), PBDEs (mono-deca) and phthalates or concentration ranges other than those specified above has not been specifically evaluated.

This document has the status of a horizontal standard in accordance with IEC Guide 108 [1]<sup>1</sup>.

#### 2 Normative references

There are no normative references in this document.

#### 3 Terms, definitions and abbreviated terms

##### 3.1 Terms and definitions

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

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