

DRAFT UGANDA STANDARD

First Edition
2016-mm-dd

Bathing bars — Specification



Reference number
DUS DEAS 877: 2016

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This Draft Uganda Standard, DUS DEAS 877:2016, *Bathing bars — Specification*, is identical with and has been reproduced from an International Standard, EAS 877: 2016, *Bathing bars — Specification*, and is being proposed for adoption as a Uganda Standard.

This standard was developed by the Chemicals and environment Standards Technical Committee (UNBS/TC 5).

Wherever the words, "East African Standard " appear, they should be replaced by "Uganda Standard."



DEAS 877: 2016

ICS 77.100.40

DRAFT EAST AFRICAN STANDARD

Bathing bars — 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.

CD-K-06 was prepared by Technical Committee EAS/TC 074, *Surface active agents*.

Introduction

Performance of soaps, for a long time, has been primarily based on Total Fatty Matter (TFM).

Whereas the above is a fact, technological trends have shown that performance of soap can be enhanced by acceptable and safe surface active agents where TFM levels have been reduced.

In this standard the TFM levels have been reduced from that of antibacterial toilet soap with introduction of surface active agents whilst serving the same purpose. However this does not necessarily imply substitution of antibacterial toilet soap but rather an alternative and affordable antibacterial soap product.

This standard therefore sets minimum requirements for performance and safety characteristics of antibacterial bathing bar.

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Bathing bars — Specification

1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for bathing bars.

This standard applies to bathing bars supplied in the form of bars/cakes and produced from vegetable or animal oils or fats, fatty acids, or from a blend of all or part of these materials, with or without the addition of rosins or non-soapy surfactants.

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.

EAS 127, *Synthetic laundry detergents for household use — Specification*

EAS 377-1, *Cosmetics and cosmetics products — Part 1: List of substances prohibited in cosmetic products*

EAS 377-2, *Cosmetics and cosmetics products — Part 2: List of substances which cosmetic products must not contain except subject to restrictions laid down*

EAS 377-3, *Cosmetics and cosmetics products — Part 3: List of colourants allowed in cosmetic products*

EAS 377-4, *Cosmetics and cosmetics products — Part 4: List of preservatives allowed in cosmetic products*

EAS 377-5, *Cosmetics and cosmetics products — Part 5: Use of UV filters in cosmetic products*

EAS 766-1, *Antibacterial toilet soap — Specification, Part 1: Solid cake*

EAS 766-2, *Antibacterial toilet soap — Specification- Part 2: Liquid*

EAS 794, *Determination of the microbial inhibition of cosmetic soap bars and liquid hand and body washes — Test method*

EAS 814, *Determination of biodegradability of surfactants — Test method*

ISO 456, *Surface active agents — Analysis of soaps — Determination of free caustic alkali*

ISO 685, *Analysis of soap — Determination of alkali content and total fatty matter content*

ISO 4315, *Surface active agents -- Determination of alkalinity -- Titrimetric method*

3 Terms and Definitions

For the purpose of this standard the following definition shall apply:

bathing bars

the bathing bar shall be a product in the form of a bar or cake containing soap of fatty acids and/ or synthetic surface active agents listed in 4.4.1 as active ingredients and which could be used for bathing purposes in soft and hard water

4 Requirements

4.1 General requirements

4.1.1 Bathing bars shall be in the form of cakes or bars.

4.1.2 The colour of the cake or bar shall generally be uniform, but uniformity of colour shall not be obligatory in the case of genuinely mottled products.

4.1.3 The product shall not be injurious to health if used in a manner and purpose meant for their use or under reasonably foreseen conditions.

4.1.4 The cake or bar shall not have an unpleasant odour.

4.1.5 The bathing bar shall be firm and smooth in texture.

4.1.6 They are for personal washing purposes, and primarily contain saponified fatty matter, structurants, preservatives and moisture. They may also contain suitable quantities of colouring matter, perfume, opacifiers and optical brightening agents.

4.1.7 Bathing bars shall not contain any ingredients in amounts that are harmful to the human body and environment

4.1.8 Synthetic surface active agents, may be used and when used shall not be more than 4% by mass. When tested in accordance to Annex D

4.2 Specific quality requirements

4.2.1 Ingredients

The bathing bar may have one or more of the following surfactants conforming to the relevant East Africa Standard subject to the restrictions indicated:

4.2.1.1 There is no restriction on the use of soap of fatty acids, fatty acid ester sulphonates, fatty alkanonamide, fatty alcohol ethoxylates, sarcosinates, taurides, fatty isothionates, alpha olefin sulphonates, alcohol sulphates and amphoterics such as betaines and fatty alcohol ethoxy sulphate, linear alkyl benzene sulphonates (LAS) and Alkyl poly glycosides (APG) and fatty alcohol sulphosuccinate and fatty alkanol amido sulphosuccinate.

4.2.1.2 Rosins, as % of total fatty matter, shall not exceed 2 %.-to general requirements

4.2.1.3 The synthetic surface active agents shall pass the biodegradability test as given in EAS 814.

4.2.2 In addition to the surfactants and perfume, the bathing bar may contain other ingredients such as electrolytes, bar structuring and processing aids, colouring matter, permitted antioxidants, preservatives, permissible germicides (See EAS 766), super fatting agents, humectants and such additional substances as are declared on the label.

4.2.3 All ingredients shall be declared on the label following descending order in terms of quantity.

4.2.4 All the ingredients used in the bathing bars shall comply with the requirements of all parts of EAS 377.

4.2.5 Performance and safety requirements

Bathing bars shall also comply with the requirements given in Table 1 when tested against the methods prescribed therein.

Table 1 — Performance and safety requirements

SL. No	Characteristic	Requirement	Test method
i)	Total fatty matter, % by mass, minimum.	50	ISO 685
ii)	Lather, mL, minimum.	200	Annex A
iii)	Mush (loss in mass due mushing on a wet surface) (g/30cm ² , maximum).	10	Annex B
iv)	Freedom from grittiness	To pass the test	Annex C
v)	Total alkalinity (as NaOH) % by mass, maximum.	1.0	ISO 685 ISO 4315
vi)	Free caustic alkali (as NaOH), % by mass, maximum.	0.05	ISO 456

5 Packaging and labelling

5.1 Packaging

Each cake or bar may be unwrapped or wrapped. Unwrapped or wrapped bars shall be packed in suitable boxes, packages or cartons to avoid contamination or damage during transportation.

5.2 Labelling

Each bathing bar package shall be legibly and indelibly marked with the following information:

- a) The words 'Bathing bar';
- b) manufacturer's name and physical address;

NOTE The name, physical address of the distributor/supplier and trade mark may be added as required.

- c) nominal weight of each bar or cake at the time of packaging;
- d) number of bars or cakes contained in the package;
- e) all ingredients except moisture in descending order of quantity ;
- f) batch number or code number;
- g) date of manufacture and best before date;
- h) country of origin;. and
- i) labelling shall be either in English, Kiswahili or French or combination or any other language as agreed between the manufactures and supplier.

6 Sampling

Sampling shall be done in accordance to with EAS 766-2, Annex D.

7 Test methods

7.1 Preparation for test samples

The cakes of a given type (brand) of bathing bar shall be packed into a clean airtight container until tested.

NOTE The requirements given in Table1 shall be tested according to Annexes A to C. Testing should commence as soon as possible after sampling.

7.2 Criteria for conformity

Criteria for conformity to tests are included in the Annexes A to C describing the individual test methodologies.

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Annex A (normative)

Test for lather volume

A.1 General

Strict attention shall be paid to all details of the procedure in order to ensure concordant results. Particular care should be taken to invert the cylinder exactly as described.

A.2 Outline of the method

A suspension of the material in standard hard water is taken in a graduated cylinder and given 12 inversions under prescribed conditions. The volume of the foam formed is observed after keeping the cylinder for 5 minutes.

A.3 Reagents

A.3.1 Calcium chloride $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$, AR

A.3.2 Magnesium sulphate $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, AR

A.3.3 Distilled water

A.4 Apparatus

A.4.1 **Graduated cylinder** — Glass stoppered with graduation from 0 to 250 mL, with 2 mL divisions. Overall height about 35 cm and the height of the graduated portion about 20 cm.

A.4.2 **100-mL glass beaker**

A.4.3 **Thermometer** of range 0 - 110°C

A.5 Preparation of standard hard water

Dissolve 0.220 g of calcium chloride dehydrate and 0.246 g of magnesium sulphate heptahydrate in distilled water. Dilute to 5 L with distilled water.

NOTE This standard hard water has a hardness of approximately 50 ppm calculated as calcium carbonate.

A.6 Sample preparation

Cut away the outer edges of bathing bar using a knife

Using a stand up type of grater, grate up to 10 g – 15 g of the bathing bar into small chips.

A.7 Procedure

Weigh 1 g of the grated chips antibacterial bathing bar accurately in a 100-mL glass beaker. Add 10 mL of the standard hard water. Cover the beaker with a watch glass and allow to stand for 30 min. The operation is carried out to disperse the antibacterial bathing bar.

Stir the contents of the beaker with a glass rod and transfer the slurry to a 250-mL graduated cylinder ensuring that not more than 2 mL foam is produced. Repeat the transfer of the residue left in the beaker with further portions of 20 mL of standard hard water ensuring that all the matter in the beaker is transferred to the cylinder.

Adjust the contents in the cylinder to 100 mL by adding sufficient standard hard water. Bring the contents of the cylinder to 30 °C. Stir the contents of the cylinder with a glass rod or thermometer to ensure a uniform suspension.

As soon as the temperature of the contents of the cylinder reach 30 °C, stopper the cylinder and give it 12 complete inversions, each inversion comprising movements in a vertical plane, upside down and vice versa. After the 12 inversions, let the cylinder stand for 5 min. Take the following readings as shown in Figure A.1:

- a) foam plus water (V_1 mL).
- b) water only (V_2 mL).

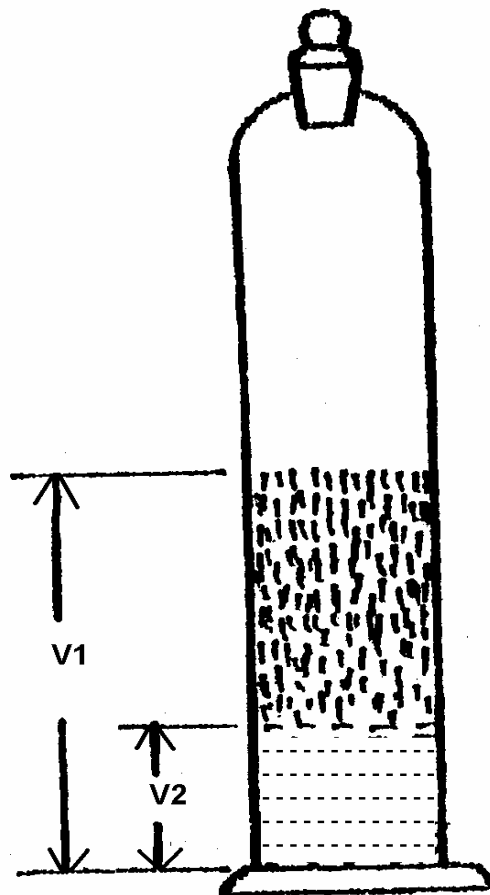


Figure A.1 — Measurement of foam

A.8 Calculation

$$\text{Lather volume} = V_1 - V_2$$

where

V_1 = Volume, in mL of foam + water;

V_2 = Volume, in mL of water only.

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Annex B

(normative)

Evaluation of the mushing properties of a bathing bar

B.1 Principle

A test piece of defined size is cut from the sample bar to remove harder outer layers. The test piece is preconditioned by giving 18 x 180 degree twists under running water at 25 °C or in a bowl of water at 25 °C. The bar is left for six hours on a piece of fabric that has been wetted and drained of excess water. During the six hours the soap/ cloth are covered to prevent drying. At the end of the test period mush is removed from the test piece face in contact with the cloth. Weight loss from the test piece is expressed as mush per 30 cm² of original surface area in contact with the cloth.

B.2 Equipment

B.2.1 For sample preparation

B.2.1.1 Coarse kitchen cheese grater

B.2.1.2 Sharp thin blade knife or carpenters plane

B.2.1.3 Callipers or ruler to ensure the sample dimensions

B.2.2 Other equipment/ materials for the test

Plastic or non-corrodible trays which are suitable sized for the test piece. Plastic soap dishes 7 x 11 x 2 cm are quite suitable.

Cotton cloth pieces cut and folded to fit as a triple layer inside the trays. Normal, flat weave, cotton sheeting as used for bed sheets will be quite suitable.

B.3 Bar preparation

B.3.1 Three (3) individual bars of a type should be tested. A test piece is cut from each bar. The test piece should if possible have a working face (to be applied to the fabric) of 6 ±1 cm x 4 ±1 cm.

All bars in a set must be cut to have the same face size. If the smallest of the range of bars to be tested at a given time is too small to allow a working face within these limits, then all bars should be cut to the maximum size possible from the smallest bar.

The longest axis of the test piece (6 ±1 cm) should be from a direction parallel to the longest axis of the original bar sample.

The working face should be a fresh surface from the interior of the bar sample. The face opposite the working face should be identified by making a small hole with a sharp object. This enables the working face to be identified after the preconditioning step.

B.3.2 To cut the bar it is convenient to first trim it to the approximate size using a coarse kitchen cheese grater and then to make the final adjustments to a smooth surface with a sharp thin-bladed knife or carpenters plane. If a plane is used, it is better to move the bar over the plane blade.

B.4 Test procedure

For each test piece;

B.4.1 The tray plus triple thickness of cloth is filled with demineralised water. The tray is then held vertically to drain the water from the cloth. The vertical position is maintained until water ceases to run from the dish in a continuous stream i.e. starts to drip.

B.4.2 The area of the working face of the test piece is measured (A).

B.4.3 The working face of the bar is placed onto the damp fabric and then the tray plus soap are covered e.g. with a sealed plastic bag, to prevent water loss.

B.4.4 The covered test piece and holder are maintained at 25 °C for 6 hours.

B.4.5 The mushed soap test piece is removed from the tray and is weighed (W1).

B.4.6 Mush is removed from the working face of the soap test piece by scraping with the edge of a blunt sided spatula or plastic ruler.

B.4.7 The test piece is reweighed (W2) and the amount of mush removed is calculated as in B.5. The mush is expressed as grams per 30cm² of original test piece surface area.

NOTE The procedure for weighing the bar and removing the mush will take some minutes. During that time the remaining soaps will continue to form mush. While this time is not critical for a set of three test pieces from a given product, if more than one product is under test it is advised to stagger the start of the test for the second product. This will give adequate time to complete work on the first set before the 6-hour storage time of the subsequent set is completed.

B.5 Calculation

$$\text{Weight of mush (grams)} = W = W1 - W2$$

$$\text{Surface area of bar (cm}^2\text{)} = A = (\text{width} \times \text{breadth})$$

$$\text{Mush} = \frac{W \times 30}{A} \text{ grams per } 30 \text{ cm}^2$$

B.6 Criteria for conformity

The test is done with three (3) separate samples of each product type, and the mean value from three samples is quoted (X). The range of values (R) is quoted as the difference between the highest and lowest values obtained for a given product type.

The sample lot of products shall be declared as conforming to the requirements for this standard if $X + 0.6R$ is less than the maximum value given in Table 1.

Annex C

(normative)

Determination of grittiness in a bathing bar

C.1 Procedure

Either

Hold the bathing bar under a smooth stream of running water at a temperature of 30 °C and gently rub the two sides of the bar on the palm of one hand for one minute each side.

Immerse the soap in a bowl containing 5 litres of water at 30 °C and gently rub two opposite bar faces with the palm of one hand for 30 seconds (15 seconds per bar face). Remove the bar from the water and continue to gently rub the two opposite bar faces for a further 30 seconds (15 seconds per face).

Allow the used bar to dry in the open for 4 hours and examine the surface.

A set of 3 samples will be tested for each product.

NOTE 1 Hands will become hydrated and insensitive with prolonged immersion in water. Testers should wait 15 minutes between testing every 3 sets of products (9 grit tests).

NOTE 2 If using a bowl rather than running water use fresh water after testing every set of 3 samples.

C.2 Criteria for conformity

The performance criteria are:

During manipulation under running water the washing bar will not have a visibly rough surface and will feel smooth to the touch.

No gritty particles will be observed on the surface of the dried bar 4 hours after the washing test.

Annex D (normative)

Determination of active detergent content

D.1 Outline of the method

When equivalent amounts of cationic and anionic detergents are present in a two-phase mixture of water and chloroform, methylene blue will colour the two phases to the same degree. Sodium alkyl benzene sulphonate and sodium lauryl sulphate or any other detergent can be titrated with a standard solution of cetyl trimethyl ammonium bromide.

D.2 Reagents

Weigh 1.5 ± 0.001 g of cetyl trimethyl ammonium bromide into a 250 mL beaker. Add 100 mL of distilled water and stir until dissolved. Transfer quantitatively to a 1 litre volumetric flask and make to volume. Mix thoroughly and standardize against solution B (see E.2.1)

D.2.1 Anionic solution (Solution B)

Weigh accurately such amount of standard alkyl sulphate of known combined SO_3 or active content so as to give exactly 0.320 g of combined SO_3 into a 250 mL beaker. Dissolve in 100 mL to 200 mL of warm water. Transfer quantitatively to 1-litre volumetric flask and make to volume with water at room temperature. Mix thoroughly. This is the primary standard against which solution A, is standardized. Solution B is 0.004 N

D.2.2 Methylene blue indicator

Dissolve 0.1 g of methylene blue in 100 mL of water. Transfer 30 mL of this solution to a 1-L flask. Add 500 mL of water, 6.8 mL of concentrated sulphuric acid, 50 g of $(\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O})$ sodium dihydrogen phosphate monohydrate and shake until dissolution is complete. Dilute to the mark.

D.2.3 Chloroform

Analytical reagent grade

D.3 Procedure

D.3.1 Weigh accurately a sample of sufficient size to give approximately 0.320 g of combined SO_3 into a 250 mL beaker. Sample size is crucial (see Note). Use 700 mL to 800 mL of warm water to transfer quantitatively to a 1-L volumetric flask. Warm on steam bath and shake gently until the sample is dissolved and solution is clear. Cool, dilute to the mark and mix thoroughly.

NOTE The titration value V should be as near as to 10 mL as possible, say between 8 mL and 12 mL but never outside 5 mL and 15 mL.

D.3.2 Pipette 10.0 mL of the sample solution into a 100 mL glass stoppered cylinder (25 x 300 mm). Add 25.0 ± 0.5 mL of methylene blue solution and 10 ± 0.5 ml of chloroform (see Note). Titrate with solution A to the correct end point, shaking the cylinder carefully after such addition to avoid emulsion and maintaining temperature within prescribed limits of 20°C - 30°C by immersion in water bath, if necessary. As the end point is approached, the rate of transfer of colour increases and solution A shall be added dropwise with vigorous shaking after each addition. If the approximate titration is known, 80 % of the required titrating solution should be added before shaking since this avoids emulsion formation. Application of vacuum to the titration cylinder may help to break some emulsions, if formed. The end point is reached when both layers

have same colour intensity. The end point is very sharp and 0.05 mL will cause a distinct change in colour distribution at or near the equivalence point.

NOTE The titration value V should be as near to 10 mL as possible, say between 8 mL and 12 mL but never outside 5 mL and 15 mL.

D.3.3 Pipette 10.0 mL of the sample solution into a 100-mL glass stoppered cylinder (25 x 300 mm). Add 25.0 mL \pm 0.5 mL of chloroform (see Note). Titrate with solution A to the correct end point, shaking the cylinder carefully after such addition to avoid emulsion and maintaining temperature within prescribed limits of 20°C to 30°C by immersion in water bath if necessary. As the end point is approached, the rate of transfer of colour increases and solution A shall be added dropwise with vigorous shaking after each addition. If the approximate titration is known, 80 % of the required titrating solution should be added before shaking since this avoids emulsion formation.

Application of vacuum to the titration cylinder may help to break some emulsions, if formed. The end point is reached when both layers have same colour intensity. The end point is very sharp and 0.05 mL will cause a distinct change in colour distribution at or near equivalence point.

NOTE The volume of methylene blue solution and chloroform may be changed if found advantageous provided the same volumes are used in standardizing solutions A and B.

D.3.4 Calculation

D.3.4.1 The percent combined SO_3 shall be expressed as follows:

$$\% \text{ combined } \text{SO}_3 = \frac{V \times N \times 8.0}{M}$$

where,

V volume, in millilitres, of solution A used in the titration;

N normality of solution A; and

M mass, in grams, of the sample in the aliquot.

D.3.4.2 The percent active detergent content shall be expressed as follows:

Percent active detergent content = percent combined SO_3 x Mol. weight of active detergent.

NOTE The molecular weight of active detergent should be supplied by the manufacturer on request.

D.4 Alternative method for determination of active detergent content

(To be used only if the first method (Clause D.1) fails to work on the product).

D.4.1 Field of application

This method is applicable to the analysis of alkylbenzene sulphonates, alkyl sulphonate, sulphates and hydroxy-sulphates, alkylphenol and fatty alcohol ethoxysulphates and dialkyl sulphosuccinates and to the determination of active materials containing one hydrophilic group per molecule.

D.4.2 Principle

Determination of anionic-active matter in a medium consisting of an aqueous and chloroform phase, by volumetric titration with a standard cationic-active solution (benzethonium chloride), in the presence of an indicator which consists of a mixture of a cationic dye (dimidium bromide) and an anionic dye (acid blue 1).

D.4.3 Reagents

D.4.3.1 The water used shall be of distilled quality.

D.4.3.2 **Chloroform**, (sp. gravity = 1.48 g/m, distilling between 59.5°C and 61.5°C).

D.4.3.3 **Sulphuric acid**, 2.5 M solution.

D.4.3.4 **Sulphuric acid**, 0.5 M solution.

D.4.3.5 **Sodium hydroxide**, 1.0 M standard volumetric solution.

D.4.3.6 **Sodium lauryl sulphate (sodium dodecyl sulphate)** ($\text{CH}_3(\text{CH}_2)_{11}\text{OSO}_3\text{Na}$), 0.004 M standard volumetric solution.

Check the purity of the sodium lauryl sulphate and simultaneously prepare the standard solution.

D.4.3.6.1 Determination of purity of sodium lauryl sulphate — Weigh, $5 \text{ g} \pm 0.2 \text{ g}$ of the product into a 250-mL round bottom flask with ground glass neck. Add exactly 25 mL of the sulphuric acid solution (E.4.3.4) and reflux into a water condenser.

During the first 5 min - 10 min, the solution will thicken and tend to foam strongly; control this by removing the source of heat and swirling the contents of the flask.

In order to avoid excessive foaming, instead of refluxing the solution may be left on a boiling water bath for 60 min.

After a further 10 min the solution clarifies and foaming ceases. Reflux for further 90 min. Remove the source of heat, cool the flask and carefully rinse the condenser with 30 mL of ethanol followed by water.

Add a few drops of the phenolphthalein solution (D.4.3.8) and titrate the solution with the sodium hydroxide solution (D.4.3.5).

Carry out a blank test by titrating 25 mL of the sulphuric acid solution (D.4.3.4) with the sodium hydroxide solution (D.4.3.5).

The purity of the sodium lauryl sulphate, expressed as a percentage,

$$= \frac{28.84 (V_1 - V_0) M_0}{M_1}$$

where,

V_0 = volume, in millilitres, of sodium hydroxide solution used for the blank test;

V_1 = volume, in millilitres, of sodium hydroxide solution used for the sample;

m_1 = mass, in grams, of the sodium lauryl sulphate to be checked; and

M_0 = exact molarity of the sodium hydroxide solution.

D.4.3.6.2 Weigh 0.004 M sodium lauryl sulphate standard volumetric solutions. Weigh, to the nearest 1 mg between 1.14 g and 1.16 g of sodium lauryl sulphate and dissolve in 200 mL of water. Transfer to a ground glass stoppered 1-L one-mark volumetric flask and dilute to the mark with water.

Calculate the molarity, M_1 , of the solution by means of the solution by means of the formula:

$$M_1 = \frac{m_2 \times \text{purity}(\%)}{288.4 \times 100}$$

where,

m_2 = mass in grams of sodium lauryl sulphate.

D.4.3.7 Benzethonium chloride 0.004 M standard volumetric solution

Weigh, to the nearest 1 mg, between 1.75 g and 1.85 g benzethonium chloride and dissolve in water. Transfer to a ground glass-stoppered 1-L one-mark volumetric flask and dilute to the mark with water.

NOTE In order to prepare a 0.004 M solution, dry the benzethonium chloride at 105 °C, weigh 1.792 g, to the nearest 1 mg, dissolve in water and dilute to 1 L.

D.4.3.8 Phenolphthalein, ethanolic solution containing 10 g/L. Dissolve 1 g of phenolphthalein in 100 mL of 95 % (v/v) ethanol.

D.4.3.9 Mixed indicator

D.4.3.9.1 Stock solution

Weigh 0.5 g ± 0.005 g dimidium bromide into a 50-mL beaker, and 0.025 g ± 0.005 g of acid blue 1 into a second 50-mL beaker.

Add between 20 mL and 30 mL of hot 10 % (v/v) ethanol to each beaker. Stir until dissolved and transfer the solutions to a 250-mL one mark volumetric flask. Rinse the beakers into the volumetric flask with ethanol and dilute to the mark with 10 % (v/v) ethanol.

D.4.3.9.2 Mixed acid indicator solution

Take 20 mL of the stock solution prepared above, put it in a 500-mL one-mark volumetric flask. Add 200 mL of water, and 20 mL of 2.5 M sulphuric acid (D.4.3.3) mix and dilute to the mark with water. Store away from direct sunlight.

D.4.4 Apparatus

Ordinary Laboratory apparatus, and

- bottles, 200-mL, glass stoppered, or measuring cylinders, glass stoppered KNY cross check.
- burettes, 25-mL and 50-mL.
- one-mark volumetric flask, 1-L capacity glass stoppered.
- one-mark pipette, 25-mL.

D.4.5 Procedure

D.4.5.1 Standardization of benzethonium chloride solution

By means of the pipette transfer 25 mL of the 0.004 M sodium lauryl sulphate solution to a bottle or measuring cylinder, add 10 mL of water, 15 mL of the chloroform and 10 mL of the mixed indicator solution.

Titrate with the 0.004 M benzethonium chloride solution. Stopper the bottle or measuring cylinder after each addition and shake well. The lower layer will be coloured pink. Continue the titration with repeated vigorous shaking. As the end point approaches, the emulsions formed during shaking tend to break easily continue the

titration drop by drop. Shaking after each addition of titrant, until the end point is reached. This is at the moment when the pink colour is completely discharged from the chloroform layer, which becomes a faint greyish blue.

The molarity, M , of the benzethonium chloride solution is given by the formula:

$$M = \frac{M_1 \times 25}{V_2}$$

where,

M_1 molarity of the sodium lauryl sulphate solution; and

V_2 Volume, in , milliliters of benzethonium chloride added.

D.4.5.2 Determination

Weigh to the nearest 1 mg a sample of 30 g; dissolve the test portion in water. Add a few drops of the phenolphthalein solution and neutralize to a faint pink colour with the sodium hydroxide solution or sulphuric acid solution as required.

Transfer to a 1-L one-mark volumetric flask and dilute to the mark with water. Mix thoroughly and, by means of the pipette transfer 25 mL of this solution to a bottle or measuring cylinder, add 10 mL of water, and 15 mL of chloroform. Titrate with the benzethonium chloride solution as described in D.4.5.1.

D.4.6 Expression of results

The content as a percentage by mass, of anionic-active matter

$$= \frac{V_3 \times M \times 1\,000 \times M_0 \times 100}{25 \times 1\,000 \times M_0}$$

$$= 4V_3M$$

The amount of active matter, expressed in milliequivalents per gram,

$$= \frac{40 \times V_3 \times M_1}{M_0}$$

where,

M_0 mass, in grams, of the test portion;

M relative molar mass of anionic-active matter;

M_1 molarity of the benzethonium chloride solution;

V_3 volume, in millilitres, of benzethonium chloride solution used for the titration of a 25-mL aliquot of anionic-active matter solution.

Annex E

(informative)

Permitted structuring and processing aids

Following is the list of structuring and processing aids used generally in bathing bars.

- a) Starch and derivatives
- b) Cellulose and derivatives
- c) Propylene glycol
- d) Sorbitol
- e) Glycerol
- f) Dextrin
- g) Kaolin
- h) Talc
- i) Bentonite
- j) Calcite
- k) Sodium lactate
- l) Soda ash
- m) Vegetable/animal oil fatty acids and salts
- n) Phosphates
- o) Sodium chloride
- p) Sodium sulphate
- q) Dolomite
- r) Fatty alcohol
- s) Rosin and rosin salts
- t) Fatty acid ethanolamide
- u) Diethylene glycol monostearate
- v) Paraffin
- w) Polyoxyethylene glycol
- x) Glycerol monostearates

- y) Silicates
- z) Sodium citrate
- aa) Chelating agents
- bb) Any other internationally accepted builder

Bibliography

KS 1942:2005, *Bathing bars -- Specification*.
IS 13498:1997, *Bathing bars -- Specification*

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