

DRAFT TANZANIA STANDARD

Draft for comments only

CDC3(5130)P3 Rev of TZS 811: 2004

Cosmetics and air freshener aerosols - Specification

TANZANIA BUREAU OF STANDARDS

0 Foreword

This draft Tanzania standard is being prepared by the Cosmetics and Creameries Technical Committee, under the supervision of Chemicals Divisional Standards Committee and it is in accordance with the procedures of the Bureau.

This Draft Tanzania Standard is the first revision of Tzs 811:2004 Cosmetics and air freshener aerosols – Specification”

In the preparation of this Draft Tanzania Standard assistance was drawn from IS 8482:2012 - Indian standard for cologne.

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.

1. Scope

This standard prescribes requirements and methods of test for cosmetics aerosol and air fresheners in aerosol form.

This standard does not cover product with therapeutical claim.

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.

2.1 Tzs 61 Part 1 Aerosols - Containers and products - Specification part 1: General requirements for aerosol containers.

2.2 Tzs 638 (Part 1) /EAS 377 (Part 1) Cosmetics and cosmetic products — Part 1: List of substances prohibited in cosmetic products.

2.3 Tzs 638 (Part 2): 2014 /EAS 377 (Part 2):2013 Cosmetic and cosmetic products — Part 2: List of substances which cosmetic products must not contain except subject to the restrictions laid down.

2.4 Tzs 638 (Part 3) 4/EAS 377(Part 3) Cosmetics and cosmetic products — Part 3: List of colorants allowed in cosmetic products.

2.5 Tzs 638 (Part 4)/EAS 377 (Part 4) Cosmetics and cosmetics products — Part 4: List of preservatives allowed in cosmetic products.

2.6 Tzs 638 (Part 5) /EAS 377 (Part 5) Cosmetics and cosmetic products — Part 5: Use of UV filters in cosmetic products.

2.7 Tzs 314 Cosmetics and toiletries products – Methods of sampling

3. Requirements

All ingredients used including dyes, pigment and colours shall conform to all parts of Tzs 638 (all Parts):2014/EAS 377(all Parts) Cosmetics and cosmetic products.

- 3.1 The product shall contain acceptable amount of the ingredients necessary to effect the intended end use performance as stipulated on the label.
- 3.2 The manufacture shall certify that all the ingredients used such as mineral oils, extracts from natural herbs, dyes, perfumes etc. shall not be harmful or irritating to the skin or the sculp (where applicable).
- 3.3 The product shall not stain fabrics and general household furnishings.
- 3.4 The propellants used shall be hydrocarbons or any other propellants with low mammalian toxicity. Chloro-fluorocarbons (CFCs) banned under the Montreal Protocol for being ozone depleting substances shall not be used as aerosol propellants.
- 3.5 The flammability of an aerosol formulation shall be kept as low as possible to ensure safety during use.
- 3.6 The product shall also comply with the requirements given in Table 1 when tested in accordance with the method prescribed therein.

Table 1: Requirements for cosmetic and air freshener aerosols.

SN	Characteristic	Requirement	Method of test
1	Delivery rate g/s, min,	0.01	Annex A
2	CFCs	Absent	Annex B
3	Specific gravity of the propellants	To pass the test	Annex C
4	Net weight delivery m/m, %, min	95	Annex D
5	Spray test	To pass test	Annex E
6	Valve leakage, g/year, max	5	Annex F
7	General leakage	To pass test	Annex G
8	Stability of smell	To pass test	Annex H

- 3.7 All filled aerosol containers shall be appropriately classified in terms of the flame propagation characteristics of their contents when determined in the manner described in Annex J.
- Highly flammable – If the average length of the flame is greater than 450 mm, or if the flame burns back to the actuator, or continues to burn when the test flame is extinguished.
 - Flammable – If the average length of the flame is between 200 and 450 mm.
 - Non-flammable – If the product does not flame or burn in the manner described above.

4. Packing and marking

4.1 Packing

The aerosol containers shall comply with the requirements of TZS 61 Part 1:1829 Part 1 with respect to internal pressure, materials of construction, filling volume, and performance.

4.2 Marking

- 4.2.1 The marking and labelling of packaging for the containers shall comply with TZS 61 (Part 1).
- 4.2.2 The packages shall be securely closed, legibly and indelibly marked in Kiswahili and English, and any other language as agreed between the manufacturer and supplier with the following information:-
- a) Manufacturer's name and address
 - b) Name of the product
 - c) Date of manufacture
 - d) expiry date.
 - e) Net content
 - f) Directions for use
 - g) flammability class (word or symbol)
 - h) Batch or code number
 - i) Country of origin
 - j) First aid information
 - k) Propellant used and its specific gravity
 - l) Fragrance used
 - m) All ingredients shall be declared in descending order of predominance. The INCI label names (previously CTFA names) shall be used.

INCI stands for International Nomenclature Cosmetic Ingredient.

CTFA stands for Cosmetic, Toiletry and Fragrance Association.

4 Sampling

For the purpose of deciding whether the product conforms to the requirements of this Tanzania Standard, representative samples shall be collected for test primarily from the factory and also from anywhere else following the procedure of random selection in accordance with TZS 314. The containers shall only be opened during testing.

5 Methods of test

Unless specified otherwise, analytical grade chemicals and distilled or deionised water shall be used in tests.

Annex A

Determination of delivery rate of dispenser

A.1 For the purpose of this determination, the following material and apparatus shall be used:-

- a) Any suitable timing device
- b) Balance having an accuracy at 0.01 g and having a capacity greater than 500 g
- c) Cloth gloves or towel for handling dispensers during test
- d) Tongs for removing dispensers from water bath
- e) Water bath at $26 \pm 0.3^\circ\text{C}$, thermostatically controlled.

A.2 Procedure

A.2.1 Hold a dispenser upright, spray for 2 seconds to fill the education tube. Then weigh the dispenser. Submerge the dispenser in the water bath ($26 \pm 0.3^\circ\text{C}$) at least 1 inch below water surface for 15 minutes. Using tongs, remove the dispenser from the water bath and immediately dry the container with a towel. Spray the dispenser in one continuous burst for 10 seconds. Reweigh the dispenser.

A.2.2 Repeat the procedure and take an average of three tests. The difference between the maximum and minimum delivery rates must not exceed 0.2 g per second.

A.3 Calculation

Delivery rate (in g per second)

$$= \frac{m_1 - m_2}{t}$$

Where;

m_1 initial weight

m_2 final weight, and

t number of seconds

Calculate the delivery rate with an accuracy of 0.01 g per second.

Annex B

Determination of propellant composition

B.1 Procedure

The analysis of the propellant mixture in most aerosols is straight forward and is carried out conveniently by gas chromatography. For sampling, a hypodermic needle is fitted to the valve of the aerosol can, and approximately 0.5 g of propellant is injected into a heavy-duty centrifuge tube closed with a serum cap, containing about 8 ml of toluene. After mixing, 5 µl samples are drawn out from this tube with a micro-liter syringe and injected into the gas chromatography.

Two 15 ft x ¼ in. OD columns operated at 40°C are recommended for the analysis containing 20 wt % hexadecane and diethylhexyl sebacate respectively on silanized chromosorb W60/80 mesh or any appropriate column. The first column should be used mainly for initial screening and the second column for the confirmation and determination of the identified propellants. Table 2 lists the relative retention data of the most widely used propellant, together with some other fluorinated hydrocarbons and benzene used as the solvent, on the two columns.

Table 2: Relative retention data of propellants at 40°C

Chemical name	Stationary Phase	
	Diethylhexyl sebacate	Hexadecane
Octafluorocyclobutane (C 318)	0.214	0.122
1-chloro-1,2,2-trifluoroethylene (1113)propane	0.268	0.196
1,2-difluoroethane (152a)	0.275	0.220
dichlorodifluoromethane (12)	0.289	0.141
1,2-dichloro 1,1,2,2-tetrafluoroethane (114) isolate	0.296	0.220
Monochlorodifluoromethane (22)	0.345	0.290
1-Chloro-1,1-difluoroethane (142b n-butane	0.366	0.378
vinylchloride	0.368	0.152
trichlorofluoromethane (II)	0.402	0.236
1,1,2-trichloro-1,2,2-trifluoethane (113)	0.449	0.527
dichloromonofluoromethane (21)	0.529	0.353
1,2-dibromo-1,1,2,2-tetrafluoroethane (114B2)	1.000	1.000
methylene chloride	1.254	1.342
benzene	1.354	0.515
	1.634	1.363
	2.565	1.070
	6.786	5.661

B.2 Results

The sample shall be declared as having failed the test if it contains any of the above CFC's

Annex C

Density of the propellant

C.1 Principle

The specific gravity of the propellant used in the aerosol cans is determined by using a Fischer-porter pressure bottle. The procedure is given below.

C.2 Procedure

Accurately weigh a clean, dry Fischer-porter bottle and place it in a thermostatically controlled water bath at 25°C into the bottle, replace the seal and screw cap, and record the reading on the graduated scale to the nearest ½ division after reaching temperature equilibrium. Continue pipetting in additional 20 ml aliquots of water and recording the scale readings to a total volume of 160 ml of water. Plot a curve of volume vs scale reading.

Attach a copper cooling coil to the discharge valve of the propellant tank, and submerge the cooling coil into a dry ice-acetone bath. Open the discharge valve on the tank and waste approximately 50-100 ml of the propellant, then insert the end of the coil into the pressure bottle and collect the propellant until the bottle is approximately one-half full. Immediately cap the pressure bottle to avoid the loss of propellant vapour as the liquid propellant warms up. Allow the propellant to warm to 25°C in a thermostatically controlled water bath, then read the volume of the graduated scale to the nearest ½ division. Accurately weigh the bottle and contents.

C.3 Calculation

Specific gravity (25/25) = W/V

Where W = weight of the propellant, in g

V = volume of the propellant established from the calibration curve, in ml.

Annex D

Net weight delivery

For the determination of the net weight delivery, a random sample of at least 10 packages is selected. After the removal of any dust cover or caps not required for dispensing the product, the gross weight of each package is determined and after hand-shaking for 15 sec, the content of the lightest container is exhausted by holding the valve wide open for 35 min. Now, the exhausted container is weighed. The result is the so-called wet-tare weight and is equal to the weight of the container plus any product remaining after exhaustion.

Consequently, the regulation allowance is determined and subtracted from the wet-tare weight to obtain the corrected wet-tare weight. The regeneration allowance is defined as the difference between the weight of product which would be delivered through normal usage and the weight of product delivered by the present accelerated procedure; it is calculated by multiplying the label weight of the container by 0.02 and rounding the result to the next lowest g.

By subtracting the corrected wet-tare weight from the gross weight, the adjusted net weight of the package is obtained. If this is greater than 95% of the label weight the lot is assumed to be satisfactory. However, if it is less than 95% of the label weight, the lot is rejected.

Annex E

Spray test

Procedure;

Hand-shake the sample container for 15 sec. Spray for 10 seconds. The sample shall be deemed to have passed the test if defects such as “streamers” (solid or nearly solid stream) “droppers” (dripping valve) or no spraying are absent.

Annex F

Determination of valve leakage

F.1 Procedure

Select 12 aerosol containers, and record the date and time to the nearest half-hour. Weigh each container to the nearest mg, and record the weight, in mg, of each as W_1 . Allow the containers to stand in an upright position at room temperature for not less than 3 days, and again weigh each container, recording the weight, in mg of each as W_2 and recording the date and time to the nearest half hour. Determine the time, t , in hours, during which the containers were under test. Calculate the leakage rate, in mg per year, of each container taken by the formula:

$$(365) (24/t) (W_1 - W_2)$$

Where plastic-coated glass aerosol containers are tested, dry the containers in a desiccator for 18 hours, and allow them to stand in a constant-humidity environment for 24 hours prior to determining the initial weigh as indicated above. Conduct the test under the same humidity conditions. Empty the contents each container tested by employing any safe technique (e.g. chill to reduce the residual contents by rising with suitable solvents then rinse with a few portions of methanol. Retain as a unit the container, the valve, and all associated parts, and heat as W_3 and determine the net fill weight ($W_1 - W_3$) for each container tested. If average net fill weight has been determined previously, this value may be used as the net fill weight.

Annex G

Testing of filled aerosol containers

G.1 Principle

This Annex describes the water bath test of filled aerosol containers.

G.2 Procedure

All filled aerosol container shall be tested by immersion in a water bath.

The conditions shall be such that the pressure generated within the immersed containers reaches not less than 90% of the pressure generated within the containers at equilibrium at 55°C. These conditions may be achieved by pre-heating the filled aerosol containers or by heating the filled aerosol containers in the water bath, or by a combination of both methods.

G.3 Interpretation of results

Any filled aerosol container that leaks, distorts or bursts as a result of this test shall be deemed to have failed the test and shall be discarded.

Annex H

Stability of smell

H.1 Procedure

Put some pieces of bleached gauze of dimensions 5 x 10 cm, which have been prewashed in hot water without soap and dried, into a porcelain cup. Spray continuously about 2 ml of this sample into the cup. After the cup gets soaked, take it out with the help of pincers.

Without squeezing, dry it in a premise having temperature $27 \pm 2^{\circ}\text{C}$, and humidity $65 \pm 5\%$ for 12 h.

H.2 Results

The product shall be taken to have passed the test if after the 12 h, the smell of the perfume in the product can be clearly picked up.

Annex J

Flame propagation

J.1 Scope

This Annex describes the test for the flame propagation characteristics of the contents of filled aerosol containers.

J.2 Principle

The filled aerosol container is sprayed as a test flame under controlled conditions and length of the burning spray cone is measured.

J.3 Apparatus

In its simplest form, the apparatus consists of a base marked at 15-cm interval; and an adjustable stand to carry the aerosol container, which may be raised or lowered to accommodate differences in container height; a means of measuring the burning spray cone (usually a one-metre fuel placed horizontally at the same height as the top third of the flame, the hottest part); a means of igniting the spray cone in the form of a test flame 50 ± 5 mm in height (usually a candle flame is used).

Equipment to bring the aerosol container and its contents to equilibrium at 20°C (heat the cans to 20°C in a water bath).

J.4 Procedure

The procedure shall be as follows:

- a) Place the aerosol container on the stand, depress the actuator and adjust the height of the stand so that the spray cone will pass through the upper third of the test flame (hottest part).
- b) Bring the aerosol container and its contents to the equilibrium temperature of 20°C. Place the container on the stand so that the point where the spray emerges is 150 mm from the test flame, then light the test flame and depress the actuator for 15 to 20 seconds. Record the total length of the burning spray cone and whether or not it burns back to the actuator.
- c) Extinguish the test flame and record whether the spray cone continues to burn while the actuator is depressed.
- d) Repeat each test twice. Record the flame length as the average of the three tests.