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ICS 71.100.80

EAST AFRICAN STANDARD

Chemicals used for treatment of water intended for human consumption — Sodium carbonate

EAST AFRICAN COMMUNITY

Draft for comments only — Not to be cited as East African Standard

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Introduction

In the preparation of this East African Standard, the following source was consulted extensively:

BS EN 897:2005, *Chemicals used for treatment of water intended for human consumption — Sodium carbonate*

Assistance derived from this source and others inadvertently not mentioned is hereby acknowledged.

Draft for comments only — Not to be cited as East African Standard

BRITISH STANDARD

BS EN
897:2005

Chemicals used for treatment of water intended for human consumption — Sodium carbonate

The European Standard EN 897:2005 has the status of a
British Standard

ICS 71.100.80

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BSi
British Standards

National foreword

This British Standard is the official English language version of EN 897:2005. It supersedes BS EN 897:1999 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CII/59, Chemicals for drinking water treatment, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Additional information

The United Kingdom, as a member of CEN, is obliged to publish EN 897 as a British Standard. However, attention is drawn to the fact that the United Kingdom voted against the approval of EN 897. The main reasons for this disapproval were as follows.

- a) The limit for mercury in Table 2 is expressed as milligrams per kilogram of sodium carbonate but the result of the determination in accordance with EN 1483 should be in micrograms per litre of test solution.
- b) In the opinion of the UK committee the limit of detection for lead, corresponding to the lower concentration quoted in Table B.1, is not adequate for a method to verify the requirement specified in Table 2.
- c) There is confusion regarding the operation of the spectrometer used for the determinations of arsenic, cadmium, chromium, lead and nickel. The parameters and operating conditions for the spectrometer are specified in Table B.2 but the instructions in B.1.5.4.1 require the parameters to be set in accordance with the operating manual of the instrument's manufacturer. If there are any conflicts between these two requirements, the BSI technical committee recommends that the parameters in question be set in accordance with the operating manual.

Summary of pages

This document comprises a front cover, an inside front cover, page i, a blank page, the EN title page, pages 2 to 20, an inside back cover and a back cover.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 897

June 2005

ICS 71.100.80

Supersedes EN 897:1998

English version

Chemicals used for treatment of water intended for human consumption - Sodium carbonate

Produits chimiques pour le traitement de l'eau destinée à la consommation humaine - Carbonate de sodium

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumcarbonat

This European Standard was approved by CEN on 12 May 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This European Standard (EN 897:2005) has been prepared by Technical Committee CEN/TC 164 "Water supply", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2005, and conflicting national standards shall be withdrawn at the latest by December 2005.

This document supersedes EN 897:1998.

Significant technical differences between this edition and EN 897:1998 are as follows :

- a) deletion of the reference to EU Directive 80/778/EEC of July, 15 1980 in order to take into account the latest Directive in force (see [1]);
- b) replacement of ISO 5666-1 by EN 1483.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EN 897:2005 (E)

Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this European Standard:

- a) this European Standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- b) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

NOTE Conformity with this European Standard does not confer or imply acceptance or approval of the product in any of the Member States of the EU or EFTA. The use of the product covered by this European Standard is subject to regulation or control by National Authorities.

1 Scope

This European Standard is applicable to sodium carbonate used for treatment of water intended for human consumption. It describes the characteristics and specifies the requirements and the corresponding test methods for sodium carbonate. It gives information on its use in water treatment. It also determines the rules relating to safe handling and use (see Annex C).

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.

EN 1483:1997, *Water quality – Determination of mercury*

EN ISO 3696, *Water for analytical laboratory use – Specification and test methods (ISO 3696:1987)*

ISO 740, *Sodium carbonate for industrial use - Determination of total soluble alkalinity –Titrimetric method*

ISO 746, *Sodium carbonate for industrial use - Determination of matter insoluble in water at 50 degrees C*

ISO 2460, *Sodium hydrogen carbonate for industrial use - Determination of iron content – 1,10-Phenanthroline photometric method*

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

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

ISO 8213, *Chemical products for industrial use – Sampling techniques – Solid chemical products in the form of particles varying from powders to coarse lumps*

3 Description

3.1 Identification

3.1.1 Chemical name

Sodium carbonate.

3.1.2 Synonym or common name

Soda ash, anhydrous sodium carbonate, light soda ash, heavy soda ash.

3.1.3 Relative molecular mass

105,99.

3.1.4 Empirical formula

Na₂CO₃.

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3.1.5 Chemical formula

Na₂CO₃.

3.1.6 CAS Registry Number¹⁾

497-19-8.

3.1.7 EINECS reference²⁾

207-838-8.

3.2 Commercial forms

The product is available as dry powder or fine granules and is described as light soda or heavy soda according to bulk density (see 3.3.2).

3.3 Physical properties

3.3.1 Appearance

The product is a white powder or crystals, slightly hygroscopic.

3.3.2 Density

The density of this product is 2,53 g/cm³.

The bulk density is:

ranging from 0,5 kg/dm³ to 0,65 kg/dm³ (light soda ash);

ranging from 0,8kg/dm³ to 1,2 kg/dm³ (heavy soda ash).

3.3.3 Solubility in water

The product is soluble at 212 g/l at 20 °C.

3.3.4 Vapour pressure

Not applicable.

3.3.5 Boiling point at 100 kPa³⁾

Not applicable.

3.3.6 Melting point

851 °C.

1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3) 100 kPa = 1 bar.

3.3.7 Specific heat

1,043 J/(kg K).

3.3.8 Viscosity (dynamic)

Not applicable.

3.3.9 Critical temperature

Not applicable.

3.3.10 Critical pressure

Not applicable.

3.3.11 Physical hardness

The hardness of solid sodium carbonate is given as 1 to 2 on the Mohs' scale of hardness.

3.4 Chemical properties

Sodium carbonate reacts exothermically with acids with the formation of carbon dioxide.

Sodium carbonate is slightly hygroscopic and dissolution in water is an exothermic reaction.

4 Purity criteria**4.1 General**

This European Standard specifies the minimum purity requirements for sodium carbonate used for the treatment of water intended for human consumption. Limits are given for impurities commonly present in the product. Depending on the raw material and the manufacturing process other impurities may be present and, if so, this shall be notified to the user and when necessary to relevant authorities.

NOTE Users of this product should check the national regulations in order to clarify whether it is of appropriate purity for treatment of water intended for human consumption, taking into account raw water quality, required dosage, contents of other impurities and additives used in the products not stated in this product standard.

Limits have been given for impurities and chemical parameters where these are likely to be present in significant quantities from the current production process and raw materials. If the production process or raw materials leads to significant quantities of impurities, by-products or additives being present, this shall be notified to the user.

4.2 Composition of commercial product

The product shall contain not less than a mass fraction of 99 % of Na_2CO_3 .

4.3 Impurities and main by-products

The product shall conform to the requirements specified in Table 1.

The concentration limits refer to pure Na_2CO_3 .

Table 1 — Impurities

| Impurity | Limit in mg/kg of Na ₂ CO ₃ |
|---|--|
| Iron (II) ¹⁾ max. | 20 |
| Insoluble matters ²⁾ max. | 200 |
| 1) Iron(II) can cause organoleptic problems . | |
| 2) Indicate the presence of foreign matter . | |

4.4 Chemical parameters

The product shall conform to the requirements specified in Table 2.

Table 2 — Chemical parameters

| Parameter | Limit in mg/kg of Na ₂ CO ₃ |
|---|--|
| Arsenic (As) max. | 2 |
| Cadmium (Cd) max. | 2 |
| Chromium (Cr) max. | 2 |
| Mercury (Hg) max. | 0,1 |
| Nickel (Ni) max. | 2 |
| Lead (Pb) max. | 2 |
| NOTE Antimony, selenium, cyanides, pesticides and polycyclic aromatic hydrocarbons are not relevant in sodium carbonate. For parametric values of sodium carbonate on trace metal content in drinking water, see [1]. | |

5 Test methods

5.1 Sampling

Prepare the laboratory sample (s) required by the relevant procedure described in ISO 8213, observe the recommendations of ISO 3165 and also take into account ISO 6206.

5.2 Analyses

5.2.1 Main product

The mass fraction in % of Na_2CO_3 shall be determined by titration of the total alkalinity with a standard volumetric acid solution in accordance with ISO 740.

5.2.2 Impurities

5.2.2.1 Iron

The iron content shall be determined by a spectrometric method with 1,10-phenanthroline in accordance with ISO 2460 replacing sodium bicarbonate by sodium carbonate.

5.2.2.2 Insoluble matters

The mass fraction in % of the insoluble matter in water shall be determined at 50 °C in accordance with ISO 746.

5.2.3 Chemical parameters

5.2.3.1 Principle

The elements arsenic, cadmium, chromium, lead and nickel are determined by inductively coupled plasma optical emission spectrometry. Mercury is determined by cold vapour atomic absorption spectrometry.

5.2.3.2 Arsenic

The arsenic content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

5.2.3.3 Cadmium

The cadmium content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

5.2.3.4 Chromium

The chromium content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

5.2.3.5 Nickel

The nickel content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

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5.2.3.6 Lead

The lead content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

5.2.3.7 Mercury

The mercury content shall be determined by cold vapour atomic absorption spectrometry in accordance with EN 1483 (see B.2).

6 Labelling – Transportation – Storage

6.1 Means of delivery

Sodium carbonate can be delivered in bulk, bulk bags or in bags.

In order that the purity of the products is not affected, the means of delivery shall not have been used previously for any different product or it shall have been specially cleaned and prepared before use.

6.2 Risk and safety labelling according to the EU Directives⁴⁾

The following labelling requirements shall apply to sodium carbonate at the date of the publication of this European Standard.

- Symbols and indications of danger:
Xi: Irritant.
- Nature of special risks attributed to dangerous substances:
R 36: Irritating to eyes.
- Safety advice concerning dangerous substances:
S 22: Do not breathe dust.
S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

NOTE Annex I of the Directive 67/548/EEC on classification, packaging and labelling of dangerous substances and its amendments and adaptations in the European Union contains a list of substances classified by the EU. Substances not in this Annex I should be classified on the basis of their intrinsic properties according to the criteria in the Directive by the person responsible for the marketing of the substance.

6.3 Transportation regulations and labelling

Sodium carbonate is not listed under a UN Number ⁵⁾. Sodium carbonate is not classified as a dangerous product for road, rail, sea and air transportation.

4) See [2]

5) United Nations Number.

6.4 Marking

The marking shall include the following information:

- the name "sodium carbonate ", trade name and grade;
- the net mass;
- the name and the address of the supplier and/or manufacturer;
- the statement "this product conforms to EN 897".

6.5 Storage

6.5.1 Long term stability

Sodium carbonate is stable in dry conditions.

6.5.2 Storage incompatibilities

Keep bags tightly closed and dry. Keep away from acids.

Annex A (informative)

General information on sodium carbonate

A.1 Origin

A.1.1 Raw materials

Sodium chloride, limestone.

A.1.2 Manufacturing process

Ammonia-soda-process (SOLVAY process).

A.2 Use

A.2.1 Function

Sodium carbonate is mainly used for increase of pH value and alkalinity.

A.2.2 Form in which it is used

Sodium carbonate is mainly used as a solution, at concentration up to a mass fraction of 10 %.

A.2.3 Treatment dose

The treatment dose is variable depending on raw water quality and application. Treatment dose should be such as sodium ions never exceed sodium parametric value (see [1]).

A.2.4 Means of application

The product is usually applied using a positive displacement metering pump.

A.2.5 Secondary effects

Increases in sodium concentration.

A.2.6 Removal of excess product

pH: Neutralization with for example hydrochloric acid, sulfuric acid.

Annex B (normative)

Analytical methods

B.1 Determination of arsenic, cadmium, chromium, lead and nickel (inductively coupled plasma optical emission spectrometry (ICP/OES))

B.1.1 General

The range covered for each element is given in the Table B.1.

Table B.1 - Concentration range

| Element | Concentration range, mg/kg of product |
|---------|--|
| Cr, Cd | 0,2 to 50 |
| Ni | 0,5 to 50 |
| As | 1 to 50 |
| Pb | 2 to 50 |

B.1.2 Principle

Dissolution of the sample with nitric acid and direct nebulization of the acid solution into an inductively coupled argon plasma formed by a high frequency. Measurement of the radiations at specific wavelengths using background correction and internal standardization.

B.1.3 Reagents

All reagents shall be of recognized analytical grade and the water used shall conform to grade 3 in accordance with EN ISO 3696.

Store all prepared solutions in polyethylene or polytetrafluoroethylene (PTFE) flasks to prevent contamination.

B.1.3.1 Nitric acid solution, $\rho \approx 1,40$ g/ml, mass fraction 65 %.

B.1.3.2 Hydrochloric acid solution, $\rho \approx 1,19$ g/ml, mass fraction 37 %.

B.1.3.3 Sodium chloride solution, $c(\text{NaCl}) = 250$ g/l.

Dissolve 250 g of NaCl (very high purity grade) with water and transfer to a 1 000 ml volumetric flask. Add 10 ml of nitric acid (B.1.3.1), make up to the mark with water and mix.

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B.1.3.4 Scandium (internal standard) solution, $c(\text{Sc}) = 50 \text{ mg/l}$.

Transfer 50 ml of a scandium stock solution [$c(\text{Sc}) = 1\ 000 \text{ mg/l}$] and 10 ml nitric acid (B.1.3.1) to a 1 000 ml volumetric flask. Make up to the mark with water and mix.

B.1.3.5 As, Cd, Cr, Ni or Pb elements stock solution, $c(\text{element}) = 1\ 000 \text{ mg/l}$ commercial solution.

B.1.3.6 Multi-element solution, $c(\text{As, Cd, Cr, Ni, Pb}) = 100 \text{ mg/l}$

Transfer 10 ml of each stock solution (B.1.3.5) and 10 ml of hydrochloric acid (B.1.3.2) to a 100 ml volumetric flask, make up to the mark with water and mix.

B.1.3.7 Argon, the pressure shall not be less than 700 kPa, and the argon used can be compressed or liquefied gas.

B.1.4 Apparatus

Ordinary laboratory apparatus and glassware together with the following:

NOTE All vessels (glassware, polyethylene, polypropylene and polytetrafluorethylene (PTFE) flasks) should be washed with hydrochloric acid $c(\text{HCl}) \approx 6 \text{ mol/l}$ and water successively.

B.1.4.1 Inductively coupled plasma optical emission spectrometer (ICP/OES) fitted with a nebulizer for high salt concentration. This instrument can be simultaneous and/or sequential. The spectrometer parameters and operating conditions are given in Table B.2:

Table B.2 - Parameters and operating conditions of the spectrometer

| Parameter | Unit | Specification |
|--------------------------|--------|--|
| Type | | monochromator or /and polychromator |
| Argon humidifier (water) | | yes |
| Argon (B.1.3.7)flows: | | |
| Plasma | l/min | 14 |
| Auxiliary | l/min | 1,5 |
| Nebulizer (180 kPa) | l/min | 0,7 |
| Sample flow | ml/min | 1,5 |
| RF power | W | $\pm 1\ 000$ |
| Integration time | s | 10 |

B.1.5 Procedure**B.1.5.1 Test portion**

Weigh, to the nearest 0,1 g, 18 g of the laboratory sample.

B.1.5.2 Test solution

Transfer the test portion (B.1.5.1) and 50 ml of water to a 250 ml polyethylene flask. After dissolution, neutralize the solution with hydrochloric acid (B.1.3.2) and add 1 ml nitric acid (B.1.3.1).

After cooling, transfer to a 100 ml volumetric flask, add 5 ml of scandium solution (B.1.3.4), make up to the mark with water and mix.

B.1.5.3 Calibration and verification solutions

Transfer 80 ml of sodium chloride solution (B.1.3.3), 5 ml of scandium solution (B.1.3.4) and the volumes of multi-element solution (B.1.3.6) given in Table B.3 to a series of four 100 ml volumetric flasks. Make up to the mark with water and mix.

Table B.3 - Calibration solutions for the different elements

| Calibration solution No | Multi-element solution, ml | Corresponding concentration of each element (As, Cd, Cr, Ni, Pb,) mg/l |
|-------------------------|----------------------------|--|
| 1 ¹⁾ | 0 | 0 |
| 2 ²⁾ | 5,0 | 5,0 |
| 3 | 10,0 | 10,0 |
| 4 ³⁾ | 10,0 | 10,0 |

1) Blank calibration solution.
 2) Linearity standard matching solution.
 3) Control solution prepared with different pipettes, flasks and if possible with different stock solutions.

B.1.5.4 Determination**B.1.5.4.1 Preparation of the apparatus**

Set all instrument parameters of the optical emission spectrometer (B.1.4.1) in accordance with the operating manual of the instrument's manufacturer.

Prepare the analytical procedure including the lines shown in the Table B.4, with background correction, concentrations of calibration solutions 1 and 3 described in (B.1.5.3) and internal standardization (B.1.3.4).

Table B.4 - Wavelength per element

| Element | Wavelength nm | |
|---------------------------|------------------|------------|
| | line | background |
| As | 193,759 | 193,79 |
| Cd | 228,802 | 228,83 |
| | 214,438 | - |
| Cr | 267,716 | 267,75 |
| Ni | 231,604 | 231,63 |
| Pb | 220,353 | 220,38 |
| Sc (internal standard) | 424,683 | - |
| | or | - |
| | 361,384 | - |

B.1.5.4.2 Spectrometric measurements

Repeat the measurements for at least five integration periods.

Rinse with water after each solution.

Calibrate the instrument with the calibration solutions 1 and 3 (B.1.5.3.).

Control and check the linearity of the calibration curve by measurement of the following calibration solutions considered as unknown solutions:

- solution 3;
- solution 1;
- solution 1;
- solution 2;
- solution 4;
- solution 3.

Continue the measurements in the following order:

- solution 3;
- solution 1;
- solution 1;
- test solution (B.1.5.2);
- solution 3;
- solution 1 (B.1.5.3.);
- solution 1 (B.1.5.3.).

B.1.6 Expression of results

B.1.6.1 Evaluation

If necessary, correct for drift the results obtained with the test solution and control solutions 2 and 4:

- **for baseline drift** by interpolating in time between both second measurements (the first may be cross-contaminated) of the blank calibration solution (solution 1);
- **for sensitivity drift** by interpolating in time between the measurements of the solution 3.

NOTE Samples of unknown composition should be tested for the presence of matrix effects, caused by present components other than sodium carbonate, by the analyte addition technique.

B.1.6.2 Calculation

The element content of the sample, $c(\text{element})$ in milligrams per kilogram is given by the equation:

$$c(\text{element}) = \frac{100 \times c}{m}$$

where:

- m is the mass, in grams, of the test portion (B.1.5.1);
- c is the corrected concentration of element, in milligrams per litre, in the test solution (B.1.5.2).

B.2 Determination of mercury (cold vapour atomic absorption spectrometry)

B.2.1 General

This method is suitable for the determination of total mercury in sodium carbonate. The method is applicable to samples whose mercury content is greater than 0,05 mg/kg as Hg.

B.2.2 Principle

After mineralization of the sample with sulfuric acid and potassium permanganate, the total mercury is determined by cold vapour atomic absorption spectrometry as described in EN 1483.

B.2.3 Reagents

See 4.3 of EN 1483:1997.

B.2.4 Apparatus

See 4.4 of EN 1483:1997.

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B.2.5 Procedure

B.2.5.1 Test portion

Weigh, to the nearest 0,01 g, 2 g of the laboratory sample.

B.2.5.2 Test solution

Transfer the test portion and 50 ml of water to a 250 ml conical flask. After dissolution, neutralize the solution with hydrochloric acid solution $c(\text{HCl}) = 6 \text{ mol/l}$. Add 1 ml of potassium permanganate solution (50 g/l) and, with care, five 1 ml portions of sulfuric acid ($\rho = 1,84 \text{ g/ml}$).

Heat and keep boiling for 1 min.

After cooling, dissolve the precipitate of manganese dioxide, dropwise, with the hydroxylamine hydrochloride solution (100 g/l), add 5 ml of potassium dichromate solution (4 g/l), dilute to 100 ml with water in a volumetric flask and mix.

B.2.5.3 Blank test solution

Prepare a blank test solution according with the instructions detailed in B.2.5.2 but omitting the test portion.

B.2.5.4 Calibration solutions

Just before use, prepare a series of six calibration solutions containing 0 mg/l, 1 mg/l, 2,5 mg/l, 5 mg/l, 7,5 mg/l and 10 mg/l of Hg.

To 100 ml of those solutions add 1 ml of potassium permanganate solution and with care five 1 ml portions of sulfuric acid and continue as described in B.2.5.2 for the test solution.

B.2.5.5 Determination

Proceed with the calibration solutions, test solution and blank test solution as described in 4th paragraph of 4.7.1 in EN 1483:1997 beginning at "Transfer in a flask...".

B.2.6 Expression of results

See 4.8 and 4.9 of EN 1483:1997.

Annex C (normative)

General rules relating to safety

C.1 Rules for safe handling and use

The supplier shall provide current safety instructions.

C.2 Emergency procedures

C.2.1 First aid

WARNING - In case of contact of aqueous solutions with eyes and with skin, eyes shall be first treated.

In case of inhalation and with a significant nasal irritation, remove the patient to fresh air. Rinse mouth and nose with water or isotonic solution. Seek medical advice.

In case of contact with eyes rinse with running water for at least 15 min, eyelids wide open. In case of persistent symptoms seek medical advice.

In case of contact with skin take off the contaminated clothes and shoes, wash the skin with water. In case of persistent symptoms seek medical advice.

In case of ingestion make patient drink water and milk, make him vomit. In any case seek medical advice.

C.2.2 Spillage

Collect the product then rinse with plenty of water.

C.2.3 Fire

Sodium carbonate is not combustible.

EN 897:2005 (E)

Bibliography

- [1] 98/83/EC, *Council Directive of 3 November 1998 on the Quality of Water intended for Human Consumption*
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