

ICS 13.030.10
CCS Z 13

HJ

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

HJ 892-2017

**Solid waste. Determination of polycyclic aromatic hydrocarbons.
High performance liquid chromatography**

固体废物 多环芳烃的测定 高效液相色谱法

(English Translation)

Issued on: December 17, 2017

Implemented on: February 1, 2018

Issued by: Ministry of Ecology and Environment

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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" Protection of the environment, protect human health, standardize the determination of solid waste and polycyclic aromatic hydrocarbons in leachate, the development of this standard.

This standard specifies the determination of solid waste and leaching solution of polycyclic aromatic hydrocarbons by high performance liquid chromatography.

This standard Appendix A normative appendix, Appendix B is an informative annex.

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. Henan Environmental Monitoring Center.

This standard verification unit. Institute of Hydrogeology and Environmental Geology, Chinese Academy of Geological Sciences, Henan Province Environmental Monitoring Center, Zheng State Environmental Protection Monitoring Center Station, Kaifeng City Environmental Monitoring Station, Luoyang City Environmental Monitoring Station and Xinxiang City 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 polycyclic aromatic hydrocarbons - High performance liquid chromatography Warning. Polycyclic aromatic hydrocarbons are carcinogens, standard solution preparation and sample preparation should be carried out in a fume hood; operation Wear protective equipment as required to avoid direct contact with skin and clothing.

1 Scope of application

This standard specifies the determination of solid waste and leaching solution of polycyclic aromatic hydrocarbons by high performance liquid chromatography.

This standard applies to solid waste and leachate naphthalene, camphene, , fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo [a] Anthracene, acenaphthene, benzo [b] fluoranthene, benzo [k] fluoranthene, benzo [a] pyrene, dibenzo [a] anthracene, benzo [g, h, i] [1,2,3-c, d] Pyrene and other 16 kinds of PAHs determination.

Solid waste (ash) sampling volume of 10.0 g, the volume of 1.0 ml when measured by UV detector 16 kinds of more the detection limit of the method for the determination of aromatics is from 3 µg/kg to 5 µg/kg, and the lower limit of determination is from 12 µg/kg to 20 µg/kg. The fluorescence detection the detection limit of 15 PAHs (excluding acenaphthylene) is 0.3 µg/kg ~ 0.5 µg/kg, and the lower limit of determination is 1.2 µg/kg ~ 2.0 µg/kg.

Solid waste (sludge) sampling volume of 2.00 g, the volume of 1.0 ml, the UV detector measured more than 16 species the detection limit of the method for detecting aromatic hydrocarbons is 0.02 mg/kg and the lower limit of determination is 0.08 mg/kg. Fifteen polycyclics Aromatics (excluding acenaphthylene) method detection limit of 0.002 mg/kg ~ 0.004 mg/kg, the lower limit of determination of 0.008 mg/kg ~ 0.016 mg/kg.

Solid waste leachate sampling volume of 100 ml, the volume of 1.0 ml, with UV detector determination of 16 kinds of multi-ring Aromatics detection limit of 0.1 µg/L ~ 2 µg/L, the lower limit of determination of 0.4 µg/L ~ 8 µg/L; with a fluorescence detector the detection limits of 15 polycyclic aromatic hydrocarbons (excluding camphene) were from 0.01 µg/L to 0.1 µg/L with the detection limit of 0.04 µg/L ~ 0.4 µg/L.

Methods for detecting solid waste and solid waste leachate detection limits and lower limit see Appendix A.

2 Normative references

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

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

Polycyclic aromatic hydrocarbons (PAHs) in solid waste or solid waste leachate are extracted with organic solvents and the extract is concentrated and purified to high 2-performance liquid chromatography, UV/fluorescence detector to determine the retention time, external standard method.

4 Reagents and materials

Unless otherwise specified, the analysis of analytical reagents used in line with national standards, experimental water for the new preparation does not contain Machine water.

Acetonitrile (CH₃CN). Chromatography grade.

4.2

n-Hexane (C₆H₁₄). Chromatography grade.

4.3

Dichloromethane (CH₂Cl₂). Chromatography grade.

4.4

Acetone (CH₃COCH₃). Chromatography grade.

4.5

acetone - n-hexane mixed solution. 1 1.

Mix with acetone (4.4) and n-hexane (4.2) at a volume ratio of 1. 1.

4.6

Dichloromethane - n-hexane mixed solution. 2 3.

Mix with methylene chloride (4.3) and n-hexane (4.2) at a volume ratio of 2. 3.

4.7

Dichloromethane - n-hexane mixed solution. 1 1.

Mix with methylene chloride (4.3) and n-hexane (4.2) at a volume ratio of 1. 1.

4.8

polycyclic aromatic hydrocarbon standard stock solution. $\rho = 100 \text{ mg/L} \sim 2000 \text{ mg/L}$.

Buy a commercially available certified standard solution, refrigerated at 4°C , protected from light and sealed, or with reference to standard solution certificate requirements save. When used should be returned to room temperature and shake.

4.9

polycyclic aromatic hydrocarbons standard solution. $\rho = 10.0 \text{ mg/L} \sim 200 \text{ mg/L}$.

Pipette 1.0 ml polycyclic aromatic hydrocarbon standard stock solution (4.8) in 10 ml brown volumetric flask, dilute with acetonitrile (4.1) and set Volume to the mark, shake, transferred to a compact bottle at 4°C refrigerated, protected from light.

4.10

ten fluorine biphenyl ($\text{C}_{12}\text{F}_{10}$). 99% purity.

Alternatives may also be used.

4.11

decafluorobiphenyl stock solution. $\rho = 1000 \text{ mg/L}$.

Weigh decafluorobiphenyl (4.10) 0.025 g (accurate to 0.001 g), with acetonitrile (4.1) dissolved and dilute to 25 ml brown Color volumetric flask, shake, transferred to airtight bottles at 4°C refrigerated, protected from light. Or purchase a certified public standard solution.

4.12

Use of decafluorobiphenyl. $\rho = 40 \mu\text{g/ml}$.

Pipette 1.0 ml of decafluorobiphenyl stock solution (4.11) in a 25 ml brown volumetric flask, dilute with acetonitrile (4.1) and allow to volume Graduated, shaken, transferred to a compact bottle at 4°C refrigerated, protected from light.

4.13

Sodium Chloride (NaCl).

Bake at 400°C 4 h, cooled and placed in a sealed glass jar sealed.

4.14

desiccant. anhydrous sodium sulfate (Na_2SO_4) or granular diatomaceous earth.