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HJ

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

HJ1017-2019

**Water quality - Determination of benzidine - High performance
liquid chromatography**

水质 联苯胺的测定 高效液相色谱法

(English Translation)

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Foreword

Protect the ecology for the implementation of 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 the environment, the protection of human health, the determination of the determination of benzidine in water, the development of this standard.

This standard specifies high performance liquid chromatography for the determination of benzidine in surface water, groundwater, domestic sewage and industrial wastewater.

This standard is the first release.

This standard is formulated by the Department of Eco-Environmental Monitoring, the Department of Regulations and Standards of the Ministry of Ecology and Environment.

This standard was drafted. Qingdao Environmental Monitoring Center Station.

This standard is verified by. Shandong Provincial Environmental Monitoring Center Station, Agricultural and Rural Department, Agricultural Products Quality and Safety Supervision and Testing Heart (Qingdao), Weihai Environmental Protection Monitoring Station, Liaoning North Environmental Testing Technology Co., Ltd., Qingdao Hua Testing Technology Co., Ltd. and National Urban Water Supply Monitoring Network Qingdao Monitoring Station.

This standard is approved by the Ministry of Ecology and Environment on April 13, 2019.

This standard has been implemented since September 1, 2019.

This standard is explained by the Ministry of Ecology and Environment.

Water quality - Determination of benzidine - High performance liquid chromatography
Warning. The organic solvent used in the experiment has certain toxicity and volatility. The standard substance has strong carcinogenicity and reagents.

Preparation and sample preparation should be carried out in a fume hood, and protective equipment should be worn as required to avoid contact with the skin and Clothing.

1 Scope of application

This standard specifies high performance liquid chromatography for the determination of benzidine in water.

This standard applies to the determination of benzidine in surface water, groundwater, domestic sewage and industrial wastewater.

When the sampling volume is 150 ml, the sample volume is 2.0 ml, and the injection volume is 40 μ l, the method detection limit is 0.006 μ g/L, the lower limit of determination is 0.024 μ g/L.

2 Normative references

This standard refers to the following documents or their terms. For undated references, the valid version applies to this standard.

HJ/T 91 Surface Water and Wastewater Monitoring Technical Specifications HJ/T 164
Technical Specifications for Groundwater Environmental Monitoring

3 Principle of the method

The sample is passed through a cation exchange solid phase extraction column, the benzidine is adsorbed, and the benzidine is locked to the solid phase extraction with an acetic acid solution.

On the column, the impurities are removed by washing with methanol, and then eluted with ammonia methanol solution. The eluent is concentrated and concentrated to have fluorescence.

High performance liquid chromatography separation detection of the detector. According to the retention time qualitative, the external standard method is quantitative.

4 Reagents and materials

Analytically pure reagents in accordance with national standards were used for analysis, unless otherwise stated.

water.

4.1

Hydrochloric acid. $\rho(\text{HCl}) = 1.19 \text{ g/ml}$.

4.2

Glacial acetic acid. $\rho(\text{CH}_3\text{COOH}) = 1.05 \text{ g/ml}$.

4.3

Ammonia. $\rho(\text{NH}_3 \cdot \text{H}_2\text{O}) = 0.91 \text{ g/ml}$, excellent grade.

4.4

Sodium hydroxide (NaOH).

4.5

sodium thiosulfate ($\text{Na}_2\text{S}_2\text{O}_3$).

4.6

Ammonium acetate ($\text{CH}_3\text{COONH}_4$). chromatographically pure.

4.7

benzidine. $w \geq 99.6\%$.

4.8

Methanol (CH_3OH). Pure by liquid chromatography.

4.9

Ethanol ($\text{CH}_3\text{CH}_2\text{OH}$).

4.10

Acetonitrile (CH_3CN). Pure by liquid chromatography.

4.11

Hydrochloric acid solution. 1 1.

4.12

Aqueous methanol solution. 1 1.

4.13

Ammonium acetate solution. $c(\text{CH}_3\text{COONH}_4) = 0.01 \text{ mol/L}$.

Weigh 0.77 g of ammonium acetate (4.6), dissolve in water, and dilute to 1 L.

4.14

Acetic acid solution. 3 97.

Measure 3 ml of glacial acetic acid (4.2) and 97 ml of water, mix and set aside.

4.15

sodium hydroxide solution. $c(\text{NaOH}) = 1 \text{ mol/L}$.

Weigh 4 g of sodium hydroxide (4.4), dissolve in water, and dilute to 100 ml.

4.16

Ammonia solution in methanol. 5 95.

Measure 5 ml of ammonia (4.3) and 95 ml of methanol (4.8), mix and set aside.

4.17

Standard stock solution of benzidine. $\rho = 1000 \mu\text{g/ml}$.

Weigh 0.050 g (accurate to 0.1 mg) of benzidine (4.7) in a 50 ml brown volumetric flask and dissolve with methanol (4.8). Dissolve and dilute to volume, transfer to a screw brown reagent bottle lined with Teflon pad. This solution is at 4 ° C it can be stored for 1 year under cold storage and protected from light. Commercially available certified standard solutions can also be purchased directly.