
**Particulate materials — Sampling and
sample splitting for the determination
of particulate properties**

*Matériaux particulaires — Échantillonnage et division des échantillons
pour la caractérisation des propriétés particulaires*



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.



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 Normative references	1
3 Terms and definitions.....	1
4 Abbreviations and symbols.....	2
5 Principles of sampling and sample splitting	3
5.1 General.....	3
5.2 Fundamental error	4
5.3 Total error/number of samples or increments	7
6 Sampling plan	9
7 General procedures	10
7.1 Safety precautions.....	10
7.2 Primary sampling.....	10
7.3 Sample handling	11
7.4 Sample containers	11
7.5 Marking of sample containers	12
8 Sample division techniques	12
8.1 General.....	12
8.2 Spinning riffler	13
8.3 Static riffle divider.....	13
8.4 Coning and quartering	14
8.5 Increment division method	15
8.6 Scoop sampling	16
8.7 Sampling from paste	16
8.8 Suspension sampling.....	16
9 Validation.....	18
Annex A (informative) Calculation of variances at different stages in the sampling sequence	19
Annex B (informative) Estimation of sampling errors and minimum mass of sample	23
Bibliography	30

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 14488 was prepared by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods*, Subcommittee SC 4, *Sizing by methods other than sieving*.

Introduction

The characterization of particle properties like size, form and specific surface area requires very careful sampling and sample splitting practices to be followed. The distributions of the values of such properties are related to the number of particles, which cannot be increased as in sampling for chemical analysis. Deviations from statistical values occur due to the presence of particles of different sizes and shapes for each component in a powder obtained from a sampled mass of powder.

Particulate materials — Sampling and sample splitting for the determination of particulate properties

1 Scope

This International Standard specifies methods for obtaining a test sample from a defined bulk of particulate material (powder, paste, suspension or dust) that can be considered to be representative of that bulk with a defined confidence level. It is particularly relevant to the measurement of particle size, size distribution and surface area.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3165, *Sampling of chemical products for industrial use — Safety in sampling*

ISO 6206, *Chemical products for industrial use — Sampling — Vocabulary*

ISO 9276-2, *Representation of results of particle size analysis — Part 2: Calculation of average particle sizes/diameters and moments from particle size distributions*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6206 and the following apply.

3.1

bias

systematic difference between true (or accepted) value and measured value

3.2

“critical” size class

specific size class, whose sampling error, in its fractional mass, has a significant influence upon the product properties

3.3

error

difference between a measured value and the true value, which may have a random or a systematic nature

3.4

gross sample

primary sample, composed of several sample increments

3.5

grab sample

sample that has not been taken under well-defined conditions