

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

HJ 1007-2018

**Stationary source emission - Determination of alkali mist -
Inductively coupled plasma optical emission spectrometry
method**

固定污染源废气 碱雾的测定 电感耦合等离子体发射光谱法
(English Translation)

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Foreword

To protect the "Environmental Protection Law of the People's Republic of China" and the "Air Pollution Control Law of the People's Republic of China" this standard is formulated to ensure the health of human body and to standardize the determination method of alkali mist in fixed pollution source exhaust gas.

This standard specifies the inductively coupled plasma optical emission spectrometry for the determination of alkali mist in a fixed source of exhaust gas.

This standard is the first release.

This standard is formulated by the Department of Eco-Environmental Monitoring, the Department of Regulations and Standards of the Ministry of Ecology and Environment.

This standard was drafted. Harbin Environmental Monitoring Center Station.

This standard is verified by. Heilongjiang Provincial Environmental Monitoring Center Station, National Environmental Analysis and Testing Center, Beijing Environmental Protection Monitoring Center, Tianjin Ecological Environment Monitoring Center, Hangzhou Environmental Monitoring Center Station and Changchun Environmental Monitoring Center Station.

This standard is approved by the Ministry of Ecology and Environment on December 26, 2018.

This standard has been implemented since June 1, 2019.

This standard is explained by the Ministry of Ecology and Environment.

1 Determination of alkali mist of fixed pollution source

Inductively coupled plasma optical emission spectrometry

1 Scope of application this standard specifies the inductively coupled plasma optical emission spectrometry for the determination of alkali mist in a fixed source of exhaust gas.

This standard applies to the determination of alkali mist in the fixed source of waste gas in the steel industry.

When the sampling volume is 200 L (standard dry volume), the method detection limit is 0.2 mg/m³, and the lower limit of determination is 0.8 mg/m³.

2 Normative references

This standard refers to the following documents or their terms. For undated references, the valid version applies to this standard.

GB/T 16157 Determination of particulate matter in fixed pollution source exhaust gas and sampling method of gaseous pollutants HJ/T 48 soot sampler technical conditions HJ/T 373 Technical Specifications for Quality Assurance and Quality Control of Fixed Pollution Source Monitoring (Trial) HJ/T 397 Fixed Source Exhaust Gas Monitoring Technical Specification

3 Terms and definitions

The following terms and definitions apply to this standard.

Alkali mist

The alkali mist measured by this standard refers to droplets and particulate matter containing sodium and its compounds produced during the production process (with NaOH).
meter).

4 Principle of the method

The alkali mist in the fixed pollution source exhaust gas is trapped in the quartz fiber filter cartridge by means of constant velocity sampling. Sampling cartridge Extracted with water, the sodium in the extract is determined by inductively coupled plasma optical emission spectrometry, based on sodium content and sampling the dry volume of the standard is used to calculate the concentration of the alkali mist.

5 Reagents and materials

Unless otherwise stated, analytically pure reagents that meet national standards were used for the analysis. Experimental water is resistivity $\geq$

18 Mohm·cm of deionized water.

5.1

Sodium chloride (NaCl).

25.2 Nitric acid. $\rho(\text{HNO}_3) = 1.42 \text{ g/ml}$, excellent grade pure.

5.3

Sodium standard stock solution. $\rho(\text{Na}) = 1000 \text{ mg/L}$.

After burning at 400-450 °C to constant weight, accurately weigh 2.5421 g of sodium chloride (5.1), dissolve in water and dilute to 1000 ml.

Mix in a volumetric flask. Transfer to a polyethylene bottle, refrigerate at 4 °C or less, and seal for 6 months. Can also be purchased commercially available Standard solution.

5.4

Sodium standard use solution. $\rho(\text{Na}) = 100 \text{ mg/L}$.

Pipette 10.00 ml of sodium standard stock solution (5.3), dilute with water to a volume of 100 ml volumetric flask, mix, use Match.

5.5

Nitric acid solution. 1 1.

5.6

Quartz fiber filter cartridge. The filter cartridge has a barrier efficiency of not less than 99.9% for particles larger than 0.5 μm .

5.7

Filter membrane. 0.45 μm inorganic water microporous membrane.

5.8

Carrier gas. Argon, purity $\geq 99.9\%$.

6 Instruments and equipment

6.1

Smoke sampler. Performance and technical indicators shall comply with HJ/T 48.

6.2

Inductively coupled plasma optical emission spectrometer.

6.3

Analytical balance. The calibration scale value is 0.1 mg.

6.4

Ultrasonic cleaner. The ultrasonic frequency range is 40-100 kHz, and the ultrasonic power range is 100-600 W.

6.5

Electric heating plate. Temperature control accuracy is better than ± 5 °C.

6.6

Stuffed conical flasks.

6.7

Common instruments and equipment used in general laboratories.

7.1 Sample Collection

The monitoring points, frequency and exhaust parameters of fixed pollution source exhaust gas are measured in accordance with GB/T 16157, HJ/T 373 and the relevant provisions of HJ/T 397 are implemented.

Before sampling, the sampler should be subjected to flow calibration and airtightness check of the sampling system. The instrument automatically adjusts the flow during the sampling process.

The amount maintains constant velocity sampling. After sampling, clean the sampling nozzle and the inner wall of the elbow with water into a conical flask (6.6), and seal the bottle.

mouth.

7.2 Sample storage

After the sample of the filter cartridge is collected, the seal is folded inward and placed vertically in a filter cartridge to be sealed and stored. Clear in a conical flask the washing solution is sealed and stored.

The sample is stored in a dry, dark, room temperature environment.