

DRAFT TANZANIA STANDARD

**TBS/CDC-2(5103) P2 Scouring powders – Specification
(Revision of TZS 225:1984)**

Draft for comment only

TANZANIA BUREAU OF STANDARDS

0 Foreword

This Draft Tanzania Standard is being developed by the Soap and Detergents Technical Committee under supervision of the Chemical Division Standards Committee and it is in accordance with the procedures of the Bureau.

This Draft Tanzania Standard is the first revision of TZS 225:1984 “Scouring Powder — Specification”.

In the preparation of this Tanzania standard, assistance has been derived from IS: 6047: 2009 Specification for scouring powders published by Indian Bureau of Standards.

In reporting the results of analysis of a test if the final value is to be rounded off, it shall be done in accordance with TZS 4 *Rounding off numerical values*

Scouring Powders – Specification

1 Scope

This Draft Tanzania Standard specifies the requirements, sampling and methods of testing for scouring powders.

2 Normative references

The following referenced documents are indispensable for the application of this document. The latest edition of the referenced document (including any amendments) applies.

TBS/CDC 2(4968) P3 *Soaps – Sampling and test methods*

TZS 39/EAS 127 *Synthetic detergents for house hold use – Specification*

TZS 59 *Water for analytical laboratory use – Specification and test method*

3 Requirements

3.1 General requirements

3.1.1 Types

There shall be two types of scouring powders, namely type I and type II, based on soap and on synthetic detergents respectively.

3.1.2 Description

3.1.2.1 Scouring powder shall be a mixture of an active ingredient (cleansing, which may be soap, or synthetic detergent) and finally ground abrasive material (e.g. ground marble, dolomite and silica) together with builders and additives. A list of suggested builders and additives is given in annex F.

3.1.2.2 The material shall be a free/ flowing powder. It shall be free from lumps and big gritty particles.

3.1.2.3 Scouring powder may also contain perfume and/or antiseptic substances.

3.2 Specific requirements

Scouring powders shall also comply with the requirements given in the table when tested by the appropriate methods as indicated in column 5 of the table.

Table 1– Requirements for scouring powders

S/NO	Parameter	Requirements		Methods of test
		Type I	Type II	
1	Surface active ingredient percent by mass, min			Annex A
	a) As total fatty matter	3.0	NA	
	b) synthetic surfactants	NA	2.0	
2	Moisture and volatile matter at 105°C percent by mass max.	3.0	3.0	Annex B
3	pH of one percent solution, max	11.0	11.0	Annex C
4	Matter insoluble in water, percent by mass, min	80.0	80.0	Annex D
5	Sieve analysis of matter insoluble in water Retained on 250 µm sieve per cent by mass, max.	0.1	0.1	Annex E
6	Free alkali content (as NaOH), % (m/m) max	1.0	1.0	Annex F
7	Alkali salts content (as anhydrous Na ₂ CO ₃) % (m/m)			Annex G
	Minimum	1.0	1.0	
	Maximum	10.0	10.0	

Note:

NA means Not Applicable to the respective property

4. Sampling

4.1 For the purpose of general precautions, scale of sampling and preparation of test samples, shall be as prescribed in TBS/CDC 2(4968) P3.

4.2 Test for checking the requirement for surface active ingredient of the material shall be conducted as indicated on individual samples and test for the determination of all the remaining characteristics shall be conducted on the composite sample.

4.3 Criteria for conformity

54.3.1 *For individual samples* – for each of the characteristics which have been determined on the individual samples the mean (\bar{X}) and the range (R) of the test results shall be calculated as follows:

$$\text{Mean } (\bar{X}) = \frac{\text{the sum of test results}}{\text{Number of the test results}}$$

Range (R) = the difference between the maximum and the minimum value of the test results

The lot shall be deemed as conforming to the requirements if requirements if the expression ($X-0.5R$) is greater than or equal to minimum value given in table1 and $X+ 0.5R$) is less than or equal to maximum value given in table1.

4.3.2 *For composite sample* - For declaring the conformity of the lot to the requirements of other characteristics determined on the composite, the test results for each of the characteristics shall satisfy relevant requirements.

5 Packing and marking

5.1 Packing

Scouring powder shall be packed in suitable airtight containers which will protect the material from caking into hard lumps.

5.2 Marking

Each container shall be legibly and indelibly marked in in Kiswahili and English, and other language as agreed between the manufacturer and supplier with the following information:

- a) the name of the product and the registered trade mark if any;
- b) the net mass in grams;
- c) the name and address of the manufacturer or packer;
- d) the country of origin,
- e) dates of manufacture and expiry
- f) the code number or batch number;
- g) Instructions for use and warning instructions “not to be handled with open wounds, and cuts”;** and
- h) the available chlorine content, as a percentage by mass, in case chlorine - containing bleaching agent is present in the product.

6. Test report

The test report shall include the following particulars:

- a) the reference of the methods used,
- b) the results and the methods of expression used,
- c) any unusual features noted during the determinations and any operations not included in this standard or regarded as optional

7. Quality of reagents

Unless otherwise specified, chemicals of analytical grade and water, distilled quality, in accordance with TZS 59 shall be used in all tests.

Annex A
(Normative)

Determination of surface active ingredient

A.1 Outline of method

First it is determined whether the surface-active cleansing ingredient is soap or synthetic detergent, and then the determination is made by the procedure which is applicable depending on the type of the ingredient.

A.2 Procedure

A.2.1 Weigh accurately about 5 g of the material and transfer it to a 150ml beaker. Add about 50 ml of freshly boiled and cooled distilled water to the beaker and put the beaker on a hot-plate for dissolving the material soluble in water. Continue stir with a glass rod to ensure dissolution. Filter through a filter paper into a 100-ml flask. Wash the filter paper with hot water at least four times collection the washings into the filtrate. Cool the solution under a water tap and then add distilled water up to the 100ml mark.

A.2.2 Take about 10 ml of the above solution and add 3 ml of 3 M solution of hydrochloric acid. Fatty acids separate if the sample is based on soap.

A.2.3 If soap is found to be absent, by the test given in A.2.2, take a fresh 10 ml solution A.2.1 in a test tube and test for the presence of anionic synthetic detergent as prescribed in B.2.5 of TBS 39/EAS 127.

A.2.4 If soap is found to be present, determine the total fatty matter content of the material by the procedure prescribed in TBS TBS/CDC 2(4968) P3

A.2.5 If the scouring powder is based on synthetic detergent material, by the procedure prescribed in clause B.5 of TBS 39/EAS 127.

Annex B
(Normative)

Determination of moisture and volatile matter content

B.1 Principle

Moisture and volatile matter is determined by the oven method.

B.2 Apparatus

B.2.1 Porcelain or silica dish – 6 cm to 8 cm in diameter and 24 cm depth.

B.2.2 Desiccator – containing an efficient an efficient descant, such as phosphorus pentoxide.

B.2.3 Air-oven – preferably electrically heated, with temperature control-device.

B.3 Procedure

Weigh accurately about 5 g of the material into a dry tared dish, and dry to constant mass in an air-oven at a temperature of $105^{\circ}\text{C} \pm 1^{\circ}\text{C}$. Cool in a desiccator and weigh. Constant mass shall be considered to have been attained when successive heating for one-hour periods shows a difference of not more than 5 mg in the net loss in mass.

B.4 Expression of results

The moisture and volatile matter content, expressed as a percentage by mass, is given by the formula

$$= \frac{(m - m_0)}{m} \times 100$$

Where

m = mass in g of the material taken for the test, and

m_0 = mass in g of the material after drying

Annex C
(Normative)

Determination of pH

C.1 Methods

The determination shall be carried out by the electrometric method or by the indicator method in case of dispute the electrometric method shall be adopted.

C.1.1 Electrometric method

Determination shall be made by using a pH meter with glass electrode.

Procedure

Prepare a 1% solution (*m/v*) of the material as in. A.2.1 Determine the pH of the solution using a pH meter.

C.1.2 Indicator method

C.1.2.1 Reagents

Alizarin yellow R- pH range 10.1 to 12.0 and colour change yellow to orange.

C.1.2.2 Procedure

As in A.2.1 Take 10 ml of this solution in a glass test tube and add 0.5 ml of the indicator. Compare the colour produced with a series of buffer tubes on known pH in the range 10.0 to 12.0. Report as pH, the pH of the buffer solution which gives the closest match with the colour produced by the sample.

C.2 Standard calibrated glass discs may also be used for determination of pH.

Annex D
(Normative)

Determination of matter insoluble in water

D.1 Principle

To determine the matter insoluble in water, the sample is extracted with alcohol, filtered and the residue extracted with hot water.

D.2 Procedure

D.2.1 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 minutes. Stir and break up any hard lump with a glass rod flattened at one end.

D.2.2 Allow the solid matter to settle and decant the hot alcoholic solution through a sintered glass filter funnel No. 4 fitted to a Buckner flask to which suction is applied. Repeat the alcoholic digestion in a similar manner with 5 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.

D.2.3 Change the receiver, and 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.

D.3 Expression of results

The matter insoluble in water, expressed as a percentage by mass is given by the formula

$$= \frac{100 m_1}{m}$$

Where

m_1 = mass in g of matter insoluble in water

m = mass in g of material taken for the test.

Annex E
(Normative)

Sieve analysis of water insoluble mater

E.1 Apparatus

250- μ sieve

E.2 Procedure

Weigh out 50.0g of the test sample into a beaker and add 200 ml of water. Heat on steam bath, with frequent stirring, until all the soluble salts are dissolved. Pour the mixture on to the sieve and transfer the residue quantitatively to the sieve by washing the beaker several times with water. Using a fine stream of tap water, wash the insoluble matter through the sieve. Continue this washing until the amount of residue on the sieve, if any, appears to remain constant. Place the sieve in basin, and continue washing the material for a further 2 min. Repeat the washing of the sieve for 2 min. Dry the sieve and its contents. If any, at $100^{\circ}\text{C} \pm 5^{\circ}\text{C}$, using brush, transfer the contents of the sieve quantitatively to a tared glass dish and determine the weight of the residue.

E.3 Expression of results

The water insoluble matter retained on 250- μ sieve, expressed as a percentage by mass in given by the formula

$$= \frac{100 m}{M}$$

Where

m = mass in g of residue on the sieve

M = mass in g of sample taken for the test

Annex F (Normative)

Determination of free alkali

F.1 Principle

The composite sample is refluxed in ethanol and the solution obtained is neutralized with a known excess of sulphuric acid solution and back titrated with ethanolic potassium hydroxide.

F.2 Reagents

F.2.1 Ethanol, 95 % (v/v) solution, free from carbon dioxide. Reflux this solution for 5 min, cool to ambient temperature and neutralize with the ethanolic potassium hydroxide solution (F.2.3) in the presence of 4 drops of phenolphthalein solution (F.2.4) for 200 ml of ethanol.

F.2.2 Sulphuric acid, 0.5 M standard volumetric solution.

F.2.3 Potassium hydroxide, 0.1M ethanolic standard volumetric solution.

F.2.4 Phenolphthalein, solution of 1 g per 100 ml in 95 % (v/v) ethanol.

F.3 Procedure

Weigh to the nearest 0.001 g, 10 g of the sample into a 250 ml conical flask and add 100 ml of neutralized ethanol solution. Fit the conical flask to the reflux condenser and digest for 30 min. Filter while still hot through a fluted Whatman No. 4 filter paper. Wash the flask and the residue with 25 ml portions of hot neutralized ethanol. Combine the filtrate and the washings and add exactly 3.0 ml of the sulphuric acid solution. Boil under reflux for at least 10 min. Allow to cool to ambient temperature and titrate with the ethanolic potassium hydroxide solution in the presence of a few drops of the indicator. Carry out two determinations on the sample.

F.4 Calculation

The total free alkali content, expressed as a percentage by mass of sodium hydroxide, is given by the formula

$$0.040 \times \frac{V_0 M_0 - V_1 M_1}{m} \times 100$$

Where

m is the mass, in grams, of the sample used;

M_0 is the exact molarity of the sulphuric acid solution;

M_1 is the exact molarity of the potassium hydroxide solution;

V_0 is the volume, in millilitre, of the sulphuric acid solution;

V_1 is the volume, in millilitre, of the potassium hydroxide solution.

Take as the result the arithmetic mean of duplicate determinations.

Draft for comment only

Annex G
(Normative)

Determination of alkaline salt

G.1 Principle

After extracting the composite sample with hot neutralized ethanol, the residue is extracted with a known volume of water which is titrated with hydrochloric acid solution.

G.2 Reagents and materials

G.2.1 *Ethanol*, 95% (v/v) solution, free from carbon dioxide

G.2.2 *Hydrochloric acid*, 0.25 M standard volumetric solution.

G.2.3 *Screened methyl orange indicator*. Dissolve 0.2 g of methyl orange and 0.28 g of xylene cyanole FF in 100 cm³ of freshly boiled 50% (v/v) ethanol and filter.

G.2.4 *Glass fiber filter*

A glass fiber filter having about the same retention as a Whatman No 5 cellulose filter and about the same speed as a Whatman No. 4 cellulose filter.

G.3 Procedure

Weigh to the nearest 0.001 g, 5 g of the sample into a 250 ml beaker, add 50 ml of hot ethanol and boil gently for 5 min. Filter the hot solution through the weighed fiber filter in a filter funnel and transfer the residue quantitatively to the filter. Wash the residue with 150 ml of hot ethanol. Extract the residue on the filter with sufficient boiling water to collect 200 ml of extract. To the water extract obtained above add about 0.5 ml of the screened methyl orange indicator and titrate with the standard hydrochloric acid solution until the colour changes from green to grey. Carry out this determination in duplicate.

G.4 Calculation

The alkaline salt content, expressed as a percentage by mass of anhydrous sodium carbonate is given by the formula

$$\frac{V \times M \times 5.3}{m_0}$$

Where

m_0 is the mass, in grams, of sample used;

M is the molarity of the standard hydrochloric acid solution;

V is the volume, in cubic centimetres, of the hydrochloric acid solution used.

Take as the result the arithmetic mean of duplicate determinations.

Annex H
(Informative)

List of suggested builders and additives for scouring powders

- d) Borax
- e) Colours
- f) Perfume
- g) Sodium bicarbonate
- h) Sodium carbonate
- i) Sodium hypochlorite
- j) Sodium silicate
- k) Sodium sulphate
- l) Sodium tripolyphosphate
- m) Trisodium phosphate