AS 4932.2—2002
ISO 9276-2:2001

Australian Standard™

Representation of results of particle size analysis

Part 2: Calculation of average particle sizes/diameters and moments from particle size distributions

Standards Australia

This Australian Standard was prepared by Committee CH-032, Particle Size Analysis. It was approved on behalf of the Council of Standards Australia on 30 April 2002 and published on 20 June 2002.

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Australian Concrete Association

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Queensland University of Technology

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PREFACE

This Standard was prepared by the Standards Australia Committee CH-032, Particle Size Analysis. This Standard is identical with and has been reproduced from ISO 9276-2:2001, *Representation of results of particle size analysis*, Part 2: *Calculation of average particle sizes/diameters and moments from particle size distributions*.

The objective of this Standard is to provide the relevant equations for the calculation of average particle sizes or average particle diameters from a given particle size distribution. It is assumed that the size distribution is available as a histogram.

The same mathematical treatment can, however, also be applied, if the size distribution is represented by an analytical function. It is furthermore assumed in this Standard that the size χ of a particle is described by the diameter of a sphere. Depending on the problem, size χ may also represent an equivalent diameter of a particle of any other shape.

This Standard is part of a series comprising:

AS		
4932	Representation of results of particle size analysis	
4932.1	Part 1:	Graphical representation
4932.2	Part 2:	Calculation of average particle sizes/diameters and moments from particle size distributions
4932.4	Part 4:	Characterization of a classification process

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text, 'this part of ISO 9276' should read 'this Australian Standard.'

(c) A full point substitutes for a comma when referring to a decimal marker.

(d) Substitute 'mL' for 'ml' wherever it appears.

(e) ISO 565:1999, listed as a normative reference in Clause 2, has not been adopted as an Australian Standard.

References to International Standards should be replaced by references to equivalent Australian Standards as follows:

Reference International Standard		*Australian Standard*	
ISO		AS	
9276	Representation of results of particle size analysis	4932	Representation of results of particle size analysis
9276-1	Part 1: Graphical representation	4932.1	Part 1: Graphical representation

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INTRODUCTION

In particle size analysis, particulate matter is often characterized based on representative samples of the population with the final aim of linking the size information with some other important physical property such as strength, flowability, solubility, etc. In general, a correlation between the physical property and the size of the particles, the so-called property function, can be obtained if an average particle size has been derived or calculated from the measured distribution of sizes.

A unique definition of the average size, $\bar{x}_{k,r}$, is given in this part of ISO 9276, using the so-called moments, $M_{k,r}$, of a size distribution. Apart from average sizes, moments are also used in the calculation of volume related surface area, the spread and other statistical measures of a particle size distribution.

AUSTRALIAN STANDARD

Representation of results of particle size analysis —

Part 2:
Calculation of average particle sizes/diameters and moments from particle size distributions

1 Scope

The object of this part of ISO 9276 is to provide the relevant equations for the calculation of average particle sizes or average particle diameters and moments from a given particle size distribution. It is assumed that the size distribution is available as a histogram. It is nevertheless also possible to apply the same mathematical treatment if the particle size distribution is represented by an analytical function.

It is furthermore assumed in this part of ISO 9276 that the particle size x of a particle of any other shape may also be represented by the diameter of an equivalent sphere, e.g. a sphere having the same volume as the particle concerned.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 9276. 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 9276 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 565:1990, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*.

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

3 Symbols and abbreviated terms

For the purposes of this part of ISO 9276, the following symbols and abbreviated terms apply.

i number of the size class with upper particle size, x_i

k power of x

n total number of size classes

r type of quantity of a distribution (general description)

$r = 0$ type of quantity, number

$r = 1$ type of quantity, length

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