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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 39560.8-2021

Determination of certain substances in electrical and electronic products - Part 8: Phthalates in polymers by gas chromatography-mass spectrometry (GC-MS), gas chromatography-mass spectrometry using a pyrolyzer/thermaldesorption accessory (Py/TD-GC-MS)

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Foreword

GB/T 39560 "Determination of Certain Substances in Electronic and Electrical Products" is divided into the following parts.

---Part 1.Introduction and overview;

---Part 2.Disassembly, disassembly and mechanical sample preparation;

---Part 3-1.Screening of lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry;

---Part 4.CV-AAS, CV-AFS, ICP-OES and ICP-MS determination of mercury in polymers, metals and electronic parts;

---Part 5.Determination of cadmium, lead and chromium in polymers and electronic parts and metals in AAS, AFS, ICP-OES and ICP-MS

The content of cadmium and lead;

---Part 6.Determination of polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatography-mass spectrometry (GC-MS);

---Part 7-1.Hexavalent chromium-colorimetric determination of hexavalent chromium in

colorless and colored anticorrosive coatings on metals [Cr(VI)];

---Part 7-2.Hexavalent chromium-colorimetric determination of hexavalent chromium in polymers and electronic parts [Cr(VI)];

---Part 8.Gas Chromatography-Mass Spectrometry (GC-MS) and Gas Chromatography-Mass Spectrometry (Py/T D-GC-

MS) Determination of phthalates in polymers.

This part is Part 8 of GB/T 39560.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this part is equivalent to the IEC 62321-8.2017 "Determination of Certain Substances in Electrical Products Part 8.Gas Color

Spectroscopy-mass spectrometry (GC-MS) or thermal pyrolysis/thermal desorption-gas chromatography-mass spectrometry (Py/T D-GC-MS) for the determination of phthalic acid in polymers

Ester".

This section has made the following editorial changes.

---In order to be consistent with our country's existing standard series, the standard name is changed to "Determination of Certain Substances in Electrical and Electronic Products, Part 8

Classification. gas chromatography-mass spectrometry (GC-MS) and gas chromatography-mass spectrometry (Py/T D-GC-MS) with thermal pyrolysis/thermal desorption

Determine the phthalates in polymers".

This part is proposed and managed by the National Environmental Standardization Technical Committee of Electrical and Electronic Products and Systems (SAC/TC297).

Drafting organizations of this section. China Electronics Standardization Institute, Shenzhen Saixi Information Technology Co., Ltd., Lanzhou 3D Big Data Standard

Chemical Research Institute Co., Ltd., Shanghai Huatest Pin Standard Testing Technology Co., Ltd., China Household Electrical Appliances Research Institute, Wuxi Customs Mechanical and Electrical Products and Vehicles

Testing Center, Shandong Product Quality Inspection Research Institute, Shimadzu Enterprise Management (China) Co., Ltd., Thermo Fisher Scientific (China) Co., Ltd.

Company, Zhejiang Qixing Electronics Co., Ltd., Hisense Video Technology Co., Ltd., Shenzhen Rainbow Testing Technology Co., Ltd., Ningbo Inspection

Quarantine Science and Technology Research Institute, Guangzhou Customs Technology Center, China Academy of Information and Communications Technology, the Fifth Institute of Electronics of the Ministry of Industry and Information Technology, Guangdong

Midea Refrigeration Equipment Co., Ltd., Weikai Testing Technology Co., Ltd., Shenzhen Customs Industrial Product Testing Technology Center, Huawei Terminal Co., Ltd.,

ZTE Corporation.

1 Scope

This part of GB/T 39560 describes two standard methods and two reference methods for the determination of polymers in electronic and electrical products

Diisobutyl phthalate (DIBP), di-n-butyl phthalate (DBP), butyl benzyl phthalate (BBP), two phthalate

Isooctyl ester (DEHP), di-n-octyl phthalate (DNOP), diisononyl phthalate (DINP) and diisodecyl phthalate

Esters (DIDP).

The standard methods in this section are gas chromatography-mass spectrometry (GC-MS) and gas chromatography-mass spectrometry (Py/T D-

GC-MS) method.

The GC-MS method is a standard method for quantitative determination of DIBP, DBP, BBP, DEHP, DNOP, DINP and DIDP. The measurement range is from

50mg/kg to.2000mg/kg.

Equipped with pyrolysis/thermal desorption gas chromatography-mass spectrometry (Py/T D-GC-MS), suitable for screening and semi-quantitative analysis of electrical and electronic products

DIBP, DBP, BBP, DEHP, DNOP, DINP and DIDP in polymer materials, the measurement range is from 100 mg/kg to

2000mg/kg.

Ion Adhesion Mass Spectrometry (IAMS) is suitable for screening and semi-determination of DIBP, DBP, BBP, DEHP, DNOP, DINP and DIDP

For quantitative analysis, see Appendix A for details. Due to the limitation of mass spectrum peak resolution, the method of determining DBP and DIBP, DEHP and DNOP by IAMS method

The law has not yet been determined.

Liquid chromatography-mass spectrometry (LC-MS) is limited to the determination of BBP, DEHP, DNOP, DINP and DIDP, see Appendix B for details. because

The limit of mass spectrum peak resolution, the method of determining DBP and DIBP by LC-MS technology has not yet been determined.

The flowchart provided in Appendix C describes how to use two standard methods. Py/T D-GC-MS and GC-MS, and how to use both

Two reference methods. Direct Injection (DIP)-Ion Adhesion Mass Spectrometry (IAMS) and Liquid Chromatography-Mass Spectrometry (LC-MS).

These four test methods have passed the testing of polyethylene (PE) and polyethylene (PE) with a phthalate content of about 450mg/kg to 30000mg/kg

Evaluation of polyvinyl chloride (PVC) materials. The four methods described in this section are effective for other polymer types, phthalic acid compounds, or

The use outside the stated concentration range has not been specifically evaluated.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T 39560.1-2020 Determination of Certain Substances in Electrical and Electronic Products Part 1.Introduction and Overview (IEC 62321-1.

2013, IDT)