

CCS C 70



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

GB/T 25915.12-2021

**Cleanrooms and associated controlled environments - Part 12:
Specifications for monitoring of air cleanliness by nanoscale
particle concentration**

Issued on: October 11, 2021

Implemented on: May 1, 2022

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Monitoring	3
5 Test report	3
Appendix A (Informative) Reference Method for Monitoring with Condensation Particle Counter	5
Appendix B (informative) Particle counting efficiency and split size	8
Reference	10

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents" Drafting.

This document is Part 12 of GB/T 25915 "Clean Room and Related Controlled Environment". GB/T 25915 has released the following part.

- Part 1. Classify air cleanliness according to particle concentration;
- Part 2. Monitoring of air particle concentration in clean rooms;
- Part 3. Detection method;
- Part 4. Design, construction, start-up;
- Part 5. Operation;
- Part 6. Vocabulary;
- Part 7. Isolation device (clean wind hood, glove box, isolator, microenvironment);
- Part 8. Classification of air cleanliness (ACC) grades according to chemical concentration;
- Part 9. Classification of surface cleanliness grades according to particle concentration;
- Part 10. Classification of surface cleanliness grades according to chemical concentration;
- Part 12. Technical requirements for monitoring the concentration of nanoparticles in the

air.

This document is equivalent to the adoption of ISO 14644-12:2018 "Cleanrooms and related controlled environments Part 12: Monitoring the concentration of nanoparticles in the air

Technical Requirements for Degrees."

Introduction

GB/T 25915 adopts the ISO 14644 series of international standards, and the settings of each part are consistent with the international standards. It is planned to consist of 15 parts constitute.

---Part 1. Classify air cleanliness according to particle concentration. The purpose is to distinguish the degree of particle contamination.

---Part 2. Monitoring of air particle concentration in clean room. The purpose is to guide the monitoring of particle pollution to avoid possible pollution risk.

---Part 3. Detection method. The purpose is to guide the detection of various pollution and related environmental elements in the clean room.

---Part 4. Design, construction, and start-up. The purpose is to guide the design, construction and start-up of the clean room.

---Part 5. Run. The purpose is to guide the operation of the clean room.

---Part 6. Vocabulary. The purpose is to unify and standardize technical terminology.

---Part 7. Isolation device (clean wind hood, glove box, isolator, microenvironment). The purpose is to propose the basis of isolation device for clean room

This requirement.

---Part 8. Classify air cleanliness (ACC) according to chemical concentration. The purpose is to distinguish the degree of air chemical pollution.

---Part 9. Classification of surface cleanliness grades according to particle concentration. The purpose is to distinguish the degree of particle contamination on the surface.

---Part 10. Classification of surface cleanliness grades according to chemical concentration. The purpose is to distinguish the degree of chemical contamination on the surface.

---Part 12. Technical requirements for monitoring the concentration of nanoparticles in the air. The purpose is to propose the detection of nano-level particle pollution

Require.

---Part 13.Surface cleaning that meets the requirements of particle and chemical cleanliness. The purpose is to put forward the cleaning requirements for the surface of the clean room to

Avoid the risk of particles and chemical contamination that may be generated.

---Part 14.Evaluate the applicability of the equipment according to the concentration of particle pollution. The purpose is to pass the related equipment that may produce particles in the clean room

Contamination test to determine the suitability of the equipment.

---Part 15.Evaluate the suitability of equipment and materials according to the concentration of chemical pollutants. The purpose is to pass the cleanliness of related equipment

Testing of chemical contamination in the room to determine the suitability of the equipment.

---Part 16.Improving the energy efficiency of clean rooms and air purification devices. The purpose is to save the energy consumption of clean room operation.

Clean rooms and related controlled environments control pollutants at appropriate levels in order to complete pollution-sensitive activities. Aerospace, Microelectronics

Products and processes in industries such as pharmaceuticals, pharmaceuticals, medical devices, food, and medical and health benefit from the control of suspended pollutants.

GB/T 25915.3-2010 is limited to the classification of particles with a particle size greater than 100nm. But in this file contains less than 100 nanometer particles

The informational content of the particle, and the particles smaller than 100nm are called ultrafine particles, not the nanoparticles as referred to in this document.

Nanotechnology is a recently formed field, generally involving materials in the size range of about 1nm to 100nm. To improve the sex of the product

Yes, its characteristic size is becoming smaller and smaller. For example, microelectronics and many health-related industries have now produced nano-scale products.

For background literature on particle size characteristics, see references [1]~[18].

Clean room and related controlled environment Part 12.

Technical requirements for monitoring the concentration of nanoparticles in the air

1 Scope

This document gives the technical requirements for monitoring the concentration of "nano-scale" particles with a particle size limit of not more than 0.1 μm (100 nm).

The monitoring technical requirements given in this document are mainly used for

"dynamic".

Note 1.The "nano-scale particles" mentioned in this document refer to all particles with nanometers in one dimension (nanosheets), two dimensions (nanofibers) or three dimensions (nanoparticles).

The scale of nanomaterials.

Note 2.Please note that the actual characteristics of particles in a clean room are determined by the source of the particles and their physical characteristics.

Note 3.This document does not consider health and safety issues.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

The following terms and definitions apply to this document.

ISO and IEC maintain a terminology database for standardization at the following website.

3.1 General

3.1.1

Cleanroom

A room in which the concentration of airborne particles is controlled and graded, and its design, construction, and operation allow particles to enter, produce, and stay in the room controlled.

Note 1.Specifies the classification of airborne particle concentration.

Note 2.Other factors that affect the cleanliness level, such as the concentration of chemicals, microorganisms or nano-scale particles in the air, and the surface cleanliness can also be affected.

Other factors of the level, such as the concentration of particles, nanoparticles, chemicals or microorganisms, etc., are regulated and controlled.

Note 3.Related physical parameters such as temperature, humidity, pressure, vibration and static electricity can also be controlled as required.

[Source. GB/T 25915.1-2021, 3.1.1]

3.1.2

Cleanzone