

ICS 13.040.20
CCS Z 11

HJ

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

HJ 645-2013

**Ambient air. Determination of volatile halogenated
hydrocarbons. Activated charcoal adsorption and carbon
disulfide desorption/gas chromatographic method**

环境空气 挥发性卤代烃的测定 活性炭吸附-二硫化碳解吸气相色谱法

(English Translation)

Issued on: January 1, 1970

Implemented on: January 1, 1970

Issued by: Ministry of Ecology and Environment

Table of Contents

Foreword	
1 Scope of application	
2 Normative references	
3 Principle of the method	
4 Interference and elimination	
5 Reagents and materials	
6 Instruments and equipment	
6.3 Sampler	
6.4 Activated carbon sampling tube	
7 Samples	
7.1 Sample collection	
7.2 Preservation of samples	
7.3 Preparation of samples	
7.4 Preparation of blank samples	
8 Analysis steps	
8.1 Instrument Reference Conditions	
8.2 Calibration	
8.3 Determination	
8.4 Blank test	
9 Calculation and representation of results	
9.1 Qualitative analysis	
9.2 Quantitative analysis	
9.3 Result representation	
10 Precision and accuracy	
10.1 Precision	
10.2 Accuracy	
11 Quality Assurance and Quality Control	

Foreword

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 Atmospheric

Pollution this standard is formulated to ensure human health and to regulate the determination of volatile halogenated hydrocarbons in ambient air.

This standard specifies the adsorption of activated carbon for the determination of volatile halogenated hydrocarbons in ambient air - carbon disulfide desorption/gas chromatography law.

This standard is the first release.

Appendix A of this standard is a normative appendix, and Appendix B is an informative appendix.

This standard was formulated by the Science and Technology Standards Department of the Ministry of Environmental Protection.

This standard is mainly drafted by. Dalian Environmental Monitoring Center and Environmental Standards Research Institute of the Ministry of Environmental Protection.

This standard is verified by. Anshan City Central Monitoring Center Station, Shenyang Environmental Monitoring Center Station, and Fushun City Environmental Monitoring Xinzhan, Changchun Environmental Monitoring Center Station, Jiangsu Environmental Monitoring Center and Harbin Environmental Monitoring Center Station.

This standard was approved by the Ministry of Environmental Protection on February 17, 2013.

This standard has been implemented since July 1, 2013.

This standard is explained by the Ministry of Environmental Protection.

Determination of Volatile Halohydrocarbons in Ambient Air - Adsorption of Activated Carbon - Carbon Disulfide Solution Suction/gas chromatography Warning. Standard samples and carbon disulfide used in the experiment are volatile toxic chemicals, solution preparation process it should be carried out in a fume hood and the operator should wear protective gear.

1 Scope of application

This standard specifies activated carbon adsorption-carbon disulfide desorption/gas chromatography for the determination of volatile halogenated hydrocarbons in ambient air.

This standard applies to ambient air chlorobenzene, benzyl chloride, 1,1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloro Ethylene, cis-1,2-dichloroethylene, 1,2-dichloropropane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,1,1-Trichloro Ethane, 1,1,2-trichloroethane, trichloroethylene, chloroform, tribromomethane, 1-bromo-2-chloroethane, 1,2,3-trichloropropane, Determination of 21 volatile halogenated hydrocarbons such as 1,1,2,2-tetrachloroethane, tetrachloroethylene, carbon tetrachloride,

and hexachloroethane. If passed this standard is also applicable to the determination of other volatile halogenated hydrocarbons.

When the sampling volume is 10 L, the detection limit of this method is 0.03~10 µg/m³, and the lower limit of determination is 0.12~40.

Gg/m³, see Appendix A for details.

2 Normative references

The contents of this standard refer to the following documents or their terms. Valid versions of undated references Applicable to this standard.

HJ/T 194 Technical Specifications for Manual Air Quality Monitoring

3 Principle of the method

Volatile halogenated hydrocarbons in ambient air are enriched by activated carbon sampling tubes and desorbed with carbon disulfide (CS₂).

Gas chromatograph with an electron capture detector (ECD) was characterized by retention time and quantified by external standard method.

4 Interference and elimination

Determination of volatile halogenated hydrocarbons in ambient air by gas chromatography, benzene series, n-hexane, acetic acid in ambient air Ethyl ester and cyclohexane did not interfere with the assay.

5 Reagents and materials

5.1

Carbon disulfide. chromatographically pure, no interference peaks were determined by gas chromatography under the recommended conditions.

5.2

Standard stock solution. Prepare a suitable amount of chromatographically pure volatile halogenated hydrocarbon in a volume of carbon disulfide (5.1).

The body concentration is shown in Table 1. Commercially available certified standard solutions can also be purchased directly.

5.3

Standard use solution. Dilute the standard stock solution (5.2) by 10 times with carbon disulfide (5.1) to prepare a standard use solution.

Available now.

5.4

Carrier gas. nitrogen, purity 99.999%.

5.5

Anhydrous sodium sulfate. After baking at 500 ° C for 4 h, it is placed in a desiccator for use.

6 Instruments and equipment

6.1

Gas Chromatograph. Electronic Capture Detector (ECD).

6.2

Capillary column. 50 m x 0.32 mm, 1.05 µm film thickness, the stationary phase is 100% methyl siloxane. Or use other Equivalent capillary column.

6.3 Sampler

It can accurately maintain the flow rate within 0.1~1.0 L/min, and the flow error should be within ±5%.

6.4 Activated carbon sampling tube

The sampling tube is equipped with two sections of coconut shell activated carbon with a particle size of 0.4-0.8 mm (20-40 mesh) and a section A 100 mg.

Section B 50 mg, as shown in Figure 1. Or use a single-stage sampling tube with 150 mg coconut shell activated carbon.

1--glass wool; 2--activated carbon; A--100 mg activated carbon; B--50 mg activated carbon

Figure 1 activated carbon sampling tube

6.5 Microinjectors. 5 µl, 10 µl, 50 µl, 100 µl and 1 ml.

6.6 Brown vial. 2 ml with Teflon liner and solid screw cap.

6.7 Common instruments and equipment used in general laboratories.

7.1 Sample collection

7.1.1

The flow rate calibration should be performed on the sampler (6.3) before sampling. At the sampling site, knock an activated carbon sampling tube (6.4) End, connected to the sampler (6.3), check the air tightness of the sampling system, adjust the flow rate of the