

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

HJ 806-2016

**Water quality - Determination of acrylonitrile and acrolein -
Purge and trap / gas chromatography**

水质 丙烯腈和丙烯醛的测定 吹扫捕集气相色谱法

(English Translation)

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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 acrylonitrile and acrolein in water, the development of this standard.

This standard specifies the purge and trap/gas chromatographic methods for the determination of acrylonitrile and acrolein 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. Shanghai Environmental Monitoring Center.

The standard verification unit. Zhejiang Province Environmental Monitoring Center, Jiangsu Province Environmental Monitoring Center, Zhenjiang City Environmental Monitoring Center Station, Shanghai Textile Energy Conservation and Environmental Protection Center, Shanghai Jiading District Environmental Monitoring Station, Shanghai Qingpu District Environmental Monitoring Station.

This standard is approved by the Ministry of Environmental Protection on June 24, 2016.

This standard has been implemented since August 1, 2016.

This standard is explained by the Ministry of Environmental Protection.

Determination of water quality acrylonitrile and acrolein - Purge and trap/gas chromatography

1 Scope of application

This standard specifies the purge and trap/gas chromatographic methods for the determination of acrylonitrile and acrolein in water.

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

When the sampling volume of 5 ml, the acrylonitrile and acrolein detection limit were 0.003 mg/L, the determination of the lower limit of 0.012 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
GB 17378.3 Marine Monitoring Specification Part 3. Sample collection, storage and transportation

3 Principle of the method

The target compound in the sample is purged by high purity nitrogen (or other inert gas) and adsorbed in the trap, rapidly heated the tubes were blown back with high purity nitrogen (or other inert gas) and the components removed by heat were separated by gas

chromatography, Detection with hydrogen flame ionization detector. The retention time was qualitative and the peak area (peak height) was quantified.

4 Interference and elimination

In the optimized chromatographic and purge conditions, there is no obvious interference material, if the qualitative results in question, can be used GC/MS or double column characterization. Auxiliary qualitative column characteristics and chromatographic reference conditions are given in Appendix A.

5 Reagents and materials

Unless otherwise stated, analytical reagents conforming to national standards are used for analysis. The experimental water is freshly prepared distilled water or deionized water.

5.1

Phosphoric acid. $\rho(\text{H}_3\text{PO}_4) = 1.87 \text{ g/ml}$.

5.2

Phosphoric acid solution. 19 (V/V), prepared with phosphoric acid (5.1).

5.3

ascorbic acid.

5.4

Acrylonitrile (CH_2CHCN). Chromatographic pure.

5.5

Acrylonitrile Standard Intermediate. $\rho(\text{CH}_2\text{CHCN}) = 12500 \text{ mg/L}$.

Prepared with acrylonitrile (5.4) at room temperature at 20°C . Remove the appropriate amount of water in a 10 ml volumetric flask and place it on a balance Weighing; and carefully drop a few drops of acrylonitrile (5.4) to a weight gain of about 125 mg (accurate to 0.1 mg) and weigh again;

The difference between the two weighing weights determines the exact addition of acrylonitrile. With the experimental water volume to the mark, shake, calculate the acrylonitrile the exact concentration of the standard intermediate solution (accurate to 10 mg/L). Into a brown reagent bottle with a Teflon screw cap, Mix, with the current allocation. You can also purchase commercially available certified materials.

5.6

acrylonitrile standard use of liquid. $\rho(\text{CH}_2\text{CHCN}) = 125 \text{ mg/L}$.

2 Remove 1.00 ml of acrylonitrile standard intermediate (5.5) in a 100 ml volumetric flask

containing the right amount of test water.

Test with water dilution volume to the scale, mixing, with the current allocation.

5.7

Acrolein (CH_2CHCHO). Chromatographic purity.

5.8

Acrolein Standard Intermediate. $\rho(\text{CH}_2\text{CHCHO}) = 12500 \text{ mg/L}$.

Prepared with acrolein (5.7) at room temperature at 20°C . Remove the appropriate amount of water in a 10 ml volumetric flask and place it on a balance Weighing; and carefully drop a few drops of acrolein (5.7) to a weight gain of about 125 mg (accurate to 0.1 mg) and weigh again;

The difference between the two weighing weights determines the exact addition of acrolein. With the experimental water volume to the mark, shake, calculate acrolein the exact concentration of the standard intermediate solution (accurate to 10 mg/L). Into a brown reagent bottle with a Teflon screw cap, Mix, with the current allocation. You can also purchase commercially available certified materials.

5.9

Acrolein standard use of liquid. $\rho(\text{CH}_2\text{CHCHO}) = 125 \text{ mg/L}$.

Take 1.00 ml of acrolein standard intermediate (5.8) in a 100 ml volumetric flask containing part of the experimental water.

Water volume to the scale, mixing, with the current allocation.

5.10

Carrier gas. nitrogen, purity 99.999%.

5.11

Gas. hydrogen, purity 99.99%.

5.12

to help gas. oil-free compressed air, by 5A0 molecular sieve purification.

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 a capillary column shunt/splitless inlet, programmable temperature, equipped with hydrogen flame ionization detector (FID).