



DRAFT TANZANIA STANDARD

Magnesium oxide for cosmetic industry - specification

TANZANIA BUREAU OF STANDARDS

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Foreword

This Draft Tanzania Standard was published under the authority of the Board of Directors of Tanzania Bureau of Standards.

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Tanzania Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. The Technical Committees work under the supervision of Divisional (sectoral) Committees. The Standards are developed in accordance with the Guide and Procedure for Development of Tanzania Standards and TZS 0, Guide for presentation of Tanzania Standards.

Tanzania Standards are subject to review, to keep pace with science and technological advances. Users of the Tanzania Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

This Tanzania Standard was developed under the supervision of the Chemicals Divisional Standards Committee (CDC). The Technical Committee responsible for the standard is CDC 3 Cosmetics and creameries.

The reporting of the results of a test or analysis made in accordance with this Tanzania Standard, if the final value observed or calculated is to be rounded off, shall be done in accordance with TZS 4.

Magnesium oxide for cosmetic industry - specification

1 Scope

This Draft Tanzania Standard specifies requirements, sampling and test methods for magnesium oxide for the cosmetic industry.

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.

TZS 650, *Method of sampling of lime and limestone products*

TZS 2127-16/EAS 847-16, *Cosmetics — Analytical methods — Part 16: Determination of lead, mercury and arsenic content*

TZS 2127-17/EAS 847-17, *Cosmetics — Analytical methods — Part 17: Determination of pH.*

TZS 2127-28/EAS 847-28, *Cosmetics — Analytical methods — Part 28: Determination of free caustic alkali*

TZS 2191: 2018, *Methods of test for chemical analysis of limestone and limestone products*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

magnesium oxide

inorganic mineral ingredient used in cosmetic and personal care products because of its absorbent, bulking, opacifying, pH adjusting, skin protective and other related properties

4 Requirement

4.1 General requirements

4.1.1 The material shall be white, free from foreign matter. It shall be in the form of either bulk powder known as light magnesium oxide, or as a relatively dense powder known as heavy magnesium oxide.

4.1.2 The material shall be practically insoluble in water and alcohol but soluble in dilute acids.

4.1.3 The material shall be odourless, and shall not develop any objectionable smell when suspended in distilled water.

4.2 Specific requirements

The material shall comply with the specific requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Specific requirements for magnesium oxide for

S/N	Characteristic	Requirement	Test method
i.	Magnesium (MgO), % m/m, of ignited residue, min.	96.0	Annex A
ii.	Acid-insoluble matter (as SiO ₂) % m/m, max.	2.0	Annex B
iii.	Matter insoluble in water, % m/m, max.	2.0	Annex C
iv.	Loss on ignition, % m/m, max.	6.0	Annex D
v.	Calcium (as CaO) % m/m, of ignited residue, min.	1.0	Annex E
vi.	Alkali carbonates	To pas test	Annex F
vii.	Lead (as Pb) mg/kg, max.	10.0	TZS 2127-16/EAS 847-16
viii.	Arsenic (as As ₂ O ₃) mg/kg, max.	2.0	

5 Packaging

The material shall be packaged in airtight and moisture-proof packages.

6 Labelling

6.1 When the material is supplied in packages, each package shall be legibly and indelibly labelled with the following information:

- name of the material,
- name and address of manufacturer,
- trade mark, if any,
- net content,
- country of origin,
- batch number, and
- date of packing

6.2 When supplied in bulk, a label bearing the information in 6.1 shall be conspicuously displayed on the carrier.

7 Sampling

Sampling shall be done in accordance with TZS 650.

Annex A

(Normative)

Determination of Magnesium

A.1 Reagents

A.1.1 Standard Sulphuric Acid – 1 N.

A.1.2 Standard Sodium Hydroxide Solution – 1 N, freshly standardized.

A.1.3 Methyl Red Indicator Solution - Dissolve 0.01 g of methyl red in 100 mL of water.

A.2 Procedure - Weigh accurately about 1 g of the freshly ignited material and transfer it to a 250-mL conical flask. Add about 20 mL of water to the flask, and transfer 25 mL of standard acid with a pipette. Cover the flask with a watch-glass. Wash down the watch-glass and stir the flask and the sides of the conical flask with water, and titrate the solution in the flask with standard sodium hydroxide solution using methyl orange indicator. Carry out a blank determination using the same quantities of the reagents.

A.3 Calculation

Magnesium (as MgO), percent by mass of the ignited residue = $\frac{2.016 (V_1 - V_2) N}{M} - 0.719 A$

where

V_1 = volume in millilitres of standard sodium hydroxide required for titration in the blank determination,

V_2 = volume in millilitres of standard sodium hydroxide solution required for titration in the test with the material,

N = Normality of standard hydroxide solution,

M = mass in gram of the ignited material taken for the test, and

A = percentage by mass of calcium (as CaO) as obtained in Annex E.

Annex B

(Normative)

Determination of matter insoluble in dilute hydrochloric acid

B.1 Reagent

Concentrated Hydrochloric Acid

B.2 Procedure: Dissolve about 5 g of the material, accurately weighed, in a mixture of 100 mL of water and 25 mL of concentrated hydrochloric acid. Boil the solution for 5 minutes, filter any undissolved matter through ash-less filter paper and wash well with water until the last wash is free from chloride. Dry the residue and ignite at a temperature of 700 °C to 800 °C for about 15 minutes. Cool in a desiccator and weigh.

B.3 Calculation

$$\text{Matter insoluble in dilute hydrochloric acid} = \frac{100 M_1}{M_2}$$

where

M_1 = mass in grams of the residue, and

M_2 = mass in grams of the material taken for the test.

Annex C

(Normative)

Determination of matter soluble in water

C.1 Procedure - Boil about 2 g of the material, accurately weighed, with about 50 mL of water for 5 minutes in a covered beaker and filter while hot. Wash the filter three or four times and collect the washings with the filtrate. Cool and dilute the solution to 100 mL. Evaporate 25 mL of the filtrate to dryness and dry at 105 °C ± 2 °C for one hour.

C.2 Calculation

$$\text{Matter soluble in water, percent by mass} = \frac{400 M_1}{M_2}$$

where

M_1 = mass in grams of the residue, and

M_2 = mass in grams of the material taken for the test.

Annex D

(Normative)

Determination of loss on ignition

D.1 Procedure - Weigh accurately about 0.5 g of the material and ignite it to constant weight in a covered platinum crucible.

D.2 Calculation

$$\text{Loss on ignition, percent by mass} = \frac{100 M_1}{M_2}$$

where

M_1 = mass in grams of the residue, and

M_2 = mass in grams of the material taken for the test.

Annex E

(Normative)

Determination of calcium

E.1 Reagents

E.1.1 Concentrated Hydrochloric Acid

E.1.2 Rectified Spirit – 95% (v/v).

E.1.3 Sulphuric Acid – 25%(m/m).

E.2. Procedure - Dissolve about 0.5 g of freshly ignited material, accurately weighed, in concentrated hydrochloric acid added in small portions. Filter, if necessary; add to the filtrate 100 mL of rectified spirit and 40 mL of sulphuric acid and let stand overnight. If crystals of magnesium sulphate separate out, warm the mixture to about 50°C to dissolve them. Filter, wash with a mixture of two volumes of rectified spirit and one volume of sulphuric acid and ignite. Weigh the residue.

E.3 Calculation

$$\text{Calcium (as CaO), per cent by mass of the ignited residue} = \frac{41.18 A}{M}$$

where

A = mass in grams of the residue, and

M = mass in grams of the ignited material taken for the test.

Annex F

(Normative)

Test for alkali carbonates

F.1 Reagents

F.1.1 Standard Hydrochloric Acid – 0.1 N.

F.1.2 Methyl Red Indicator Solution - Dissolve 0.1 g of methyl red in 100 mL of rectified spirit.

F.1.3 Solution AA – Dissolve 2.0 g of the material in 50 mL of distilled water, boil the solution for 5 minutes in a covered beaker and filter while hot. Wash the filter three or four times and collect the washings with the filtrate. Cool and dilute the solution to 100 mL. Evaporate 25 mL of the filtrate to dryness and dry at $105^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for one hour. Preserve the solution in a conical flask and label it as AA.

F.2 Procedure

F.2.1 Pipette exactly 50 mL of solution AA preserved in a conical flask (see A.1.3), using methyl red indicator. Titrate exactly 50 mL of solution AA with standard hydrochloric acid.

F.2.2 The material shall be taken to have passed the test if not more than 1.0 mL of standard hydrochloric acid is required for the titration.

Bibliography

[1] *IS 2529:1983 (Reaffirmed 2021) - Magnesium oxide for cosmetic industry*

[2] *TZS 586: 2020 Lime (quick lime and hydrated) - Chemical industries -Specification*

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