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HJ

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

HJ 620-2011

Replacing GB/T 17130-1997

**Water quality. Determination of volatile halogenated organic
compounds. Headspace gas chromatography
(English Translation)**

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14 Hexachlorobutadiene 20.0 1.00 10.0 20.0 50.0 100

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 Water Pollution Prevention and Control, to protect the environment, this standard is formulated to ensure human health and to regulate the determination of volatile halogenated hydrocarbons in water.

This standard specifies the headspace gas chromatography for the determination of volatile halogenated hydrocarbons in water and wastewater.

This standard is a revision of the "Preparation of Volatile Halogenated Hydrocarbons by Headspace Gas Chromatography" (GB 17130-1997).

This standard was first published in 1997. The original drafting unit was China Environmental Monitoring Station. This is the first revision. repair the main contents of the subscription are as follows.

--Adopted automatic headspace injection technology;

--The target compound is increased by 1,1-dichloroethylene, dichloromethane,

trans-1,2-dichloroethylene, chloroprene, cis 9 kinds of volatility of formula-1,2-dichloroethylene, 1,2-dichloroethane, monobromodichloromethane, dibromochloromethane and hexachlorobutadiene Halogenated hydrocarbons.

From the date of implementation of this standard, "Determination of volatile halogenated hydrocarbons in water quality by headspace gas chromatography" (GB/T 17130-1997) Abolition.

Appendix A and Appendix B of this standard are normative appendices.

This standard is revised by the Science and Technology Standards Department of the Ministry of Environmental Protection.

This standard is mainly drafted by. China Environmental Monitoring Center, Liaoning Provincial Environmental Monitoring Experimental Center.

This standard is verified by. Zhejiang Environmental Monitoring Center, Jilin Province Environmental Monitoring Center Station, and Shenyang Environmental Monitoring Xinzhan, Dalian Environmental Monitoring Center, Anshan Environmental Monitoring Center Station and Liaoyang Environmental Monitoring Station.

This standard was approved by the Ministry of Environmental Protection on September 1, 2011.

This standard has been implemented since November 1, 2011.

This standard is explained by the Ministry of Environmental Protection.

Water quality - Determination of volatile halogenated hydrocarbons - Gas chromatography Warning. The volatile halogenated hydrocarbon standard sample used in this method is harmful to human health and should be operated according to the requirements.

Wear protective gear to avoid contact with skin and clothing.

1 Scope of application

This standard specifies the headspace gas chromatography for the determination of volatile halogenated hydrocarbons in water.

This standard applies to surface halogen, groundwater, drinking water, seawater, industrial wastewater and volatile halogenated hydrocarbons in domestic sewage.

Determination. Specific components include 1,1-dichloroethylene, dichloromethane, trans-1,2-dichloroethylene, chloroprene, cis-1,2-Dichloroethylene, chloroform, carbon tetrachloride, 1,2-dichloroethane, trichloroethylene, monobromodichloromethane, tetrachloroethylene, two 14 kinds of bromochloromethane, tribromomethane and hexachlorobutadiene. Other volatile halogenated hydrocarbons can also be used after verification this method performs the measurement.

When the headspace bottle is 22 ml and the sampling volume is 10.0 ml, the detection limit of the above target compound is 0.02 to 6.13.

Mg/L, the lower limit of determination is 0.08 to 24.5 µg/L. See Appendix A for details.

2 Principle of the method

The water sample is placed in a sealed headspace bottle and equilibrated at a certain temperature for a certain period of time. The volatile halogenated hydrocarbon in the water Escape to the upper space and achieve a dynamic balance in the gas-liquid two phases. At this time, the concentration of volatile halogenated hydrocarbons in the gas phase and it the concentration in the liquid phase is proportional. Volatile halogenation in the gas phase using a gas chromatograph with an electron capture detector (ECD) the concentration of the hydrocarbon is measured to calculate the concentration of volatile halogenated hydrocarbons in the water sample.

3 Interference and elimination

When determining the volatile halogenated hydrocarbons in water by headspace gas chromatography, the hydrocarbons commonly found in environmental waters are not determined.

Disturb.

4 Reagents and materials

The reagents used in this standard are of analytical grade unless otherwise stated.

4.1

Experimental water. freshly prepared organic-free deionized or distilled water.

4.2

Carrier gas. high purity nitrogen, purity 99.999%.

4.3

Methanol (CH₃OH). Chromatographically pure or excellent grade.

4.4

Ascorbic acid.

4.5

Sodium chloride (NaCl). excellent grade pure.

After heating at 350 ° C for 6 h, the organic matter adsorbed on the surface was removed, cooled and stored in a clean reagent bottle.

4.6 Volatile halogenated hydrocarbon mixed standard solution

Purchase different levels of certified reference materials or standard solutions as needed. The opened standard solution is frozen and protected from light. Store under sealed conditions or refer to the manufacturer's recommended storage conditions.

Mixed standard solution (methanol solvent). $\rho = 500 \text{ mg/L}$, the composition is 1,1-dichloroethylene, chloroprene; $\rho = 2000 \text{ mg/L}$, the components are dichloromethane, trans-1,2-dichloroethylene, cis-1,2-dichloroethylene, 1,2-dichloroethane; $\rho = 100 \text{ mg/L}$, group Divided into dibromochloromethane, tribromomethane; $\rho = 20.0 \text{ mg/L}$, the composition is chloroform, carbon tetrachloride, trichloroethylene, a Bromomethylene chloride, tetrachloroethylene, hexachlorobutadiene.

4.7 Volatile halogenated hydrocarbon standard intermediate solution

Pipette 900 μl of methanol into the vial with a 1 ml gas-tight needle and accurately transfer 100 μl of volatile halogenated hydrocarbon standard solution.

(4.6) Add to the sample bottle, mix and seal, the concentration of each component is 1/10 of the concentration of the standard solution. Standard intermediate Sealed and stored under freezing and dark conditions, and stored for less than 1 week.

5 Instruments and equipment

5.1

with an electron capture detector (ECD) gas chromatograph.

5.2

Column. Quartz capillary column, 60 m (length) $\times$ 0.25 mm (inside diameter) $\times$ 1.4 μm (film thickness), stationary phase it is 6% cyanopropylbenzene-94% dimethylsiloxane. Or other equivalent capillary column.

5.3

Microinjectors. 10 μl , 50 μl , 100 μl , 250 μl .

5.4 1 ml airtight needle.

5.5 10 ml graduated pipette or bellows.

5.6

Brown vial. 1 ml with Teflon liner and solid screw cap.

5.7

Balance. Accuracy is 0.1 g.