

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

HJ 1010-2018

**Specifications and Test Procedures for Ambient Air Quality
Continuous Monitoring System with Gas Chromatography for
Volatile Organic Compounds**

环境空气挥发性有机物气相色谱连续监测系统技术要求及检测方法
(English Translation)

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Foreword

To protect the ecological ring for the implementation of the Environmental Protection Law of the People's Republic of China and the Law of the People's Republic of China this standard is formulated to ensure human health and to regulate the performance and quality of ambient air volatile organic compounds gas chromatography continuous monitoring system.

This standard specifies the composition, technical requirements, performance indicators and requirements of the ambient air volatile organic compounds gas chromatography continuous monitoring system.

Detection method.

Appendix A to Appendix B of this standard are normative appendices.

This standard is the first release.

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

This standard was drafted. Beijing Environmental Protection Monitoring Center, China Environmental Monitoring Center, Peking University, Shanghai Environmental Department Research Institute, Shanghai Environmental Monitoring Center, Jiangsu Environmental Monitoring Center, Zhejiang Environmental Monitoring Center, Guangzhou Environmental Protection Science Research Institute, Wuhan Environmental Monitoring Center.

This standard is approved by the Ministry of Ecology and Environment on December 29, 2018.

This standard has been implemented since July 1, 2019.

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

1 Environmental air volatile organic compounds gas chromatography continuous monitoring system technical requirements and detection method

1 Scope of application

This standard specifies the composition and technical requirements of the continuous monitoring system for volatile organic compounds in ambient air.

Performance indicators and testing methods.

This standard applies to the design, production and inspection of gas chromatography continuous monitoring system for the determination of volatile organic compounds in ambient air.

Measurement.

2 Normative references

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

GB/T 30431 laboratory gas chromatograph GB/T 33864 mass spectrometer general specification HJ 212 pollutant online monitoring (monitoring) system data transmission standard HJ 654 Technical requirements for continuous automatic monitoring system for ambient air gaseous pollutants (SO₂, NO₂, O₃, CO) Detection method

3.1 Reference state reference state

It refers to the state when the atmospheric temperature is 298.15 K and the atmospheric pressure is 1013.25 hPa.

3.2 Valid data rate validated data rate

The percentage of hours that the monitoring data is valid for a period of time as a percentage of the total operating hours.

4.1 Working principle

Ambient air or standard gas enters the sampling system at a constant flow rate, and the volatile organic compounds are passed through low temperature or traps.

Enrichment, separation by gas chromatography, etc., and detection by hydrogen flame ionization detector (FID) or mass spectrometry the detector (MSD) was tested to obtain the concentration of each component of the volatile organic compounds.

4.2 System components

The monitoring system consists of a sample collection unit, a quality control unit, a gas source unit, an analysis unit, a data acquisition and transmission unit, and it consists of other auxiliary equipment.

24.2.1 Sample Collection Unit

The sample collection unit is mainly composed of sampling pipeline, sampling pump and flow control unit for environmental air volatile organic Continuous automatic sampling of objects. The specific requirements of the sample collection unit are given in 5.4.1.

4.2.2 Quality Control Unit the quality control unit is mainly composed of zero gas, standard gas and dilution system, and is used for calibration and daily verification of analytical instruments.

The specific requirements of the quality control unit are given in 5.4.2.

4.2.3 Air source unit the air source unit is mainly composed of a gas source and a pipeline, and is used for providing carrier gas, gas, and combustion gas required for system operation.

See 5.4.3 for specific requirements for the air supply unit.

4.2.4 Analysis unit

The analysis unit is mainly composed of an enrichment module, a column oven, a column, a detector, etc., and is used for collecting ambient air.

The volatile organic components are enriched and separated, and the volatile organic components are quasi-deterministic and quantified. Analysis sheet See Section 5.4.4 for specific requirements.

4.2.5 Data Acquisition and Transmission Unit the data acquisition and transmission unit is used to collect, process and store monitoring data, and can transmit monitoring data and instruments according to instructions.

Device working status information. The specific requirements for the data acquisition and transmission unit are given in 5.4.5.

5 Technical requirements

5.1 Appearance requirements

5.1.1 The appearance is neat and tidy, the surface coating and plating layer are not

obviously peeled off, scratched, exposed and dirt, and the surface of the parts is free from rust;

5.1.2 should have a product nameplate, which should be marked with the instrument name, model specifications, production unit, factory number, date of manufacture, Information such as rated voltage and power;

5.1.3 The display of the host panel is clear, and the characters and logos are easy to identify;

5.1.4 All fasteners are not loose, each operation button and button are flexible and function properly;

5.1.5 The detachable part should be dismantled and disassembled.

5.2 Working conditions the monitoring system should function properly in the following environmental conditions.

Ambient temperature. $(20 \sim 30) ^\circ \text{C}$;

Relative humidity. $\leq 85\%$;

Atmospheric pressure. $(800 \sim 1060) \text{ hPa}$;

Supply voltage. AC $(220 \pm 22) \text{ V}$ or $(380 \pm 38) \text{ V}$, $(50 \pm 1) \text{ Hz}$.

35.3 Safety requirements

5.3.1 Insulation resistance in the case of ambient temperature $(20 \sim 30) ^\circ \text{C}$, relative humidity $\leq 85\%$, monitoring the system power terminal to the ground or the chassis the edge resistance is not less than 20 Mohm.

5.3.2 Insulation strength the monitoring system is at 1500 V (rms), 50 Hz at an ambient temperature of $(20 \text{ to } 30) ^\circ \text{C}$ and a relative humidity of $\leq 85\%$.

Under the sine wave test voltage for 1 min, there should be no breakdown or arcing.

5.3.3 Power Requirements the monitoring system should be equipped with a regulated power supply to ensure that the power supply meets AC $(220 \pm 22) \text{ V}$ or $(380 \pm 38) \text{ V}$, $(50 \pm 1) \text{ Hz}$ requirements.

5.3.4 Other requirements the airtightness of units and pipelines with flammable gases and toxic gases shall meet the requirements of GB/T 30431, ie 0.3 MPa.

Next, the pressure drop of 30 min is not more than 0.01 MPa to ensure that it will not leak.

The high temperature heating zone of the instrument shall be provided with an anti-scald mark.

5.4 Functional requirements