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## **DRAFT EAST AFRICAN STANDARD**

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**Toilet cleansers — Specification — Part 1: Acidic liquid toilet cleansers**

**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 793-1:2013), which has been technically revised.



# Toilet cleansers — Specification — Part 1: Acidic liquid toilet cleansers

## 1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for acidic liquid toilet cleansers. This standard applies to a liquid acid, heavy-duty compound suitable for cleaning toilet surfaces and urinals.

## 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*

## 3 Terms and definitions

For the purposes of this standard, terms and definitions 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>

### 3.1 toilet cleanser

product used for cleaning toilet and urinal surfaces

### 3.2 acidic toilet cleanser

product used for cleaning toilet and urinal surfaces which may contain hydrochloric acid or phosphoric acid

## 4 Requirements

### 4.1 General requirements

4.1.1 The acidic toilet cleanser shall be a homogeneous aqueous liquid with a distinct colour.

4.1.2 The acidic toilet cleanser shall be miscible in water in all proportions.

4.1.3 The acidic toilet cleanser shall be stable, and not deteriorate in storage when kept in its original unopened container at ambient temperature.

4.1.4 The acidic toilet cleanser shall not affect intended surfaces when used as directed by the manufacturer.

4.1.5 The acidic toilet cleanser shall not be used for any other purpose and with any other cleaning product.

## 4.2 Specific requirements

The acidic toilet cleanser shall comply with the specific requirements prescribed in Table 1.

**Table 1 — Specific requirements for acid toilet cleanser**

S/No.	Parameter	Requirement	Test method
i)	Total acidity, %m/m	7 – 12	Annex A
ii)	Total surfactant, % m/m	0.4 – 5.0	Annex B
iii)	Rust Inhibitor	To pass the test	Annex C

## 5 Packaging

5.1 The product shall be packed in suitable containers that are securely closed, impervious to the product or shall not be corroded by the product.

5.2 The package shall be sufficiently strong to prevent contamination of the product arising from the ordinary risks of transportation, handling and storage.

5.3 The lid or cap on the container shall be such that the product is easily and safely dispensed from the container.

## 6 Labelling

The container shall be securely closed, 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) name of the product as “acidic liquid toilet cleanser”
- b) type of acid used
- c) manufacturer’s name and physical address

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

- d) batch or code number;
- e) net contents;
- f) instruction of use (in either English, Kiswahili or French or in combination as agreed between the manufacturer and supplier);
- g) date of manufacture and expiry date; and
- h) type of cleanser 'Acidic';
- i) country of origin
- j) precautionary notice marked in either English or Kiswahili languages with the following information:

- i) the word 'CAUTION' shall be in a colour that contrasts with the surrounding for easy visibility and shall be followed with the statement, 'READ LABEL BEFORE USE';
- ii) the following shall be marked immediately under i):
- 'Keep Out of Reach of Children';
  - contains acid, the hazards involved and the necessary storage precautions to be used;
  - that, in case of floor spills, baking soda ash shall be sprinkled over the product and the affected area shall be rinsed with water;
  - the product shall be used for the cleaning of toilet bowls and urinals only;
  - the product shall not be used with any other cleaning product;
  - the product shall be marked with the following cautionary words and symbols:

'CORROSIVE ACID' ('INAWENZA KUUNGUZA/ ACIDE CORROSIF'); followed by the



symbol,

- 'POISON/DANGER' ('SUMU/HATARI); followed by a skull and bones,



## 7. Sampling

Sampling shall be done in accordance with Annex D



## Annex A (normative)

### Determination of acidity

Accurately weigh 10 g of sample in a 250-mL Erlenmeyer flask and add 25 mL of distilled water. Add approximately 15 mL of 5 % aqueous calcium acetate solution and warm contents to 50 °C. Cool and filter into beaker.

Carefully rinse the Erlenmeyer flask precipitate with 3 to 4 aliquots of distilled water collecting all rinsing with the filtrate. Titrate the filtrate with standard 1 mol/L NaOH solution.

Calculate as follows:

$$\text{percent acidity} = \frac{\text{concentration of NaOH (mol/L)} \times \text{mL of NaOH} \times C}{\text{mass of sample}}$$

where

C = 3.647 for HCl or

C = 3.132 for H<sub>3</sub>PO<sub>4</sub>

## Annex B (normative)

### Determination of non-ionic, anionic and cationic surfactant content

**B.1** The molar mass and chemical name of all surfactants used shall be supplied by the manufacturer on request by respective partner states bureaux of standards, when use of High-Performance Liquid Chromatography (HPLC) equipment is employed in the determination of surfactant content in the product.

**B.2** Accurately weigh about 100 g of the product in a 250-mL Erlenmeyer flask and neutralize it with caustic soda solution to a pH of 8.8 to 7.0.

**B.3** Evaporate the resulting solution to dryness at 105 °C. Cool to room temperature and wash the resulting solids with five 20 mL aliquots of chloroform, filtering and collecting each in one tared 300-mL beaker. Evaporate the chloroform and determine the weight of organic solids, ( $W_1$ ) g.

$$W_1 (\text{Organic solids}) = \frac{\text{mass of solids}}{\text{mass of product}}$$

NOTE Myer's reagent may be used to confirm nonionic surfactant. Dissolve 100 mg to 150 mg of isolated surfactants in 5 mL of distilled water. Add two drops of Myer's reagent. A yellow precipitate will form if non-ionic surfactant is present.

**B.4** Dissolve the organic solids in 50 mL of ethanol and pass resulting solution through a 22 mm x 200 mm x 250 mm chromatographic column of freshly regenerated cationic exchange resin (150 mm to 175 mm mesh). Wash the beaker with four 50 mL aliquots of ethanol collecting them in one tared beaker. (Cationic surfactant, if present, will be retained, the eluate will contain nonionic and anionic surfactants, if present). Evaporate the alcohol eluate in an oven. Weigh accurately, ( $W_2$ ).

$$\text{cationic surfactant, g} = W_1 - W_2$$

**B.5** Dissolve organic solids ( $W_2$ ), g obtained in B.4 in 50 mL of ethanol and pass the resulting solution through a chromatographic column specified in B.4 but having freshly regenerated anionic exchange resin (150 mm to 175 mm mesh). Wash the beaker with four 50 mL aliquots of alcohol collecting them in one tared beaker. (Anionic surfactant, if present, will be retained, the eluate will contain only nonionic surfactant). Weigh accurately,  $W_3$ , g.

**B.6** By difference,

$$\text{anionic surfactant content, g} = (W_2 - W_3)$$

$$\text{surfactant content, percent m/m} = \frac{(W_1 - W_2) + W_3}{m} \times 100 \text{ or}$$

$$= \frac{W_2}{m} \times 100 \% \text{ (anionic cleanser)}$$

## Annex C (normative)

### Method for assessing corrosion potential

#### C.1 Apparatus

**C.1.1 Squat and tall 1-L Pyrex glass beakers**

**C.1.2 Oven**, capable of maintaining  $105\text{ °C} \pm 2\text{ °C}$

**C.1.3 Test panel**, made of stainless steel, of approximate dimensions 125 mm x 63 mm x 1.5 mm. The panels shall have a cold-rolled finish on both faces. They shall be undamaged and unmarked, flat and with their edges free from burrs.

**C.1.4 Stainless steel tongs**, for handling the panels

**C.1.5 Panel bolders**, made of inert material such as polypropylene for use during pre-cleaning and drying operations

**C.1.6 Rubber bands**, of rectangular cross-section, measuring when lying flat and unstretched, approximately 80 mm x 6 mm

**C.1.7 Magnesium carbonate (technical)**, for use as an abrasive in cleaning panels

**C.1.8 Distilled water**

**C.1.9 Watch glass**, large enough to cover the tall 1-L beakers in C1.1

#### C.2 Pre-cleaning of test panels and rubber bands

##### C.2.1 Panels

**C.2.1.1** Swab the test panels, two for each test, with cotton wool using a warm 1 % v/v solution of a general purpose detergent.

**C.2.1.2** Scour the panels with cotton wool using water as a lubricant and the magnesium carbonate as an abrasive.

NOTE Scouring also removes any films produced by reaction between the detergent and the abrasive, for example, magnesium silicate.

**C.2.1.3** Without delay, thoroughly rinse the panels under hot tap water, ensuring that all of the magnesium carbonate is removed.

**C.2.1.4** Then, rinse the panels in boiling, distilled water immersing each panel in turn in water contained in three 1-L beakers.

**C.2.1.5** Dry in an oven at  $105\text{ °C} \pm 2\text{ °C}$ .

**C.2.1.6** Allow to cool in a dry, dust-free position.

## **C.2.2 Rubber bands**

- C.2.2.1** Place the rubber bands in a hard-boiling 1 % v/v solution of a general cleaning detergent for 10 min.
- C.2.2.2** Rinse under hot tap water.
- C.2.2.3** Then rinse in distilled water and allow to dry.

## **C.3 Procedure**

- C.3.1** The procedure shall be carried out in duplicate in accordance with C.3.2 – C.3.9.
- C.3.2** In a tall 1-L beaker, make up 950 mL of the use dilution of the product under test. Mark the level of the solution on the side of the beaker.
- C.3.3** Place two rubber bands around each test panel in the direction of the long axis of the panel, ensuring that the bands are flat against both sides of the panel and that the panel is not touched by the fingers.
- C.3.4** Five minutes after placement of the bands, immerse the panels on their ends as upright as possible in the test solution, so that there is at least 10 mm of solution above the panels. Note the time. Place the watch glasses on the beaker.
- C.3.5** Leave the panels in the test solution for 72 h. Each morning and evening, top up the solution to the mark with distilled water.
- C.3.6** At the end of the 72 h remove the panels from the test solution, remove the bands and rinse the panels under hot, running water.
- C.3.7** Then rinse three times as prescribed in C.2.1.4.
- C.3.8** Finally, dry the panels in the oven at  $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ .
- C.3.9** Examine the panels for:
- a. evidence of corrosion, and
  - b. discolouration.

**NOTE** Pitting is most likely to occur where the rubber band contacts the edges of the panel.

## **C.4 Interpretation of results**

If the duplicate panels from the test detergents show the same characteristics, record the results. If the duplicates differ, repeat the test using fresh panels.

## **C.5 Report**

The product shall be deemed to contain an effective rust inhibitor if no visible corrosion or discolouration of the panels has occurred.



## Annex D (normative)

### Sampling

#### D.1 Procedure

**D.1.1** In a single consignment, all packages (cartons) containing toilet cleansers 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 D.1.

**Table D.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

**D.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  $N/n$ .

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

#### D.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.