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## **DRAFT EAST AFRICAN STANDARD**

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**Stain remover for tableware — Specification**

**EAST AFRICAN COMMUNITY**

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# Contents

Page

1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Requirements.....	1
4.1	General requirements .....	1
4.2	Specific requirements .....	2
5	Packaging.....	2
6	Labelling.....	2
8	Testing.....	3
	Annex A .....	4
	(normative) .....	4
	Determination of active oxygen .....	4
	A.1 Apparatus .....	4
	A.2 Reagents.....	4
	A.3 Procedure .....	4
	A.4 Calculation.....	4
	Annex B .....	5
	(normative) .....	5
	Determination of available chlorine.....	5
	B.1 Principle.....	5
	B.2 Reagents.....	5
	B.3 Procedure .....	5
	B.4 Calculation.....	5
	Annex C .....	6
	(normative) .....	6
	Determination of solution stability .....	6
	C.1 Apparatus .....	6
	C.2 Reagents.....	6
	C.3 Determination of Solution stability at 80 °C .....	6
	C.4 Determination of solution Stability at 70 °C .....	7
	Annex D .....	8
	(normative) .....	8
	Determination of matter insoluble in water .....	8
	D. 1 Procedure .....	8
	D.2 Calculation.....	8
	Annex E .....	9
	(normative) .....	9
	Sampling.....	9
	E.1 Procedure.....	9
	E.2 Samples for testing .....	9
	Bibliography.....	10

## 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 817:2015) Stain remover for tableware — Specification which have been technically revised.

# Stain remover for tableware — Specification

## 1 Scope

This Draft East African Standard specifies the requirements, sampling and test methods for a stain remover used in water to remove adsorbed food stains from plastic tableware, glass and China tableware and non-aluminium coffee urns.

## 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 4316, *Surface active agents — Determination of pH of aqueous solution — Potentiometric method*

## 3 Terms and definitions

For the purposes of this standard 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>

### Tableware

dishes used to set a table, serve and display food. It includes cutlery, glassware, serving dishes and other useful items for practical as well as decorative purposes

## 4 Requirements

### 4.1 General requirements

4.1.1 Stain remover for tableware shall be a uniform, free-flowing, stable, granular, powdered or liquid material.

4.1.2 It shall be free from objectionable odour either in dry form or in solution.

## 4.2 Specific requirements

Stain remover for tableware shall comply with the specific requirements specified in Table 1.

**Table 1 — Specific requirements for Stain remover for tableware**

SL No.	Characteristic	Requirement	Test method
i)	Active oxygen, %, m/m, min	4.0	Annex A
	Available Chlorine, %, m/v, min	4.5	Annex B
ii)	pH, 2 % solution, at 25°C ± 2°C	10.5 – 12.0	ISO 4316
iii)	Solution stability for 3h at 80 °C ± 2 °C for 24h at 70 °C ± 1 °C	To pass test	Annex C
iv)	Water insoluble matter, % by mass, max	1	Annex D

## 5 Packaging

The stain remover for table ware shall be packaged in suitable well-closed containers/packages.

The product shall be packaged in containers that are able to withstand normal usage, storage and transportation and that will prevent leaking, drying out and contamination of the product”.

## 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 the product as “Stain remover for tableware”;
- 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) batch number or lot number;
- d) net content;
- e) country of origin;
- f) list of ingredients date of manufacture;
- g) best before date;
- h) instructions for use
- i) indicate mode of disposal of containers/packages
- j) safety precaution

## **7 Sampling**

Sampling shall be done in accordance with Annex E.

## **8 Testing**

Before making the required analysis, the stain remover shall be thoroughly mixed in a tumbler mixer for 30 min. It is extremely important that all of the ingredients be uniformly distributed in the samples subsequently used in several of the tests.

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## Annex A

(normative)

### Determination of active oxygen

#### A.1 Apparatus

**A.1.1 Analytical Balance** — Capable of determining the mass to 0.1 mg

**A.1.2 Normal Laboratory Glassware**

#### A.2 Reagents

**A.2.1 Concentrated Sulphuric Acid, (H<sub>2</sub>SO<sub>4</sub>)** — Analytical Grade

**A.2.2 10 % v/v Sulphuric Acid Solution** — Prepared by adding 1 part of concentrated sulphuric acid to 9 parts of distilled water.

**A.2.3 Potassium Permanganate, (KMnO<sub>4</sub>), Crystals** — Analytical Grade

**A.2.4 Potassium Permanganate, (KMnO<sub>4</sub>), 0.02 mol/L VS** —

Prepared by dissolving 3.2 g of potassium permanganate crystals in about 1 L of distilled water. Heat to boiling and keep hot for about 1 h. Cover the solution and let it stand overnight.

**A.2.4.1** Filter the solution through a fine-porosity sintered glass crucible or through a Gooch crucible with an asbestos mat. Store the solution in a clean, amber glass-stoppered bottle and keep in the dark when not in use.

**A.2.4.2** Prior to use, standardize the potassium permanganate solution against sodium oxalate or other primary standards.

#### A.3 Procedure

Accurately (to the nearest milligram) determine the mass of about 4 g of the sample. Transfer into a 400-ml beaker and dissolve in 250 ml of distilled water.

Transfer the solution to a 500-ml volumetric flask. Rinse the beaker several times with small portions of the 10 % v/v sulphuric acid solution. Transfer all the washings to the flask. Fill the flask to the mark with 10 % v/v sulphuric acid and thoroughly mix.

Immediately titrate a 25-ml aliquot with 0.02 mol/L of KMnO<sub>4</sub>. Determine the required blank and subtract the volume, if any, of KMnO<sub>4</sub> required for the blank from that required for the specimen.

#### A.4 Calculation

Calculate the percentage of active oxygen as follows:

$$\% \text{ active oxygen} = \frac{v \times c \times 0.008 \times 500 \times 100 \times 5}{m \times 25} = \frac{v \times c \times 80}{m}$$

where

*v* is the volume in millilitres of KMnO<sub>4</sub> used (corrected for blank)

*c* is the concentration in mol/L of KMnO<sub>4</sub>

*m* is the mass in grams of the specimen

## Annex B

(normative)

### Determination of available chlorine

#### B.1 Principle

The sample is added to an acidified solution of potassium iodide and the released iodine titrated with standard sodium thiosulphate solution to the starch endpoint.

#### B.2 Reagents

**B.2.1 Glacial acetic acid 99%**

**B.2.2 Standard potassium iodate solution — 0.1 N**

**B.2.3 Starch indicator solution (0.5% w/v)** — Mix 0.5 g of soluble starch with 5 ml of cold water and add 95 ml of boiling water. Mix, cool and store in a glass bottle. Replace frequently or add 0.1 % m/v salicylic acid to the starch solution to minimize deterioration.

**B.2.4 Potassium iodide crystals** — Iodate free

**B.2.5 Standard Sodium Thiosulphate Solution** — 0.1 N

Dissolve 25 g of sodium thiosulphate ( $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ ) crystals in freshly boiled and cooled water, and dilute to 1 000 ml.

NOTE The solution is more stable if the glassware is cleaned with sulphuric or chromic acids and thoroughly rinsed with water before use.

#### B.3 Procedure

Dissolve 2 g - 3 g of potassium iodide crystals in 50 ml of water in a 250-ml conical flask.

Add 10 ml of glacial acetic acid, then pipette out a 3 ml aliquot of sample into the solution, keeping the tip of the pipette beneath the surface of the solution until drained.

Titrate at once with 0.1 N sodium thiosulphate VS until the iodine colour is nearly gone then add 1 ml of starch indicator solution and complete the titration to the disappearance of the blue colour.

#### B.4 Calculation

The available chlorine expressed as  $\text{Cl}_2$  % m/v, shall be calculated as follows:

$$= \frac{(AN \times 0.03546) \times 100}{V}$$

where

A = Volume in millilitres of standard sodium thiosulphate solution required for titration of the sample

N = Normality of the standard sodium thiosulphate solution

V = Volume in ml of original sample in aliquot used

## Annex C

(normative)

### Determination of solution stability

#### C.1 Apparatus

**C.1.1 Hot Plate** — Capable of maintaining a temperature of  $80\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ .

**C.1.2 Ice Bath**

**C.1.3 Normal Laboratory Glassware**

**C.1.3 Drying Oven**, capable of maintaining a temperature of  $70\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$

#### C.2 Reagents

**Sulphuric Acid, 5% v/v Solution** — Prepared by adding 5 parts of sulphuric acid into 95 parts of distilled water

#### C.3 Determination of Solution stability at $80\text{ }^{\circ}\text{C}$

##### C.3.1 Procedure

**C.3.1.1** Dissolve 500 g of stain remover in 900 ml of distilled water at room temperature in a tared 1 500-ml beaker.

**C.3.1.2** Add distilled water to bring the total mass of solution to 1 000 g. Heat the solution to  $80\text{ }^{\circ}\text{C}$ . Mark the liquid level on the beaker.

**C.3.1.3** Heat at  $80\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$  for 3 h restoring the water lost by evaporation. Cool the solution to room temperature using an ice-water bath, and adjust the solution mass to the original 1 000 g. Take a 10 g specimen of the solution and add 100 ml of the 5 % v/v sulphuric acid solution. Analyse for active oxygen as specified in Annex A.

##### C.3.2 Calculation

Calculate the percentage of active oxygen as follows:

$$\% \text{ active oxygen} = \frac{v \times c \times 0.008 \times 100 \times 100 \times 5}{50} = 8 \times v \times c$$

where

$V$  is the volume in millilitres of  $\text{KMnO}_4$  used (corrected for blank)

$C$  is the concentration in mol/L of  $\text{KMnO}_4$ .

##### C.3.3 Conclusion

The stain remover for tableware shall pass the test when it does not lose more than 30 % of its original active oxygen

## C.4 Determination of solution Stability at 70 °C

### C.4.1 Procedure

**C.4.1.1** Determine the mass of three 4-g specimens of stain remover in three 400-ml tared beakers. Place in an oven and maintain at 70 °C ± 1 °C for 24 h and dissolve in 250 ml of distilled water.

**C.4.1.2** Transfer the solution to a 500-ml volumetric flask. Rinse the beaker several times with small portions of the 10 % sulphuric acid solution. Transfer all the washings to the flask. Fill the flask to the mark with 10 % sulphuric acid and thoroughly mix.

**C.4.1.3** Immediately titrate a 25-ml aliquot with 0.02 mol/L of KMnO<sub>4</sub>. Determine the required blank and subtract the volume, if any, of KMnO<sub>4</sub> required for the blank from that required for the specimen.

### C.4.2 Calculation

Calculate the percentage of active oxygen as follows:

$$\% \text{ active oxygen} = \frac{v \times c \times 0.008 \times 500 \times 100 \times 5}{m \times 25} = \frac{v \times c \times 80}{m}$$

where

*v* is the volume in millilitres of KMnO<sub>4</sub> used (corrected for blank)

*c* is the concentration in mol/L of KMnO<sub>4</sub>

*m* is the mass in grams of the specimen

### C.4.3 Conclusion

The stain remover for tableware shall pass the test when it does not lose more than 10 % of its original active oxygen

## Annex D

(normative)

### Determination of matter insoluble in water

#### D. 1 Procedure

**D.1.1** Starting with a fresh portion of the material, proceed as described under E.1.2 but do not dry or weigh the matter insoluble in alcohol. After filtering and washing the residue thoroughly with hot ethyl alcohol, change the receiver, extract the residue with successive portions of distilled water at about 60 °C, and wash the residue several times to remove all the water soluble matter.

**D.1.2** Dry the sintered glass funnel with the residue in an air-oven at a temperature of 105 °C ± 2 °C until a constant mass is obtained.

**D.1.3** Weigh accurately about 5 g of the material into a beaker, and digest with 50 ml of ethyl alcohol by heating on a steam bath for about 2 min. Stir and break up any hard lump with a glass rod flattened at one end. Allow the solid matter to settle and decant the hot alcoholic solution through a sintered glass filter funnel fitted to a Buchner flask to which suction is applied. Repeat the alcoholic digestion in a similar manner with five further consecutive 30 ml portions of boiling ethyl alcohol. Filter each extract in turn through the same sintered glass funnel and, finally, wash the residue several times with hot ethyl alcohol to remove all the alcohol soluble matter.

#### D.2 Calculation

The matter insoluble in water shall be expressed as follows:

$$\text{Matter insoluble in water, \% by mass} = 100 \frac{m_1}{m}$$

where

$m_1$  is the mass in grams of matter insoluble in water

$m$  is mass in grams of material taken for the test.

## Annex E

(normative)

### Sampling

#### E.1 Procedure

**E.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 E.1.

Table E.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

**E.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  $k^{\text{th}}$  package, where  $k$  is the integral part of  $N/n$ .

**E.1.3** From each package thus selected, draw at random an equal number of units so as to obtain a total volume of at least 2 L.

#### E.2 Samples for testing

Take at one time all test samples required for the tests in 4.2. Measure the test sample required for determination of free alkali or acid content, and use it immediately.

## **Bibliography**

EAS 817:2013 *Stain remove for tableware*

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