

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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**Stationary source emission - Determination of mass
concentration of particulate matter at low concentration -
Manual gravimetric method**

固定污染源废气 低浓度颗粒物的测定 重量法

(English Translation)

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Foreword

In order to implement the "Environmental Protection Law of the People's Republic of China" and "The Air Pollution Prevention Law of the People's Republic of China", protect the environment, protect human health, standardize the determination method of low-concentration particulate matter in the exhaust gas of stationary pollution sources, this standard is hereby formulated.

This standard specifies a manual gravimetric method for the determination of mass concentration of particulate matter at low concentration from stationary sources.

Appendix A of this standard is an informative appendix.

This standard was issued for the first time.

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

Drafting organizations of this standard. China Environmental Monitoring Center,

Beijing Environmental Monitoring Center, Hebei Environmental Monitoring Center, Hubei Environmental Monitoring Center.

Verifying organizations of this standard. China Environmental Monitoring Center, Beijing Environmental Monitoring Center, Hebei Environmental Monitoring Center, Hubei Environmental Monitoring Center, Beijing Chaoyang District Environmental Monitoring Station, Qingdao Laoshan Applied Technology Research Institute, Qingdao Rongguang Electronic Technology Co., Ltd., Shanghai Minyou Environmental Testing Technology Co., Ltd., Wuhan Tianhong Instrument Co., Ltd.

This standard was approved by the Ministry of Environmental Protection on December 29, 2017.

This standard comes into effect on March 1, 2018.

For this standard, the Ministry of Environmental Protection is responsible for the interpretation.

Stationary source emission - Determination of mass
concentration of particulate matter at low
concentration - Manual gravimetric method

1 Scope

This standard specifies a manual gravimetric method for the determination of mass concentration of particulate matter at low concentration from stationary source emission.

This standard applies to the determination of particulate matter in various types of coal-fired, fuel-fired, gas-fired boilers, industrial kilns, stationary gas turbines, other stationary pollution sources.

This standard applies to the determination of low-concentration particulate matter. When the determination result is greater than 50 mg/m³, it is expressed as "> 50 mg/m³".

When the sampling volume is 1 m³, the detection limit of this standard method

is 1.0 mg/m³.

2 Normative references

The content of this standard refers to the following documents or their clauses.

For undated reference documents, the effective version is applicable to this standard.

GB/T 16157 The determination of particulates and sampling methods of gaseous pollutants emitted from exhaust gas of stationary source

HJ 76 Specifications and test procedures for continuous emission monitoring system for SO₂, NO_x and particulate matter in stack gas emitted from stationary

HJ 656 Technical specification for manual monitoring method (gravimetric method) of ambient air particulate matter (PM_{2.5})

HJ/T 48 Technical requirements for soot sampler

HJ/T 373 Quality assurance and quality control technical specifications for monitoring of stationary pollution source

HJ/T 397 Technical specifications for monitoring of stationary emission sources

JJG 1036 Electronic balance

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1

Particulate matter

Solid and liquid particulate matter suspended in the exhaust gas produced by the combustion, synthesis, decomposition of fuel and other materials, as well as the mechanical processing of various materials.

3.2

Dry waste gas of standard condition

Exhaust gas containing no moisture at a temperature of 273.15 K and a

pressure of 101325 Pa. Unless otherwise specified, the volume and concentration referred to in this standard are the volume and concentration of dry waste gas under standard conditions.

3.3

Isokinetic sampling

The plane of the sampling nozzle is directly facing the exhaust gas flow, so that the airflow velocity entering the sampling nozzle is equal to the exhaust gas flow rate at the measuring point.

4 Principle of method

This method adopts the in-stack filtration method; uses a low-concentration sampling probe containing filter media; inserts a particulate matter sampling tube into the stack through the sampling hole; uses the principle of isokinetic sampling to extract a certain volume of particulate matter-containing exhaust gas.

5.1 Acetone

Dry residue ≤ 10 mg/L, $\rho(\text{CH}_3\text{COCH}_3) = 0.788$ g/ml.

5.2 Filter membrane

The diameter of the filter membrane is (47 ± 0.25) mm, which shall meet the following requirements.

6.1.1 Measuring device for condensation method and gravimetric method

The measuring device for condensation method and gravimetric method shall meet the requirements of the condensation method and gravimetric method in GB/T 16157 for the determination of moisture content in exhaust gas.

6.3.1 Composition of sampling device

The particulate matter sampling device is composed of a combined sampling tube, a cooling and drying system, a suction pump unit, a gas metering system, connecting pipelines.