

ICS 13.040.20
CCS Z 15

HJ

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

HJ 638-2012

**Ambient air. Determination of phenolic compounds by high
performance liquid chromatography
(English Translation)**

Issued on: January 1, 1970

Implemented on: January 1, 1970

Issued by: Ministry of Ecology and Environment

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Foreword

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 this standard is formulated to ensure human health and to regulate the determination of phenolic compounds in ambient air.

This standard specifies high performance liquid chromatography for the determination of phenolic compounds in ambient air.

This standard is the first release.

Appendix A of this standard is a normative appendix, and Appendix B is an informative appendix.

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

This standard is mainly drafted by. Changchun Environmental Monitoring Center Station.

This standard is verified by. Shenyang Environmental Monitoring Center Station, Dalian Environmental Monitoring Center, Jilin Province Environmental Monitoring Center Station, Harbin Environmental Monitoring Center Station, Jilin Entry-Exit Inspection and Quarantine Technology Center and Jilin Province Product Quality Supervision and Inspection hospital.

This standard was approved by the Ministry of Environmental Protection on February 29, 2012.

This standard has been implemented since June 1, 2012.

This standard is explained by the Ministry of Environmental Protection.

Determination of phenolic compounds in ambient air - High performance liquid chromatography Warning. Phenolic compounds are toxic substances. The preparation of samples should be carried out in a fume hood. Operators should avoid them.

Avoid direct contact with skin and clothing.

1 Scope of application

This standard specifies high performance liquid chromatography for the determination of phenolic compounds in ambient air.

This standard applies to the determination of 12 phenolic compounds in ambient air (see Appendix A for specific determination components). This standard does not Sutable for the

determination of phenolic compounds in granules.

When the sampling volume is 25L, the detection limit of this method is 0.006~0.039 mg/m³, and the lower limit of determination is 0.024~0.156.

Mg/m³; When the sampling volume is 75L, the detection limit of this method is 0.002~0.013mg/m³, and the lower limit of determination is 0.008~ 0.052 mg/m³. See Appendix A for details.

2 Normative references

The contents of this standard refer to the following documents or their terms. For undated references, the valid version is appropriate.

Used in this standard.

HJ/T 55 Technical Guidelines for Unorganized Emissions of Air Pollutants HJ/T 194
Technical Specifications for Manual Air Quality Monitoring

3 Principle of the method

The gaseous phenolic compounds collected by XAD-7 resin are eluted with methanol and separated by high performance liquid chromatography. UV detection Detector or diode array detector detection, qualitative time of retention, quantified by external standard method.

4 Interference and elimination

Benzene, toluene, ethylbenzene, styrene, trichlorobenzene, tetrachlorobenzene, benzopyrene, aniline, nitrobenzene, etc. in ambient air the determination of phenolic compounds does not cause interference, and other interferents can be replaced by changing the column or changing the proportion of the mobile phase.

The target is separated.

5 Reagents and materials

Analytical purification reagents in accordance with national standards were used for analysis unless otherwise stated; the experimental water was phenol-free water, liquid the chromatographic test showed no interference peaks.

5.1

Non-phenolic water. It should be stored in a glass bottle. When using it, avoid contact with rubber products (rubber plugs or latex plugs, etc.).

It can be prepared in accordance with 5.1.1 or 5.1.2.

5.1.1

Add 0.2g of activated carbon powder activated at 200 ° C for 30 min per liter of distilled water, shake it thoroughly, and place it.

At night, filter with double-layer medium speed filter paper.

5.1.2

Add sodium hydroxide to make the distilled water weakly alkaline, and add potassium permanganate until the solution is purple-red, and move into the all-glass distiller.

The medium is heated and distilled, and the effluent is collected for use.

5.2

Methanol. HPLC grade.

5.3

Acetonitrile. HPLC grade.

5.4

Acetone. Excellent grade.

5.5 Standard stock solution. rho=1000mg/L

Accurately weigh phenol, 2-methylphenol, 3-methylphenol, 4-methylphenol, 1,3-benzenediol, 4-chlorophenol, 2,6-di 0.050 g of methylphenol, 1-naphthol, 2-naphthol, 2,4,6-trinitrophenol, 2,4-dinitrophenol and 2,4-dichlorophenol in a 50 ml volumetric flask, make up to volume with methanol (5.2) and mix. Store in a 4 ° C refrigerator. Or buy a commercially available certified standard directly Solution.

5.6 Standard use solution. rho=100mg/L

Measure 1.0 ml of standard stock solution (5.5) in a 10 ml volumetric flask, dilute to volume with methanol (5.2), and mix. Ice at 4 ° C Saved in the box.

5.7 XAD-7 Resin. 40~60 mesh

Soak it in acetone (5.4) for 12h, then put it into Soxhlet extractor and extract it with methanol (5.2) for 16h, then put it in vacuum.

Volatilize to dryness in the dryer.

5.8 Glass fiber filter

Placed in a muffle furnace at 350 ° C for 4 h, cooled and then washed with methanol (5.2), the punch is cut vertically into 8 mm the diameter of the disc is placed in a desiccator for later use.