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Laundry soap — Specification



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Foreword

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The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

Committee membership

- Kengrow Industries Limited
- Madhvani and Company Limited
- Mbale Soap Works
- Mukwano Industries
- Nakasero Soap Works
- National Environment Management Authority
- The Government Chemist Analytical Laboratory
- Uganda Cleaner Production Centre
- Uganda National Bureau of Standards
- Uganda Revenue Authority - Chemist Section
- Unilever Uganda Limited

Introduction

This standard has been prepared because of the need for standardising the different types of laundry soaps being manufactured in Uganda. It is hoped that the standard shall assist the production of laundry soaps of well-defined types and thus ensure their quality to purchasers in Uganda and within the East African region. This standard has been produced to guide manufactures, importers and consumers on the quality of laundry soap.

This Uganda standard defines one type of soap, that is laundry soap, which is widely used in the country. It establishes two different grades of laundry soap based on the total fatty matter content and addition of builders and fillers to the soap. This standard shall enable the purchaser to define the customer requirements with precision by referring to the grade and designation given in this Uganda Standard.

Laundry soap — Specification

1 Scope

This Uganda Standard specifies requirements for two grades of laundry soaps in the form of cakes or bars, produced from vegetable or animal oils or fats or a blend of all or part of these materials. It does not cover liquid soap for household purposes, and bar soap, in which synthetic detergents have been added to enhance its performance.

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.

US 67 ISO 684 *Analysis of Soap – Determination of total free alkali*

US 73 ISO 685 *Analysis of Soap – Determination of total alkali content and total fatty matter content*

US 74 ISO 1067 *Analysis of Soap – Determination of unsaponifiable, unsaponified, and unsaponified saponifiable matter*

US 75 ISO 457 *Analysis of Soap – Determination of chloride content*

US 76 ISO 673 *Analysis of Soap – Determination of ethanol insoluble matter*

US 77 ISO 672 *Analysis of Soap – Determination of moisture and volatile matter content*

US 78 ISO 456 *Surface-active agents – Determination of free caustic alkali*

3 Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply.

3.1

soap

the product formed by the saponification or neutralisation of fats, oils, waxes, rosins or their acids with organic or inorganic bases

3.2

pure soap

well-saponified soaps, which in addition to moisture may contain amounts of substances, such as colouring matter, perfume, preservative, opacifiers and optical brightening agents

3.3 built laundry soap
well-saponified soaps which in addition to moisture and moderate quantities of builders, may contain small amounts of substances such as colouring matter, perfume, preservatives, opacifiers, and optical brightening agent

3.4 builder
a complementary component of soap, usually inorganic, which with reference to the washing action, adds its characteristic properties to those of the essential constituents

NOTE: Builders are added to a soap to improve its effectiveness under the conditions of use. The action of builders is mostly physico-chemical and comprises a series of effects, which results in more economic usage and better cleansing action of soap especially in hard water areas. Substances commonly used as builders are soda ash, sodium silicates, sodium phosphates, borax and cellulose derivatives.

3.5 colouring matter
any dyestuff that may be used to colour laundry soap

3.6 fillers
materials added to soap to increase the mass of the product but which in themselves may or may not improve effectiveness of the soap under the conditions of use

3.7 free caustic alkali
the free (uncombined) caustic alkali present in a soap

3.8 laundry soap
soap which is intended for use in washing clothes

NOTE: Laundry soap may contain fillers, builders, colouring matter, perfume, optical brighteners, preservatives, glycerine or opacifiers.

3.9 total fatty matter
includes either the water-insoluble or ether soluble fatty matter under the specified conditions of test

3.10 total free alkali
the sum of the free caustic alkali and the free carbonate alkali contents

3.11 saponification
a chemical reaction permitting the separation of an ester into its constituent parts, acid and alcohol, or possibly phenol, by the action of a base, with the formation of a salt from the acid

NOTE: Saponification of fats produces soap.

4 Grade designations of laundry soap

Laundry soap shall be of the following grade designations:

- (a) **Grade I** for the genuine or pure laundry soap, and

(b) **Grade II** for the built or filled laundry soap

5 Requirements

5.1 General requirements

Laundry soaps shall be well saponified in form of firm cakes, tablets or bars of well-dispersed and uniform colour.

5.1.1 Appearance:

Laundry soap shall be free from dirt and other foreign matter.

5.1.2 Texture and stability

Laundry soap shall be of firm texture and possess good lathering and cleaning properties.

5.1.3 Odour

Laundry soap both as received and when dissolved in hot water, shall possess a pleasant odour and shall not develop an objectionable odour during storage at ambient temperature. It shall also not leave disagreeable or objectionable odour on clothes after washing and thoroughly rinsing with water.

5.1.4 Colouring matter

5.1.4.1 When coloured laundry soap is used in washing any fabric, it shall not leave any visible stains on the fabrics after washing and thorough rinsing with water.

5.1.4.2 During certification, the manufacturer shall objectively demonstrate to the certification body or authority that the dyes used during soap manufacture had been properly evaluated with respect to the staining characteristics of fabrics.

NOTE: Some of the methods that may be used for evaluation of staining properties are laid down in Annex B

5.1.5 Ingredients

All the ingredients used in the product shall be not injurious to health, cause irritation to the skin during use, damage the fabrics, and be environmentally safe.

5.2 Compositional requirements

Laundry soap shall comply with the requirements in Table 1.

Table 1 — Specification for laundry soap

Characteristic	Requirements % (m/m)		Methods of test
	Pure laundry soap	Built/Filled laundry soap	
	Grade I	Grade II	
Total Fatty Matter ¹ , (% m/m) min	62	50	US 73
Matter insoluble in ethanol ² (% m/m), max.	3.5	20	US 76
Free alkali as NaOH ² (% m/m) max.	0.2	0.4	US 78
Total free fat ² (unsaponified and unsaponifiable fatty matter), max	2	2	US 74
Chloride content ² , as NaCl, (% m/m)	1.5	1.5	US 75
Mashing properties/stability	To pass test	To pass test	5.4, Annex A
Staining properties	To pass test	To past test	Annex B
Ratio between (actual fatty matter content x average mass of units) and (the specified minimum fatty matter x the specified unit mass), min	1.0	1.0	
¹ On the soap as received ² Corrected to a fatty matter content of 62 % (m/m) or 50% (m/m), in accordance with formula (1)			

NOTE: Allowance should be made for the loss of moisture of the soap on storage. The results for each of the above-specified methods of test should be corrected in relation to the specified minimum total fatty matter by means of the equation:

$$\text{Corrected result} = \frac{\text{Actual result} \times \text{Minimum total fatty matter}}{\text{Actual total fatty matter}}$$

The corrected results shall be used to determine whether the product is up to standard.

5.3 Performance requirements

Requirement for stability - when subjected to the test described in Annex A, the laundry soap shall not disintegrate, and when dried at room temperature for 25 h thereafter, it shall not crumble, crack or break.

6 Sampling and inspection

6.1 Lot and Batch

6.1.1 Batch - the soap from one vat or pan. In the continuous production process, the soap from one day's production shall constitute a batch.

6.1.2 Lot - In a single consignment, all packages containing laundry soap bars or cakes drawn from the same batch of production shall constitute a lot.

6.2 Sampling

6.2.1 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 and product units from each container respectively to be selected for drawing the sample shall be in accordance with Table 2.

Table 2 — Scale of sampling

Number of packages (cartons) in the lot N	Number of containers (cartons) to be selected n	Number of product units to be selected from each container
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

6.2.2 The packages (cartons) 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^{th} package, where k is the integral part of $N \div n$.

From each package thus selected, draw at random an equal number of cakes so as to obtain a total mass of at least 2 kg.

6.2.3 *Inspection* - Inspect the cakes selected for compliance with the requirements of 5.1 – 5.3.

7 Preparation of test samples

7.1 Composite sample - Weigh each bar separately (including any material that may have adhered to the wrapper), and calculate the average mass. Keep one bar for the test in Clause 4 and Table 1. Cut each of the remaining bars into eight parts by means of three cuts at right angles to each other through the middle. Grate finely the whole of two diagonally opposite eighths of each specimen. Mix the gratings and place in a clean, dry, airtight glass container.

7.2 Samples for testing - Immediately after, take at one time all test samples required for the tests in 4.7. Weigh out last the test sample required for determination of free alkali or acid content, and use it immediately.

8 Methods of test

Samples of laundry soap shall be tested in accordance with the methods of test referred to in 4.5 and Table 1. Before testing, reduce the sample taken in 5.2 to a final sample by cutting each bar or cake of soap into eight parts by three mutually perpendicular cuts passing through the middle of each face. Either grate or slice finely or run through a suitable chopper the whole of the diagonally opposite eight of portions. Mix the gratings or slices or disintegrated material from the chopper and place in a clean dry, airtight container.

8.1 Number of tests

8.1.1 Tests for the determination of total fatty matter, unsaponified matter and free caustic alkali shall be conducted on each of the individual samples separately.

8.1.2 Tests for determination of all the remaining characteristics shall be conducted on the composite sample.

9 Compliance with the standard

The lot shall be deemed to comply with this standard, if after inspection and testing, it complies with the requirements specified in Clause 4.

10 Packing and marking

10.1 Packing

Laundry soap shall be packed in clean, sound and dry containers made of a material, which does not affect the product it protects from excessive loss of moisture and contamination.

10.2 Marking

10.2.1 Bar or Cake of laundry soap - Each bar or cake of laundry soaps, whether wrapped or unwrapped, shall be marked with:

- a) the grade of the soap, that is, the words "Grade I" or Grade II" depending on the grade of soap;
- b) the trade name or brand name and/or the manufacturer's name; and
- c) the words " Laundry soap".

10.2.2 Wrapper - Each wrapper shall be marked or labelled with the following particulars:

- a) the name of the product and/or the trade name or brand name, if any;
- b) the net mass of the soap at the time of packing and this shall not differ by more than 2 % at the time of packing the soap; and
- c) the grade of the soap in words "Grade I" or Grade II" depending on the grade of soap

10.2.3 Carton - The carton of laundry soap shall be marked or labelled with the following particulars:

- a. name of the product, and the trade name or brand, if any;
- b. name and address of manufacturer;
- c. batch or code number;
- d. net mass of the soap in accordance with the requirements of the Weights and Measures regulations and this shall not differ by more than 2 % at the time of packing the soap.

NOTE: The Weights and measures legislation lays down the different weights of soaps and outlined in Annex B.

- e. number of bars or cakes in the carton;
- f. grade of soap (Grade 1 or Grade 2); and
- g. country of origin.

Annex A (normative)

Mush Test

A.1 Principle

A.1.1 A test bar piece of defined size is cut from the sample bar to remove harder outer layers. The test piece is preconditioned by turning to and fro 18 times through 180° twists under running water maintained at 25 °C or in a bowl of water.

A.1.2 The bar is left for six hours on a piece of fabric, which has been wetted and drained of excess water. During the six hours the bar and cloth are covered to prevent drying. At the end of the test period mush is removed from the test piece face in contact with the cloth. Weight loss from the test piece is expressed as mush per 30 cm² of original surface area in contact with the cloth.

A.2 Equipment

A.2.1 Coarse kitchen cheese grater

A.2.2 Sharp thin blade knife

A.2.3 Calipers or ruler to measure ensure the sample dimensions

A.2.4 Plastic or non-corrodible trays, plastic bar dishes (7 x 11 x 2) cm are quite suitable.

A.2.5 Pieces of cotton cloth cut to fit as a double layer inside the trays. The cotton cloth used for wear measurements (Annex B) is suitable.

A.3 Bar preparation

A.3.1 Randomly sample nine (9) bars or cakes.

A.3.2 Cut from each bar a test piece having a working face (to be applied to the fabric) of 4.0 cm x 7.5 cm taking into consideration the following conditions:

A.3.2.1 The working face should be a fresh surface from the interior of the bar sample. The face opposite the working face should be identified by making a small hole with a sharp object. This enables the working face to be identified after the preconditioning step.

A.3.2.2 The longer side the test piece, that is, the 7.5 cm length, should be from a direction parallel to the longest axis of the original bar sample.

A.3.2.3 To cut the bar it is convenient to first trim it to the approximate size using a coarse kitchen cheese grater and then to make the final adjustments to a smooth surface with a sharp thin-bladed knife.

A.4 Test Procedure

For each test piece

A.4.1 The tray plus double thickness of cloth is filled with demineralized water. The tray is then held in a vertical position to drain the water from the cloth. The vertical position is maintained until water ceases to run from the dish in a continuous stream, that is, starts to drip.

A.4.2 Measure the working area of the face of the test piece.

A.4.3 Precondition the bar by rotating it to and from 18 times through 180° under running water at 25 °C or in a bowl of supply water at a temperature 25 °C.

A.4.4 Place the working face of the bar onto the damp fabric and then cover the tray plus the bar with for example a sealed plastic bag, to prevent water loss.

A.4.5 Maintain the covered test piece and holder at 25 °C for six hours.

A.4.6 Remove the mushed bar test piece from the tray and take its weight.

A.4.7 With a blunt sided spatula or plastic ruler remove the mush scrapping the working face of the bar test piece.

A.4.8 Reweigh the test piece and calculate the amount of mush removed, expressed as grams per 30 cm² of original test piece surface area.

NOTE: The procedure for weighing the bar and removing the mush should take some minutes. During that time the remaining bars should continue to form mush. While this time is not critical for a set of nine test pieces from a given product, if more than one product is under test it is advised to stagger the start of the test for the second product. This should give adequate time to complete work on the first set before the six hour storage time of the subsequent set is completed.

Annex B (informative)

Determination of staining test of laundry bar soap

Two methods are for staining are described.

B.1 Method 1: Undissolved Powder (5.0 % Product concentration)

B.1.1 Principle

Test pieces of cloth of defined area are rubbed with soap and then dipped in water overnight, then scrubbed and rinsed in running water.

B.1.2 Materials

Pieces of white cotton, nylon and Crimplene C cloth.

B.1.3 Procedure

NOTE: The staining test is conducted in triplicate for all cloth types.

B.1.3.1 Rub evenly about 10 g of soap over a 15 cm x 7.5 cm test swatch placed on a china plate.

B.1.3.2 Pour gently 50 ml of hot water (approximately 55 °C) into the plate so that the test swatch is covered and left overnight (16 h).

B.1.3.3 Hand rub the swatch 10 times and then rinse each of the three test swatches are rinsed twice in about 2 litres of water and then dried in the drier.

B.2 Method 2: Pre-dissolved Soap (2.5 % Product concentration)

B.2.1 Principle

The method involves subjecting fabrics to prolonged soaking in a highly concentrated soap solution.

B.2.2 Materials

Pieces of white cotton, nylon and Crimplene C cloth of dimension 15 cm x 7.5 cm

B.2.3 Procedure

NOTE: The staining test should be conducted in triplicate for all cloth types.

B.2.3.1 Weight 10 g of soap in a honey jar and then add 200 ml of hot water at a temperature of approximately 60 °C, shake until when the soap is thoroughly dissolved.

B.2.3.2 Place a test swatch A 15 cm x 7.5 cm in the soap solution (B.2.3.1) and allow to stand overnight.

B.2.3.3 Transfer the test swatch in a bowl containing 1 litre of water and then agitate vigorously by hand for 10 s.

B.2.3.4 Rinse the test swatches in 5 litres of water by hand. The times should be fixed for all washes, and then dry swatches.

Annex C
(normative)

Weights and Measures requirements for soap

Minimum quantities of soap specified in the Weights and Measures (Sale and labelling of Goods) rules, 1972

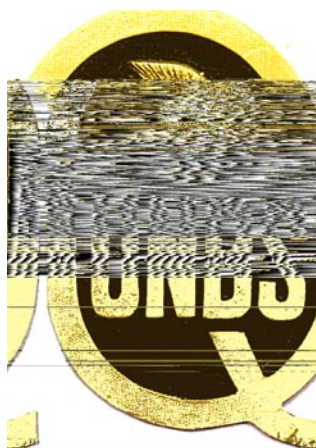
25 g, 50 g, 100 g, 150 g, 200 g, 300 g, 400 g, 500 g, 800 g, 1 Kg, 1.25 Kg, 1.5 Kg, 2 Kg, 2.25 Kg, 2.5 Kg, 3 Kg, thereafter by steps of 1 kg

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