



## **DRAFT EAST AFRICAN STANDARD**

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### **Soap noodles — 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.

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*

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

This second edition cancels and replaces the first edition (EAS 815:2015), which has been technically revised.

## Introduction

Conventionally, solid soap is a salt of fatty acids made by reaction of alkali with oils or fats in the process called saponification. Builders may be added in soap in order to improve its performance. As a result of rising of soap demand across the globe due to the growing awareness of personal hygiene, the soap manufacturers have opted to sell the finished soap base, i.e., the soap noodles because making soap by starting with the soap noodles provides the end manufacturers with the benefit of investment, time and convenience as the reaction process stage is already done.

Soap noodles contain salts of fatty acids comprising chiefly C-18 unsaturated and saturated acids with added preservatives and necessary electrolytes, built or unbuilt and in a form which is not suitable for direct domestic use.

The increased manufacturing and importation of soap noodles into the East African region has necessitated the need to regulate the quality of this product.

This standard was developed to guide the quality and safety of the locally manufactured and imported noodles into the EAC region.



## Soap noodles — Specification

### 1 Scope

This Draft East African Standard specifies requirements sampling and test methods for soap noodles used as an intermediate product for subsequent conversion into a marketable soap.

### 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 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*

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

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

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

ISO 862, *Surface active agents — Vocabulary*

ISO 4323, *Soaps - Determination of chlorides content — Potentiometric method*

### 3 Terms and definitions

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



## soap noodle

fatty acids salt produced by saponification of vegetable oil or animal fats and used as an intermediate raw material in the production of surface active agents”.

## 4 Requirements

### 4.1 General requirements

4.1.1 Soap noodles shall be classified into the following 3 types:

- a) Type 1 – for toilet soaps,
- b) Type 2 – For pure laundry soaps, and
- c) Type 3 – For built soaps.

4.1.2 All ingredients used shall comply with the requirements of all parts of EAS 377.

4.1.4 The soap noodles shall not have any objectionable odour and shall possess good lathering and cleaning properties.

### 4.2 Specific requirements

Soap noodles shall comply with the specific requirements given in Table 1 when tested in accordance with test methods specified therein

**Table 1 — Specific requirements for soap noodles**

SL No.	Characteristic	Requirement			Test method
		Type 1	Type 2	Type 3	
i)	Total fatty matter, % m/m, min.	78	67.0	50	ISO 685
ii)	Free caustic alkali as sodium hydroxide), % m/m, max	0.05	0.1	0.2	ISO 456
iii)	Matter insoluble in alcohol, % m/m, max.	1.0	1.5	15.	ISO 673
v)	Chlorides (as sodium chloride) % m/m, max.	0.5	0.5	1.0	ISO 457 ISO 4323
ix)	Titre of total fatty acids, °C, min.	37	33	33	Annex D

## 5 Packaging

The material shall be packaged in suitable containers to avoid contamination or damage during transportation.

## 6 Labelling

Each package 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 product "Soap Noodles"
- b) Total fatty matter (TFM) content;
- c) manufacturer's name and physical address;

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

- c) net content;
- d) batch number or lot number;
- e) date of manufacture and best before date; and
- f) country of origin

## **Annex A (normative)**

### **Determination of nickel content**

#### **A.1 Outline of the method**

The method is based on the isolation of the metal from the soap and reaction between nickel in the oxidized form with dimethyl glyoxime forming a red colour, the intensity of which is proportional to the amount of nickel present in the sample.

#### **A.2 Apparatus**

##### **UV Spectrophotometer**

#### **A.3 Reagents**

**A.3.1 Sodium hydroxide**, solid

**A.3.2 Concentrated hydrochloric acid**

**A.3.3 Dimethyl glyoxime solution** – 0.1 % (v/v) in 95 % ethyl alcohol

**A.3.4 Saturated bromine water**

**A.3.5 Standard nickel sulphate solution** – containing 1000 µg of nickel (Ni) per ml.

**A.3.6 Liquor ammonia** – Relative density 0.9

#### **A.4 Procedure**

##### **A.4.1 Isolation of metals from sodium oleostearate**

**A. 4.1.1** Weigh 50 g of the sample in a beaker and dissolve in hot water. Add to this soap solution 40 ml of concentrated hydrochloric acid, stir and keep on steam bath until fatty acid layer separates. Add 20 g of paraffin wax; stir at intervals, and allow it to settle until phases are clear. Cool to room temperature.

**A.4.1.2** Remove the waxy cake with rod; rinse with water; add rinsing to aqueous phase. Evaporate aqueous phase to about 60 ml by gentle boiling. Add 100 ml of water and filter through paper washed previously with hydrochloric acid. Evaporate the filtrate to about 60 ml. Cool and transfer to volumetric flask. Make up the volume to about 100 ml. Take aliquot portions for metal estimation.

##### **A.4.2 Determination of nickel content**

**A.4.2.1** Take 50 ml aliquot of the aqueous solution from the test solution in a 250-ml breaker. Evaporate the solution to about 15 ml by heating. Transfer the solution to a 50-ml glass stopped volumetric flask using a small quantity of water for rinsing the solution from the beaker into the volumetric flask.

**A.4.2.2** Add to the flask 3 ml of saturated bromine water and allow to stand for 1 min. Add liquor ammonia drop-wise until excess bromine is destroyed as indicated by the disappearance of brown colour. Then add 5 ml of liquor ammonia in excess. If a precipitation occurs, filter the solution and wash the precipitate with water, combine the filtrate and the washings and concentrate to a volume of a few millilitre and transfer to a 50-ml volumetric flask.

**A.4.2.3** Add 10 ml of dimethyl glyoxime solution followed by 15 ml - 20 ml of 95 % ethyl alcohol. Mix thoroughly and make up the volume and again mix thoroughly. Allow the solution to stand for 5 min to permit full development of colour and take the absorption/transmittance reading at 445 nm.

**A.4.2.4** Prepare and conduct blank determination simultaneously and similarly in all respects. The transmittance of the blank should be  $98 \% \pm 1 \%$ . Determine the nickel content of the sample by reference to a concentration transmittance graph prepared as in A.4.3.

#### **A.4.3 Preparation of concentration transmittance graph**

Weigh accurately 2.2617 g of nickel sulphate (99 %  $\text{NiSO}_4 \cdot 6\text{H}_2\text{O}$ ) and dissolve in distilled water in a 500-ml volumetric flask. Add 30 ml of concentrated hydrochloric acid and bring to volume. This solution contains 1000  $\mu\text{g}$  of nickel per ml. Make appropriate dilutions of this solution and process this as in sample above. The dilutions should cover a range 0  $\mu\text{g}$  - 100  $\mu\text{g}$ . Finally plot a curve relating transmittance to micrograms of nickel.

#### **A.4.4 Calculation**

The nickel content shall be expressed as follows:

$$\text{Nickel content, parts per million} = \frac{M_1 - M_2}{M}$$

Where

$M_1$  is the micrograms of nickel present in the sample;

$M_2$  is the micrograms of nickel present in the blank; and

$M$  is the mass in grams of the sample taken for the test.

## **Annex B (normative)**

### **Determination of iron content**

#### **B.1 Outline of the method**

The method is based on the isolation of the metal from the soap by dissolving in hot water. The aqueous extract is treated with citric acid to sequester aluminium and then thioglycolic acid in ammoniacal solution is added and colour measured spectrophotometrically.

#### **B.2 Apparatus**

**Spectrophotometer**

#### **B.3 Reagents**

**B.3.1 Liquor ammonia** – Relative density 0.9

**B.3.2 Dilute sulphuric acid** – 50 % (v/v)

**B.3.3 Citric acid (aqueous solution)** - 50 % (v/v)

**B.3.4 Thioglycolic acid (aqueous solution)**

**B.3.5 Standard iron solution** containing 10 µg of iron per ml prepared from ferric ammonium sulphate ( $\text{Fe}_2(\text{SO}_4)_3 \cdot (\text{NH}_4)_2 \text{SO}_4 \cdot 12\text{H}_2\text{O}$ ) in acid solution

**B.3.6 Methyl red indicator** - 0.1 % aqueous solution

#### **B.4 Procedure**

##### **B.4.1 Isolation of metals from sodium oleostearate**

Weigh 50 g of the sample in a beaker and dissolve in hot water. To this soap solution add 40 ml of concentrated hydrochloric acid with constant stirring and keep the beaker on steam bath until fatty acid layer separates. Add 20 g of paraffin wax to this solution while hot. Stir the solutions at intervals and allow them to settle until phases are clear. Cool the mass to room temperature. Remove the waxy cake with rod, rinse with water and add the rinsing to the aqueous phase.

Evaporate the aqueous phase to about 60 ml by gentle boiling. Add 100 ml of water and filter through paper washed previously with hydrochloric acid. Evaporate the filtrate and washings to about 60 ml. Cool and transfer the solution to a volumetric flask and make up the volume to 100 ml. Take aliquot portion of the solution for metal estimation.

##### **B.4.2 Determination of Iron content**

Take 5 ml aliquot of the aqueous solution from the test solution in a 25-ml volumetric flask. To this add 4ml citric acid solution in 25-ml volumetric flask. To this add 4ml citric acid solution and 0.02 ml methyl red indicator and liquor ammonia till the colour of the solution of the solution turns yellow. Then add 3 ml liquor ammonia in excess. Cool the solution and add 3 ml thioglycolic acid. Make up the volume to 25 ml and mix the solution thoroughly. Filter the solution through acid washed and dried filter paper. Measure absorbance of the clear solution at 540 nm in the spectrophotometer using water as reference. Prepare a calibration curve with standard iron solution and determine the iron content of the soap sample from it.

## **Annex C (normative)**

### **Determination of copper content**

#### **C.1 Outline of the method**

The method is based on the isolation of the metal from the soap and to make a copper complex using zinc dibenzyl dithiocarbamate in carbon tetrachloride solution and measure the colour of the solution spectrophotometrically.

#### **C.2 Apparatus**

**Spectrophotometer**

#### **C.3 Reagents**

**C.3.1** Zinc Dibenzyl dithiocarbamate solution - 0.05 % in carbon tetrachloride

**C.3.2** Standard copper solution containing 1 µg of copper per ml (prepared from a stock solution of 100 times the concentration)

#### **C.4 Procedure**

##### **C.4.1 Isolation of metal from sodium oleostearate**

Weigh 50 g of the sample in a beaker and dissolve it with hot water. To this soap solution add 40 ml of concentrated hydrochloric acid with constant stirring and keep the beaker on steam bath until fatty acid layer separates. Add 20 g of paraffin wax to this solution while hot. Stir the solution at intervals and allow it to settle until phases are clear. Cool the mass to room temperature. Remove the waxy cake with rod, rinse with water and add the rinsing to the aqueous phase. Evaporate the aqueous phase to about 60 ml by gentle boiling. Add 100 ml of water and filter through paper washed previously with hydrochloric acid. Evaporate the filtrate and washing to about 60 ml. Cool and transfer the solution to a volumetric flask and make up the volume to 100 ml. Take aliquot portion of the solution for metal estimation.

##### **C.4.2 Determination of copper**

Take 20 ml aliquot of the aqueous solution and to it add 10 ml of zinc dibenzyl dithiocarbamate solution followed by 25 ml of sulphuric acid in a separating funnel. Shake the solution for 1 min and allow it to settle. Run the lower carbon tetrachloride layer into 25-ml volumetric flask. Wash the aqueous layer with carbon tetrachloride and transfer through glass wool to volumetric flask. Make up the volume and mix well. Measure absorption of the clear solution at 435 nm in the spectrophotometer. Prepare a calibration curve with standard copper solution and determine the copper content of the soap sample from the curve.

The standard solution shall also be extracted with carbon tetrachloride before estimation of colour.

## **Annex D (normative)**

## Determination of titre of fatty matter (metric units)

### D.1 Apparatus (see Figure D.1)

**D.1.1 Water bath**, a two litre low-form beaker

**D.1.2 Wide-mouth bottle**, an approximately 450-ml bottle that is about 190 mm high, having a neck of inside diameter approximately 40 mm and fitted with a cork that holds the test tube (D.1.3). The bottle contains sufficient lead shot or other dense ballast to hold it steady when placed in the water bath

**D.1.3 Test tube**, a test tube of length 100 mm, of inside diameter 25 mm, and marked 57 mm from the bottom to indicate the level to which the sample should be added. It is fitted with a bored cork to support the stirrer and the titre-test thermometer

**D.1.4 Stirrer**, a stirrer made from glass or stainless steel of diameter 2 mm - 3 mm, and with the lower end formed into a loop 19 mm in diameter. The upper end of the stirrer is shaped as a handle for hand operation

**D.1.5 Laboratory thermometer**, having a range of 0 °C - 150 °C

**D.1.6 Titre-test thermometer**, having a range of -2 °C to + 68 °C

### D.2 Procedure

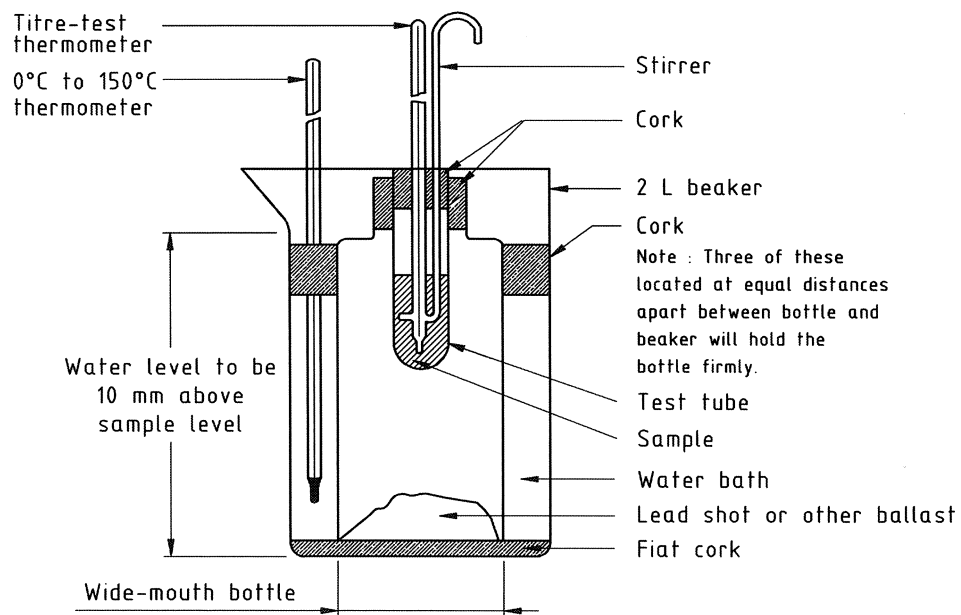
**D.2.1** Heat the fatty matter (retained from the determination of rosin content) to a temperature approximately 10 °C above the expected titre and pour sufficient into the test tube to reach the 57-mm mark. Fit the test tube in the wide-mouth bottle and place the assembly in the water bath. The water level should be approximately 10 mm above the 57-mm mark on the test tube. Adjust the temperature of the water bath to 20 °C below the expected titre (for titres 35 °C and over) or to 15 °C - 20 °C below expected titre (for titres below 35 °C).

**D.2.2** Ensure that the titre-test thermometer is situated approximately along the axis of the test tube and at such a height that the immersion mark coincides with the top of the sample of fatty matter.

**D.2.3** When the titre-test thermometer reads 10 °C above the expected titre, commence stirring at the rate of about 100 completed up and down strokes per min. (The stirrer should travel through a distance of approximately 40 mm on each stroke.) Read the thermometer every 15 s and continue stirring until the temperature remains constant for 30 s or just begins to rise. At this point stop stirring, and note the rise in temperature. Record the highest temperature reached.

**D.2.4** Repeat the procedure given in D.2.1 – D.2.3.

**D.2.5** The recorded temperatures of the two determinations shall not differ by more than 0.2 °C. (If the difference exceeds 0.2 °C, repeat the determination until two readings agree). Report as the titre of the fatty matter, the mean of the two temperature readings that agree to within 0.2 °C.



**Figure D.1 — Condenser for moisture determination**



## **Bibliography**

EAS 815:2013 *Soap noodles — Specification*

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