

KENYA STANDARD

**Detergent-disinfectant liquid toilet cleansers —
Specification**

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PUBLIC REVIEW DRAFT

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DRAFT KENYA STANDARD

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DKS 2501:2013
Foreword

This Kenya Standard was developed by the Technical Committee on Surface Active Agents under the guidance of the Standards Projects Committee and it is in accordance with the procedures of the Bureau.

This standard is intended for the evaluation of detergent-disinfectant liquid toilet cleansers based on quaternary ammonium compounds and other chemical agents that are miscible with water and intended for cleaning toilet bowls and urinals. Quaternary ammonium compounds are organically substituted ammonium compounds in which the nitrogen compound has a valence of five. Four of the substituent radicals are alkyl or heterocyclic radicals and the fifth is an ion. Examples include centrimide, Benzalkonium chloride and benzethonium chloride.

Using this standard, it is not possible to determine the bactericidal activity of the undiluted product. Some dilution is always produced by the addition of inoculum, hard water and sterile skimmed milk. If a product complies with the test requirements, it can be considered to be bactericidal.

During the preparation of this standard, reference was made to the following document:

SANS 639:2009, Detergent-disinfectants based on quaternary ammonium compounds

Acknowledgement is hereby made for assistance derived from this source.

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Detergent-disinfectant liquid toilet cleansers — Specification

1 Scope

This Kenya Standard specifies requirements and test methods for detergent-disinfectant liquid toilet cleansers based on quaternary ammonium compounds and other chemical agents (such as compatible surface-active agents and phosphates) that are miscible with water and intended for cleaning toilet bowls and urinals.

2 Normative references

This Kenya Standard incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate place in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Kenya Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

KS 929: *Chemical disinfectants and antiseptics – Quantitative suspension test for the evaluation of bactericidal activity of chemical disinfectants and antiseptics used in food, industrial, domestic, and institutional areas – Test method and requirements (phase 2, step 1)*

2 Definitions

For the purposes of this standard the following definitions apply.

2.1

detergent-disinfectant

Product that cleans and disinfects simultaneously.

2.2

disinfectant

chemical agent that kills most vegetative forms of pathogenic and other micro-organisms (but not necessarily all bacteria and fungal spores, mycobacteria, or viruses) on inanimate surfaces

3 Requirements

3.1 The detergent-disinfectant liquid toilet cleanser shall be a homogeneous liquid, free from sediment and suspended matter.

3.2 The detergent-disinfectant liquid toilet cleanser shall have a stable, distinct colour.

3.3 The detergent-disinfectant liquid toilet cleanser shall be miscible in water in all proportions.

3.4 The detergent-disinfectant liquid toilet cleanser shall be stable, and not deteriorate in storage when kept in its original unopened container at ambient temperature for a period of one year from the date of manufacture.

3.5 The detergent-disinfectant liquid toilet cleanser shall not affect toilet bowl surfaces when used as directed by the manufacturer.

3.6 Bactericidal efficacy

When the detergent-disinfectant liquid toilet cleanser is tested in accordance with KS 929, at the prescribed concentration by the manufacturer, it shall, within 5 minutes, kill at least 99.9 % of microorganisms.

3.7 The detergent-disinfectant liquid toilet cleanser shall comply with the requirements given in Table 1, when tested in accordance with the methods described therein.

Table 1: Requirements for detergent-disinfectant toilet cleansers

Sl. No	Characteristic	Requirement	Test Method
i)	pH, max	10.5	
ii)	Surfactant, percent, m/m, min	0.2	Annex A
iii)	Bactericidal efficacy	to pass test	KS 929

4 Packaging and marking

4.1 Packing

Detergent-disinfectant liquid toilet cleansers shall be packed in plastic or other suitable opaque containers that are strong enough to protect the product adequately during normal handling, transportation and storage.

4.2 Marking

4.2.1 The container shall be marked in prominent, legible and indelible markings with the following information:

4.2.2 Individual containers shall be marked with the following information:

- i) manufacturer's name and physical address
NOTE: The name, physical address of the distributor/supplier and trade mark may be added as required
- ii) product name as "detergent-disinfectant toilet cleanser"
- iii) Ingredients
- iv) the net contents;
- v) the instructions for use;
- vi) the code number or batch number;
- vii) date of manufacture and use by date
- viii) first aid instructions
- ix) country of origin
- x) 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';
 - the product shall be used for the cleaning of toilet bowls and urinals only;
 - Do not mix with incompatible substances such as soap and detergents;

5 Sampling and compliance with the standard

5.1 Sampling

5.1.1 For ascertaining the conformity of the lot to the requirements of this standard, tests shall be carried out on each lot separately.

5.1.2 The number of packages and product units from each container respectively to be selected for drawing the sample shall be in accordance with table 2.

5.1.3 The sample so drawn shall be deemed to represent the lot. From a given lot, for product units of 500 cm³ or more a sample of one unit shall be chosen.

5.1.4 Take at random the number of containers shown in column 2 of Table 2, relative to the appropriate lot size given in column 1.

Table 2 — Scale of sampling

1	2
Lot size number of containers	Sample for inspection number of containers
5 – 10	2
11 – 300	4
301 – 800	6
801 – 2000	8
2001 – 8000	10

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Annex A (Normative)

Determination of non-ionic, anionic and cationic surfactant content

- A1.** The molar mass and chemical name of all surfactants used shall be supplied by the manufacturer on request by Kenya Bureau of Standards, when use of high pressure liquid chromatography (HPLC) equipment is employed in the determination of surfactant content in the product.
- A2.** Accurately weigh about 100 g of the compound in a 250-mL Erlenmeyer flask and neutralize it with caustic soda solution to a pH of 8.8 to 7.0.
- A3.** 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.

$$W_1 \text{ (organic Solids)} = \frac{\text{Mass of solids}}{\text{Mass compound}}$$

NOTE: You may use myer's reagent to confirm nonionic surfactant. Dissolve 100 mg to 150 mg of isolated surfactants in 5 mL of distilled water. Add 2 drops of myer's reagent. A yellow precipitate will form if nonionic surfactant is present.

- A4.** 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).

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

- A5.** Dissolve organic solids (W_2), g obtained in **A4** in 50 mL of ethanol and pass the resulting solution through a chromatographic column specified in **A4** 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.

- A6.** By difference,

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

Surfactant content per cent m/m

$$= \frac{(W_1 - W_2) + W_3}{m} \times 100 \text{ per cent (for cationic cleansers)}$$

OR

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