KENYA STANDARD

KS 1941-1: 2018
ICS 71.100.40

APPROVED
2018-01-11

Scouring compounds for utensil cleaning — Specification

Part 1:

Dishwashing paste

Second Edition, 2018

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

PZ Cussons East Africa Ltd.

Unilever Kenya

Colgate-Palmolive (East Africa) Ltd.

Orbit Chemicals Industries Ltd.

Kenya Industrial Research and Development Institute

Government Chemist's Department

University of Nairobi

Consumer Information Network

Pwani Oil Refineries Ltd.

Johnson Diversey East & Central Africa

BIDCO Africa Ltd.

Henkel Chemicals East Africa Ltd.

MEP Chemicals Industries

Kenya Bureau of Standards — Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

KENYA STANDARD

KS 1941-1: 2018
ICS 71.100.40

Scouring compounds for utensil cleaning — Specification

Part 1:

Dishwashing paste

KENYA BUREAU OF STANDARDS (KEBS)

Head Office: P.O. Box 54974, Nairobi-00200, Tel.: (+254 020) 605490, 602350, Fax: (+254 020) 604031
E-Mail: info@kebs.org, Web:http://www.kebs.org

Coast Region
P.O. Box 99376, Mombasa-80100
Tel.: (+254 041) 229563, 230939/40
Fax: (+254 041) 229448

Lake Region
P.O. Box 2949, Kisumu-40100
Tel.: (+254 057) 23549, 22396
Fax: (+254 057) 21814

Rift Valley Region
P.O. Box 2138, Nakuru-20100
Tel.: (+254 051) 210553, 210555

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.

Dishwashing bars are used to remove grease from dishes, pots, pans, glasses and cutlery. Surfactants and builders are the major components of dishwashing bars. 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.

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.

This standard cancels and replaces KS 1941-1:2005, Scouring compounds — Specification Part 1: Dishwashing paste.

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

KS 1941-1:2005, Scouring compounds — Specification Part 1: Dishwashing paste.

IS 6047: Scouring products for utensil cleaning- Specification

Acknowledgement is hereby made for the assistance received from these sources.

Scouring compounds for utensil cleaning — Specification

Part 1:

Dishwashing paste

1 Scope

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

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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*

3 Requirements

3.1 General

3.1.1 The 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 paste shall be uniformly mixed. It shall not be irritating to the normal skin, and it shall not contain ingredients in quantities that are toxic to human beings.

3.1.3 When the 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.

3.3 Odour

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

3.4 Specific requirements

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

Table 1 — Specific requirements for dish washing paste

S/N	Characteristic	Requirement	Test method
i)	Free alkali content [a] (as sodium hydroxide) % (m/m), max.	0.1	KS ISO 456
ii)	Total alkalinity [a] (as sodium hydroxide) % (m/m), max.	14	KS ISO 685 KS ISO 4315
iii)	Active (reserve) alkalinity in mL, *max.*	20	Annex A
iv)	Active detergent [a], % (m/m), min.	12	KS ISO 2870 KS ISO 2871-1 KS ISO 2871-2
v)	Water insoluble matter content [a], % (m/m), max.	55	Annex B
vi)	Moisture and volatile matter content [a],at 105 ºC % (m/m), max.	35	KS ISO 672 KS ISO 4317
vii)	Fineness of water insoluble matter retained on a 250-μm aperture sieve % (m/m), max.	0.1	Annex C
viii)	Lather volume, in mL, min.	70	Annex D
[a] On the dishwashing paste as received.			

4 Packaging

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

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

5 Labelling

Each package and bulk package shall bear in prominent, legible, and indelible marking the following information in English, Kiswahili or French or in combination or any other language as agreed between the manufacturer and supplier.

i) Name of the product i.e. 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) Instructions for use

vi) Date of manufacture

vii) Best before date

viii) In the case of bulk packages, the number of packets.

ix) Country of origin

Annex A
(normative)

Determination of active (Reserve alkalinity)

A.1 Principle

Reserve alkalinity is expressed as amount of 0.1 N hydrochloric acid in ml required for 50 ml of 1 % 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 °C ± 2 °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 °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 °C ± 2 °C until a constant mass is obtained.

B.2 Calculation

The matter insoluble in water is expressed as follows:

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 dying oven capable of being maintained at 105 °C ± 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 °C ± 5 °C. Allow them to cool and, using a camel-hair brush, transfer the contents of each sieve quantitatively to separate tarred, 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 matter =

$$\frac{A \times 10000}{B \times C}$$

Where

A is the mass of the insoluble matter on the sieve in grams;

B is the mass of the test sample used in grams;

C is the 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 $CaCl_2.2H_2O$, AR

D.3.2 Magnesium sulphate $MgSO_4.7H_2O$, 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 ºC – 110 ºC

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.

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 ºC. 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 ºC, 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:

a) foam plus water (V_1 ml).

b) water only (V_2 ml).

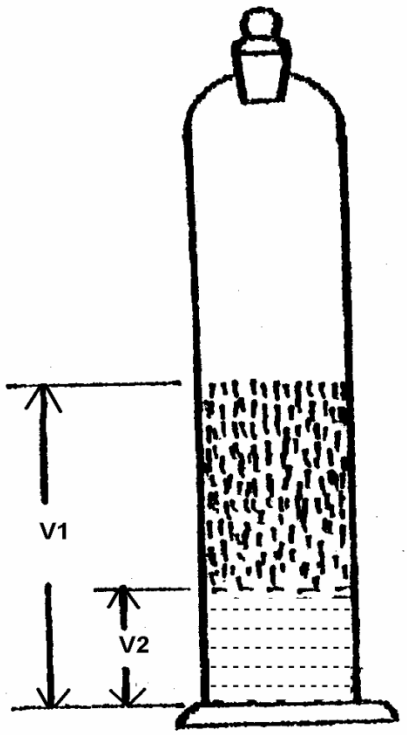

Figure A.1 — Measurement of foam

D.8 Calculation

Lather volume = $V_1 - V_2$

Where

V_1 is the Volume, in millilitres of foam + water;

V_2 is the Volume, in millilitres of water only.

