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

**Part 2:
Light scattering liquid-borne particle
counter**

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

*Partie 2: Compteur de particules en suspension dans un liquide en
lumière dispersée*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Terms and definitions.....	2
3 Requirements.....	2
3.1 Size calibration.....	2
3.2 Verification of size setting.....	2
3.3 Counting efficiency.....	2
3.4 Size resolution.....	2
3.5 False count rate.....	3
3.6 Maximum particle number concentration.....	3
3.7 Sampling flow rate.....	3
3.8 Sampling time.....	3
3.9 Sampling volume.....	3
3.10 Calibration interval.....	3
3.11 Test report.....	3
4 Test method.....	4
4.1 Size calibration.....	4
4.2 Verification of size setting.....	6
4.3 Counting efficiency.....	6
4.4 Size resolution.....	6
4.5 False count rate.....	7
4.6 Maximum particle number concentration.....	7
4.7 Sampling flow rate.....	7
4.8 Sampling time.....	8
4.9 Sampling volume.....	8
4.10 Calibration.....	8
Annex A (informative) Uncertainty of particle size calibration.....	9
Annex B (informative) Counting efficiency.....	11
Annex C (informative) Size resolution.....	12
Annex D (informative) False count rate.....	13
Bibliography.....	15

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 21501-2 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 21501-2, together with ISO 21501-3 and ISO 21501-4, 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 liquid. 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.

This document is a preview generated by EVS

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

Part 2:

Light scattering liquid-borne particle counter

1 Scope

This part of ISO 21501 describes a calibration and verification method for a light scattering liquid-borne particle counter (LSLPC), which is used to measure the size and particle number concentration of particles suspended in liquid. 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 evaluation of the cleanliness of pure water and chemicals, as well as the measurement of number and size distribution of particles in various liquids. The measured particle size using the LSLPC depends on the refractive index of particles and medium; therefore the measured particle size is equivalent to the calibration particles in pure water.

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.