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SOUTH AFRICAN NATIONAL STANDARD

Water — Dissolved solids content

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1 Dr Lategan Road Groenkloof ☒ Private Bag X191 Pretoria 0001
Tel: +27 12 428 7911 Fax: +27 12 344 1568
www.sabs.co.za
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Table of changes

Change No.	Date	Scope
Amdt 1	2004	Amended to change the designation of SABS standards to SANS standards, to update referenced standards, to convert the reference to a washing stage for the sample into a requirement and to change the wording of the requirement.
Amdt 2	2005	Amended to change a referenced standard.
Amdt 3	2013	Amended to update referenced standards.

Foreword

This South African standard was approved by National Committee SABS/TC SC 147A, *Water – Water sampling and analysis*, in accordance with procedures of the SABS Standards Division, in compliance with annex 3 of the WTO/TBT agreement.

This document was published in August 2013.

This document supersedes SANS 5213:2005 (edition 2.2).

A vertical line in the margin shows where the text has been technically modified by amendment No. 3.

Water — Dissolved solids content

1 Scope and field of application

This standard specifies a method of measuring the concentration of dissolved solids in water and in wastewater by gravimetric determination of the dry residue of the sample after filtration through a glass fibre filter of nominal pore size $1,0\ \mu\text{m} \pm 0,2\ \mu\text{m}$.

The method is conveniently applied after the determination of suspended solids by SANS 6049, since the filtrate can be used to supply the test portion for dissolved solids.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this standard are encouraged to take steps to ensure the use of the most recent editions of the standards indicated below. Information on currently valid national and international standards can be obtained from the SABS Standards Division.

Amdt 1

SANS 111/ISO 835, *Laboratory glassware – Graduated pipettes.*

Amdt 1; amdt 3

SANS 112/ISO 648, *Laboratory glassware – Single volume pipettes.*

Amdt 1

SANS 115/ISO 385, *Laboratory glassware – Burettes.*

Amdt 1; amdt 3

SANS 128/ISO 1042, *Laboratory glassware – One-mark volumetric flasks.*

Amdt 1

SANS 3696/ISO 3696, *Water for analytical laboratory use – Specification and test methods.*

SANS 6049, *Water – Suspended solids content.*

SANS 7888/ISO 7888, *Water quality – Determination of electrical conductivity.*

Amdt 2

3 Principle

Dissolved solids in this standard refers to recoverable organic and inorganic matter, dried at $180\ ^\circ\text{C} \pm 2\ ^\circ\text{C}$, after filtration of the sample through a glass fibre filter with a nominal pore size of $1,0\ \mu\text{m} \pm 0,2\ \mu\text{m}$.

4 Apparatus

4.1 Evaporation dish, nickel, silica or platinum dish of capacity at least 100 mL.

4.2 Steam bath, capable of seating the evaporation dish (4.1).

4.3 Drying oven, for operation at $180\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$.

4.4 Analytical balance, readable to 0,1 mg.

4.5 Glass fibre filter, of diameter between 70 mm and 110 mm and of nominal pore size $1,0\text{ }\mu\text{m} \pm 0,2\text{ }\mu\text{m}$.

4.6 Filtration apparatus, consisting of a Buchner funnel or a three-piece filtration funnel of a suitable size and capacity.

4.7 Suction flask, Buchner flask of capacity at least 1 L.

4.8 Desiccator, containing colour-indicated desiccant.

4.9 Tongs, wooden or metal tongs for material transfer during drying.

4.10 Glassware. Where applicable, only use burettes, pipettes and volumetric flasks that comply with the requirements for class A items as specified in SANS 111, SANS 115 and SANS 128, as relevant.

Amdt 1; amdt 3

5 Procedure

NOTE Unless otherwise specified, only use water that complies with the requirements of SANS 3696.

5.1 Preparation of evaporation dish

Dry the clean dish (4.1) for 1 h at $180\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and cool in a desiccator until a constant mass is attained. Record the final mass.

5.2 Filtration of sample

5.2.1 Determine the electrical conductivity of the sample, using SANS 7888, and obtain an estimate of the inorganic dissolved solids content by using the product of the conductivity result in millisiemens per metre (mS/m) and a factor of 7,5.

Amdt 2

5.2.2 Use this estimate as a guideline to select a suitable volume of the sample that will contain between 5 mg and 200 mg of dissolved solids.

NOTE The estimated value is a guide value only and may differ significantly from the actual value, especially if the sample contains a high proportion of organic matter.

5.2.3 Proceed to 5.3 if sufficient filtrate is available from SANS 6049.

5.2.4 Insert the glass fibre filter (4.5) into the filtration apparatus (4.6) and wash over a vacuum with approximately 200 mL of water. Continue suction until the excess water has been removed from the filter. Discard the washings.

5.2.5 Filter a sufficient volume of the sample through the filter and ensure that the filter surface remains flooded during filtration.

If the levels of dissolved or suspended solids (or both) are high, a washing stage is included. Take an equivalent volume of reagent water (SANS 3696) as determined in 5.2.2 and wash down the filter paper and funnel walls.

Amdt 1

5.3 Evaporation of the filtrate

Place the dish (4.1) on the steam bath and evaporate the exact volume of sample filtrate as determined in 5.2.2 or the total filtrate and washings in the situation where a washing stage was included (see 5.2.5).

Amdt 1

5.4 Determination of residue mass

Remove the dish from the steam bath and allow any excess moisture to evaporate before drying for 2 h at 180 °C ± 2 °C. Cool in a desiccator until a constant mass is attained, and record the final mass of the dish.

6 Expression of results

The dissolved solids content at 180 °C, expressed in mg/L, is given by the formula

$$\frac{(m_1 - m_0) \times 1\,000}{V}$$

where

m_0 is the mass of the dish, in milligrams;

m_1 is the mass of the dish and dried residue, in milligrams;

V is the volume of sample filtrate used, in millilitres.