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

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**Emission from stationary sources. Sampling of volatile organic
compounds. Bags method**

固定污染源废气 挥发性有机物的采样 气袋法

(English Translation)

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Foreword

To implement the "Environmental Protection Law" and "Air Pollution Prevention Law" to protect the environment, protect human health, the development of this standard.

This standard specifies the use of fluoropolymer film air bags on the fixed source of volatile organic compounds in the sampling method.

This standard is the first release.

Appendix A of 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. Shanghai Environmental Monitoring Center, Tongji University, China Environmental Monitoring Station.

This standard is approved by the Ministry of Environmental Protection on December 31, 2014.

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This standard is explained by the Ministry of Environmental Protection.

1 Sampling air bag method for volatile organic compounds

1. Applicable scope

This standard specifies the use of fluoroprene (PVF) and other fluoropolymer film bags manually collected temperature below 150 °C fixed pollution sources Methods for the Volatile Organic Compounds (VOCs) in Exhaust.

This standard applies to the sampling of non-methane total hydrocarbons and partial VOCs in fixed sources of exhaust gas. VOCs suitable for use in this process include Experiments have been carried out to verify that the compounds can be stably preserved in the material type air bag used. Three kinds of fluoropolymer film material bag storage 61 kinds See Appendix A for the performance indicators of VOCs.

2 Normative references to documents

The contents of this standard refer to the terms of the following documents. For undated references, the valid version applies to this standard.

Technical specification for HJ/T 397 fixed source exhaust gas monitoring

3 Methodology

The use of vacuum boxes, pumps and other equipment will be fixed pollution source exhaust pipe emissions directly collected and preserved to the chemical inert of the fluoropolymer film in the air bag.

4.1 Air bag sampling system

1-exhaust pipe; 2-glass wool filter head; 3-Teflon connecting tube; 4-heated sampling tube; 5-quick connector male; 6-quick connector female;
7 - sample air bag; 8 - vacuum box; 9 - valve; 10 - activated carbon filter; 11 - pump.

Figure 1 Airbag sampling system

24.8 Glass wool filter head

Installed in the front of the sampling tube, filling the experimental cleaning glass wool, filter exhaust particles in the device.

4.1.2 sampling tube

There is heating function, the inner wall should be stainless steel or coated with Teflon (Teflon) or quartz glass sampling tube.

4.1.3 Teflon connection tube Sufficient length of Teflon (Teflon) tube.

4.1.4 Sampling air bag Low adsorption and low gas permeability, do not release the interference material, the experimental verification of the target VOCs in the air bag can be stable Preserved fluoropolymer film bag. The storage properties of 61 VOCs in three fluoropolymer materials are shown in Appendix A.

The results for the choice of air bag material reference. A Teflon material with a connection tube can be connected to the tube it is also a valve device that can be opened and closed.

The volume of the sample bag is at least 1 L, depending on the minimum sample required for the analytical method. Volume to select the sampling bag size specifications. Before sampling, observe the appearance of the air bag, check whether there are cracks and other leaks may be the case, If found to be abandoned.

4.1.5 vacuum box

Transparent or observing holes, with sufficient strength of plexiglass or stainless steel sealed containers, vacuum box cover can be opened, cover the bottom four sides have a seal.

4.1.6 Valves

Control and switch sampling airflow.

4.1.7 Activated carbon filter Intermediate filled with activated carbon, both ends of the glass wool to fill.

4.1.8 Pumps

A diaphragm pump or other type of pump that provides at least a flow rate of 0.1 to 1 L/min should be able to overcome the resistance of the flue and sampling system.

If the sampling site explosion-proof safety requirements, the pump must be explosion-proof safety certification with explosion-proof function.

4.2 Sample storage container Contains containers that are protected from light.

4.3 Sample heating box the air bag sample can be heated to a heating vessel of 120 ° C ($\pm$ 5 ° C).

5. Sampling

5.1 sampling position, sampling frequency and sampling time Sampling position, sampling frequency and sampling time selection and related operations to implement the relevant provisions of HJ/T 397.

35.2 Installation of sampling system

5.2.1 Install the sampling system as shown in Figure 1.

5.2.2 Leakage check

After the system is connected, the sampling system should be checked for air tightness. Remove the glass wool filter (4.1.1), block the sampling tube (4.1.2) Front, with a three-way vacuum pressure gauge installed in the regulator before the valve on the pipeline, and then through the quick connector (or other means) to jump the vacuum chamber is connected directly to the Teflon connection tube; open the suction pump (4.1.8) to allow the vacuum gauge to read to 13 kPa, close Control valve; if the vacuum pressure gauge in 1 min down

less than 0.15 kPa, then the system is not leaked. Such as the discovery of leakage should be divided Check, find out the leak, timely solution.

5.3 Sampling steps

5.3.1 Sampling the air bag directly connected to the pump, the gas bag in the bag after the pump into the vacuum box, and close the sealed vacuum box.

5.3.2 The heated sampling tube into the sampling hole, the inlet position should be as close as possible to the center of the discharge pipe, if the exhaust pipe exhaust the temperature is higher than the ambient temperature, then open the heating tube power supply, the sampling tube heated to 120 °C (± 5 °C).

5.3.3 Connect the pipe in front of the valve directly to the Teflon connection pipe via the quick connector (or other means), jump the vacuum chamber and then open the pump to continue pumping for some time, the sampling tube of gas into the exhaust pipe of the gas, and then disconnect (If you do not use the self-styled quick connector connection shown in Figure 1, you will need to take other ways to disconnect the Teflon Tube end closed).

5.3.4 Quickly connect the Teflon sampling tube to the interface of the vacuum box access air bag, connect the pipe in front of the adjustment valve to the vacuum box an interface, air connection as shown in Figure 2 (a), began sampling. Observe the air bag inside the vacuum box, when the air bag inside the sample volume to reach the air bag the maximum volume of about 80% of the sampling end, close the pump. Disconnect the Teflon connection from the vacuum box connector (if not used) After disconnecting the quick-connect quick connector connection, you will need to take the other way to disconnect the Teflon connection tube and the vacuum box interface Closed).

Figure 2 (a) Figure 2 (b)

Figure 2 Schematic diagram of sampling and exhaust gas connections

5.3.5 Connect the pump directly to the interface of the vacuum box to the sampling bag. The air connection is shown in Figure 2 (b). Open the pump the sample gas in the bag is drained.

5.3.6 repeat the above 5.3.4 and 5.3.5 steps 3 times, so that the sample gas aging the inner surface of the bag to reduce the adsorption of the inner surface of the bag 4 sample loss interference.

5.3.7 to restore the sampling air connection, as shown in Figure 2 (a), when the bag size of the bag to reach the maximum volume of about 80% Sampling is completed, close the pump on the pump and the air bag, remove the air bag and label the sample number.

5.3.8 Determine and record the exhaust gas temperature, exhaust gas flow and moisture content in the exhaust pipe. The procedure is to implement the relevant regulations of HJ/T 397.