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DRAFT EAST AFRICAN STANDARD

Chemical hair relaxers and hair waving products — Specification

EAST AFRICAN COMMUNITY

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Foreword

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

In order to achieve this objective, the Community established an East African Standards Committee mandated to develop and issue East African Standards.

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.

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.

Chemical hair relaxers and hair waving products — Specification

1 Scope

This Draft East African Standard specifies requirements and methods of test for chemical hair relaxers and hair waving products.

This standard applies to chemical cream hair relaxers based on alkalis or thioglycollates, as well as hair waving (curling) products based on thioglycollates.

2 Description

Chemical hair relaxers and waving products are grouped into three categories, namely;

1) Lye-based

2) No lye

3) Thioglycollate-based

3 Normative references

DEAS 346 Labelling of cosmetics — General requirements

DEAS 377-2 Cosmetics — List of substances which must not form part of.the composition of any cosmetic product.

DEAS 377-3 Cosmetics — List of substances.which cosmetics must not contain except subject to the restrictions and conditions laid down.

4 Terms and definitions

4.1
Lye based
Chemical hair relaxers that conain sodium hydoxide.

4.2
No lye
Chemical hair relaxers that contain alkalis other than sodium hydroxide such as Potassium hydroxide, Lithium hydroxide, Calcium hydroxide.

5 Requirements

5.1 General requirements

Chemical hair relaxers and waving products shall conform to the requirements specified in DEAS 377-2 and DEAS 377-3.

The products shall be in the form of emulsions or gels.

These products shall be homogenous and of uniform colour, with no visible signs of separation nor visible impurities.

5.2 Specific requirements

The hair relaxers and hair waving products shall also comply with the requirements given in Table 1 when tested in accordance with the methods indicated therein.

Table 1 — Requirements for chemical hair relaxers and hair waving products

S/N	Characteristic	Requirement	Method of test
1	Thermal stability	To pass test	Annex A
2	Microbiological examination (Total Plate Count), micro-organisms1 per g, max	100	Annex b

The lye and no lye relaxers (Type 1 and Type 2) shall, in addition, comply with the requirements given in Table 2 when tested in accordance with the methods indicated therein.

Table 2 — Requirements for chemical hair relaxers, lye and no lye

S/N	Characterisitc	Requirements	Method of test
1	pH range	11- 13	Annex F
2	Free alkali content, % by mass, max	2.5	Annex G
3	Total alkali content:- a) Potassium hydroxide as KOH, % by mass, max b) Sodium hydroxide as NaOH, % by mass, max c) Lithium hydroxide as LiOH, % by mass, max d) Calcium hydroxide CaOH, % by mass, max e) Ammonium hydroxide, % by mass, max	 2.5 2.5 2.5 7.0 6.0	Annex H

The thioglycollate based hair relaxers and hair waving products shall, in addition, comply with the requirements given in Table 3 when tested in accordance with the methods indicated therein.

Table 3 —Requirements for thioglycollate based hair relaxers and hair waving products

S/N	Characteristic	Requirements		Method of test
		Thioglycollic acid and its salts	Thioglycollic acid Esters	
1	pH range	7- 9.5	6-9.5	Annex F
2	Thioglycollic acid, %, max	7- 11	7-11	Annex J

The products shall comply with the requirements for contaminants in accordance with Table 4.

Table 4: Requirements for contaminants

S/N	Characteristic	Requirement	Method of test
1	Lead, ppm, max	20	Annex C
2	Arsenic, ppm, max	2	Annex D
3	Mercury, ppm, max	2	Annex E
NOTE The total amount of heavy metals as lead, mercury and arsenic, in combination, in the finished product should not exceed 20 ppm.			

6 Packaging

The product shall be packed in suitable well-sealed containers that shall protect the contents and shall not cause any contamination or react with the product.

7 Marking and labelling

The containers shall be securely closed and in addition to the labelling requirements of DEAS 346. The labelling shall be in either English, Kiswahili or French or in combination as agreed between the manufacturer and supplier. The following information shall be indelibly and legibly marked on the container:

a) product name;

b) net contents;

c) Manufacturer's name, physical address, and trade mark (if any) and name and physical address of the distributor/supplier if any

d) batch number in code or otherwise;

e) the date of manufacture in the form "mm/yyyy", and

f) best before date in the form "mm/yyyy";

g) Country of origin

In addition to the labeling requirements of DEAS 346, each package shall be legibly and indelibly marked with the following (An enclosed leaflet may also be used).

1) type of product as follows:-

a. Mild — for fine textured or processed hair

b. Regular — For medium textured hair

c. Super — For coarse hair

NOTE This does apply in the case of thioglycollic based formulations.

2 Type of alkali used"

3 Instructions for use including the neutralising shampoo and conditioner which are recommended for use with the product

4 Storage instructions

5 All ingredients shall be declared in descending order of predominance. The INC label names (previously CTFA names) shall be used.

NOTE INCI Stands for International Nomenclature Cosmetic Ingredient. CTFA stands for Cosmetic, Toiletry and Fragrance Association.

8 Cautions/warnings

The following warnings shall be printed on the label in either English, Kiswahili or French or in combination as agreed between the manufacturer and supplier:

8.1 For products containing thioglycollic acid, its salts and its esters

"For professional use only"

a. Contains thioglycollate.

b. Follow the instructions.

c. Avoid contact with eyes.

d. In the event of contact with eyes, rinse immediately with plenty of water and seek medical advice.

e. Wear suitable gloves.

f. Keep out of reach of children.

8.2 For lye-based and no lye relaxers:

a. For professional use only.

b. Contains alkali.

c. Keep out of reach of children.

d. Follow the instructions.

e. Wear suitable gloves.

f. Avoid contact with eyes as the product can cause blindness.

g. In the event of contact with eyes, rinse immediately with plenty of water and seek medical advice.

9 Sampling

Representative samples shall be drawn for test from the market or anywhere else following the procedure of random selection. The samples shall be declared as conforming to the specification if they satisfy all the specified requirements.

Annex A
(normative)

Determination of thermal stability

A.1 Apparatus

A thermostatically controlled oven, capable of maintaining a temperature of 37 ± 1 ° C.

A.2 Procedure

Place a fresh, unopened sample of the cream in its original container into a thermostatically controlled oven at 37±1 ° C for 48 hours, making sure that the sample is securely sealed. If the product is packed in an opaque container (e.g. a tube), remove 50 g of the sample and place into an effectively sealed glass tube or vial, and test as above.

A.3 Results

The products shall be taken to have passed the test if, on removal from the oven, the following indications of instability are not observed.

a. Change of colour.

b. Change of smell or odour.

c. Phase separation.

d. Formation of granules or crystal growth.

e. Shrinkage due to evaporation of water.

Annex B
(normative)

Microbiological examination of hair relaxers and hair waving products

B.1 Outline of the method

The test consists of plating a known dilution of the sample on any digest agar medium (soya bean casein is recommended) suitable for the total amount of bacteria and fungi after incubating them for a specified period to permit the development of visual colonies.

Important: Take precaution in ascertaining that only fresh samples, from carefully sealed containersthat had not been opened before, are used for this test. This is very necessary for getting accurate results.

B.2 Apparatus

B 2.1 Tubes of resistant glass, provided with closely fitting metal caps.

B.2.2 Autoclaves

Of sufficient size. They shall keep uniform temperature within the chamber up to and including the sterilizing temperature of 122 ° C. They shall be equipped with an accurate thermometer, located so as to register the minimum temperature within the sterilizing chamber, a pressure gauge and properly adjusted safety valves.

B.2.3 Petri dishes

Of 100 mm diameter and 15 mm depth. The bottom of the dishes shall be free from bubbles and scratches and shall be flat so that the medium is of uniform thickness throughout the plate.

B.2.4 Colony counter

An approved counting aid such as Quebec colony counter. If such a counter is not available, counting may be done with a lens giving a magnification of 1.5 diameter. In order to ensure uniformity of conditions during counting, illumination equivalent to that provided by the Quebec colony counter shall be employed.

B.2.5 Balance

B.2.6 pH meter

B.2.7 Water bath

B.3 Media buffer

B.3.1 Soya bean casein digest agar medium

Dissolve 15 g of pancreatic digest of casein 5 g papaic digest of soya bean meal, and 5 g of sodium

chloride in l00 ml of distilled water contained in a 2-litre beaker by heating in water bath. Add 15 g of powdered agar and continue boiling until the agar is completely digested. Adjust the pH to 7.5 with sodium

hydroxide solution. Distribute in 20 ml quantities, close the tubes with metal caps an autoclave at 122 ^{0}C for 20 minutes. After autoclaving, store the tubes in a cool place and use them within 3 weeks.

B.3.2 Stock solution pH 7.2 phosphate buffer

Dissolve 34 g of monobasic potassium phosphate in about 100 ml of water contained in 500 ml volumetric flask. Adjust the pH to 7.2 ± 0.1 by the addition of 4 % sodium hydroxide solution. Add water to volume and mix. Sterilize at 122 ^{0}C for 20 min. Store under refrigeration.

B.3.3 Dilute phosphate buffer solution pH 7.2

Dilute 1 ml of stock solution with distilled water in the ratio of 1:800. Fill 50 ml in each of the conical flasks of 10ml capacity. Plug the flasks with cotton and sterilize at 122 ° C for 20 minutes.

B.4 Sterilization of apparatus

B.4.1 Tubes

These shall be sterilized in the autoclave at 122 ° C temperature and 1.05kg/cm^2 pressure for 20 minutes or in a hot air oven at 160 ° C.

B.4.2 Petri dishes

These shall be packed in drums and autoclaved at 122 ° C temperature and 1.05kg /cm^2 pressure for 20 minutes or individually wrapped in Kraft paper and sterilized in a hot air oven at 160 °C for one hour.

B.4.3 Pipettes

These shall be placed in pipette cones (copper, stainless steel or aluminium) after plugging the breader end with cotton and sterilized in the autoclave at 122 ° C temperature and 1.05kg/cm$_2$ pressure for 20 minutes, or at 160 ° C for one hour in the air oven.

B.5 Procedure

B.5.1 Melt a sufficient number of soya bean casein digest agar medium tubes in a hot water bath and transfer while hot into a constant temperature water bath maintained at 48 ± 2 ° C.

B.5.2 Weigh and transfer aseptically 1 g of the sample to a conical flask containing sterile 50 ml of any suitable dilution factors of dilute phosphate buffer at pH 7.2. Shake well. Pipette out in 1 ml portions into three sterile petri-dishes. Pour melted and cooled (at 45 ° C) soya bean casein digest agar medium over it, and rotate the plates to mix thoroughly. Incubate the plate at 32 ° C for 72 hours in an inverted position.

B.6 Expression of results

Get the average number of colonies on Soya bean casein digest agar medium plates and determine the number of microorganisms per gram of the sample. If no colony is covered from any of the plates microorganisms can be stated as being less than 50 per gram. For calculations, refer to EAS 217-1.

Annex C
(normative)

Test for lead using atomic absorption spectrophotometer (AAS)

C.1 Scope

This method describes the determination of lead in various cosmetic products. No interference occurs from the high concentrations of bismuth which do interfere in the dithzone colorimetric procedure.

C.2 Reagents

C.2.1 Lead nitrate $Pb(NO_3)_2$.

C.2.2 Dimethylacetamide DMA.

C.2.3 Nitric acid HNO_3,

3N. Prepare by diluting 195 ml of concentrated HNO_3 (15.4N) tone litre with deionized water.

C.2.4 Ethanol C_2H_5OH.

C.2.5 Bismuth oxychloride BiOCL

C.2.6 Hydrochloric acid

HCL, 6N. Prepare by diluting 516 ml of concentrated HCL (11.6N) to one litre with deionized water.

C.2.7 Hydrochloric acid

HCL, 2N, prepare by diluting 172 ml of concentrated HCL (11.6N) to one litre with deionized water.

C.2.8 Hydrochloric acid

HCL, 0.5N. Prepare by diluting 25 ml of 2N HCL to 100 ml with deionized water.

C.3 Standard solutions

C.3.1 Lead standard solution

100 μ g/ml. Dissolve 0.1598g of $pb(NO_3)_2$ in 10 ml of Dilute HNO_3 and dilute to 1000 ml with deionized water.

C.3.2 Lead standard solution

1000 μ g/ml in DMA. Dissolve 0.1598g of pb $(NO_3)_2$ in DMA Dilute to 100 ml.

C.4 Sample preparation

C.4.1 Aerosols

For hair, deodorant spray or similar aerosols, weigh accurately about 5 g of sample and dissolve in 50 ml of ethanol. For shaving cream spray or similar aerosols weigh accurately about 1g of sample and dissolve in 50 ml of ethanol.

C.4.2 BiOCL or cosmetics containing BiOCL

Dissolve 1g of sample (5 g if the lead level is expected to be less than 10 μ g/g) in 15 ml of 6N HCl and dilute to 100ml with 0.5N HCl. If the sample is coated with an organic material, it is necessary to ignite the sample to 500 ° C to ash before analysis.

C.4.3 Lipsticks and similar products

Ignite 1 g of sample at 500 ° C to ash. Extract the lead from the ash with 20 ml of 2N HCl, and repeat with 10ml of 2N HCl. Combine the extracts and dilute to 50ml with 2N HCl.

C.5 Instrument conditions

C.5.1 Standard atomic absorption conditions for lead

Wavelength(nM)	Slit (nM)	Relative noise	Characteristic concentration, (mg/L)	Characteristic concentration check, (mg/L)	Linear range (mg/L)
283.3	0.7	0.43	0.45	20.0	20.0
217.0	0.7	1.0	0.19	9.0	20.0
205.3	0.7	1.4	5.4	250.0	-
202.2	0.7	1.8	7.1	350.0	-
261.4	0.7	0.35	11.0	500.0	-
368.3	0.7	0.40	27.0	1200.0	-
364.0	0.7	0.33	67.0	3000.0	-

C.5.1.1 Recommended Flame air-acetylene, Oxidizing (lean,blue).

C.5.1.2 Data obtained with a standard nebulizer and flow spoiler. Operation with a High sensitivity nebulizer or impact bead will typically provide a 2-3x sensitivity improvement.

C.5.1.3 Characteristic concentration with a N_2O-C_2H_2 flame at 283.3nm: 2.7mg/L.

C.5.1.4 Table contains HCL data EDL sensitivity values approximately the same.

C.5.2 Standard flame emission conditions for lead

Wavelength (nm)	Slit (nm)	Flame
Flame 405.8	0.2	Nitrous oxide- acetylene

Stock standard solution:
LEAD, 1000 mg/L. Dissolve 1.598 g of lead nitrate, $Pb(NO_3)_2$ in1%(v/v)HNO_3 and dilute to 1 litre with 1% (v/v) HNO_3

C.5.3 Light Sources

Both Electrodeless Discharge Lamps (EDLs) and Hollow Cathode Lamps are available for lead. EDLs provide greater light output and longer life than Hollow Cathode Lamps. For lead, both EDLs and Hollow Cathode Lamps provide approximately the same sensitivity and detection limit. With multielement lamps containing copper, the Cu 216.5nm resonance line may interfere with lead determinations at the lead 217.0 nm line. The lead 283.3 nm line should be used instead.

C.5.4 Interferences

Large excesses of other elements (eg. 10,000 mg/L Fe) may interfere with the lead signal.

C.6 Analysis

Determine the concentration of lead in the sample solutions of aerosols and similar products using the standard conditions for lead and standards prepared in ethanol. The standard solutions shall be the following concentrations: 0, 10, 20, 30, 40 and 50 ppm. Determine the concentration of lead in the BiOCl solutions the lipstick solutions and similar samples using the standard conditions for lead and the method of additions.

C.7 Calculations

$$\mu \text{ g/g pb} = \frac{\mu g / ml\ pb(50)}{g\ of\ sample}$$

C.8 Interferences

No interference was found from 1000 μ g/ml of Na, Mg, K, or Ca, or from 500 μ g/ml of Mn, Co or Ni. A background absorption interference was noted with 1000 μ g/ml of Al, Fe or Bi, which can be eliminated by correcting the lead absorption at 283nm by any absorption observed at 280nm, or by using the Deuterium Background Corrector.

Annex D
(normative)

Test for arsenic using atomic absorption spectrophotometer (AAS)

D.1 Scope

This method describes the determination of Arsenic in various cosmetic products.

D.2 Reagents

The reagents used should be of analytical reagent grade. Water must be of distilled or de-ionised quality.

D.3 Instrument conditions

D.3.1 Standard Atomic Absorption Conditions for As

Wavelength (nm)	Slit (nm)	Relative noise	Characteristic concentration (nm)	Characteristic concentration check (mg/L)	Linear range, (mg/ L)
193.7	0.7	1.0	1.0	45.0	100.0
189.0	0.7	1.8	0.78	40.0	180.0
197.2	0.7	0.95	2.0	90.0	250.0

D.3.1.1 Recommended flame air-acetylene, reducing (rich, slightly yellow)

D.3.1.2 Data obtained with a standard nebulizer and flow spoiler. Operation with a High Sensitivity nebulizer or impact bead will typically provide a 2-3X sensitivity improvement.

D.3.1.3 Characteristic Concentration with a N_2O-C_2H_2 flame at 193.7 nm: 1.4mg/L.

D.3.1.4 Table contains EDL data. HCL sensitivity values are more than 25% poorer.

D.3.2 Stock standard solution

Arsenic, 1000mg/L. Dissolve 1.320 g of Arsenious oxide As_2O_3, in 25 ml of 20% (w/v) KOH solution. Neutralize with 20% (/v) H_2SO_4 to a phenolphthalein endpoint. Dilute to 1 litre with 1% (v/v) H_2SO_4. The standard solutions shall be of the following concentrations:- 0,2,4,6,8 and 10 ppm.

D.3.3 Flames

The air-acetylene flame absorbs or scatters more than 60 % of the light source radiation at the 193.7 nm arsenic line. Flame absorption is reduced with the use of the nitrous oxide-acetylene flame, although sensitivity is also reduced. Use of background correction is recommended, as it will correct for flame absorption and thus improve the signal to noise ratio.

D.3.4 Light sources

Both HCL and EDL sources are available for arsenic. EDLs, Which are more intense, provide better performance and longer life.

D.3.5 Interferences

Sample with high total salt content (greater than 1 %) can produce non-specific absorption at the 193.7 nm arsenic line, even when the metal is absent. It is therefore advisable to set background correction.

D.4 Sample preparation

As in C.4.

D.5 Analysis

As in C.6.

D.6 Calculations

As in C.7.

Annex E
(normative)

Test for mercury using Atomic Absorption Spectrophotometer (AAS)

E.1 Scope

This method describes the determination of Arsenic in various cosmetic products.

E.2 Reagents

The reagents used should be of analytical reagent grade. Water must be distilled or de-ionised.

E.3 Instrument Conditions

E.3.1 Standard atomic Absorption Conditions for Hg

Wavelength (nm)	Slit (nm)	Relative noise	Characteristic concentration (nm)	Characteristic concentration check (mg/L)	Linear range, (mg/ L)
253.7	0.7	1.0	4.2	200.0	300.0

E.3.1.1 Recommended Flame air-acetylene, oxidizing (lean,blue).

E.3.1.2 Data obtained with a standard nebulizer and flow spoiler. Operation with a High Sensitivity nebulizer or impact bead will typically provide a 2-3X sensitivity improvement.

E.3.1.3 Characteristic Concentration with a N_2O-C_2H_2 flame at 253.7nm: 12mg/L

E.3.1.4 Table contains EDL data. HCL sensitivity values more than 25 % poorer

E.3.2 Standard Atomic Absorption conditions for Hg

Wavelength, (nm)	Slit (nm)	Flame
253.7	0.2	Nitrous oxide- acetylene

E.3.3 Stock Standard Solution

MERCURY, 1000mg/L. Dissolve 1.080g of mercury (II) oxide, HgO, in a minimum volume of (1+1) HCl. Dilute to 1 litre with deionized water. The standard solutions shall be of the following concentrations: 0, 2,4,6,8 and 10 ppm.

E.3.4 Light Sources

Both Electrodeless Discharge Lamps (EDLs) and Hollow Cathode Lamps are available for Mercury. However, the light output of mercury Hollow Cathode Lamp is significantly poorer than with EDLs, and the sensitivity and detection limit achieved also are much poorer. In addition, the life of Hollow Cathode Lamps is much shorter.

E.3.5 Interferences

Large concentrations of cobalt will absorb at the mercury 253.7 nm resonance line. A 1000 mg/L cobalt solution produces approximately 10 % absorption. Ascorbic acid, stannous chloride, or other reducing agents may reduce the mercury present to Hg(I) or elemental mercury. These give higher sensitivities than Hg(II), and their presence can generate erroneously high results.

E.4 Sample preparation

As in C.4.

E.5 Analysis

As in C.6.

E.6 Calculations

As in C.7.

Annex F
(normative)

Determination of pH

F.1 Apparatus

A pH meter, preferably equipped with a glass electrode.

F.2 Procedure

F.2.1 For oil-in-water emulsion creams

Weigh 5 ± 0.01 g of the cream in a 100 ml beaker. Add 45 ml of water and disperse the cream in it. Determine the pH of the suspension at 25 ° C using the pH meter.

F.2.2 For water-in-oil emulsion creams

Weigh 10g of the cream to the nearest 0.1 g. Add 90ml of rectified spirit previously adjusted to pH 6.5 to 7.0. Warm, if necessary, to 45 ° C and stir thoroughly for 15 minutes. Filter the alcoholic layer through a filter paper and measure the pH of the filtrate at 25 ° C using pH meter.

NOTE Determine the form of cream by placing some of it on spot tile and sprinkling with a mixed indicator consisting of an intimate mixture of oil soluble dye of one colour, e.g. oil orange, and a water-soluble dye of a different colour e.g. methylene blue. After a few minutes the predominant colour indicates whether the continuous phase is oil or water. In case of doubt matter is confirmed by checking whether the product is capable of conducting electricity: if so the cream is deemed to be water continuous.

Annex G
(normative)

Determination of free alkali content

G.1 Outline of the method

This method consists of dissolving the sample in alcohol, and titrating against standard acid.

G.2 Reagents

G.2.1 Phenolphthalein Indicator Solution

Dissolve 1g of phenolphthalein in 100 ml of 95 % (v/v) rectified spirit.

G.2.2 Ethyl Alcohol
freshly boiled, and neutral to phenolphthalein, 95 percent (v/v).

G.2.3 Standard hydrochloric acid
0.1 N.

G.3 Procedure
Dissolve 2 g of hair relaxer in 100 ml of ethyl alcohol by warming, if necessary. Cool and add a few drops of phenolphthalein indicator. Titrate with standard hydrochloric acid.

G.4 Calculation

Free alkali % by mass= $\frac{VN}{M}.C$

where

C = Constant

C = 2.4 for LiOH

C = 4 for NaOH, KOH and LiOH

C = 5.6 for KOH

C = 3.7 for $Ca(OH)_2$

C = 3.5 for NH_4OH

V= volume in ml of standard hydrochloric acid

N= normality of Standard hydrochloric acid

M= mass of the sample in g.

NOTE Where mixtures of Sodium, lithium and potassium hydroxide are present in the product, the free alkali content shall not exceed 2.5 % by mass when calculated as sodium hydroxide.

Annex H
(normative)

Determination of total alkali content

H.1 Outline of the method

The method consists of refluxing the sample in alcohol, and titrating with standard acid.

H.2 Reagents

H.2.1 Ethanol - 95 % (v/v solution, free from carbon dioxide. Reflux this solution for 5 minutes. Cool to room temperature and neutralize with the ethanolic potassium hydroxide solution (see clause H.2.3) per 200 ml of ethanol.

H.2.2 Hydrochloric acid

1 N standard solution.

H.2.3 Ethanolic potassium hydroxide

0.1 N ethanolic standard solution.

H.2.4 Phenolphthalein

Solution of 1 g per 100 ml in 95 per cent (v/v) ethanol.

H.3 Apparatus

H.3.1 Conical flask capacity 250 ml, with a conical ground-glass joint at the bottom.

H.3.2 Reflux condenser Water cooled, with a conical ground-glass joint at the bottom.

H.3.3 Analytical balance.

H.4 Procedure

Weigh accurately 2 g of the sample into the flask. Add 100 ml of the ethanol solution to the test portion. Fit the flask to the reflux condenser, and gently heat until the sample is completely dissolved.

Add 3.0 ml of the hydrochloric acid solution and boil gently for 10 minutes. If after boiling, the pink colour re-appears, add a further quantity of hydrochloric acid. Titrate, at 70 ° C, with the ethanolic potassium hydroxide solution in the presence of phenolphthalein indicator. Carry out two determinations on the same sample.

H.5 Calculation

Total alkali content = $\frac{V_0 N_0 - V_1 N_1}{M} x C$

where

C = Constant

C = 2.4 for LiOH

C = 4 for NaOH

C = 5.6 for KOH

C = 3.7 for $Ca(OH)_2$

C = 3.5 for NH_4OH

M = mass of sample in g.

V_0 = volume in ml of hydrochloric acid used.

V_1 = volume in ml of potassium hydroxide used in titration.

N_0 = the exact normality of the hydrochloric acid.

N_1 = the exact normality of the potassium hydroxide solution used.

NOTE Where mixtures of sodium, lithium and potassium hydroxide are present in the product, the total alkali content shall not exceed 2.5 % by mass, calculated as sodium hydroxide.

Annex I
(normative)

Determination of thioglycollic acid

I.1 Reagents

I.1.1 Concentrated hydrochloric acid

I.1.2 Standard iodine solution 0.1N

I.2 Procedure

Accurately weigh 5 g of the sample in a 250 ml conical flask. Add about 75 ml of water and 15 ml of concentrated hydrochloric acid and heat on a water bath for 10 minutes. Cool and titrate with iodine solution using starch solution as the indicator.

I.3 Calculation

Calculate on the basis that each ml of 0.1 N iodine solution is equivalent to 0.00921 g of thioglycollic acid.

$$\% \text{ of thioglycollic acid, m/m} = \frac{Vx0.00921x100}{M}$$

where

M = mass of sample taken for test

V = volume of 0.1 N iodine solution used.

