

CCS Z 16

HJ

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

HJ 788-2016

**Water quality. Determination of Acetonitriie. Purge and Trap/Gas
chromatography**

水质 乙腈的测定 吹扫捕集气相色谱法

(English Translation)

Issued on: March 29, 2016

Implemented on: May 1, 2016

Issued by: Ministry of Ecology and Environment

Table of Contents

Preface .ii

1 Scope of application

2 Normative reference documents

3 Principle of the method

Foreword

In order 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 Water Pollution, Protection of human health, regulate the determination of acetonitrile in water, the development of this standard.

This standard specifies the purge and trapping/gas chromatography for the determination of acetonitrile in water.

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. Dalian Environmental Monitoring Center.

The standard verification unit. Liaoning Province Environmental Monitoring Experimental Center, Shenyang City Environmental Monitoring Center Station, Jinzhou City Environmental Monitoring Central station, Tianjin Environmental Monitoring Center, Jiangsu Province Environmental Monitoring Center and Suzhou Environmental Monitoring Center Station.

The environmental protection department of this standard approved on March 29, 2016.

This standard has been implemented since May 1, 2016.

This standard is explained by the Ministry of Environmental Protection.

Water quality - Determination of acetonitrile - Purge and trap/gas chromatography Warning. The acetonitrile used in the experiment is harmful to human health. The standard solution preparation process should be carried out in the fume hood.

Should be required to wear protective equipment, to avoid contact with skin and clothing.

1 Scope of application

This standard specifies the purge and trapping/gas chromatography for the determination of acetonitrile in water.

This standard is applicable to the determination of acetonitrile in surface water, groundwater, industrial waste water and domestic sewage.

When the hydrogen flame ionization detector was used, the detection limit of acetonitrile was 0.1 mg/L when the sample volume was 5.0 ml.

Limited to 0.4 mg/L. When the nitrogen and phosphorus detectors were used, the detection limit of acetonitrile was 0.009 mg/L when the sampling volume was 5.0 ml the limit was 0.036 mg/L.

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.

Technical specification for surface water and wastewater monitoring Technical specification for groundwater environmental monitoring

3 Principle of the method

The acetonitrile in the sample was purged with high purity nitrogen and adsorbed into the trap. The trap was heated and blown back with high purity nitrogen.

The thermally desorbed acetonitrile is separated by gas chromatography and is detected by a hydrogen flame ionization detector or a nitrogen and phosphorus detector. To keep Qualitative and external standard method.

4 Interference and elimination

Determination of acetonitrile in water by this method, dichloroethylene, methyl chloride, dichloroethane, dichloropropane, dichloropropene, tris Vinyl chloride, trichloropropane, trichloroethane, trichloromethane, tetrachlorethylene, tetrachloroethane, dibromoethane, bromochloromethane, bis Methyl bromide, monochloromethane,,,,, monochloroethane,, monochloromethane, Dibromochloropropane, dichlorodifluoromethane, trichlorofluoromethane, acetone, butanone, hexanone, carbon disulfide, monomethyl iodide, benzene, Toluene, chlorobenzene, bromobenzene, ethylbenzene, xylene, styrene, cumene, n-propylbenzene, dichlorobenzene, trichlorobenzene, chlorotoluene, Trimethylbenzene, butylbenzene, isopropyltoluene, hexachlorobutadiene, naphthalene, vinyl acetate, chloroethyl vinyl ether, methyl pentanone, Methanol, ethanol, acrylonitrile, acrolein,

formaldehyde, acetaldehyde and other organic matter on the determination will not interfere. If there are other substances dry Interference, can be used with different polarity of the auxiliary column qualitative.

5 Reagents and materials

5.1

Experimental water. secondary distilled water or water prepared by pure water equipment.

Before use, subject to a blank test to confirm that there is no interference to the target compound in the retention time interval or target combination the detection concentration is lower than the method detection limit.

5.2

Acetonitrile (CH₃CN). Chromatographic pure.

5.3

acetonitrile standard stock solution. rho (CH₃CN) ~ 1 x 10⁴ mg/L.

Prepared with acetonitrile (5.2) at room temperature at 20 ° C. Remove the appropriate amount of test water (5.1) in a 10 ml volumetric flask, placed on a balance (5.2) to about 100 mg (accuracy to 0.1 mg), and weigh again; according to two the difference between the weight and the weight is determined by the exact quality of acetonitrile. With the experimental water (5.1) constant volume to the mark, shake, calculate the standard the exact concentration of the stock solution (accurate to 10 mg/L). Transfer to a brown reagent bottle with a Teflon screw cap at 4 ° C Under the cold storage, dark and sealed can be kept for 3 months. You can also purchase commercially available certified materials (in water as solvent).

5.4

acetonitrile standard use liquid I. rho (CH₃CN) = 100 mg/L.

Remove the appropriate amount of test water (5.1) and a volume of acetonitrile standard stock solution (5.3) in 100 ml volumetric flask, Experimental water (5.1) constant volume to the marking, shake. Pro is now available.

5.5

acetonitrile standard use liquid II. rho (CH₃CN) = 1.0 mg/L.

Remove the appropriate amount of water (5.1) and 1.0 ml of acetonitrile in the order of liquid I (5.4) in 100 ml volumetric flask, Test water (5.1) constant volume to the mark, shake. Pro is now available.

5.6

high purity nitrogen. purity $\geq 99.999\%$.

5.7

Hydrogen. purity $\geq 99.95\%$.

5.8

Air. Dehumidified silica gel dehumidification and dehydrocarbon removal of hydrocarbons, or oil-free compressed air purified by 5 Å molecular sieve.

6 Instruments and equipment

Unless otherwise stated, the use of the national standard A-class glass gauge is used for the analysis.

6.1

Gas Chromatograph. with capillary column shunt/splitless inlet, equipped with hydrogen flame ionization detector (FID) or nitrogen and phosphorus detection (NPD).

6.2

Purge and trap device. with 5 ml purge tube, the capture tube generally use 1/3 Tenax, 1/3 silicone, 1/3 activated carbon mixed Adsorbents or other equivalent adsorbents.

6.3

Column. quartz capillary column, 30 m x 0.32 mm, film thickness 1.0 μm (polyethylene glycol -20 M fixative), or Other equivalent columns.

6.4

Air tightness syringe. 5 ml.

6.5

Reagent Bottle. 10 ml brown reagent bottle with polytetrafluoroethylene screw cap.

6.6

Sampling vials. 40 ml brown wide mouth sampling vial with PTFE cap screw cap.

6.7

balance. one thousandth of a balance.

6.8

Volumetric flask. Class A, 10 ml and 100 ml.

6.9

General laboratory equipment and equipment commonly used.