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

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Replacing GB/T 13904-1992

**Water quality. Determination of TNT, RDX, DNT. Gas
chromatography
(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, standardization of TNT, Hessian and Dien.

This standard specifies the gas chromatographic method for the determination of TNT, Hessian and Dien in water.

This standard is a revision of the "Gas Chromatography Method for the Determination of Water Quality, Esso, and Dien" (GB/T 13904-92).

This standard was first published in 1992. The original standard drafting unit was the Sixth Design and Research Institute of China Ordnance Industry. This is the first revision.

The main revisions are as follows.

- increased the principle of the method;
- Increased capillary column content;
- Added blank test content;
- Added quality assurance and quality control regulations;
- Increased 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 gas chromatography method for the determination of TNT, Hessau, and Dienction (GB/T 13904-92) is abolished.

Appendix A of this standard is an informative annex.

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., Nanjing University of Science and Technology, School of Chemical Engineering and Chinese soldiers.

Industrial Group Corporation.

This standard is verified by. Taizhou University of Science and Technology, Nanjing University of Science and Technology, Changzhou Environmental Monitoring Center Station, Jiangsu University of Science and Technology, Taizhou City Ring Environmental Monitoring Center Station, National Civil Blasting Equipment Quality Supervision and

Inspection Center and Nanjing Police Dog Research Institute of the Ministry of Public Security.

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 TNT, Hessian and Dien, gas chromatography

1 Scope of application

This standard specifies the gas chromatographic method for the determination of TNT, Hessian and Dient in water.

This standard is applicable to the determination of TNT, Hesuojin and Dien ladder in the industrial wastewater of ammunition.

When the sampling volume is 10.0 ml, the packed column is used. The detection limit is. TNT 0.02 mg/L, Black Sox 0.1 mg/L, Dion Ladder 0.01 mg/L; the lower limit of determination. TNT 0.08 mg/L, black soda 0.4 mg/L, Dien ladder 0.04 mg/L.

When the sampling volume is 10.0 ml, the capillary column is used. The detection limit is 0.02 mg/L for TNT and 0.05 mg/L for black cable.

Dien ladder 0.01 mg/L; the lower limit of determination. TNT 0.08 mg/L, black soda 0.2 mg/L, Dien ladder 0.04 mg/L.

2 Principle of the method

Extract the TNT, Hessian and Dien ladder in the sample with benzene, and then take a certain volume of benzene extract under the selected chromatographic conditions.

It was separated by chromatography and detected by an electron capture detector. The retention time was qualitative and the peak area (or peak height) was quantified by internal standard method.

3 Reagents and materials

Unless otherwise stated, chromatographic purification reagents conforming to national standards were used for the analysis, and the experimental water was newly prepared deionized water or steamed.

Distilled water.

3.1

Acetone (CH_3COCH_3).

3.2

Anhydrous ethanol ($\text{C}_2\text{H}_5\text{OH}$).

3.3

Benzene (C_6H_6). There is no interference peak at the target position by chromatography, otherwise it should be re-distilled through a full glass distiller.

3.4 Internal standard. 1,5-dinitronaphthalene (1,5-DNN), $\rho[\text{C}_{10}\text{H}_6(\text{NO}_2)_2]=10.0 \text{ mg/L}$

Accurately weigh 0.025 0 g 1,5-dinitronaphthalene dissolved in acetone (3.1), and after dissolving, move to a 25 ml volumetric flask with acetone (3.1) Dilute to the mark and shake well. Pipette accurately 10.0 ml, place in a beaker containing 500 ml of water, and remove the acetone on a 50 ° C water bath.

After cooling to room temperature, transfer to a 1 000 ml brown volumetric flask, add water to the score line, and shake well. Stored in a refrigerator at 0 to 4 ° C in the dark, it is effective the period is 30 days.

3.5 Internal standard. 1,5-dinitronaphthalene (1,5-DNN), $\rho[\text{C}_{10}\text{H}_6(\text{NO}_2)_2]=1.0 \text{ mg/L}$

Measure 10.0 ml of internal standard (3.4) into a 100 ml brown volumetric flask, add water to the score line, and shake well. Stored in ice at 0 to 4 ° C in the dark in the box, it is valid for 30 days.

3.6 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 (3.2), and filter with medium-speed quantitative filter paper.

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

3.7 Hessian (RDX). 1,3,5-trinitrohexahydro-symmetric triazabenzene or 1,3,5-trinitro-1,3,5-trinitrohexane ($\text{C}_3\text{H}_6\text{O}_6\text{N}_6$) Weigh 1.0 g of Hessau (industrial product) in a small beaker, dissolve it with 10 ml of acetone (3.1), and filter with medium-speed quantitative filter paper.

The filtrate was placed in a fume hood and protected from light and dried naturally. Recrystallization twice, spare.

3.8 Dint ladder (DNT). 2,4-dinitrotoluene [$\text{C}_6\text{H}_3\text{CH}_3(\text{NO}_2)_2$], or purchase commercially available certified reference materials.