
**Determination of particle size distribution
by gravitational liquid sedimentation
methods —**

**Part 2:
Fixed pipette method**

*Détermination de la distribution granulométrique par les méthodes de
sédimentation par gravité dans un liquide —*

Partie 2: Méthode de la pipette fixe



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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 3.

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 part of ISO 13317 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 13317-2 was prepared by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods*, Subcommittee SC 4, *Sizing by methods other than sieving*.

ISO 13317 consists of the following parts, under the general title *Determination of particle size distribution by gravitational liquid sedimentation methods*:

- *Part 1: General principles and guidelines*
- *Part 2: Fixed pipette method*
- *Part 3: X-ray gravitational technique*

Annex A of this part of ISO 13317 is for information only.

Introduction

This part of ISO 13317 describes a method to determine particle size distribution using a fixed position pipette apparatus commonly referred to as the Andreasen pipette. The Andreasen pipette employs an incremental method of analysis which gives the mass distribution directly. In incremental methods, the solids concentration at the measurement level determines directly the proportion by mass of the analysis sample that consists of particles having a diameter less than that corresponding to the velocity of fall at the time of sampling.

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Determination of particle size distribution by gravitational liquid sedimentation methods —

Part 2: Fixed pipette method

1 Scope

This part of ISO 13317 describes a method using a pipette to determine particle size distribution, typically in the size range 1 μm to 100 μm , by gravitational sedimentation in a liquid.

NOTE This part of ISO 13317 may involve hazardous materials operations and equipment. This part of ISO 13317 does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this part of ISO 13317 to establish appropriate safety and health practices and to determine the applicability of the regulatory limitations prior to its use.

The method of determining the particle size distribution described in this part of ISO 13317 is applicable to powders which can be dispersed in liquids or powders which are present in slurry form. The method is applicable to powders made up of particles having the same density and of comparable shape. Particles should not undergo any chemical or physical change in the suspension liquid. It is necessary that the particles have a density higher than that of the liquid.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 13317. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 13317 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 8213, *Chemical products for industrial use — Sampling techniques — Solid chemical products in the form of particles varying from powders to coarse lumps*.

ISO 9276-1, *Representation of results of particle size analysis — Part 1: Graphical representation*.

ISO 13317-1, *Determination of particle size distribution by gravitational liquid sedimentation methods — Part 1: General principles and guidelines*.

ISO 14887, *Sample preparation — Dispersing procedures for powders in liquids*.

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this part of ISO 13317, the terms and definitions given in ISO 13317-1 apply.