Australian Standard®

Waters

Part 4: Determination of solids—Gravimetric method

This Australian Standard was prepared by Committee CH/22, Methods for Examination of Waters. It was approved on behalf of the Council of Standards Australia on 6 July 1990 and published on 10 December 1990.

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Australian Government Analytical Laboratories
Australian Mining Industry Council
Board of Works, Melbourne
Confederation of Australian Industry
Department of Administrative Services, Australian Construction Services
Department of Conservation, Forests and Lands
Department of Health, N.S.W.
Department of Local Government, Qld
Engineering and Water Supply Department, S.A.
Environment Protection Authority, Vic.
Government Chemical Laboratory, Qld
National Association of Testing Authorities, Australia
Royal Australian Chemical Institute
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PREFACE

This Standard was prepared by the Standards Australia Committee on the Examination of Waters under the direction of the Chemical Standards Board, as Part 4 in the AS 3550 series of Standards. Other parts in the series are as follows:

Part 1 *Determination of dissolved sulfide—Spectrophotometric method*

Part 2 *Determination of carbon dioxide—Alkalimetric titration method*

Part 3 *Determination of alkalinity—Acidimetric titration method*

Part 5 *Determination of gross alpha and gross beta activities*

Part 6 *Determination of filtrable calcium—Flame atomic absorption spectrometric method.*

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STANDARDS AUSTRALIA

Australian Standard

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Part 4: Determination of solids—Gravimetric method

1 SCOPE This Standard sets out methods for the gravimetric determination of total, fixed, volatile dissolved and suspended solids in waters. These methods are directly applicable to potable, waste and saline waters having concentrations of dissolved and suspended solids up to 40 000 mg/L. Dilution of the filtered sample may be used to extend the limit for dissolved solids. This method may underestimate the amount of suspended solids if their nature alters during the procedure, due to solubility, colloidal stability or changes in physical integrity.

NOTES:

1 A method for the determination of suspended solids in samples which are difficult to filter is given in Appendix A.

2 The determination of low concentrations of volatile solids in the presence of high concentrations of fixed solids may be subject to considerable error.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

2031 Selection of containers and preservation of water samples for chemical and microbiotogical analysis

2031.1 Part 1: Chemical

2162 Code of practice for the use of volumetric glassware

2163 Graduated measuring cylinders

2850 Chemical analysis — Interlaboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct

3 DEFINITIONS

3.1 Total solids—the material, both suspended and dissolved, remaining after evaporation of a sample of water and its subsequent drying at 105 ± 2°C, or the sum of suspended and dissolved solids.

3.2 Fixed total solids—the total solids remaining after heating at 550 ± 50°C.

3.3 Volatile total solids—the total solids that are volatilized by heating at 550 ± 50°C.

3.4 Total dissolved solids—the solids obtained by evaporating the filtrate passing a glass fibre filter with a nominal pore size of 1.2 μm, and drying at 105 ± 2°C.

NOTE: 'Total dissolved solids' is sometimes referred to as 'the filtrable residue'.

3.5 Fixed dissolved solids—the dissolved solids remaining after heating at 550 ± 50°C.

3.6 Volatile dissolved solids—the dissolved solids that are volatilized by heating at 550 ± 50°C.

3.7 Total suspended solids—the solids retained on a glass fibre filter with a nominal pore size of 1.2 μm, after drying at 105 ± 2°C.

NOTE: 'Total suspended solids' is sometimes referred to as the 'non-filtrable residue'.

3.8 Fixed suspended solids—the suspended solids remaining after heating at 550 ± 50°C.

3.9 Volatile suspended solids—the suspended solids that are volatilized by heating at 550 ± 50°C.

4 PRINCIPLE The various solids as defined in Clause 3 are determined, either gravimetrically or by calculation, as shown in Figures 1 and 2.

5 REAGENTS Unless otherwise specified, distilled water or water of equivalent purity shall be used.

6 APPARATUS

6.1 Glassware — volumetric glassware complying with the relevant Australian Standards and for use in accordance with AS 2162. Measuring cylinders shall comply with AS 2163.

6.2 Evaporating dishes—manufactured from platinum, porcelain or silica.

6.3 Vacuum filtration apparatus

NOTE: Pressure apparatus may be used.

6.4 Filters—Glass fibre filter discs of approximately 2.2 cm diameter and with a nominal pore size of 1.2 μm.

NOTE: Whatman GF/c or equivalent have been found suitable.