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HJ

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

HJ 891-2017

**Solid waste. Determination of polychlorinated biphenyls. Gas
chromatography/mass spectrometry method**

固体废物 多氯联苯的测定 气相色谱-质谱法

(English Translation)

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Foreword

In order to carry out "Law of the People's Republic of China on Environmental Protection" and "Law of the People's Republic of China on Prevention and Control of Environmental Pollution by Solid Wastes" Protect the environment, protect human health, standardize the determination of solid waste and leaching solution of PCBs, the development of this standard.

This standard specifies the determination of solid waste and leachate 18 kinds of PCBs by gas chromatography - mass spectrometry.

This standard Appendix A normative appendix, Appendix B ~ Appendix E is informative appendix.

This standard is released for the first time.

This standard by the Environmental Protection Department of Environmental Monitoring Division and Science and Technology Standards Division to develop.

This standard was drafted. Zhejiang Provincial Environmental Monitoring Center.

This standard verification unit. Jiangsu Provincial Environmental Monitoring Center, Hubei

Provincial Environmental Monitoring Center, Hangzhou Environmental Monitoring Center, Ningbo Environmental Monitoring Center, Shaoxing Environmental Monitoring Center Station and Jiaxing Environmental Monitoring Station.

This standard MEP approved on December 17, 2017.

This standard since February 1, 2018 implementation.

This standard is interpreted by the MEP.

Solid waste - Determination of PCBs - Gas chromatography - mass spectrometry Warning. The standard substances and solvents used in the experiment are all toxic substances. The preparation process should be carried out in a fume hood.

And pay attention to wear protective equipment, avoid contact with skin and clothing.

1 Scope of application

This standard specifies the determination of solid waste and its leachate PCBs by gas chromatography - mass spectrometry.

This standard applies to the determination of 18 kinds of PCBs in solid waste and leachate. If verified, this standard is also suitable for other polychlorinated biphenyls congeners determination.

When the solid waste sample volume is 20 g and the constant volume is 1.0 ml, the detection limits of the 18 PCBs are 2 to 3 g/kg, the lower limit of determination is 8 ~ 12 g/kg; solid waste leachate volume of 300 ml, volume of 1.0 ml, the side the detection limit was 0.08 ~ 0.2 g/L, and the lower limit of determination was 0.32 ~ 0.8 g/L. See Appendix A for details.

2 Normative references

This standard references the following documents or the terms. For undated references, the effective version applies to this book standard.

HJ 77.3 Solid waste Dioxins Determination Isotope dilution High-resolution gas chromatography-high resolution mass spectrometry HJ 782 Solid waste - Extraction of organic matter - Pressurized fluid extraction HJ/T 20 Industrial solid waste sampling Sampling specifications HJ/T 298 Hazardous Waste Identification Technical Specifications Solid waste extraction toxicity Toxicity method HNO₃ method HJ/T 300 solid waste leaching toxic leaching method acetic acid buffer solution method

3 Method principle

PCBs in solid wastes are extracted by Soxhlet or pressurized fluid extraction. PCBs in leachate Using liquid-liquid extraction, the extraction liquid selected appropriate methods of

purification, concentration and separation by gas chromatography - mass spectrometry, detection, according to Retention time and characteristic ion abundance ratio qualitative, internal standard method.

4 Reagents and materials

Unless otherwise specified, the analysis of the use of analytical reagents in line with national standards, the experimental water for the newly prepared non-containing head Standard water, subject to a blank test before use.

4.1

acetone (C_3H_6O). pesticide grade.

4.2

Toluene (C_7H_8). pesticide residues.

4.3

n-hexane (C_6H_{14}). pesticide grade.

4.4

methanol (CH_3OH). pesticide grade.

24.5 Dichloromethane (CH_2Cl_2). Pesticide grade.

4.6

Dimethyl sulfoxide (C_2H_6OS).

Saturated with n-hexane (4.3) before use.

4.7

Hydrochloric acid. (HCl) = 1.18 g/ml, excellent grade pure.

4.8

Sulfuric acid. (H_2SO_4) = 1.84 g/ml, excellent grade pure.

4.9

Sodium hydroxide ($NaOH$). excellent grade pure.

4.10

Potassium hydroxide (KOH). excellent pure grade.

4.11

Sodium chloride ($NaCl$).

Heat at $450^\circ C$ for 4 h, cool to room temperature in a desiccator and store in a clean reagent bottle.

4.12

anhydrous sodium sulfate (Na_2SO_4). excellent grade pure.

660 °C calcined 6 h, cooled to 150 °C after the transfer to the dryer, after cooling into the reagent bottle, stored in a desiccator.

4.13

Dichloromethane - n-hexane mixed solvent. 3 7.

Dichloromethane (4.5) and n-hexane (4.3) were mixed at a volume ratio of 3.7.

4.14

n-hexane - acetone mixed solvent. 1 1.

Hexane (4.3) and acetone (4.1) were mixed in a volume ratio of 1.1.

4.15

hydrochloric acid solution. 1 1.

Hydrochloric acid (4.7) and water were mixed in a volume ratio of 1.1.

4.16

Sodium hydroxide solution. (NaOH) = 40 mg/L.

Weigh 4 g of sodium hydroxide (4.9) and dilute to 100 ml with water.

4.17

Potassium hydroxide solution. (KOH) = 112 mg/L.

Weigh 11.2 g of potassium hydroxide (4.10) and dilute to 100 ml with water.

4.18

Sodium chloride solution. (NaCl) = 50 mg/L.

Weigh 5 g of sodium chloride (4.11) and dilute to 100 ml with water.

4.19

PCB stock standard solution. = 100 mg/L.

Buy a certified standard solution (polychlorinated biphenyls standard solution or single component polychlorinated biphenyl standard solution), - below 20 °C Protect from light, or refer to the standard solution certificate for instructions.

4.20

Polychlorinated biphenyls standard solution. = 10.0 mg/L (reference concentration).

Dilute PCB stock standard solution (4.19) with n-hexane (4.3) or methanol (4.4). The solution is below -20 °C avoidance Light preservation, can be stored for two months.