AS 5012—2003
ISO 13319:2000

Australian Standard™

Determination of particle size distributions—Electrical sensing zone method

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 28 February 2003 and published on 10 April 2003.

The following are represented on Committee CH-032:

Australian Pre-Mixed Concrete Association

CSIRO Land and Water

Queensland University of Technology

Royal Australian Chemical Institute

Scientific Suppliers Association of Australia

University of South Australia

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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 13319:2000 *Determination of particle size distributions—Electrical sensing zone method*.

The objective of this Standard is to specify guidance on the measurement of the size distributions of particles dispersed in an electrolyte solution using the electrical sensing zone method. It does not address the specific requirement of the particle size measurement of specific materials. The method described in this Standard measures particle volumes and reports in the range from 0.6 µm to 1600 µm.

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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 International Standard' should read 'this Australian Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

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

(e) Clause 3, page 2, symbol 'x' used to denote particle size should be replaced by symbol 'd'. It is recognized that the symbol 'd' is used more commonly in Australia.

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NOTES

AUSTRALIAN STANDARD

Determination of particle size distributions—Electrical sensing zone method

1 Scope

This International Standard gives guidance on the measurement of the size distributions of particles dispersed in an electrolyte solution using the electrical sensing zone method. It does not address the specific requirements of the particle size measurement of specific materials. The method described in this International Standard measures particle volumes and reports in the range about from 0,6 μm to 1 600 μm.

2 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

2.1
dead time
time during which the electronics are not able to detect particles due to the signal processing of a previous particle

2.2
orifice
small-diameter hole through which suspension is drawn

2.3
sensing zone
volume of electrolyte solution within, and around, the orifice in which a particle is detected

2.4
sampling volume
volume of suspension that is analysed

3 Symbols

D	orifice diameter, in μm
K_d	calibration constant of diameter
$\overline{K}_d$	calibration constant of mean diameter
$\sigma_{\overline{K}_d}$	standard deviation of mean calibration constant
m	mass of sample in beaker, in g
V_T	volume of electrolyte solution in which m is dispersed, in ml
V_m	analysis volume, in ml
ΔN_i	number of counts in a size interval i
ρ	mass of the particles per volume of the electrolyte it displaces, in g·ml^{-1}
$\overline{V}_i$	arithmetic mean volume for a particular size interval i, in ml