DRAFT EAST AFRICAN STANDARD

Scouring powder — Specification

EAST AFRICAN COMMUNITY

Foreword

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

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

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

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

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

EAS 294 was prepared by Technical Committee EASC/TC 074 -Surface Active Agents,

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1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for scouring powder

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 862, *Surface active agents — Vocabulary*

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

ISO 2271 *Surface active agents -- Detergents -- Determination of anionic-active matter by manual or mechanical direct two-phase titration procedure*

ISO 2268 Surface active agents (non-ionic) — Determination of polyethylene glycols and non-ionic active matter (adducts) — Weibull method

ISO 685 Analysis of soaps — Determination of total alkali content and total fatty matter content

ISO 607 Surface active agents and detergents — Methods of sample division

ASTM D2180 Standard Test Method for Active Oxygen in Bleaching Compounds

EAS 377, Cosmetics and cosmetic products (All parts)

3. Definitions

For the purposes of this Draft Standard, definition given in ISO 862 and the following shall apply

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp.

— IEC Electropedia: available at http://www.electropedia.org/

3.1
scouring powder
household cleaning product consisting essentially of a mixture of abrasives, suitable additives and builders together with an active ingredient which may be an anionic or non-ionic or a soap or synthetic detergent or their mixture

3.2
product unit

a unit of the final product, packed in a plastic or any other suitable container

3.3

lot

a number of product units of the same size, type and style which contains scouring powder manufactured from a single batch.

3.4
batch

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

4 Requirements

4.1 General requirements

4.1.1 The Scouring powder shall be categorized as:

a) Physical
b) Chemical

4.1.2 The physical scouring powder shall consist of powdered hard natural silicate rock, or felspar, calcite, diatomite or any other suitable abrasive, together with a surface-active ingredient, which shall be soap, and/or any suitable natural/synthetic detergent with or without a bleaching agent, dye or perfume.

4.1.3 The Chemical scouring powder shall consist of chemical abrasives, for example, sodium carbonate, sodium bicarbonate, together with a surface-active ingredient, which shall be soap, and/or any suitable natural/synthetic detergent with or without a bleaching agent, dye or perfume.

4.1.4 All ingredients used shall comply to the requirements of EAS 377 (all parts).
4.1.5 The scouring powder shall be in the form of a uniform free-flowing powder, free from lumps and visible impurities.

4.1.6 The scouring powder, both as received and when mixed in water, shall not have an objectionable odour”

4.1.7 The Scouring powder shall not be corrosive or cause chemical burns when used under normal and reasonably foreseeable conditions of use.

4.2 Specific requirements

The scouring powder shall comply with the specific requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Specific requirements for Scouring powder

S/No	Characteristic	Requirement	Test method
i.	Surface active content, % m/m, min. • As alkylarylsulphonate[1] • As total fatty matter[2]	 2.0 3.0	ISO 2268 for non-ionic and ISO 2271 for anionic matter ISO 685 for fatty matter
ii.	Volatile matter at 105 ºC± 2 ºC. %, m/m, max.	3.0	Annex B
iii.	Total free alkali content (as NaOH), % m/m, max.	1.0	ISO 684
iv.	alkali salts content (as anhydrous Na_2CO_3), % m/m Physical Scouring Powder Chemical Scouring powder	 1.0 – 10.0 10 – 16.0	Annex C
v.	Matter insoluble in water, % m/m, min. Physical Scouring Powder Chemical Scouring powder	 80 3	Annex D
vi.	Fineness of water-insoluble matter, % m/m, max. • Retained on 250-*µ*m sieve • Retained on 150-*µ*m sieve • Retained on 75-*µ*m sieve	 0.1 5.0 15	Annex E
vii.	pH of 1 % solution, max.	11.0	Annex F
viii	Available chlorine[3], % m/m, min	0.3	Annex A
ix	Available oxygen[4] % m/m, min	2	ASTM D2180
x	cleaning efficiency • Tough soil removal • Grease removal	To pass test	 Annex G Annex H

[1] Applicable for detergent based formulations

[2] Applicable for soap-based formulations

[3] This test is only applicable to products with chlorine-based bleaching agent,

[4] This test is only applicable to products with oxygen-based bleaching agent,

5 Packaging

Scouring powder shall be packaged in suitable airtight containers which will protect the material from caking into hard lumps.

6 Labelling

Each container shall be legibly and indelibly labelled either in English, Kiswahili or French or combination or any other language as agreed to between the manufacturer and supplier with the following information: a) name of the product;

a) name of the product as Scouring powder
b) registered trade mark if any;
c) net mass in grams;
d) name and physical address of the manufacturer;
e) country of origin;
f) lot or batch number;
g) date of manufacture and best before date;
h) instructions for use;
i) Warning statements;
j) available bleaching agent when used;
k) Indicate whether soap or detergent based List of the ingredients
l) Indicate whether is physical or chemical

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

7 Sampling

Sampling shall be done in accordance to ISO 607

Annex A
(normative)

Determination of available chlorine

A.1 Principle

The available chlorine is determined iodometrically by titration with standard thiosulphate solution.

A.2 Reagents

A.2.1 Acetic acid, glacial

A.2.2 Potassium iodide, 3 % (m/V) aqueous solution

A.2.3 Sodium thiosulphate, 0.1 M standard volumetric solution

A.2.4 Starch indicator solution, 0.5 % (m/v) aqueous solution

A.3 Procedure

Weigh to the nearest 0.01 g, 30 g to 35 g of the composite sample in a 500-mLconical flask containing 250 mL of potassium iodide solution. Stopper the flask and stir for five minutes on a magnetic stirrer. Add 15 mL of glacial acetic acid. (Caution: acid to be added with extra care to avoid an excessive rate of carbon dioxide evolution when the formulation contains a carbonate). Titrate with sodium thiosulphate solution to a light-yellow colour while stirring continuously. Add 0.5 mL of starch indicator solution and titrate slowly until the colour disappears. Carry out the determination in duplicate.

A.4 Calculation

The available chlorine, expressed as percent by mass shall be calculated as follows:

$$\frac{M \times V \times 3.546}{m_0}$$

where

m_0 is the mass, in grams, of the sample;

M is the molarity of sodium thiosulphate solution;

V is the volume, in cubic centimetres, of sodium thiosulphate use.

Annex B
(normative)

Determination of volatile matter

B.1 Principle

A known mass of composite sample is oven-dried to constant mass.

B.2 Apparatus

B.2.1 Porcelain or silica dish, 6 cm to 8 cm diameter and 2 cm to 4 cm depth

B.2.2 Desiccator, containing an efficient desiccant

B.2.3 Air-Oven, electrically heated

B.2 Procedure

Weigh to the nearest 0.001 g, 5 g of the sample in a tarred dish, which has been previously dried and cooled. Heat the dish and its content in an oven at 105 ºC ± 2 ºC for an hour. Cool in a desiccator and weigh. Repeat the operation of heating, cooling and weighing until the difference in mass between two successive weighings are less than 0.01 g. Carry out this determination in duplicate and take the mean of the results.

B.3 Calculation

The volatile matter content, expressed as percent by mass, shall be calculated as follows:

$$\frac{m_1 - m_2}{m_0} \times 100$$

where

m_0 is the mass, in grams, of sample used;

m_1 is the mass, in grams, of sample and dish before heating; m_2

is the mass, in grams, of sample and dish after heating.

Annex C

(normative)

Determination of alkaline salt

C.1 Principle

After extracting the composite sample with hot neutralised ethanol, the residue is extracted with a known volume of water which is titrated with hydrochloric acid solution.

C.2 Reagents and materials

C.2.1 Ethanol, 95 % (V/V) solution, free from carbon dioxide. Reflux this solution for five minutes, cool to ambient temperature and neutralise with the ethanolic potassium hydroxide solution (C.2.2) in the presence of four drops of phenolphthalein solution (C.2.3) for 200 mL of ethanol.

C.2.2 **Potassium hydroxide**, 0.1M ethanolic standard volumetric solution

C.2.3 **Phenolphthalein**, solution of 1 g per 100 ml in 95 % (v/v) ethanol

C.2.4 **Hydrochloric acid**, 0.25 M standard volumetric solution

C.2.5 Screened methyl orange indicator, dissolve 0.2 g of methyl orange and 0.28 g of xylene cyanole FF in 100 Ml of freshly boiled 50% (v/v) ethanol and filter

C.2.4 Glass fibre filter, having about the same retention as a Whatman No 5-cellulose filter and about the same speed as a Whatman No. 4 cellulose filter

C.3 Procedure

C.3.1 Weigh to the nearest 0.001 g, 5 g of the sample into a 250-mL beaker, add 50 mL of hot ethanol and boil gently for five minutes. Filter the hot solution through the weighed fibre filter in a filter funnel and transfer the residue quantitatively to the filter. Wash the residue with 150 mL of hot ethanol.

C.3.2 Extract the residue on the filter with sufficient boiling water to collect 200 mL of extract. Reserve the extracted residue for the determination of water-insoluble matter (Annex D). To the water extract obtained above add about 0.5 mL of the screened methyl orange indicator and titrate with the standard hydrochloric acid solution until the colour changes from green to grey. Carry out this determination induplicate.

C.4 Calculation

C.4.1 The alkaline salt content, expressed as percent by mass of anhydrous sodium carbonate, shall be calculated as follows:

$$\frac{V \times M \times 5.3}{m_0}$$

where

m_0 is the mass, in grams, of sample used;

M is the molarity of the standard hydrochloric acid solution;

V is the volume, in millilitres, of the hydrochloric acid solution used.

C.4.2 Take the result as the arithmetic mean of duplicate determinations.

Annex D
(normative)

Determination of water insoluble matter

D.1 Principle

The residue obtained after extraction with hot ethanol and boiling water is dried to constant mass.

D.2 Procedure

Dry the residue and the filter, retained from the determination of alkaline salts (C.3.2), In an oven maintained at 105 ºC ± 5ºC for one hour. Cool in a desiccator and weigh. Repeat the operation of heating, cooling and weighing until no further loss in mass occurs. Carry out the determination in duplicate.

D.3 Calculation

The water-insoluble matter content, expressed as percent by mass, shall be calculated as follows:

$$\frac{m_1}{m_0} \times 100$$

where

m_1 is the mass, in grams, of the residue;

m_0 is the mass, in grams, of the sample used (Annex C).

Annex E
(normative)

Determination of fineness of water-insoluble matter

E.1 Principle

The water-insoluble matter content is sieved and the percentage of residue retained on each sieve calculated.

E.2 Apparatus

Sieves, of diameter 100 mm, and of nominal aperture sizes 75-*µ*m, 150-*µ*m and 250-*µ*m

E.3 Procedure

Weigh out 20 g of the composite sample into a beaker and add 200 mL of distilled water. Heat on a water bath, with frequent stirring until all the soluble salts are dissolved. Assemble three tared sieves in descending order, beginning with 250-µm aperture sieve at the top, followed by the 150-µm aperture sieve and 75-µm at the bottom. Pour the mixture on the top sieve and transfer the residue quantitatively to the sieve by washing the beaker several times with hot water, washing the insoluble matter through the sieves. Continue the washing until the amount of residue on the top sieve appears to remain constant. Dry each sieve and its contents in an oven at 105 ºC + 5 ºC. Allow to cool and weigh each sieve with its residue.

E.4 Calculation

The insoluble matter retained on each sieve of total insoluble matter, expressed as percent by mass, shall be calculated as follows:

$$\frac{m_1 \times 10000}{m_0 \times P}$$

where

m_1 is the mass, in grams, of the insoluble matter on the sieve;

m_0 is the mass, in grams, of the sample used;

P is the percentage of water insoluble matter present in the test sample (Annex D).

Annex F
(normative)

Determination of pH

F.1 Methods

The determination shall be carried out by the electrometric method or by the indicator method and in case of dispute the electrometric method shall be adopted.

F.1.1 Electrometric method

F.1.1.1 General

Determination shall be made by using a pH meter with glass electrode.

F.1.1.2 Procedure

Prepare a 1% solution (*m/v*) of the material by weighing accurately about one grams of the material and transfer it to a 150-mLbeaker. Add about 50 mL of freshly boiled and cooled distilled water to the beaker and put the beaker on a hot-plate for dissolving the material soluble in water. Continue string with a glass rod to ensure dissolution. Filter through a filter paper into a 100-mLflask. Wash the filter paper with hot water at least four times collecting the washings into the filtrate. Cool the solution under a water tap and then add distilled water up to the 100-mLmarkas. Determine the pH of the solution using a pH meter.

F.1.2 Indicator method

F.1.2.1 Reagents

Alizarin yellow R, pH range 10.1 to 12.0 and colour change yellow to orange

F.1.2.2 Procedure

F.1.2.2.1 As in F.1.1 take 10 mL of this solution in a glass test tube and add 0.5 mL of the indicator. Compare the colour produced with a series of buffer tubes on known pH in the range 10.0 to 12.0. Report as pH, the pH of the buffer solution which gives the closest match with the colour produced by the sample.

F.1.2.2.2 Standard calibrated glass discs may also be used for determination of pH.

Annex G
(normative)

DETERMINATION OF CLEANING EFFICIENCY BY TOUGH SOIL CLEANING TEST

G.1 Method

This method gives an estimation of the fixed soil cleaning power.

G.2 MATERIALS

a) Stainless steel plates (SS 304, 1.3 mm thick, 20 x 10 cm);
b) Nylon scrubber;
c) Wheat flour;
d) Besan flour;
e) Rice flour;
f) Vegetable oil;
g) Weighing balance (least count 0.00 1 g);
h) Hot plate (up to 400°C);
i) Pair of tongs;
j) Beaker;
k) Glass rod; and
l) Brush.

G.3 SOIL

In a glass beaker mix 16.5 percent wheat flour, 16.5 percent besan flour, 17 percent rice flour and 50 percent vegetable oil by mass thoroughly with a glass rod.

G.3 SOILED PLATE PREPARATION

The clean stainless steel plate is weighed (W_1). The soil solution is spread evenly on the stainless steel plate using a brush such that the soil loading is 0.2 g/cm2. This soiled plate after ageing for 30 min is heated on a hot plate set at 325°C for 2 min. The soiled plate is then cooled to room temperature and aged at room temperature for 2 h. The soiled plate is weighed now (W_2).

G.4 CLEANING PROTOCOL

Take 1g of the product directly on the soiled plate. Wet the nylon scrubber and shake it to remove excess water. The plate is then manually cleaned for 30 seconds with to and fro movements (in the range of 60 to 70 cycles). One cycle is one complete to and fro motion. The plate is rinsed and dried in an oven at 50°C for 30 min. After bringing to room temperature, the plate is reweighed (W_3).

$$Tough\ soil\ cleaning\ in\ percentage = \frac{W_2 - W_3}{W_2 - W_1} \times 100$$

Requirement: Minimum 30%

Annex H
(normative)

DETERMINATION OF CLEANING EFFICIENCY BY GREASE REMOVAL

H.1 Methods
This method prescribes the method of test for evaluating the grease removal efficacy. It involves the cleaning of soiled plates through direct application consumer wash habit. The cleaning is carried out using product picked-up through wet nylon wire puff and cleaning soiled plates by giving predetermined number of rubs under standard conditions.

H.2 REQUIREMENTS
a) Stainless steel (SS 304,) plates of about 20 to 25 cm diameter (A stock of 25 to 30 plates is required).
b) Nylon wire puff.
c) Rubber bung, about 2 cm diameter
d) Graduated pipette.
e) Soil - A mixture of vanaspati (hydrogenated vegetable oil) and soft edible oil (Ground nut oil) in the ratio of 80: 20.
f) Three trained panel members for carrying out 4 plate cleaning.

H.3 SOILED PLATE PREPARATION
Pipette out 0.5 mL soil into each stainless steel plate. Spread the same evenly on the plate with the rubber bung. Add 5 ml of water (containing Ca as 50 ppm $CaC0_3$) on each plate. Allow the plates to age for 30 min after stacking one over the another.

H.4 TEST PRODUCT SAMPLE PREPARATION
take 5 g of representative sample directly for testing in porcelain dish.

H.5 PROCEDURE
Remove the top soiled plate from the stack. Pick approximately 0.5 g of test product sample prepared above using wet nylon wire puff. Rub the front of the plate with nylon puff containing the product making 6 turns clockwise and 6 turns anti-clockwise covering the entire soiled surface on the plate. Reverse the plate and rub with the used nylon puff 3 times clockwise and 3 times anticlockwise. Rinse the washed plate in thin running tap water. Observe the extent of cleaning to achieve oil free complete washed plate. Oil free complete cleaning is confirmed by observing the continuous sheet of water flow across the plate without getting cut. Oily plates results in cut (break) of water flow across the plate surface where the oily stains remain uncleaned. In case of incomplete cleaning, pick-up minimal quantity of test product sample onto the nylon puff and repeat cleaning to complete satisfactory cleaning. Continue cleaning of plates one by one till 5 g of test sample is exhausted. Record the result as 'Number of plates cleaned per 5 g of sample’. Carry out 3 replicate assessments for each test sample using 3 different trained panel members and report the average figure.

Bibliography

EAS 294: 2021 Scouring powder — Specification
IS 6047: 2009 Scouring product for utensil cleaning- Specification