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

HJ 656-2013

**Technical Specifications for gravimetric measurement methods
for PM2.5 in ambient air**

环境空气颗粒物(PM2.5)手工监测方法(重量法)技术规范 含2018年第1号修改单
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Foreword

Implementing the "Environmental Protection Law of the People's Republic of China" Air Quality Standards (GB 3095-012), standardizing the method of manual monitoring of ambient air particulate matter (PM2.5) quasi.

This standard specifies the sampling, analysis and data of the manual monitoring method (gravimetric method) of ambient air particulate matter (PM2.5).

Technical requirements for handling, quality control and quality assurance.

Appendix A, Appendix B, Appendix C, Appendix D, and Appendix E of this standard are informative annexes.

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

This standard is mainly drafted by. China Environmental Monitoring Center.

This standard was approved by the Ministry of Environmental Protection on July 30, 2013.

This standard has been implemented since August 1, 2013.

This standard is explained by the Ministry of Environmental Protection.

Technical specification for manual monitoring of airborne particulate matter (PM2.5) (gravimetric method)

1 Scope of application

This standard specifies the sampling, analysis and data of the manual monitoring method (gravimetric method) of ambient air particulate matter (PM2.5).

Technical requirements for handling, quality control and quality assurance.

This standard applies to the monitoring of ambient airborne particulate matter (PM2.5) by the manual monitoring method (gravimetric method).

2 Normative references

The contents of this standard refer to the terms in the following documents. For undated references, the valid version applies to this standard.

GB 3095-2012 Ambient Air Quality Standard HJ/T 93 PM10 sampler technical requirements and testing methods JJG 1036 electronic balance

3 Terms and definitions

The following terms and definitions apply to this standard.

Particulate matter (particle size less than or equal to $2.5\mu\text{m}$) particulate matter(PM2.5)
Refers to particulate matter in the ambient air having an aerodynamic equivalent diameter of $2.5\mu\text{m}$ or less, also called fine particulate matter.

Ambient air quality manual monitoring at the monitoring point, the sampling device is used to collect the ambient air sample for a certain period of time, and the collected sample is used in the laboratory analyzer.

Process of analysis and processing.

Work flow rate

Under the working environment conditions, the sampler maintains a constant value of the gas production flow rate, and the flow rate that can ensure the cutting characteristics of the cutter is called mining.

The working point flow of the sampler.

24 Hour average 24 hour average

Refers to the arithmetic mean of a 24-hour average concentration on a natural day, also known as the daily average.

Standard state

Refers to the state when the temperature is 273K and the pressure is 101.325kPa. The concentration of pollutants in this standard is under standard conditions.

concentration.

Calibration scale value (e) Calibration scale the value in mass units used to divide the balance level.

4 Principle of the method the sampler draws ambient air at a constant sampling flow so that PM2.5 in the ambient air is trapped on a filter of known mass.

The PM2.5 concentration was calculated based on the mass change of the filter before and

after sampling and the cumulative sample volume.

The operating point flow of the PM2.5 sampler is not required. The general situation is as follows.

The flow rate of the large flow sampler is 1.05 m³/min;

The flow rate of the medium flow sampler is 100L/min;

The flow rate of the small flow sampler is 16.67 L/min.

5 Instruments and equipment

5.1 PM2.5 sampler

The PM2.5 sampler consists of a cutter, filter clamp, flow measurement and control components, and an air pump.

The performance and technical specifications of the PM2.5 sampler used for manual monitoring should meet the requirements of HJ 93, and the PM2.5 can be manually monitored.

The sampler used shall be qualified for the applicability of the product issued by the Quality Supervision and Inspection Center of the Environmental Monitoring Instrument of the Ministry of Environmental Protection.

report.

5.2 Flow Calibrator

Used for flow calibration of samplers of different flows.

Large flow flow calibrator. In the range of (0.8 ~ 1.4) m³/min, the error is $\leq 2\%$.

Medium flow flow calibrator. In the range of (60 ~ 125) L/min, the error is $\leq 2\%$.

Small flow flow calibrator. In the range of (0 ~ 30) L/min, the error is $\leq 2\%$.

5.3 Thermometer

Used to measure ambient temperature, calibrate sampler temperature measurement components. measuring range (-30 ~ 50) ° C, accuracy. ± 0.5 ° C.

5.4 Barometer

Used to measure ambient atmospheric pressure, calibrate sampler atmospheric pressure measuring components. measuring range (50 ~ 107) kPa, accuracy.

± 0.1 kPa.

5.5 Hygrometer

For measuring environmental humidity, measuring range (10% ~ 100%) RH, accuracy. $\pm$

5% RH.

5.6 filter

According to the purpose of monitoring, inorganic filter membranes such as glass fiber membrane and quartz membrane or polytetrafluoroethylene or polyvinyl chloride may be used.

Organic filter membranes such as polypropylene and mixed cellulose. The retention efficiency of the filter membrane to 0.3 μ m standard particles is not less than 99.7%, and the filter membrane See Appendix C for other technical specifications.

5.7 filter storage box the filter drum or filter cartridge used to store the filter or filter cartridge should be made of an inert material that has no effect on the measurement results.

The filter should be kept free of adhesions for easy access.

5.8 Analytical balance it is used to weigh the filter. The calibration index value does not exceed 0.1mg. The technical performance of the analytical balance should conform to JJG 1036.

Provisions.

5.9 constant temperature and humidity equipment it is used to balance the temperature and humidity of the membrane.

(1) Temperature control (15 ~ 30) °C any point, temperature control accuracy ± 1 ° C.

(2) Humidity control (50 $\pm$ 5)% RH.

6 sampling

6.1 Preparation before sampling

6.1.1 Cutter cleaning. The cutter should be cleaned regularly, depending on the local air quality. Generally tired the meter should be cleaned once after sampling for 168h. In case of bad weather such as dust and sandstorm, it should be cleaned in time.

6.1.2 Ambient temperature check and calibration. Check the ambient temperature measurement indication error of the sampler with a thermometer, and check each sample before sampling.

Check once, if the ambient temperature measurement indication error exceeds ± 2 °C, the sampler should be temperature calibrated.

6.1.3 Ambient atmospheric pressure check and calibration. Check the ambient atmospheric pressure measurement indication error of the sampler with a barometer, each sampling Check once before, if the ambient atmospheric pressure measurement error exceeds ± 1 kPa, the sampler should be pressure calibrated.