

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 639-2012

**Water quality. Determination of volatile organic compounds.
Purge and trap/gas chromatography-mass spectrometer
(English Translation)**

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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 organic compounds in water.

This standard specifies the purging of volatile organic compounds in seawater, groundwater, surface water, domestic sewage and industrial wastewater.

Capture/gas chromatography - mass spectrometry.

This standard is the first release.

Appendix A of this standard is a normative appendix, and Appendix B and Appendix C are informative appendices.

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

This standard is mainly drafted by. Qingdao Environmental Monitoring Center Station and Qingdao Technological University.

This standard is verified by. National Urban Water Supply and Water Quality Testing Network Qingdao Monitoring Station, Qingdao Economic and Technological Development Zone Water Supply and Drainage Supervision Station, Jinan Environmental Protection Monitoring Station, Weifang Environmental Monitoring Center Station, Dalian Environmental Monitoring Center and Anshan City Environment Monitoring center station.

This standard was approved by the Ministry of Environmental Protection on December 3, 2012.

This standard has been implemented since March 1, 2013.

This standard is explained by the Ministry of Environmental Protection.

Water quality - Determination of volatile organic compounds - Purge and capture - Gas chromatography - mass spectrometry Warning. The internal standard, substitutes and standard samples used in the experiment are volatile toxic compounds, and the solution should be prepared in in the fume hood, the protective equipment should be worn as required to avoid contact with skin and clothing.

1 Scope of application

This standard specifies the purge and trap/gas chromatography-mass spectrometry for the determination of volatile organic compounds in water.

This standard applies to the determination of 57 volatile organic compounds in seawater, groundwater, surface water, domestic sewage and industrial wastewater.

This standard is also applicable to the determination of other volatile organic compounds if verified.

When the sample amount is 5ml, the detection limit of the target compound is 0.6-5.0µg/L by the full scan method.

The limit is 2.4~20.0µg/L; the detection limit of the target compound is 0.2~2.3µg/L by the selective ion method, and the lower limit of determination it is 0.8 to 9.2 µg/L. See Appendix A for details.

2 Normative references

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

GB 17378.3 Marine monitoring specification Part 3 Sample collection, storage and transportation HJ/T 91 Surface Water and Wastewater Monitoring Technical Specifications HJ/T 164 Technical Specifications for Groundwater Environmental Monitoring HJ 586 - Determination of free chlorine and total chlorine - N,N-diethyl-1,4-phenylenediamine spectrophotometric method

3 Terms and definitions

The following terms and definitions apply to this standard.

Internal standard

Refers to a substance that is not contained in the sample but has similar physicochemical properties to the target compound to be tested. Usually added before sample analysis in, used for quantification of the target compound.

Surrogate

Refers to a substance that is not contained in the sample but has similar physicochemical properties to the target compound to be tested. Generally in sample extraction or other Before the pretreatment, the recovery rate can be used to evaluate the influence of the sample matrix and the sample processing process on the analysis results.

Matrix spiked spike

Refers to the addition of a known amount of the target compound to be tested in the sample for evaluation of the recovery rate of the target compound and the matrix effect of the sample.

should.

Transport blank strip blank A blank reagent water is placed in the sample vial in the laboratory prior to sampling and brought to the sampling site. Cap 1 when sampling Straight in sealed state, transported to the laboratory with the sample, processed and measured in the same analytical step as the sample, used to inspect the sample Whether it is contaminated during transportation.

Full program blank whole program blank A blank reagent water is placed in the sample vial in the laboratory prior to sampling and brought to the sampling site. Sample bottle with sample Simultaneously open the lid and seal, transport it back to the laboratory, and process and measure it in the same analytical step as the sample.

Whether the entire process of analysis is contaminated.

4 Principle of the method

The volatile organic compounds in the sample are purged with high-purity helium (or nitrogen) and adsorbed in the trap tube. The trap tube is heated and high.

Pure helium backflushing, the components desorbed by heat are separated by gas chromatography and detected by a mass spectrometer. By combining with the target to be tested the retention time of the material is compared with a standard mass spectrum or a characteristic ion, and the internal standard method is used for quantification.

5 Reagents and materials

Unless otherwise stated, the analytical grades used in accordance with national standards were used for the analysis.

5.1

Blank reagent water. double distilled water or water prepared by pure water equipment.

A blank test is required before use to confirm that no interference peak appears or the target compound is concentrated in the retention time interval of the target compound.

The degree is below the method detection limit.

5.2

Methanol (CH₃OH). Before use, it is necessary to pass the test to confirm that the concentration of the target compound or target compound is lower than the method detection limit.

5.3

Hydrochloric acid solution, 1 1.

5.4

Ascorbic acid (C₆H₈O₆).

5.5

Standard stock solution. rho=200~2000 µg/ml.

It can be purchased directly from a commercially available certified standard solution or prepared with a high concentration standard solution.

5.6

Standard intermediate solution. rho=5~25 µg/ml.

The standard stock solution (5.5) was diluted with methanol (5.2) for one month.