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DRAFT EAST AFRICAN STANDARD

Laundry soap — Specification

EAST AFRICAN COMMUNITY

DRAFT FOR PUBLIC REVIEW

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Contents	Page
1	Scope..... 1
2	Normative references..... 1
3	Terms and definitions 1
4	Grades of laundry soap 2
5	Requirements..... 2
5.1	General requirements 2
5.1.1	Appearance 2
5.1.2	Texture..... 3
5.1.3	Odour 3
5.1.4	Colouring matter..... 3
5.1.5	Stability..... 3
5.1.6	Toxicity 3
5.2	Specific requirements 3
6	Sampling 4
8	Packaging and labelling..... 4
8.1	Packaging..... 4
8.2	labelling 4
9	Criteria for conformity..... 5
Annex A	(normative) Determination of staining test of laundry bar soap..... 5
A.1	Method 1: Undissolved powder (5.0 % product concentration) 6
A.1.1	Principle 6
A.1.2	Materials 6
A.1.3	Procedure..... 6
A.2	Method 2: Pre-dissolved soap (2.5 % product concentration) 6
A.2.1	Principle 6
A.2.2	Materials 6
A.2.3	Procedure..... 6
Annex B	(normative) Sampling 7
B.1	Procedure..... 7
B.2	Preparation of test samples 7
B.2.1	Composite sample..... 7
B.2.2	Samples for testing 7

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.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS) and other deliverables. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. 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 Principles and procedures for development of East African Standards.

East African Standards and other deliverables 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.

The committee responsible for this document is Technical Committee EASC/TC 074, *Surface active agents*

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This fourth edition cancels and replaces the third edition (EAS 31:2013), which has been technically revised.

Laundry soap — Specification

1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for two grades of laundry soaps. This standard covers two grades of laundry soap pure and built laundry soap in the form of cakes, tablets or bars, produced from vegetable or animal oils or fats or a blend of all or part to these materials.

It does not cover any soap in which synthetic detergents have been added to enhance its performance.

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.

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

ISO 457, *Analysis of soap — Determination of chloride content*

ISO 672, *Analysis of soap — Determination of moisture and volatile matter content*

ISO 673, *Analysis of soap — Determination of ethanol insoluble matter*

ISO 684, *Analysis of soap — Determination of total free alkali*

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

ISO 862, *Surface active agents — Vocabulary*

ISO 1067, *Analysis of soap — Determination of unsaponifiable, unsaponified, and unsaponified saponifiable matter*

ISO 6839, *Anionic surface active agents — Determination of solubility in water*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in ISO 862 and the following apply.

3.1

batch

material from a single mix or, in the case of a continuous production process, the material from a single day's production

3.2

builder

complementary component of soap, usually inorganic, which with reference to the washing action, adds its characteristic properties to those of the essential constituents

NOTE Builders are added to a soap to improve its effectiveness under the conditions of use. The action of builders is mostly physico-chemical and comprises a series of effects, which results in more economic usage and better cleansing action of soap especially in hard water areas. Substances commonly used as builders are soda ash, sodium silicates, sodium phosphates, borax and cellulose derivatives.

- 3.3 built laundry soap**
grade II laundry soap containing moderate quantities of builders (see Table 1)
- 3.4 colouring matter**
any dyestuff that may be used to colour laundry soap
- 3.5 fillers**
materials added to soaps to increase the mass of the product but which in themselves do not improve effectiveness of the soap under the conditions of use

NOTE Fillers are generally inert and of an almost or completely non-detergent character.

- 3.6**
free caustic alkali/uncombined caustic alkali present in a soap

- 3.7 laundry soap**
soap which is intended for use in washing clothes

NOTE Laundry soap may contain fillers, builders, colouring matter, perfume, optical brighteners, preservatives, glycerine or opacifiers.

- 3.8 lot**
identified quantity of laundry soap produced under essentially the same conditions

- 3.9 pure laundry soap**
well saponified soaps which, in addition to moisture, may contain amounts of other substances, such as colouring matter, perfume, preservative, opacifiers and optical brightening agents.

- 3.10 total fatty matter**
water-insoluble or ether soluble fatty matter under the specified conditions of test

- 3.11 total free alkali**
sum of the free caustic alkali and the free carbonate alkali contents

- 3.12 saponification**
chemical reaction in which a fat is converted into a soap by the action of alkaline

4 Grades of laundry soap

Laundry soap shall be of the following grades and designations:

- a) pure laundry soap, Grade I (see Table 1); and
- b) built/filled laundry soap, Grade II (see Table 1)

5 Requirements

5.1 General requirements

5.1.1 Appearance

Laundry soap shall be free from visible dirt and other foreign matter.

5.1.2 Texture

Laundry soap shall be of firm texture and possess good lathering and cleaning properties.

5.1.3 Odour

Laundry soap shall be free from objectionable odour. It shall not leave objectionable odour on clothes after washing and thoroughly rinsing with water.

5.1.4 Colouring matter

When coloured laundry soap is used in washing any safe white fabric, it shall not leave any visible stains on the fabrics after washing and thorough rinsing with water when tested in accordance with Annex A.

5.1.5 Stability

When immersed in distilled water for one hour at 25 °C – 30 °C, laundry soap shall not disintegrate, and when dried at room temperature for 25 h thereafter, it shall not crumble, crack or break.

5.1.6 Toxicity

The product shall not be injurious to health, cause irritation to the skin during use or handling, damage the fabrics and shall be environmentally friendly/safe.

5.2 Specific requirements

Laundry soap shall comply with the specific quality requirements in Table 1.

Table 1 — Specific requirements for laundry soap

S/No.	Characteristic	Requirement, % (m/m)		Methods of test
		Pure laundry soap Grade I	Built/filled laundry soap Grade II	
i)	Total fatty matter, %, min	62	45	ISO 685
ii)	Matter insoluble in water, % max.	0.5	5	ISO 6839
iii)	Matter insoluble in ethanol, % by mass, max	2.5	20	ISO 673
iv)	Free caustic alkali, as NaOH, % by mass, max	0.2	0.4	ISO 456 or Annex C
v)	Total free alkali, as NaOH, % by mass, max	0.2	0.3	ISO 684
vi)	Total free fat (unsaponified and unsaponifiable fatty matter), % by mass, max	0.2	2	ISO 1067
vii)	Sodium Oxide (Na ₂ O), by mass % max.	0.25	0.4	ISO 456
viii)	Moisture and volatile matter content at 105 °C, % by mass, max	30	30	ISO 672
ix)	Chloride content, as NaCl, % by mass, max	1.5	1.5	ISO 457
x)	Staining	Shall pass the test		Annex A

NOTE 1 As laundry soap is liable to lose moisture on keeping, the results of analysis in respect to free caustic alkali, unsaponified fatty matter, unsaponifiable matter and matter insoluble in alcohol should be recalculated on the basis of the minimum specified total fatty matter by means of the equation

$$\text{Recalculated results} = \frac{\text{Actual results} \times \text{Minimum specified total fatty matter}}{\text{Actual total fatty matter}}$$

NOTE 2 As weight of laundry soap is liable to diminish owing to loss of moisture in the soap, the weight of the soap bars or cakes should be recalculated on the basis of the minimum specified total fatty matter.

EXAMPLE

If a soap bar during analysis is found to weigh 496 g, the actual total fatty matter of that bar is found to be 70.0 %, the value of unsaponified matter is found to be 0.56 % and the minimum content of total fatty matter is specified as 62.0 %, then recalculated value for unsaponified matter is:

$$\frac{0.56 \times 62.0}{70.0} = 0.469 \%$$

and the recalculated weight of the soap bar drying is:

$$\frac{496 \times 70.0}{62.0} = 560 \text{ g}$$

6 Sampling

Sampling shall be done in accordance to Annex B.

8 Packaging and marking

8.1 Packaging

Laundry soap shall be packed in clean, sound and dry containers made of a material, which does not affect the product and which protects the product from excessive loss of moisture and shall be from free contamination.

8.2 Marking

8.2.1 Packaging

Each package shall be legibly and indelibly labelled either in English, Kiswahili or French or combination or any other language as agreed between the manufacturer and supplier with the following information:

- a) the words "Grade I Laundry Soap" or "Grade II Laundry Soap";
- 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) country of origin;
- f) batch number or lot number.
- g) date of manufacture and best before date

8.2.2 Wrapper

On the paper or wrapper in which the bar or cake is wrapped shall be marked with the particulars contained in 8.2.1 (a) to (b).

8.2.3 Bars or cakes

In case of bars or cakes which, are not wrapped in individual wrapper, the bars or cakes shall be marked with brand names or trademarks and where possible.

9 Criteria for conformity

The lot shall be deemed to comply with this standard, if after inspection and testing, it complies with the requirements specified in Clause 4 and Clause 5.

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**Annex A
(normative)**

Determination of staining test of laundry bar soap

A.1 Method 1: Undissolved powder (5.0 % product concentration)

A.1.1 Principle

Test pieces of cloth of defined area are rubbed with soap and then dipped in water overnight then scrubbed and rinsed in running water.

A.1.2 Materials

Pieces of white cotton, nylon and Crimplene C cloth

A.1.3 Procedure

A.1.3.1 Rub evenly about 10 g of soap over a 15 cm x 7.5 cm test swatch placed on a china plate.

A.1.3.2 Pour gently 50-mL of hot water (approximately 55 °C) into the plate so that the test swatch is covered and left overnight (16 h).

A.1.3.3 Hand rub the swatch 10 times and then rinse each of the three test swatches are rinsed twice in about two litres of water and then dried in the drier.

NOTE The staining test is conducted in triplicate for all cloth types.

A.2 Method 2: Pre-dissolved soap (2.5 % product concentration)

A.2.1 Principle

The method involves subjecting fabrics to prolonged soaking in a highly concentrated soap solution.

A.2.2 Materials

Pieces of white cotton, nylon and Crimplene C cloth of dimension 15 cm x 7.5 cm

A.2.3 Procedure

A.2.3.1 Weight 10 g of soap in a honey jar and then add 200 mL of hot water at a temperature of approximately 60 °C, shake until when the soap is thoroughly dissolved.

A.2.3.2 Place a test swatch A 15 cm x 7.5 cm in the soap solution (A.2.3.1) and allow to stand overnight.

A.2.3.3 Transfer the test swatch in a bowl containing one litre of water and then agitate vigorously by hand for 10 s.

A.2.3.4 Rinse the test swatches in 5 L of water by hand. The times should be fixed for all washes, and then dry swatches.

NOTE The staining test should be conducted in triplicate for all cloth types.

Annex B (normative)

Sampling

B.1 Procedure

B.1.1 In a single consignment, all packages (cartons) containing toilet soap cakes drawn from the same batch of production shall constitute a lot. For ascertaining the conformity of the lot to the requirements of this standard, tests shall be carried out on each lot separately. The number of packages to be selected for drawing the sample shall be in accordance with Table B.1.

Table B.1 — Scale of sampling

Number of packages (cartons) in the lot <i>N</i>	Number of packages (cartons) to be selected <i>n</i>	Number of samples
4 to 15	3	3
16 to 40	4	4
41 to 65	5	2
66 to 110	7	2
111 and above	10	1

B.1.2 The packages shall be selected at random, using tables of random numbers. If these are not available, the following procedure shall be applied:

Starting from any package, count all the packages in one order as 1, 2, 3.... N , selecting every k^{th} package, where k is the integral part of $N \div n$.

B.1.3 From each package thus selected, draw at random an equal number of cakes so as to obtain a total mass of at least 2 kg.

B.2 Preparation of test samples

B.2.1 Composite sample

Weigh each cake separately (including any material that may have adhered to the wrapper), and calculate the average mass. Cut each of the remaining cakes into eight parts by means of three cuts at right angles to each other through the middle. Grate finely the whole of two diagonally opposite eighths of each specimen. Mix the gratings and place in a clean, dry, airtight glass container.

B.2.2 Samples for testing

Immediately after preparation of composite sample (B.2.1), take at one time all test samples required for the tests in 4.2. Weigh out the test sample required for determination of free alkali or acid content, and use it immediately.

Annex C (normative)

Determination of free caustic alkali or free fatty acid

C.0 General

The method consists in dissolving the soap in alcohol and titrating the solution with sulphuric acid or alcoholic sodium hydroxide solution, as the case may be.

C.1 Reagents

C.1.1 Phenolphthalein Indicator — Dissolve 1 g in 100 mL of 95%

C.1.2 Ethyl Alcohol — rectified spirit

C.1.3 Standard Sulphuric Acid or Standard Hydrochloric Acid — approximately 0.1 N.

C.1.4 Standard Sodium Hydroxide Solution — approximately 0.1 N.

C.1.5 Barium Chloride Solution — 10% (m/v).

C.2 Procedure for Free Caustic Alkali

C.2.1 For Toilet Soaps and Unbuilt Laundry Soaps — Weigh accurately about 10 g of the sample into a 250-mL flask, add about 100 mL of ethyl alcohol, insert a cork provided with a long tube to act as a reflux condenser and immerse into a boiling water-bath, shaking frequently until the soap is dissolved. Add about 5 mL of barium chloride solution to eliminate traces of carbonates which are usually present. Add a few drops of phenolphthalein indicator and titrate with standard sulphuric acid or hydrochloric acid.

C.2.2 For Soaps Containing Builders and Filters — Take the filtrate heat it to boil. Add about 0.5 ml of phenolphthalein indicator and titrate with standard sulphuric or hydrochloric acid.

C.3 Procedure for Free Fatty Acid — Proceed as prescribed under **C.2.1** starting with a fresh sample of soap, and omitting the addition of barium chloride solution and titrate the alcoholic solution with standard sodium hydroxide solution. This procedure is applicable to pure soaps only.

6.4 Calculation — Calculate the percentage of free caustic alkali (as NaOH, KOH and K₂O) and free fatty acid (as oleic acid) as follows:

a) Free caustic alkali (as NaOH), percent by mass = $\frac{4 V N}{M}$

b) Free caustic alkali (KOH), percent by mass = $\frac{5.61 V N}{M}$

c) Free caustic alkali (as K₂O), percent by mass = $\frac{4.71 V N}{M}$

where

V = volume in ml of standard sulphuric acid or hydrochloric acid used,

N = normality of standard sulphuric acid or hydrochloric acid, and

M = mass in g of the material taken for the test.

d) Free fatty acid, as oleic acid ($C_{18}H_{34}O_2$), percent by mass = –

where

V_1 = volume in ml of standard sodium hydroxide solution used,

N_1 = normality of standard sodium hydroxide solution, and

M = mass in g of the material taken for the test

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