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

HJ 738-2015

**Ambient air. Determination of nitroaromatics. Gas
chromatography**

环境空气 硝基苯类化合物的测定 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

Atmospheric Pollution, Environment, the protection of human health, regulate the ambient air nitrobenzene monitoring methods, the development of this standard.

This standard specifies the gas chromatographic method for the determination of gaseous nitrobenzenes in ambient air and unorganized emissions.

This standard is the first release.

Appendix A of this standard is a normative appendix, Appendix B 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. Tianjin Environmental Monitoring Center.

The standard verification unit. the national environmental protection stench pollution control key laboratory, Tianjin Hexi District environmental monitoring station, Ministry of Agriculture Environmental Protection Research and Testing Institute, Tianjin Tanggu District Environmental Monitoring Station, Tianjin Dongli District Environmental Monitoring Station, Tianjin Dagang District Environmental Monitoring Station.

This standard is approved by the Ministry of Environmental Protection on February 7, 2015.

This standard is implemented as of April 1, 2015.

This standard is explained by the Ministry of Environmental Protection.

Determination of nitrobenzene compounds in ambient air Gas chromatography WARNING. The reagents and standard solutions used in the experiment are volatile, and the process should be carried out in the fume hood.

Line, according to the provisions of the requirements of wearing protective equipment, to avoid contact with the skin.

1 Scope of application

This standard specifies the determination of gaseous nitrobenzene compounds in ambient air by gas chromatography.

This standard applies to the determination of nitrobenzene, nitrotoluene and nitrochlorobenzene in ambient air and unorganized emissions.

When the sample volume is 25 L, nitrobenzene, p-nitrotoluene, m-nitrotoluene, o-nitrotoluene, p-nitrochloride the detection limits of benzene, m-nitrochlorobenzene and o-nitrochlorobenzene were 0.001 mg/m³ to 0.002 mg/m³, respectively, and the lower limit of determination was 0.004 Mg/m³ ~ 0.008 mg/m³, see Appendix A.

2 Normative reference documents

The contents of this standard refer to the terms of the following documents. For those who do not specify a date, the valid version applies to this standard.

Technical Guidelines for Sampling of Semi - Volatile Organic Compounds for Environmental Air Technical specification for manual monitoring of ambient air quality Technical Guidelines for Unorganized Emissions Monitoring of Air Pollutants

3 Principle of the method

The nitrobenzene compounds were collected from the ambient air and the unorganized exhaust gas in a silica gel sampling tube with hexane. acetone (1. 1, V/V) ultrasonic desorption, gas chromatography/electron capture detector (GC/ECD) for separation detection, according to retention time Qualitative and external standard method.

4 Reagents and materials

Unless otherwise stated, analytical pure chemical reagents and distilled water are used in accordance with national standards.

4.1

n-hexane (C₆H₁₄). pesticide residues.

4.2

Acetone (C₃H₆O). pesticide residues.

4.3

Benzene (C₆H₆). pesticide residues.

4.4

Reference materials. nitrobenzene (C₆H₅NO₂), o-nitrotoluene (C₇H₇NO₂), m-nitrotoluene (C₇H₇NO₂), P-nitrotoluene (C₇H₇NO₂), m-nitrochlorobenzene (C₆H₄ClNO₂), p-nitrochlorobenzene (C₆H₄ClNO₂), o-nitrochlorobenzene (C₆H₄ClNO₂), the purity of the above standard should not be less than 98%, dark storage.

4.5 Standard stock solution. rho = 2.00 mg/ml

2 Weigh 0.05 g (accurate to 0.0001 g) standard (4.4) one by one, move into 25 ml volumetric flask, add 2-3 (4.3) dissolved, and then n-hexane (4.1) constant volume to the mark, shake, transferred into the dense bottle seal, 4 °C closed to avoid Light preservation, period of one year. Can also be purchased directly to prove the standard solution.

4.6 Intermediate solution. rho =.200 mg/L

Nitrobenzene standard stock solution (4.5) in 100 ml brown volumetric flask, with n-hexane. acetone (1. 1, V/V) constant volume, prepared into a mixed standard intermediate liquid, 4 °C conditions can be stored for six months.

4.7 standard working solution.

According to the sensitivity of the gas chromatograph detector, linear requirements and the concentration of nitrobenzene compounds in the sample to be tested, Alkane. acetone (1. 1, V/V) dilute the intermediate solution, prepared into several different concentrations of standard working solution, is now available.

4.8 Silica Sampling Tube. Buy commercially available Silica Sampling Tube, Silicone Sampling Tube Size 20cm long, 6mm OD Diameter 4 mm, the tube is equipped with two 40 mesh silica gel, the former 150 mg, the next paragraph 75 mg, the middle with 2 mm glass wool separated Open, two pieces of silica gel with silanized glass wool plug, filled with both ends of the filling.

4.9 nitrogen. ultra-pure cylinder gas (purity $\geq 99.999\%$).

5 Instruments and equipment

5.1

Gas Chromatograph. with capillary column shunt/splitless inlet, with constant current or constant voltage function, programmable temperature, with electricity Sub-capture detectors (ECD) and workstations.

5.2

Atmospheric Sampler. Sampling flow rate can reach 0.1 ~ 1.0 L/min, flow accuracy $\pm 1\%$.

5.3

Ultrasonic cleaner. Power 250 W.

5.4

Columns 1. 30 mx0.25 mm, 0.5 m film thickness (crosslinked bonded polyethylene glycol), other equivalent or Tested to verify the capillary column.

5.5

Columns 2.30 mx0.32 mm, 1.0 [mu] m Film thickness (100% dimethylpolysiloxane column), other equivalent or a test-proven capillary column.

5.6

Analysis of the balance. accuracy of 0.0001 g.