

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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**Specifications and Test Procedures for Ambient Air Quality
Continuous Automated Monitoring System for PM10 and PM2 -**

5

(English Translation)

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Foreword

In order to enforce the Environmental Protection Law of People's Republic of China, Air Pollution

Prevention Law of People's Republic of China, implement Ambient Air Quality Standard (GB

3095-2012), and regulate the performance and quality of the continuous automatic monitoring

system on ambient air particulate matter (PM10 and PM2.5), this Standard is formulated.

This Standard specifies the technical requirements, performance metrics and test methods of the

continuous automatic monitoring system (hereinafter referred to as PM10 and PM2.5 continuous

monitoring system) on ambient air particulate matter (PM10 and PM2.5).

Annex A of this Standard is the normative annex.

This Standard is first-time issued.

This Standard is organized and formulated by Department of Science & Technology and Standards,

Ministry of Environmental Protection.

This Standard is mainly drafted by the following organization. China National Environmental Monitoring Center.

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

This Standard shall be implemented from August 1, 2013.

The Ministry of Environmental Protection of the People's Republic of China is responsible for the

interpretation of this Standard.

Specifications and Test Procedures for Ambient Air Quality

Continuous Automated Monitoring System for PM10 and

PM2.5

1 Scope

This Standard specifies the technical requirements, performance metrics and test methods of the

continuous automatic monitoring system on ambient air particulate matter (PM10 and PM2.5).

This Standard is applicable for the design, production and detection of the continuous automatic

monitoring system on ambient air particulate matter (PM10 and PM2.5).

2 Normative References

The provisions contained in the following documents have become part of this Standard when they

are quoted herein. For the undated documents so quoted, the latest editions shall be applicable to

this Standard.

GB 3095-2012 Ambient air quality standard

GB/T 17214.1 Industrial-process measurement and control equipment -- Operating conditions

Part 1.Climatic conditions

HJ 618 Determination of atmospheric particles PM10 and PM2.5 in ambient air by gravimetric method

3 Terms and definitions

For the purpose of this standard, the following terms and definitions shall apply.

3.1 Aerodynamic diameter

It refers to the diameter of which the sphere with the unit density ($\rho_0=1\text{g/cm}^3$) reaches the final

settling velocity as actual particle, when it travels with low Reynolds movement in still air.

3.2 Cutter

It refers to the device which has function of separating particles of different diameters.

3.3 50% cut particle-diameter

It refers to the equivalent aerodynamic particle diameter when the trapping efficiency of the cutter

[Translator. the device which cuts particle] to the particulate matter reaches 50%.

3.4 Particulate matter (diameter of particles $\leq 10\mu\text{m}$) particulate-matter (PM10)

It refers to the particulate matter with the aerodynamic equivalent diameter in the ambient air less

than or equal to $10\mu\text{m}$, which is also known as inhalable particulate matter.

3.5 Particulate matter (diameter of particles $\leq 2.5\mu\text{m}$) particulate-matter (PM2.5)

It refers to the particulate matter with the aerodynamic equivalent diameter in the ambient air less

than or equal to $2.5\mu\text{m}$, which is also known as fine particulate matter.

3.6 Standard state

The state when the temperature is 273K and pressure is 101.325kPa. Pollutant concentration in this

Standard refers to the concentration under this standard state.

3.7 Reference method

Standard methods issued by the State.

3.8 Geometric standard deviation of trapping efficiency (Δ_{tag})

Trapping efficiency of cutter to particulate matter includes the following two statements.

(1) The ratio OF the corresponding particle aerodynamic equivalent diameter Da_{16} when the

trapping efficiency is 16% WITH the corresponding particle aerodynamic equivalent diameter Da_{50}

when the trapping efficiency is 50%;

(2) The ratio OF the corresponding particle aerodynamic equivalent diameter Da_{50} when the

trapping efficiency is 50% WITH the corresponding particle aerodynamic equivalent diameter Da_{80}

when the trapping efficiency is 80%.

Both of above two ratios shall meet the requirements of $\Delta_{tag} = 1.5 \pm 0.1$ (PM₁₀) continuous monitoring

system), and $\Delta_{tag} = 1.2 \pm 0.1$ (PM_{2.5} continuous monitoring system). Calculation refers to Formula (1)

and (2).

Where. Δ_{tag} -- Geometric standard deviation of trapping efficiency, %;

Da_{16} -- The equivalent aerodynamic particle diameter when the trapping efficiency of the cutter to the

particulate matter reaches 16%, μm ;

Da_{50} -- The equivalent aerodynamic particle diameter when the trapping efficiency of the cutter to the

particulate matter reaches 50%, μm ;

shall meet the requirements of 6.1.2.

7.1.1.2 Static box test method

The tested cutter is mounted in a static box; GENERATE a single size, uniform and stable aerosol;

USE the aerosol detecting instrument to measure the concentration and uniformity of the aerosol;

ENSURE stable aerosol concentration and uniform distribution in the box. USE aerosol