



## DRAFT TANZANIA STANDARD

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LIQUEURS — SPECIFICATION

DRAFT FOR STAKEHOLDERS COMMENTS

TANZANIA BUREAU OF STANDARDS

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## LIQUEURS — SPECIFICATION

### 0 FOREWORD

A liqueur is a alcoholic beverage that has been flavoured with fruit, herbs, nuts, spices, flowers or cream and bottled with added sugar. There are different types of liqueur such as chocolate liqueurs, coffee liqueurs, cream liqueurs, fruit liqueurs, crème liqueurs, berry liqueurs, flower liqueurs, herbal liqueurs and nut-flavored liqueurs.

This Tanzania Standard was prepared to ensure the safety and quality of liqueurs produced and/ or traded in the country.

In reporting 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, it shall be done in accordance with TZS 4 *Rounding off numerical values*

### 1 SCOPE

This Tanzania Standard specifies requirements, methods of sampling and tests for liqueurs.

### 2 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 documents (including any amendments) applies;

:

TZS 4 *Rounding off numerical values*

TZS 1018 *Neutral (fine) spirit — Specification*

TZS 109 *Food processing units — Code of hygiene*

TZS 268 *General atomic absorption — Spectrophotometric method for determination of lead in food stuffs*

TZS 471 *Methods of sampling and test for alcoholic beverages*

TZS 118 *Microbiology of food and animal feeding stuffs — Horizontal method for enumeration of micro-organisms — Colony count technique at 30 °C*

TZS 119 *Microbiology of food and animal feeding stuff horizontal method for the detection and enumeration of coliforms-most probable number technique*

TZS 59 *Water — Distilled quality — Specification*

TZS 115 *Food — Permitted food additives — Schedule*

TZS 76 *Methods for determination of arsenic*

TZS 538 *Packaging and labeling of foods*

### 3 TERMS AND DEFINITIONS

For the purpose of this Tanzania Standard the following definitions shall apply:

#### 3.1 liqueurs

alcoholic beverage produced by mixing or redistilling neutral spirit with permitted food additives, produced by distillation, infusion, percolation or maceration, which may be sweetened with sugar or honey and colored with permitted colorants and may contain aromatic materials/from extracts derived from animal or plant origin.

#### 3.2 neutral spirit

the alcoholic distillate obtained from fermented wort or wash of mash of cereals and other carbohydrates, saccharified by diastase of malt or other permitted enzymes; or it may be a distillation product from sugarcane or honey; fermented by the action of *Saccharomyces cerevisiae*, from which a distilled liquor conforming to TZS 1018 (see clause 2) is obtained after a series of concentration by distillation process.

#### 3.3 alcohol

ethyl alcohol (ethanol).  $C_2H_5OH$

### 4 REQUIREMENTS

#### 4.1 GENERAL REQUIREMENTS

##### 4.1.1 Description

4.1.1.1 A liqueur shall be the product obtained by mixing or redistilling neutral spirits with, or over flavouring materials and containing any of the sugars, or a combination of these.

4.1.1.2 The product shall be free from any extraneous and foreign matter substances injurious to health

4.1.1.3 The flavouring extracts materials may include:

- a) fruits, flowers, plants or pure juices;
- b) other natural flavouring materials; and
- c) permitted artificial or synthetic flavourants

4.1.1.4 Blending materials such as egg, milk, cream, fat or vegetable oil products may be added.

4.1.1.5 The product shall be free from sediments.

4.1.1.6 The water used to dilute liqueurs to bottling strength shall be distilled, in accordance with TZS 59 (see clause 2) or demineralized or deionized.

##### 4.1.1.7 Food additives

The product may contain food additives as prescribed in TZS 115 (see clause 2).

#### 4.2 Specific requirements

Liqueurs shall comply with the chemical requirements given in Table 1.

**Table 1 — Chemical requirements for liqueurs**

<b>Characteristics</b>	<b>Requirements</b>	<b>Methods of test TZS 471 (see clause 2)</b>
Alcohol content % v/v	15 - 45	Clause 6
Total acids as acetic acid, g/100 L, max	15	Clause 10
Total esters as ethyl acetate, g/100 L, max	5	Clause 11
Aldehydes as acetaldehyde, g/100 L, max	2	Clause 12
Furfural, g/100 L, max	0.5	Clause 13
Higher alcohols (amyl alcohol or isoamyl alcohol) g/100 L as absolute alcohol, max	3	Clause 16
Methanol, mg/L, max	60	Clause 14
Total sugars %, min	2.5	Annex A or Refractometer

## 5 METAL CONTAMINANTS

The level of metal contaminants shall conform to the limits specified in Table 2.

**Table 2 — The level of metal contaminants**

<b>Metal</b>	<b>Limit</b>	<b>Methods of test (see clause 2)</b>
Lead mg/L , max	0.1	TZS 268:1986
Arsenic mg/L ,max	0.1	TZS 76: 1980
Copper mg/L , max	2	AAS

## 6 HYGIENE

6.1 Liqueurs shall be prepared under Good Hygienic Practices as stipulated in TZS 109 (see clause 2).

6.2 Liqueurs shall be free from pathogenic microorganisms and shall comply with the microbiological limits given in Table 3.

**Table 3 — Microbial requirements for liqueurs**

<b>Characteristic</b>	<b>Requirements</b>	<b>Methods of test (See clause2)</b>
Total plate count cfu/ml	10 <sup>2</sup>	TZS 118: 2007
Coliforms MPN/ml	Shall be absent	TZS 119:2010

## **7 Sampling and tests methods**

### **7.1 Sampling**

The product shall be sampled as prescribed in TZS 471 (see clause 2).

### **7.2 Test methods**

**7.2.1** Testing shall be done in accordance with TZS 471 (see clause 2) and as provided in the respective Tables of this Tanzania Standard.

#### **7.2.2 Quality of reagents**

Unless specified otherwise, pure chemicals and distilled water shall be used in tests.

## **8 PACKAGING, MARKING AND LABELING**

### **8.1 Packaging**

**8.1.1** The product shall be packed in suitable and hygienic food grade packaging materials which protect the safety and quality of the product.

**8.1.2** The volume filled shall be in accordance with the Weights and Packaging Regulations

### **8.2 Marking and labeling**

**8.2.1** The product shall be marked and labeled either in English or English and Kiswahili in accordance with TZS 538 (see clause 2).

**8.2.2** In addition each container/packet of product shall be legibly and indelibly marked with the following information:

- a) Name of the product shall be "Liqueur"
- b) Alcohol content i.e v/v
- c) Batch or code number
- d) Date of packing and expiry date
- e) Name, postal and physical address of the manufacturer
- f) Net volume
- g) Manufacturer registered product brand name and/or trade mark, if any
- h) Country of origin
- i) List of Ingredients
- j) Declaration of statutory warning on age of end-user and excessive consumption
- k) Storage condition

**8.2.3** The containers may also be marked with the TBS Standards Mark of Quality.

NOTE — The TBS Standards Mark of Quality may be used by the manufacturers only under licence from TBS. Particulars of conditions under which the licences are granted, may be obtained from TBS.

## Annex A

### HPLC method for determination of sugar in liqueurs

#### A.1 Apparatus

##### A.1.1 Liquid Chromatograph with:

- solvent delivery system and injector;
- differential refractometer detector (10 MV full scale deflection);
- recorder with variable chart speed.

A.1.2 HPLC column 30 cm × 4 mm stainless steel tube packed with  $\mu$  Bondapak/carbohydrate.

A.1.3 Sample clarification kit (0.45  $\mu$ m-pore diameter)

#### A.2 Reagents

A.2.1 Reference sugars. D-glucose, D-fructose, sucrose, lactose, and maltose

A.2.2 Mobile phase. Acetonitrile and water (80 + 20)

#### A.3 Operating conditions

flow rate	2.0 mL/min (approx. 600 psi)
Mode	isocratic
Temperature	ambient
Attenuation	8
chart speed	5 mm/min

#### A.4 Preparation

##### A.4.1 Sample preparation

Dilute sample to known volume containing 10 mg to 15 mg of each sugar/mL. Filter about 2 mL sample solution through 0.45  $\mu$ m-pore diameter membrane (Sample Clarification Kit) to remove particulate matter.

##### A.4.2 Standard preparation

Mixed sugar standard solution. Accurately weigh 1.0 g to 1.5 g of each reference sugar, transfer to 100-mL volumetric flask, and dilute to volume with water. Filter about 2 mL through to 0.45  $\mu$ m-pore diameter membrane (Sample Clarification Kit).

#### A.5 Determination

##### A.5.1 Chromatography

Inject 20  $\mu$ L mixed sugar standard solution filtrate into liquid Chromatograph. Under these conditions the retention times (min) of reference sugars are:

Fructose	4.55 (min)
Glucose	5.30 (min)
Sucrose	7.88(min)
Lactose	10.84(min)
Maltose	11.40(min)

Measure peak height of each reference sugar. Inject 20  $\mu$ L sample solution filtrate into liquid Chromatograph. Measure height of peak corresponding to each sugar.

#### A.5.2 Calculation

Calculate amount of each sugar in 100 g sample as follows;

$$W = \frac{C \times PH' \times V \times I \times 100}{PH \times V' \times S \times 1000}$$

Where by:

- W = weight of sugar (g)
- C = concentration of sugar (mg/mL) in mixed sugar standard solution
- PH' & PH = peak heights of sugar in sample and standard, respectively
- V & V' = volume ( $\mu$ L) of mixed sugar standard solution and sample solution injected, respectively
- I = volume (mL) of sample assay solution
- S = Weight of sample (g) taken for assay.

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