
**Determination of particle size
distribution — Single particle light
interaction methods —**

**Part 4:
Light scattering airborne particle counter
for clean spaces**

*Détermination de la distribution granulométrique — Méthodes
d'interaction lumineuse de particules uniques —*

*Partie 4: Compteur de particules en suspension dans l'air en lumière
dispersée pour espaces propres*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 21501-4 was prepared by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods*, Subcommittee SC 4, *Sizing by methods other than sieving*.

This first edition of ISO 21501-4, together with ISO 21501-2 and ISO 21501-3, cancels and replaces ISO 13323-1:2000, which has been technically revised.

ISO 21501 consists of the following parts, under the general title *Determination of particle size distribution — Single particle light interaction methods*:

- *Part 2: Light scattering liquid-borne particle counter*
- *Part 3: Light extinction liquid-borne particle counter*
- *Part 4: Light scattering airborne particle counter for clean spaces*

The following part is under preparation:

- *Part 1: Light scattering aerosol spectrometer*

Introduction

Monitoring particle contamination levels is required in various fields, e.g. in the electronic industry, in the pharmaceutical industry, in the manufacturing of precision machines and in medical operations. Particle counters are useful instruments for monitoring particle contamination in air. The purpose of this part of ISO 21501 is to provide a calibration procedure and verification method for particle counters, so as to minimize the inaccuracy in the measurement result by a counter, as well as the differences in the results measured by different instruments.

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Determination of particle size distribution — Single particle light interaction methods —

Part 4:

Light scattering airborne particle counter for clean spaces

1 Scope

This part of ISO 21501 describes a calibration and verification method for a light scattering airborne particle counter (LSAPC), which is used to measure the size and particle number concentration of particles suspended in air. The light scattering method described in this part of ISO 21501 is based on single particle measurements. The typical size range of particles measured by this method is between 0,1 μm and 10 μm in particle size.

Instruments that conform to this part of ISO 21501 are used for the classification of air cleanliness in cleanrooms and associated controlled environments in accordance with ISO 14644-1, as well as the measurement of number and size distribution of particles in various environments.

The following are within the scope of this part of ISO 21501:

- size calibration;
- verification of size setting;
- counting efficiency;
- size resolution;
- false count rate;
- maximum particle number concentration;
- sampling flow rate;
- sampling time;
- sampling volume;
- calibration interval;
- test report.