



Reference number

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 127-2 was prepared by Technical Committee RSB/TC 011, Cosmetics, Toiletries and Surface Active Agents.

In the preparation of this standard, reference was made to the following standards.

- 1) KS 03-1290-1, Specification for bleaching agents, Part 1. Sodium hypochlorite solutions
- 2) AWWA B 300 80 American Water Works Association standards for hypochlorites.

The assistance derived from the above source is hereby acknowledged with thanks.

RS 127 consists of the following parts, under the general title, Bleaching agents Specification

- Part 1: Sodium hypochlorite solutions for water treatment
- Part 2: Sodium hypochlorite solutions for industrial and domestic use

Committee membership

The following organizations were represented on the Technical Committee on Cosmetics, Toiletries and Surface Active Agents (RSB/TC 011) in the preparation of this standard.

ALYVO Rwanda Ltd

Better Home Ltc

Eden Business Center Ltd

National Industrial Research and Development Agency (NIRDA)

Private Sector Federation/Beauty Makers Association (PSF/BMA)

Rwanda Biomedical Centre (RBC)

Rwanda National Police (RNP)

Sulfo Rwanda Industries Ltd

Trust Industries Ltd

copy for public comments University of Rwanda/College of Sciences and Technology (UR/CST)

Bleaching agents — Specification — Part 2: Sodium hypochlorite solutions for industrial and domestic use

1 Scope

This Draft Rwanda Standard prescribes the requirements and methods of test for sodium hypochlorite for use as bleaching and disinfecting agents.

This document applies to three aqueous concentrations of sodium hypochlorite solution suitable for industrial and domestic use.

This standard does not apply to sterilizers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EAS 295, Sodium Hypochlorite solutions for domestic use – Specification

RS 127-1, Bleaching agents - specification - Part 1: Sodium hypochlorite solutions for water treatment

ASTM D2022-89, Standard Test Methods of Sampling and Chemical Analysis of Chlorine-Containing Bleaches

3 Terms and definitions

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

3.1

available chlorine

quantity of chlorine chemically equivalent to the oxygen that would be released during the complete decomposition of the sodium hypochlorite to sodium chloride and oxygen

Note - This is a conventional way of expressing the concentration of sodium hypochlorite solution. The available chlorine is 0.95 times the sodium hypochlorite content and is a measure of the oxidising power of sodium hypochlorite solutions.

3.2

nominal concentration

minimum available chlorine content of the sodium hypochlorite solution under test, at the time of manufacture

4 Requirements

4.1 General

Sodium hypochlorite solutions shall be of one of the following nominal concentrations, as required (see Annex A):

- a) 150 g/L for industrial use;
- b) 50 g/L for domestic use; or
- c) 35 g/L for domestic use.

4.2 Sodium hypochlorite solution for industrial use

4.2.1 General

The solution shall be a clear liquid free from suspended or particulate matter and shall be miscible in all proportions with distilled water.

4.2.2 Physical and chemical requirements

The solution shall comply with the requirements given in Table 1:

Table 1 — Physical and chemical requirements for a sodium hypochlorite solution for industrial use

S/N	Property	Requirement	Test method
1.	pH, min	11	-
2.	Freezing point, °C	-25	-
3.	Available chlorine (%, m/v), min	3.5	Annex B
4.	Sediment content, % (mass fraction expressed as a percentage), max.	0.1	Annex C
5.	Sodium hypochlorite content determined on the date of manufacture, g/L, min.	150	Annex D
6.	Sodium hypochlorite content determined on the 14th day ± 2 d after date of manufacture, g/L, min.	130	Annex D
7.	Sodium hydroxide content, g/L, min. max.	10 - 60	Annex E
8.	Gassing at 37 °C, cm ³ over a 20 h period, max.	35	Annex F
9.	Iron content, mg/L, max.	10	Annex G
10.	Cobalt content, mg/L, max.	5	Annex G
11.	Copper content, mg/L, max.	5	Annex G
12.	Nickel content, mg/L, max.	5	Annex G

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4.2.3 Stability

When (after receipt) the solution has been stored in the dark at a temperature of 20 °C to 25 °C, the sodium hypochlorite content, determined in accordance with 5.5 on the 14th day \pm 2 d after date of manufacture, shall be at least 130 g/L.

NOTE See annex A for notes to users on the two main ways sodium hypochlorite solution decomposes.

4.3 Sodium hypochlorite solutions for domestic use

4.3.1 General

4.3.1.1 When so required, the solution shall contain laundry blue. The laundry blue might settle on standing but shall disperse completely in the solution when the solution, in the original container, is shaken for 30 s.

4.3.1.2 The solution shall be a clear liquid, and shall be free from sediment and suspended matter other than the required laundry blue. A solution shall be considered to be clear if all salts that have crystallized from the solution dissolve completely when the solution is mixed with twice its volume of distilled water.

4.3.2 Physical and chemical requirements

The solution shall comply with the requirements given in Table 2.

4.3.3 Stability

When (after receipt) the solution has been stored in the dark at a temperature of 20 °C to 25 °C, the sodium hypochlorite content, determined in accordance with 5.5 on the 60th day \pm 2 d after date of manufacture, shall be as follows:

- a) solutions of 5 % nominal concentration: not less than 45 g/L; and
- b) solutions of 3.5 % nominal concentration: not less than 32 g/L.

S/N	Property	Requirement	Test method
1.	pH, min	11	-
2.	Freezing point, °C	-25	-
3.	Available chlorine (%, m/v), min	3.5	Annex B
4.	Sediment content, % (mass fraction expressed as a percentage), max.	0.1	Annex C
5.	Sodium hypochlorite content determined on the 14th day ± 2 d after date of manufacture, g/L, min. 5 % nominal concentration 3.5 % nominal concentration	50 35	Annex D
6.	Sodium hypochlorite content determined on the 60th day ± 2 d after date of manufacture, g/L, min. 5 % nominal concentration 3.5 % nominal concentration	45 32	Annex D
7.	Sodium hydroxide content, g/L, max.	15	Annex E

Table 2 — Physical and chemical requirements for a sodium hypochlorite solution for domestic use

5 Labelling and packaging

5.1 Labelling

- 5.1.1 Containers shall be marked with the following conspicuous, legible and indelible information:
- a) name of the product;
- b) name of address of the manufacturer, and registered trade mark, if any;
- c) instructions for use and dilution factor;
- d) batch or code number;
- e) date of manufacture and expiry date;
- f) net volume of the solution;
- g) available chlorine;
- h) color; and
- i) country of origin.

5.1.2 The container shall also be marked with the following information:

- a) the warning "Corrosive";
- b) the instruction "Use in well ventilated room";
- c) the instruction "First aid instructions";
- d) the words "Keep away from heat or sunlight"; and
- e) the words "Keep out of the reach of children" or words having similar meaning".

5.2 Packaging

5.2.1 The containers used for packaging sodium hypochlorite solutions shall be of material inert to the contents and shall protect the solution from sunlight.

5.2.2 The containers shall not be metallic. The only metals that should be used with bleach are titanium or tantalum.

5.2.3 The containers shall be strong enough to withstand normal usage and transportation.

Annex A

(normative)

User information

A.1 The decomposition of sodium hypochlorite takes place in two main ways:

- a) 3NaOCI→2NaCl + NaClO₃; and
- b) $2NaOCI \rightarrow 2NaCI + O_2$.

Normally, in the dark, over 90% of the decomposition follows the chlorate-forming mechanism (a) and the remainder follows the oxygen-forming reaction (b).

A.2 The following are some of the factors that increase the rate at which decomposition of the solution occurs:

- a) concentration: the rate of decomposition falls off rapidly as the solution loses strength;
- b) **temperature**: elevated temperatures greatly increase the rate of decomposition;
- c) **metallic impurities**: certain trace metallic impurities such as copper, nickel, cobalt and iron catalyse the oxygen-forming reaction;
- d) **exposure to light**: the rate of both the chlorate-forming reaction and the oxygen-forming reaction is increased by exposure to blue or ultraviolet light; and

e) **pH value of solution**: sodium hypochlorite is stabilized by sodium hydroxide, and the pH value of the solution should exceed 11.

Annex B

(normative)

Determination of available chlorine

B.1 Principle of test methods

The sample is added to an acidified solution of potassium iodine and the released iodine titrated with standard sodium thiosulphate solution to the starch end point.

B.2 Reagents

B.2.1 Glacial acetic acid

B.2.2 Standard potassium iodate solution – 0.1N

B.2.3 Starch indicator solution – 0.5 per cent.

Mix 0.5 per cent of solution starch with 5 mL of cold water and 95 mL of boiling water. Mix, cool and store in glass bottle. Replace frequently or add 0.1 per cent m/v salicylic acid to the starch solution to minimize deterioration.

B.2.4 Potassium iodate crystals- lodate free.

B.2.5 Standard Sodium thiosulphate solution - 0.1N.

Dissolve 25 g of sodium thiosulphate ($Na_2S_2O_3.5H_2O$) crystals in freshly boiled and cooled water, and dilute to 1 000 mL.

NOTE: the solution is more stable if the glassware is cleaned with sulphulic or chromic acids and thoroughly rinsed with water before use.

B.3 Procedure

Dissolve 2 g to 3 g of potassium iodide crystals in 50 mL of water in 250 mL conical flask.

Add10 mL of glacial acetic acid, then pipette out a 3 mL aliquot of sample into the solution, keeping the tip of the pipette beneath the surface of the solution until drained.

Titrate at once with 0.1N standard sodium thiosulphate solution until the iodine colour is nearly gone then add 1 mL of starch indicator solution and complete the titration to the disappearance of the blue colour.

B.4 Calculation

Available chlorine (as CI) per cent mass by volume

$$=\frac{(ANx\ 0.03546\ x\ 100)}{V}$$

Where,

A = volume in mL of standard sodium thiosulphate solution required for titration of the sample,

N = Normality of the standard sodium thiosulphate solution, and

V = volume in mL of original sample in aliquot used.

Annex C (normative)

Sediment content

C.1 Procedure

C.1.1 Mix the test specimen of sodium hypochlorite solution (see 5.3.1) thoroughly and then accurately weigh out approximately 300 g into a 500 mL beaker.

C.1.2 Filter the solution through a Whatman GF/A glass-fibre filter paper that has been dried at 100 $^{\circ}$ C ± 2 $^{\circ}$ C and tared, or equivalent.

C.1.3 Wash the beaker and the sediment five times with 20 mL portions of cold water and then dry the glass fibre filter paper with the sediment at 100 °C \pm 2 °C until a constant mass is attained.

C.2 Calculation

Calculate the sediment content, S, as a percentage, as follows:

$$S = \frac{m_2}{m_1} \times 100$$

where

 m_2 is the mass of the sediment after it has been dried, in grams;

 m_1 is the mass of test specimen taken, in grams.

Annex D

(normative)

Sodium hypochlorite content

D.1 Reagents

- D.1.1 Potassium iodide (KI).
- D.1.2 Glacial acetic acid (CH₃COOH).
- D.1.3 Sodium carbonate (Na₂CO₃).
- D.1.4 Mercuric iodide (Hgl₂).
- D.1.5 Starch indicator solution

Prepare the starch solution immediately before use, as follows

⊳٥. Make a paste of 1 g of soluble starch and a small amount of water. Pour the paste into 100 mL of boiling water, stirring it constantly. Boil for approximately 1 min and cool.

D.1.6 Standard potassium dichromate solution, $c(K_2Cr_2O_7) = 0,01667 \text{ mol/L}$

Dissolve exactly 4.904 g of potassium dichromate, previously dried at 105 °C ± 2 °C for 2 h and cooled in a desiccator, in water and dilute to 1,000 mLin a volumetric flask.

D.1.7 Sodium thiosulfate solution (± 0.1 mol/L).

D.1.7.1 Preparation

Prepare a stock volumetric solution as follows:

- Dissolve 25 g \pm 1 g of sodium thiosulfate pentahydrate (NaS₂O₃·5H₂O) in freshly boiled and cooled a) water.
- Add 0.1 g of sodium carbonate (see 5.5.1.3) and 0.01 g of mercuric iodide (see 5.5.1.4) and dissolve. b)
- Dilute to 1 000 mL with freshly boiled and cooled water in a volumetric flask. c)
- d) Transfer to an amber-coloured glass-stoppered bottle and store in the dark.
- e) Standardize the solution before use (see 5.5.1.7.2).

f) Discard the solution when it becomes turbid.

D.1.7.2 Standardization

Standardize the sodium thiosulfate solution as follows:

- a) Pipette 20.0 mL of the potassium dichromate solution (see 5.5.1.6) into a glass-stoppered iodine flask.
- b) Remove the stopper and quickly add 3 g of potassium iodide, 2 g of sodium bicarbonate and 5 mL of concentrated hydrochloric acid.
- c) Insert the stopper gently in the flask, swirl to mix, and allow to stand in the dark for 10 min.
- d) Rinse the stopper and the inner walls of the flask with water and titrate with the sodium thiosulfate volumetric solution (see 5.5.1.7) until a pale straw colour is obtained.
- e) Add 2 mL of the starch solution (see 5.5.1.5) and continue the titration until a blue colour is discharged.
- f) Carry out a blank determination by repeating the procedure but omitting the potassium dichromate.
- g) Calculate the concentration, *M*, of the sodium thiosulfate solution, in moles per litre, as follows:

$$M = \frac{20.0 \times 0.01667 \times 6}{V}$$

where

- *V* is the volume of sodium thiosulfate solution used in the titration after the correction for the blank, in millilitres.
- NOTE Alternative methods of standardization may be used provided that they give equivalent results.

D.2 Procedure

D.2.1 Pipette 25.0 mL of the sample into a 1 000 mL volumetric flask and dilute with water up to the mark.

D.2.2 Pipette 25.0 mL of the diluted sample into a 250 mL glass-stoppered iodine flask and add 50 mL of water.

D.2.3 Add 2 g of potassium iodide and 10 mL of glacial acetic acid. Insert the stopper and allow to stand in the dark for 10 mins.

D.2.4 Rinse the stopper and the inner walls of the flask with water.

D.2.5 Titrate the liberated iodine with the standardized sodium thiosulfate solution (see 5.5.1.7) to a pale straw yellow colour.

D.2.6 Add 1 mL of starch indicator solution (see 5.5.1.5) and titrate drop by drop until the faint blue colour changes to colourless, for at least 30 s.

D.2.7 Carry out a blank determination by repeating the procedure but omitting the sample.

D.3 Calculation

Calculate the sodium hypochlorite (NaOCI) content, C, in grams per litre, as follows

 $C = V \times 59.56 \times M$

where

- *V* is the volume of sodium thiosulfate solution used in the titration after correction for the blank, in millilitres;
- *M* is the molarity of sodium thiosulfate solution, in moles per litre.

Annex E

(Normative)

Sodium hydroxide content

E.1 Reagents

E.1.1 Barium chloride solution, 10 g/100 mL

Dissolve 100 g of barium chloride ($BaCl_2.2H_2O$) in water and dilute to 1 L with water. Filter the solution if turbid.

E.1.2 Hydrogen peroxide solution

Approximately 3 % (10 volumes).

E.1.3 Sodium hydroxide solution, 0.4 g/100 mL

Dissolve 0.4 g of sodium hydroxide in water, cool and dilute to 100.0 mL in a volumetric flask. Store in a plastics container.

E.1.4 Phenolphthalein indicator solution

Dissolve 1 g of phenolphthalein in 100 mL of ethanol (95 %).

E.1.5 Screened methyl orange indicator solution

Dissolve 0.2 g of methyl grange and 0.28 g of xylene cyanol FF in 100 mL of ethanol (50 %).

E.1.6 Standard hydrochloric acid solution (c (HCI) = 0.10 mol/L)

Dilute 8.9 mL of concentrated hydrochloric acid (d at 25 °C ≥ 1.160) with water. Standardize against sodium carbonate, using the screened methyl orange as indicator.

E.2 Procedure

E.2.1 Place 50 mL of the barium chloride solution and 40 mL of the hydrogen peroxide solution in a 250 mL conical flask.

E.2.2 Add 10 drops of the phenolphthalein indicator and then add the sodium hydroxide solution drop by drop until a permanent faint pink colour is obtained.

E.2.3 Immediately pipette 10 mL of the test specimen of sodium hypochlorite solution drop by drop into the flask, taking care that the effervescence does not become excessive.

E.2.4 When the effervescence subsides, swirl the flask vigorously for 1 min.

E.2.5 Add another drop of phenolphthalein indicator and rapidly titrate the solution with the standard hydrochloric acid solution (see 5.6.1.6) until the pink colour first disappears.

E.2.6 Do not continue the titration if the pink colour re-appears on standing.

E.3 Calculation

Calculate the sodium hydroxide content, X, in grams per litre, as follows:

 $X = V \times M \times 4.0$

where

- *V* is the volume of hydrochloric acid solution used in the titration, in millilitres;
- *M* is the concentration of the standard hydrochloric acid solution, in moles per litre.

Annex F

(normative)

Gassing rate of sodium hypochlorite

F.1 Outline of method

The gas evolved from a weighed sample maintained at a controlled temperature is collected and measured volumetrically.

F.2 Apparatus

- F.2.1 Water-bath and thermostatic water circulator, capable of maintaining a temperature of 37 °C.
- **F.2.2** Dreschel bottle, of 250 mL and that is externally covered to exclude light.
- F.2.3 Graduated burette, of 50 mL capacity.
- **F.2.4 Top-pan balance**, capable of weighing to an accuracy of 0.1 g.
- F.2.5 Tallform beaker, of 500 mL capacity.
- **F.2.6 Delivery tube**, of glass connected to the Dreschel bottle.

F.3 Procedure

- **F.3.1** Weigh out 300 $g \pm 0.5 g$ of the sample into the Dreschel bottle.
- **F.3.2** Place the Dreschel bottle in the water-bath at 37 $^{\circ}$ C ± 1 $^{\circ}$ C.

F.3.3 Fill the beaker with approximately 400 mL of water and immerse the end of the delivery tube in the beaker. Check that the water does not suck back beyond the second bend in the delivery tube

F.3.4 Completely fill the burette with water and invert in the beaker, ensuring that no air is trapped in the burette and that the end of the burette is well submerged in the water.

F.3.5 Secure the open end of the burette over the end of the delivery tube so that the gas evolved is trapped in the burette.

F.3.6 Use the burette tap to adjust the volume of water in the burette to the 50 mL mark.

F.3.7 Leave the sample in the water-bath for 1 h to equilibriate to the correct temperature.

F.3.8 Record the volume (V₁) of gas (mL) collected in the inverted burette.

F.3.9 Leave the sample in the water-bath for a further 20 h and then record the total volume (V_2) of gas (mL) collected in the inverted burette.

NOTE Take the reading in millilitres as equivalent to the volume of gas in cubic centimetres.

F.3.10 Calculate the gassing rate per 20 h (see 5.7.4).

F.3.11 Repeat 5.7.3.1 to 5.7.3.10 (inclusive) at least once more.

F.4 Calculation

Calculate the gassing rate, *GR*, of the gas collected, in cubic centimetres per 20 h, as follows:

$$GR = V_2 - V_1$$

where

- V_2 is the total volume of gas collected after 20 h, in cubic centimeters;
- V_1 is the volume of gas collected after 1 h, in cubic centimeters.

Express the final results as an average of the calculated results for each determination.

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Annex G

(normative)

Iron content, cobalt content, copper content and nickel content

G.1 Apparatus

Atomic absorption spectrometer, capable of operating under the conditions given in Table 3

G.2 Reagents

G.2.1 Nitric acid solution (1:1)

Carefully add 100 mL of concentrated nitric acid (*d* at 25 °C \ge 1.339) to 100 mL of water while mixing.

G.2.2 Hydrochloric acid

Concentrated hydrochloric acid (a mass fraction of 32 %: d at 25 °C ≥ 1.160).

G.2.3 Hydrochloric acid solution (1:1)

Carefully add 100 mL of concentrated hydrochloric acid (see 5.8.2.2) to 100 mL of water while mixing.

G.2.4 Sodium chloride solution (30 g/L)

Dissolve 30.00 g of sodium chloride in 100 mL water in a 1 L volumetric flask, and make up to the mark with water.

G.3 Standard solutions

G.3.1 General

Prepare four standard solutions, as detailed in 5.8.3.2 to 5.8.3.5 (inclusive), that contain iron, cobalt, copper and nickel respectively, in a concentration of 1 000 mg/L.

5.8.3.2 Iron solution

Dissolve exactly 1.000 g of a mass fraction of 99.99 % metallic iron in 25 mL of 1:1 hydrochloric acid in a 150 mL tallform beaker. Leave the beaker covered with a watch glass in a water-bath until the metallic iron is completely dissolved. Transfer quantitatively to a 1 L volumetric flask, and make up to the mark with water.

G.3.3 Cobalt solution

Dissolve exactly 1.000 g of a mass fraction of 99.99 % metallic cobalt in a minimum volume of 1:1 nitric acid, transfer quantitatively to a 1 L volumetric flask, and make up to the mark with water.

G.3.4 Copper solution

Dissolve exactly 1.000 g of a mass fraction of 99.99 % metallic copper in a minimum volume of 1:1 nitric acid, transfer quantitatively to a 1 L volumetric flask, and make up to the mark with water.

G.3.5 Nickel solution

Dissolve exactly 1,000 g of a mass fraction of 99.99 % metallic nickel in 20 mL of 1:1 nitric acid, transfer quantitatively to a 1 L volumetric flask, and make up to the mark with water.

NOTE Commercially available standard solutions may also be used.

G.4 Procedure

G.4.1 Instrument operating conditions

Adjust the instrument controls to the settings given in table 3, appropriate to the element being determined, using acetylene as the fuel for the burner, and air as the support.

Table G1— Instrument settings

1	2	3	4	5				
In strument setting	Setting ^a for the determination of							
instrument setting	Iron 🧹	Cobalt	Copper	Nickel				
Wavelength, nm	248.3	240.7	324.7	232.0				
Slit width, nm	0.2	0.2	0.2	0.2				
Lamp current, mA	5,0	7.0	3.5	3.5				
Scale expansion	Up to x 10	Up to × 10	Up to × 10	Up to × 10				

Small variations in the above settings might be necessary for different instruments.

G.4.2 Calibration of instrument

From the standard solutions (see 5.8.3), prepare calibration solutions as follows:

- a) pipette 10 mL of 1 000 mg/L of iron, cobalt, copper and nickel into separate 100 mL volumetric flasks, make up to the mark with water and mark it 100 mg/L;
- b) prepare 1 mg/L, 5 mg/L and 10 mg/L standards by pipetting 1 mL, 5 mL and 10 mL of each of the 100 mg/L standards into separate 100 mL flasks;
- c) make up to the mark, using the 30 g/L sodium chloride solution to ensure a similar matrix to the test specimen of sodium hypochlorite solution;

- d) as a blank, use the same 30 g/L sodium chloride solution;
- e) aspirate each solution through the instrument and read its absorbance value at the specified settings (see Table 3); and
- f) for each element, prepare a calibration curve by plotting the concentrations of the three standard solutions, in milligrams per litre, against their absorbance values minus the absorbance value of the blank.

G.4.3 Determination of iron content, cobalt content, copper content and nickel content

G.4.3.1 Pipette 10 mL of the test specimen of sodium hypochlorite solution into a 150 mL tallform beaker and slowly add 1 mL of concentrated hydrochloric acid while stirring. (The test specimen is treated with hydrochloric acid to remove the formed chlorine and to form sodium chloride in solution.)

G.4.3.2 Cover the beaker with a watch glass and allow the ensuing heat to complete the following exothermic reaction:

 $NaOCI+2HCI \rightarrow NaCI+H2O+Cl_2$

G.4.3.3 If the solution is not clear, add another 1 mL of concentrated hydrochloric acid and allow the reaction to continue; repeat the procedure until the solution is clear.

G.4.3.4 Allow the solution to cool and as soon it has lost all of its yellow colour and a crystalline precipitate has formed, transfer the contents quantitatively into a 100 mL volumetric flask and make up to the mark with water.

G.4.3.5 Aspirate the solution through the instrument and read its absorbance value for each element, at the specified settings (see Table 3).

NOTE It is recommended that procedures be conducted in the following sequence:

- optimize instrument;
- read blank;
- read standards; and
- read test specimen.

G.5 Calculation

Calculate the concentration, Y, in milligrams per litre, of each of the four elements in the test specimen, using the following formula:

$$Y = \frac{100 \times C}{V}$$

where

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C is the concentration of the element in the dilute test specimen of sodium hypochlorite solution (as read off from the appropriate calibration curve), in milligrams per litre;

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V is the volume of test specimen used (see G.4.3.1).

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