

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 765-2015

**Waste solid. Distilling of organic compound. Microwave
extraction**

固体废物 有机物的提取 微波萃取法

(English Translation)

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Foreword

In order to implement the Environmental Protection Law of the People's Republic of China and the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Protect the environment, protect human health, regulate the extraction of organic matter in solid waste, the development of this standard.

This standard specifies the microwave extraction of organic matter in solid waste.

This standard is the first release.

Appendix A and Appendix B of this standard are informative.

This standard is organized by the Ministry of Environmental Protection Science and Technology Standards Division.

The main drafting unit of this standard. Jiangsu Province Environmental Monitoring Center.

The Environmental Protection Department of this standard approves on November 20, 2015.

This standard is implemented as of December 15, 2015.

This standard is explained by the Ministry of Environmental Protection.

Extraction of organic waste from organic waste by microwave extraction WARNING. The organic solvents, reference materials, solid waste samples used in the test contain toxic compounds.

In the fume hood, the operation should be required to wear protective equipment, to avoid contact with skin and clothing.

1 Scope of application

This standard specifies the microwave extraction of organic matter in solid waste.

This standard applies to polycyclic aromatic hydrocarbons in solid waste, phthalate esters, organochlorine pesticides, organophosphorus pesticides and polychlorinated biphenyls, etc.

Extraction of organic matter.

2 Normative reference documents

The contents of this standard refer to the following documents or their terms. Those who do not specify the date of the reference file, the effective version of the appropriate for this standard.

Technical specification for SJ sample preparation for industrial solid waste

3 Principle of the method

Microwave radiation can be freely through the microwave transparent extraction medium, deep inside the sample matrix, according to different substances on the microwave the degree of absorption can be different from the different components of the system can be selectively heated, so that the target from the matrix or system points Leave out into the extraction solvent.

4 Reagents and materials

Unless otherwise stated, analytical reagents and distilled water in accordance with national standards are used for analysis.

4.1

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

4.2

Acetone (CH_3COCH_3). pesticide residues.

4.3

n-Hexane - Acetone Mixed Solvent. 1:1 (v/v).

Mixed with n-hexane (4.1) and acetone (4.2) in a 1:1 by volume ratio.

4.4

anhydrous sodium sulfate (Na_2SO_4). anhydrous sodium sulfate should be heated at 500 °C for at least 4 h, remove the crystal water and organic matter, and then Cooled in a closed container.

4.5

diatomaceous earth. granular diatomaceous earth, 20 mesh to 100 mesh.

5 Instruments and equipment

5.1

microwave extractor. equipped with the extraction tank and sealed tank.

5.2

Analysis of balance. accuracy of 0.01 g.

5.3

Sample Sieve. Aperture 1 mm.

5.4

Concentration device. nitrogen blowing instrument, rotary evaporator, KD concentrator or other equipment with considerable function.

5.5

General laboratory equipment and equipment.

6.1 Collection and storage

Refer to the relevant regulations of HJ/T 20 for the collection and preservation of solid waste samples.

Solid waste samples should be placed in a stoppered brown glass bottle without interruption, sealed away from light, stored at low temperature, shipped back as soon as possible. Laboratory, on the way to avoid the introduction of interference or destruction of the sample. Such as temporarily can not be analyzed, should be stored below 4 °C cold storage, semi-volatile the shelf life of the organic matter is one month, and the perishable sample should be analyzed as soon as possible.

6.2 Preparation of samples

Will be collected good solid waste samples, placed in a clean and clean tray, first remove impurities, and then according to the sample form, select Choose different pre-treatment methods.

6.2.1

Solid waste samples for easy grinding. The samples are crushed by grinding or other means so that the size of the sample particles A sample of 1 mm sieve (5.3) is used to make the sample fully homogeneous.

6.2.2

Solid waste samples that are not easily milled. The size of the sample can be reduced by cutting, shredding or other methods, in the extraction of the solvent is fully soaked. Also after the sample is weighed, add anhydrous sodium sulfate (4.4), diatomaceous earth (4.5) together Grinding.

7.1 Extraction

Weigh 5 g to 10 g (accurate to 0.01 g) to be tested, placed in a microwave extraction tank, adding proper amount of n-hexane-acetone Mixed solvent (4.3), solvent consumption does not exceed the extraction tank volume of one-third. Place the extraction tank with the sample in the sealed tank , Then the sealed tank into the microwave extractor (5.1), set the extraction temperature and extraction time (see Table 1), open instrument to extract.

Table 1 Microwave Extraction Reference Conditions

No.	Analysis item	Preheating time/min	Extraction time/min	Extraction temperature/°C
	Polycyclic aromatic hydrocarbons	5	10	90
	phthalate esters	5	10	110
3	Organochlorine Pesticides	5	10	110
	Organic Phosphorus Pesticides	5	10	90
	polychlorinated biphenyls	5	10	110
	6 other organic matter	5	15	100

7.2 Extraction of the filter

After the extraction is complete, the extract is reduced to room temperature and the extract is divided by water. The glass funnel is padded with glass wool or glass the fibrous membrane was coated with about 5 g of anhydrous sodium sulfate (4.4) and the extract was filtered through a glass funnel into the concentrate tube.

A small amount of n-hexane-acetone mixed solvent (4.3) Wash the glass funnel and filter the residue, combine the extract, Reason.