

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

HJ 801-2016

**Ambient air and waste gas-Determination of amide
compounds-Liquid chromatography**

环境空气和废气 酰胺类化合物的测定 液相色谱法

(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, the protection of human health, regulate the ambient air and fixed sources of waste gas amide compounds in the determination of the development of this standard.

This standard specifies liquid chromatography for the determination of amide compounds in ambient air and stationary sources.

This standard is the first release.

Appendix A to this standard 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. Dalian Environmental Monitoring Center.

The standard verification unit. Shenyang City Environmental Monitoring Center Station, Shaanxi Province Environmental Monitoring Center Station, Anshan City, environmental monitoring Heart station, Jinzhou City Environmental Monitoring Center Station, Fushun City Environmental Monitoring Center and Yingkou City Environmental Monitoring Center Station.

The environmental protection department of this standard approved on May 13, 2016.

This standard has been implemented since August 1, 2016.

This standard is explained by the Ministry of Environmental Protection.

Ambient air and waste gas - Determination of amide compounds - Liquid chromatographic method

1 Scope of application

This standard specifies liquid chromatography for the determination of amide compounds in ambient air and stationary sources.

This standard applies to ambient air and fixed sources of waste gas in formamide, N, N-dimethylformamide, N, N-dimethylethyl Determination of amide and acrylamide.

When the ambient air sampling volume is 30 L (standard state) and the volume of the absorbed liquid is 10 ml, the process formamide, N, N-the detection limits for dimethylformamide, N, N-dimethylacetamide and acrylamide were 0.03 mg/m³, 0.02 mg/m³, 0.03 Mg/m³ and 0.02 mg/m³, the lower limit of determination was 0.12 mg/m³, 0.08 mg/m³, 0.12 mg/m³ and 0.08 mg/m³, respectively.

When the fixed source of waste gas sampling volume of 30 L (standard state), the absorption volume of 50 ml, the method of formamide, N, N-the detection limits for dimethylformamide, N, N-dimethylacetamide and acrylamide were 0.2 mg/m³, 0.1 mg/m³, 0.2 mg/m³ and 0.1 mg/m³, the determination of the lower limit of 0.8 mg/m³, 0.4 mg/m³, 0.8 mg/m³ and 0.4 mg/m³.

2 Normative reference documents

The contents of this standard refer to the following documents or their terms. Those who do not specify the date of the reference file, the effective version of the appropriate for this standard.

Determination of particulate matter and sampling method of gaseous pollutants in exhaust gas of fixed pollution sources GB/T 16157 Technical specification for manual monitoring of ambient air quality

3 Principle of the method

Ambient air and fixed sources of amide compounds in the exhaust gas are absorbed by water and then treated with an aqueous solution equipped with an ultraviolet detector Phase chromatograph separation detection, to retain the time qualitative, external standard method quantitative.

4 Interference and elimination

Under the conditions specified in this method, other organic substances may cause interference, can be used under different auxiliary wavelength absorbance Ratio, UV spectrum or mass spectrometry. According to the nature of the interference, the appropriate method to remove the interference.

5 Reagents and materials

Unless otherwise stated, analytical pure chemical reagents are used in accordance with national standards. Experimental water is not prepared for new Water containing organic matter.

5.1

acetonitrile (CH_3CN). HPLC grade.

5.2

Formamide (CH_3NO). purity $\geq 99.0\%$.

5.3

N, N-Dimethylformamide ($\text{C}_3\text{H}_7\text{NO}$). purity $\geq 99.0\%$.

5.4

N, N-dimethylacetamide ($\text{C}_4\text{H}_9\text{NO}$). purity $\geq 99.0\%$.

5.5

Acrylamide ($\text{C}_3\text{H}_5\text{NO}$). purity $\geq 99.0\%$.

5.6 Amide Compounds Standard stock solution

Accurate weighing 0.100 g (accurate to ± 0.0001 g) Formamide (5.2), 0.050 g (accurate to ± 0.0001 g) N, N-Dimethylformamide (5.3), 0.100 g (accurate to ± 0.0001 g) N, N-dimethylacetamide (5.4) and 0.050 g (exact to ± 0.0001 g) acrylamide (5.5), dissolved in water after the full volume into the 100 ml volumetric flask, diluted with water volume to the mark, Shake well Preparation of Formamide, N, N-Dimethylformamide, N, N-Dimethylacetamide and Acrylamide Concentration of 1000 Mg/L, 500 mg/L, 1000 mg/L and 500 mg/L amide compounds were mixed at 4 ° C, Dark and sealed can be stored for three months, should be used to restore to room temperature and shake. You can also purchase commercially available certified reference materials Conditions Refer to the product description.

5.7 Amide Compounds Standard Use Liquid

Accurate removal of 5.00 ml of amide compound standard stock solution (5.6) in a 100 ml volumetric flask, diluted with water to Marking, shaking. N, N-dimethylformamide, N, N-dimethylacetamide and acrylamide were prepared in the form of formamide, N, N-dimethylformamide 50.0 mg/L, 25.0 mg/L, 50.0 mg/L and 25.0 mg/L amide compounds. Turn into brown glass Glass reagent bottles, frozen below 4 °C, dark and sealed can be stored for 6 d. Use should be restored to room temperature, and shake.

6 Instruments and equipment

6.1

Liquid Chromatograph. equipped with UV detector or diode array detector.

6.2

Column. The filler is silica gel bonded C18, the side chain is diisobutyl, particle size 5 µm, inner diameter 4.6 mm, column length 150 mm, or other equivalent columns.

6.3

Atmospheric Sampler. Flow rate 0.1 L/min ~ 2.0 L/min, accuracy 0.1 L/min.

6.4

Flue gas sampler. flow 0.1 L/min ~ 2.0 L/min, the accuracy of 0.1 L/min. Smoke gun with heating and insulation function.

Thermometer accuracy should not be less than 2.5%, the minimum scale value should not be greater than 2 °C, sampling gun heating temperature of not less than 120 °C.

6.5

brown porous glass absorber. meet the requirements of HJ/T 194.

6.6

brown porous glass absorption bottle. in line with GB/T 16157 requirements.

6.7

Balance. Accuracy is 0.0001 g.

6.8

Water phase needle filter. 13 mm x 0.22 µm.

6.9

freezer. easy to transfer, good sealing, can maintain the internal temperature below 4 °C.