

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

**HJ 783-2016**

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**Soil and sediment. Extraction of organic compounds.  
Pressurized fluid extraction (PFE)**

土壤和沉积物 有机物的提取 加压流体萃取法

**(English Translation)**

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## Foreword

For the implementation of the "People's Republic of China Environmental Protection Law" to protect the environment, protect human health, regulate soil and sediment Organic matter extraction method, the development of this standard.

This standard specifies the pressurized fluid extraction of organic matter in soil and sediments.

This standard is the first release.

Appendix A to this standard is an informative appendix.

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

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

This standard is approved by the Ministry of Environmental Protection on February 1, 2016.

This standard has been implemented since March 1, 2016.

This standard is explained by the Ministry of Environmental Protection.

Extraction of organic matter from soil and sediment. Pressurized fluid extraction WARNING. The organic solvents and standard substances used in the experiments contain toxic compounds. The procedure should be used in the fume hood.

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

## **1 Scope of application**

This standard specifies the extraction of soil and sediment organic matter in the pressurized fluid extraction method.

This standard applies to soil and sediment organophosphorus pesticides, organochlorine pesticides, chlorinated herbicides, polycyclic aromatic hydrocarbons, o-benzene Dicarboxylic acid esters, polychlorinated biphenyls and other semi-volatile organic compounds and non-volatile organic compounds extraction, see Appendix A. If verified, this standard is also applicable to the extraction of soil and other organic matter in sediments.

## **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.

Specification for ocean monitoring - Part 3. Sample collection, storage and transport  
Specification for marine monitoring - Part 5. Sediment analysis Determination of Dry Matter and Moisture in Soil Technical specification for soil environmental monitoring

## **3 Principle of the method**

The treated soil or sediment sample is added to a closed container, and a suitable organic solvent is selected.

, In the liquid organic solvent and soil or sediment samples in full contact with the soil or sediment in the organic matter extraction to the organic solvent.

## **4 Reagents and materials**

Unless otherwise stated, the analytical grade is used in accordance with national standards. Experimental water is not prepared for new preparation Ultrasonic water or distilled water.

### **4.1**

dichloromethane (CH<sub>2</sub>Cl<sub>2</sub>). pesticide residues.

#### 4.2

n-hexane (C<sub>6</sub>H<sub>14</sub>). pesticide residues.

#### 4.3

Acetone (C<sub>3</sub>H<sub>6</sub>O). pesticide residues.

#### 4.4

Acetone-dichloromethane mixed solution. 1 1.

Mix with acetone (4.3) and dichloromethane (4.1) in a 1. 1 by volume ratio.

#### 4.5

Acetone-n-hexane mixed solution. 1 1.

Mix with acetone (4.3) and n-hexane (4.2) in a 1. 1 by volume ratio 4.6 phosphoric acid. rho (H<sub>3</sub>PO<sub>4</sub>) = 1.69 g/ml, excellent grade pure.

#### 4.7

Phosphoric acid solution. 1 1.

Mixed with phosphoric acid (4.6) and experimental water at a volume ratio of 1. 1.

#### **4.8 Mixed solution of acetone-dichloromethane-phosphoric acid solution. 250 125 15**

Mixed with acetone (4.3), dichloromethane (4.1) and phosphoric acid solution (4.7) at a volume ratio of 250. 125. 15.

24.9 Desiccant. Granular diatomaceous earth or other equivalent desiccant, 20 mesh to 100 mesh.

Before use should be desiccant purification treatment, the specific method. 400 °C baking 4 h, or with organic solvents (4.1 or 4.2 or 4.3) to remove the interference.

4.10 quartz sand. 20 mesh ~ 30 mesh.

Before use to be purified, the specific method with the desiccant purification treatment (4.9).

4.11 Nitrogen. Purity >=99.999%.

### **5 Instruments and equipment**

#### **5.1**

pressurized fluid extraction device. heating temperature range of 100 °C ~ 180 °C; pressure up to 2000 psi (about 13.8 MPa).

Equipped with 40 ml, 60 ml or other specifications of the glass receiving bottle (threaded

cap, coated with silicone PTFE gasket); metal Material for funnel; dedicated glass fiber filter and so on.

## **5.2**

Extraction cell. 11 ml, 22 ml, 34 ml, 66 ml or other specifications. Stainless steel, or resistant to 2000 psi (approx

13.8 MPa) pressure of the other materials, the extraction tank through a special polishing inside; the upper and lower ends are equipped with a spiral seal Cover and stainless steel sand core.

## **5.3**

soil sieve. 1 mm diameter, metal mesh.

## **5.4**

mortar. agate, glass or ceramic and other materials made.

## **5.5**

General laboratory equipment and equipment.

## **6.1 Collection and storage**

The collection and storage of soil samples were carried out in accordance with the relevant provisions of HJ/T 166. In accordance with the relevant provisions of GB 17378.3 Collection and storage of sediment samples.

The soil and sediment samples are packed in a clean, non-intrusive stoppered brown glass bottle, stamped, sealed. transport process should be protected from light, cold storage, as soon as possible back to the laboratory for analysis, on the way to avoid the introduction of interference or damage to the sample. If not Timely analysis, should be below 4 °C cold storage, dark and sealed preservation, determination of semi-volatile organic matter sample retention time of 10 Day, non-volatile organic matter for 14 days.

### **6.2.1 Drying and dehydration**

The sample on the enamel plate or stainless steel plate, mix, remove branches sticks, leaves, stones, glass, scrap metal and other foreign matter, According to HJ/T 166 for the four points split. The drying of the sample can be selected according to the nature of the target in the following different ways.

Method 1. Determination of PCBs and other non-volatile organic compounds and non-polar organic samples should be at room temperature to avoid Light, dry.

Method 2. the need to determine the fresh sample, the use of freeze-drying method for drying dehydration.