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HJ

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

HJ 599-2011

Replacing GB/T 13903-1992

**Water quality. Determination of TNT. N-cetyl pridium chloride.
Sodium sulfite Spectrophotometric method
(English Translation)**

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Foreword

To protect the environment and protect the human body 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 Water Pollution Prevention and Control this standard is formulated for the determination of health and standardization of TNT in water.

This standard specifies the N-chlorohexadecylpyridine-sulfite spectrophotometric method for the determination of TNT in water.

This standard is a revision of the "Measurement Spectrophotometric Method for Water Quality TNT" (GB/T 13903-92).

This standard was first published in 1992. The original standard was drafted. Taiyang Jiangyang Chemical Plant. This standard is the first revision. Major repair the order is as follows.

- The standard name was changed to "Determination of water quality TNT by N-chlorohexadecylpyridine-sodium sulfite spectrophotometry";
- increased interference and elimination clauses;
- Added blank test content;
- Added quality assurance and quality control regulations;
- Added provisions for waste disposal and precautions.

The national environmental protection standard "Water quality approved and issued by the former National Environmental Protection Agency on December 2, 1992 since the implementation of this standard.

The TNT's Determination Spectrophotometry (GB/T 13903-92) is abolished.

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

This standard is mainly drafted by. Beijing Zhongbing North Environmental Technology Development Co., Ltd., China Ordnance Industry Group Corporation and Liaoyang Qing Yang Special Chemical Co., Ltd.

This standard was approved by the Ministry of Environmental Protection on February 10, 2011.

This standard has been implemented since June 1, 2011.

This standard is explained by the Ministry of Environmental Protection.

Determination of water quality ladder N-chlorohexadecylpyridine-sodium sulfite spectrophotometry

1 Scope of application

This standard specifies the N-chlorohexadecylpyridine-sulfite spectrophotometric method for the determination of TNT in water.

This standard applies to the determination of TNT in the ammunition charging industrial wastewater.

When using a 30 mm cuvette, the method detection limit is 0.05 mg/L and the measurement range is 0.2-4 mg/L.

For samples with a TNT concentration higher than the upper limit of the method, the sample

can be appropriately diluted and measured.

2 Principle of the method

The addition of TNT to the sodium sulfite in the sample is sensitized by N-chlorohexadecylpyridine to form a red complex.

The absorbance was measured at a wavelength of 466 nm. Within a certain concentration range, the TNT concentration and absorbance values are in accordance with Lambert-Beer law.

3 Interference and elimination

When the wastewater has a certain color, it will interfere with the measurement. Dilute to 25.0 ml by collecting 10.0 ml of sample as a sample blank.

The absorbance was measured directly without any reagent. The absorbance of the sample blank is subtracted from the absorbance of the sample, and then calculated to eliminate the chromaticity pair the effect of the determination.

4 Reagents and materials

Analytical purification reagents that meet national standards are used for analysis, unless otherwise stated. The experimental water is freshly prepared deionized water or steamed.

Distilled water.

4.1

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

4.2

Hydrochloric acid solution. 1 1.

4.3

Concentrated ammonia. $\rho(\text{NH}_4\text{OH}) = 0.91 \text{ g/ml}$.

4.4

Ammonia solution. 1 1.

4.5

Ether. $\rho(\text{C}_2\text{H}_5\text{OC}_2\text{H}_5) = 0.71 \text{ g/ml}$.

4.6

Anhydrous ethanol. $\rho(\text{C}_2\text{H}_5\text{OH}) = 0.79 \text{ g/ml}$.

4.7

Sodium sulfite solution. $\rho(\text{Na}_2\text{SO}_3) = 0.1 \text{ g/ml}$.

Weigh 10.0 g of anhydrous sodium sulfite dissolved in an appropriate amount of water, dissolve and transfer to a 100 ml volumetric flask, add water to the mark, and mix. this the solution is valid for 3 days.

4.8

N-chlorohexadecylpyridine solution. $\rho[\text{C}_6\text{H}_5\text{N}(\text{CH}_2)_{15}\text{CH}_3\text{Cl} \cdot \text{H}_2\text{O}] = 2.5 \text{ g/L}$.

Weigh 0.500 g of cetylpyridinium chloride in an appropriate amount of water, dissolve it, transfer it to a 200 ml volumetric flask, add water to the mark, and mix.

The solution was stored in a brown glass ground bottle and stored stably for 30 days at room temperature.

4.9

TNT. 2,4,6-trinitrotoluene $[\text{CH}_3\text{C}_6\text{H}_2(\text{NO}_2)_3]$.

Weigh 1.0 g of TNT (industrial product) in a small beaker, dissolve it with 10 ml of absolute ethanol (4.6), and filter with medium-speed quantitative filter paper.

Place the filtrate in a fume hood and allow it to dry naturally. Recrystallization twice, spare.

4.10

TNT standard stock solution. $\rho(\text{TNT}) = 50.0 \text{ mg/L}$.

Weigh 0.050 0 g TNT (4.9) in a 1 000 ml beaker, add about 800 ml of water preheated to 70 ° C, and place at 75-79 ° C.

In a constant temperature water bath, stir while heating until completely dissolved. Remove, cool to room temperature and transfer to a 1 000 ml brown volumetric flask.

Add water to the mark and mix. The solution is stored at 2 to 5 ° C in the dark, valid for 30 days, or purchased commercially available certified standards.

4.11

TNT standard use solution. $\rho(\text{TNT}) = 10.0 \text{ mg/L}$.

Measure 50.0 ml of TNT standard stock solution (4.10) in a 250 ml brown volumetric flask, add water to the mark and mix. When used Now equipped.

5 Instruments and equipment

5.1

Visible spectrophotometer. with 30 mm cuvette.