

**DRAFT KENYA STANDARD**

**Scouring compounds for utensil cleaning  
Specification  
Part 2: Antibacterial dishwashing paste**

**PUBLIC REVIEW DRAFT**

**JULY 2017**

## DKS 1941 – 2: 2017

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Colgate-Palmolive  
Unilever Kenya  
Orbit Chemicals  
Kenya Industrial Research and Development Institute  
Government Chemist's Department  
University of Nairobi  
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**Scouring compounds for utensil cleaning —  
Specification  
Part 2: Antibacterial dishwashing paste**

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### Foreword

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

Antibacterial dishwashing paste is used to remove grease from dishes, pots, pans, glasses and cutlery. Surfactants and builders are the major components of Antibacterial dishwashing paste. Other ingredients (builders) are added to provide a variety of functions, such as increasing cleaning performance for specific soils/surfaces, ensuring product stability and supplying a unique identity to a product. In addition they contain antibacterial agents which reduce drastically the bacterial count on dishes. Antibacterial dishwashing paste should be used regularly for it to be effective.

Surfactants (surface active agents) are organic chemicals that change the properties of water. By lowering the surface tension of water, surfactants enable the cleaning solution to wet a surface so that soil can be readily loosened and removed. Surfactants also emulsify oily soils. Builders enhance and maintain the cleaning efficiency of the surfactant. The primary function of builders is to reduce water hardness. Complex phosphates and sodium citrate are common builders. Builders can also maintain alkalinity, which assists cleaning, especially of acid soils; help keep removed soil and emulsify oily and greasy soils.

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

KS 1941: Dishwashing paste – Specification

IS 6047: Scouring products for utensil cleaning- Specification

Acknowledgement is hereby made for assistance derived from these sources.

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## Scouring compounds for utensil cleaning — Specification Part 2: Antibacterial dishwashing paste

### 1 Scope

This Kenya Standard prescribes the requirements and methods of test for antibacterial dishwashing paste.

This standard does not cover ordinary dishwashing paste and dishwashing bar.

### 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 ISO 456, *Surface active agents — Analysis of soaps — Determination of free caustic alkali*

KS ISO 685, *Analysis of soap — Determination of alkali content and total fatty matter content*

KS ISO 4315, *Surface active agents -- Determination of alkalinity -- Titrimetric method*

KS ISO 2870, *Surface active agents — Detergents — Determination of anionic-active matter hydrolysable and non-hydrolysable under acid conditions*

KS ISO 2871-1, *Surface active agents — Detergents — Determination of cationic-active matter content — Part 1: High-molecular-mass cationic-active matter*

KS ISO 2871-2, *Surface active agents — Detergents — Determination of cationic-active matter content — Part 2: Cationic-active matter of low molecular mass (between 200 and 500)*

KS ISO 672, *Soaps — Determination of moisture and volatile matter content — Oven method*

KS ISO 4317, *Surface-active agents and detergents — Determination of water content — Karl Fischer methods*

KS EAS 814, *Determination of biodegradability of surfactants — Test method*

KS EAS 794, *Determination of the microbial inhibition of cosmetic soap bars and liquid hand and body washes — Test method*

### 3 Requirements

#### 3.1 General

3.1.1 The antibacterial dishwashing paste shall be water-based and shall consist essentially of an abrasive together with a surfactant, and may contain alkaline salts.

3.1.2 The antibacterial dishwashing paste shall be smooth, and shall be uniformly mixed.

3.1.3 It shall not be irritating to the normal skin, and it shall not contain ingredients in quantities that are toxic to human beings.

3.1.4 When the antibacterial paste is stored or transported under normal conditions in its original package, no cracking of the material shall occur.

#### 3.2 Biodegradability

The active ingredient used shall pass the biodegradability test as given in KS EAS 814.

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### 3.3 Odour

The antibacterial dishwashing paste, both as received and when dissolved in hot water, shall not have objectionable odour.

### 3.4 Antibacterial activity

3.4.1 The antibacterial dishwashing paste shall contain permitted antibacterial agent. The label shall clearly state the antibacterial agent used and its level.

3.4.2 The solid antibacterial dishwashing paste shall pass the antibacterial activity test when determined by the method given in KS EAS 794.

### 3.5 Detailed requirements.

In addition to the above requirements, the antibacterial dishwashing paste shall also comply with the relevant requirements given in Table 1.

Table 1: Detailed requirements

Sl. No	Characteristic	Requirement	Method of test
1)	Free alkali content* (as sodium hydroxide) % (m/m), <i>max.</i>	0.1	KS ISO 456
2)	Total alkalinity* (as sodium hydroxide) % (m/m), <i>max.</i>	1	KS ISO 685 KS ISO 4315
3)	Active (reserve) alkalinity in mL, <i>max.</i>	2	Annex A
4)	Active detergent*, % (m/m), <i>min.</i>	12	KS ISO 2870 KS ISO 2871-1 KS ISO 2871-2
5)	Water insoluble matter content*, % (m/m), <i>max.</i>	55	Annex B
6)	Moisture and volatile matter content at 105 °C % (m/m), <i>max.</i>	35	KS ISO 672 KS ISO 4317
7)	Fineness of water insoluble matter retained on a 250- $\mu$ m aperture sieve % (m/m), <i>max.</i>	0.1	Annex C
8)	Lather volume, in mL, <i>min.</i>	70	Annex D

\*On the dishwashing paste as received

## 4. Packaging and Marking

### 4.1 Packing

4.1.1 The dishwashing paste shall be so packed as to prevent drying out and contamination of the product.

4.1.2 It shall be packed in containers that are strong enough to withstand normal usage and transportation.

### 4.2 Marking

Each package and bulk package shall bear in prominent, legible, and indelible marking the following information,

- i) Name of the product i.e. "Antibacterial dishwashing paste"
- ii) manufacturer's name and physical address

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

- iii) Nominal weight of the product at the time of packaging.
- iv) List of ingredients
- v) Name of antibacterial agent used and its level in percentage
- vi) Instructions for use
- vii) Date of manufacture
- viii) Best before date
- ix) In the case of bulk packages, the number of packets.
- x) Country of origin

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**Annex A**  
*(normative)*  
**Determination of active (Reserve alkalinity)**

**A.1 Principal**

Reserve alkalinity is expressed as amount of 0.1 N hydrochloric acid in ml required for 50ml of 1 percent solution of product sample to lower its pH to 8.0.

**A.2 Apparatus**

**A.2.1 pH meter**

**A.2.2 Beaker**, 250-ml and 100-ml capacity.

**A.2.3 Magnetic stirrer**

**A.2.4 Burette**

**A.3 Reagents**

Hydrochloric acid, 0.1 N.

**A.4 Procedure**

Weigh accurately 1.0 g of sample in a 250-ml beaker. Add 100 ml of distilled water and dissolve the sample. Filter through Whatman filter paper No. 42 and collect the filtrate. Pipette out 50 ml of filtrate in a 100 ml beaker. Place the beaker on a magnetic stirrer and mix thoroughly. Note down the pH of the solution using pH meter. With the electrode of pH meter dipping in solution and keeping the pH meter on, add drop by drop of 0.1 N hydrochloric acid from a burette till the pH of the solution drops to 8.0. While adding hydrochloric acid stir the solution continuously. Note the amount of hydrochloric acid required to bring down the pH of solution 8.0 which is a measure of the reserve alkalinity of the test sample.

**NOTE:** Average of 2 replicate measurements will give reserve alkalinity expressed as amount in ml of 0.1 N hydrochloric acid.



**Annex B**  
(normative)

**Determination of Water insoluble matter content of Dishwashing paste**

**B.1 Procedure**

- B.1.1** Starting with a fresh portion of the material, 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 solubles. Dry the sintered glass funnel with the residue in an air-oven at a temperature of  $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$  until a constant mass is obtained.
- B.1.2** Even after digestion with five 30-ml portions of boiling ethyl alcohol, the alcohol insoluble portion may sometimes be found to be sticky. In that case, treat it further with more boiling ethyl alcohol until it is free from active matter and the alcohol insoluble portion is no longer sticky. 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  $60\text{ }^{\circ}\text{C}$ , and wash the residue several times to remove all the water solubles. Dry the sintered glass funnel with the residue in an air-oven at a temperature of  $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$  until a constant mass is obtained.

**B.2 Calculation**

The matter insoluble in water is 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; and

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

**Annex C**  
(normative)

**Fineness of water insoluble matter dishwashing paste (Metric units)**

**C.1 Apparatus**

**C.1.1 Sieve** A nest of standard sieve of diameter 200 mm, and another of nominal aperture size 250 µm.

**C.1.2 Oven** A drying oven capable of being maintained at 105 ± 5 °C.

**C.2. Procedure**

**C.2.1** Weigh out 50.0 g of the test sample into a beaker and add 200 ml of water. Heat on a water bath, with frequent stirring, until all the soluble salts are dissolved.

**C.2.2** Assemble the nest of sieves in the correct order with the 250 µm aperture sieve at the top and the 200 µm aperture at the bottom. Pour the mixture on to the top sieve and transfer the residue quantitatively to this sieve by washing the beaker several times with water.

**C.2.3** Using a fine stream of tap water, wash the insoluble matter through the sieves. Continue this washing until the amount of any residue on the top sieve appears to remain constant.

**C.2.4** If there is any residue on the top sieve, remove the sieve, stand it in a basin, and continue washing the material on it for a further 2 min. Transfer any further material that passes this sieve to the bottom sieve. Repeat the washing of the top sieve and the transfer of material until no further material passes through after 2 min.

**C.2.5** Repeat this procedure on the bottom sieve but discard any material that passes through.

**C.2.6** Dry each sieve and its contents in the oven at 105 ± 5 °C. Allow them to cool and, using a camel-hair brush, transfer the contents of each sieve quantitatively to separate tared, glass dishes and determine the masses of the residues.

**C.3 Calculation**

Water insoluble matter retained on any particular sieve, % (m/m) of the total water insoluble

$$\text{matter} = \frac{A \times 10000}{B \times C}$$

Where

A = mass of the insoluble matter on the sieve, g

B = mass of the test sample used, g

C = water insoluble matter present in the test sample, % (from Annex B)

## Annex D (normative)

### Test for lather volume

#### D.1 General

Strict attention shall be paid to all details of the procedure in order to ensure concordant results. Particular care should be taken to invert the cylinder exactly as described.

#### D.2 Outline of the method

A suspension of the material in standard hard water is taken in a graduated cylinder and given 12 inversions under prescribed conditions. The volume of the foam formed is observed after keeping the cylinder for 5 min.

#### D.3 Reagents

**D.3.1 Calcium chloride**  $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ , AR

**D.3.2 Magnesium sulphate**  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ , AR

**D.3.3 Distilled water**

#### D.4 Apparatus

**D.4.1 Graduated cylinder** — Glass stoppered with graduation from 0 ml - 250 ml, with 2-ml divisions. Overall height about 35 cm and the height of the graduated portion about 20 cm.

**D.4.2 100-ml glass beaker**

**D.4.3 Thermometer** of range  $0\text{ }^\circ\text{C} - 100\text{ }^\circ\text{C}$

#### D.5 Preparation of standard hard water

Dissolve 0.220 g of calcium chloride dehydrate and 0.246 g of magnesium sulphate heptahydrate in distilled water. Dilute to 5 l with distilled water.

NOTE This standard hard water has a hardness of approximately 50 mg/kg calculated as calcium carbonate.

#### D.6 Sample preparation

Cut away the outer edges of bathing bar using a knife.

Using a stand up type of grater, grate up to 10 g – 15 g of the bathing bar into small chips.

#### D.7 Procedure

**D.7.1** Weigh 1 g of the grated chips accurately in a 100-ml glass beaker. Add 10 ml of the standard hard water. Cover the beaker with a watch glass and allow to stand for 30 min. The operation is carried out to disperse the antibacterial bathing bar.

**D.7.2** Stir the contents of the beaker with a glass rod and transfer the slurry to a 250-ml graduated cylinder ensuring that not more than 2 ml foam is produced. Repeat the transfer of the residue left in the beaker with further portions of 20 ml of standard hard water ensuring that all the matter in the beaker is transferred to the cylinder.

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**D.7.3** Adjust the contents in the cylinder to 100 ml by adding sufficient standard hard water. Bring the contents of the cylinder to 30 °C. Stir the contents of the cylinder with a glass rod or thermometer to ensure a uniform suspension.

**D.7.4** As soon as the temperature of the contents of the cylinder reach 30 °C, stopper the cylinder and give it 12 complete inversions, each inversion comprising movements in a vertical plane, upside down and vice versa. After the 12 inversions, let the cylinder stand for 5 min. Take the following readings as shown in Figure A.1:

1. a) foam plus water ( $V_1$  ml).
2. b) water only ( $V_2$ ml).

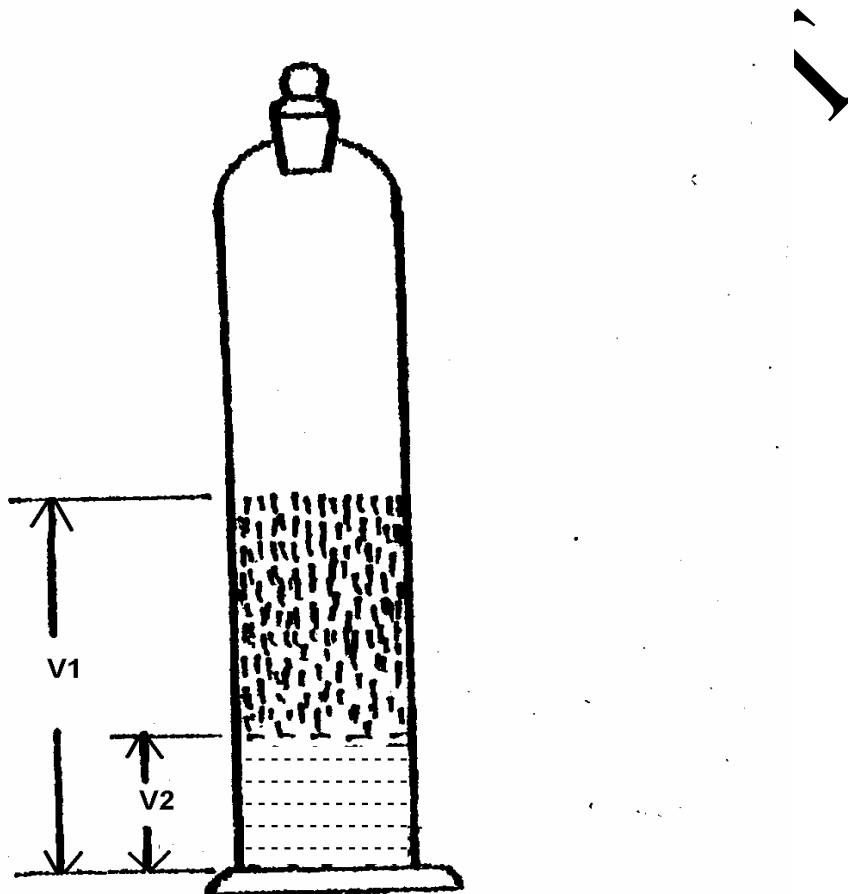


Figure A.1 — Measurement of foam

### D.8 Calculation

$$\text{Foam volume} = V_1 - V_2$$

Where

$V_1$  = Volume, in millilitres of foam + water;

$V_2$  = Volume, in millilitres of water only.