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DRAFT TANZANIA STANDARD

Fruit juices and nectars — Specification

FOR STAKEHOLDERS' COMMENTS ONLY

TANZANIA BUREAU OF STANDARDS

Fruit juices and nectars — Specification

0 FOREWORD

Fruit juice is a product obtained from the edible part of sound, appropriately mature and fresh fruit or of fruit maintained in sound condition by suitable means including postharvest surface treatments

Nectar is a product obtained by adding water to fruit juices and fruit puree and concentrated fruit puree, concentrated fruit juices, fruit juice from concentrate, water extracted fruit juice, dehydrated fruit juice, powdered fruit juice with or without the addition of sugars

In light of the need to safeguard the consumer and in order to ensure that fruit juices and nectars imported and locally produced are safe and of good quality this Tanzania Standard was thus developed.

In the preparation of this Tanzania Standard assistance was drawn from EAS 948: 2019- Fruit juices and nectars — Specification

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 (see clause 2).

1 SCOPE

1.1 This Tanzania standard specifies requirements, sampling and test methods for fruit juices, nectars and fruit puree and concentrated fruit puree intended for direct human consumption or for further processing.

1.2 This standard also applies to the following fruit juices

- a) concentrated fruit juices;
- b) Fruit juice from concentrate;
- c) Water extracted fruit juice;
- d) Dehydrated fruit juice; and
- e) Powdered fruit

2 Normative References

The following referenced standards are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

TZS 4, Rounding off numerical values

TZS 585, Ready to drink (Non – carbonated) beverages – Specification

TZS 132, Edible common salt – Specification

TZS 118, Microbiology – General guidance for the enumeration of microorganisms – Colony count technique.

TZS 119, Microbiology- General guidance for the enumeration of coliform – Most probable number technique.

Codex Stan 192, Food additives

TZS 268, General atomic absorption spectrophotometric method for determination of lead in food stuffs

TZS 1502, Fruits and Vegetables – Determination of Arsenic content
TZS 471, Methods of sampling and tests for alcoholic beverages

TZS 268/ AOAC 999.10, Lead, Cadmium, Zinc, Copper and iron in foods. Atomic absorption spectrophotometry after microwave digestion

CODEX STAN 192, General standard for food additives

TZS 538/ EAS 38, Labelling of pre-packaged foods — General requirements

TZS 114/EAS 39, Hygiene in the in the food and drink manufacturing industry — Code of practice

TZS 59/EAS 153, Packaged drinking water — Specification

TZS 789 /EAS 12 Potable water Specification

TZS 1496/ISO 2173, Fruit and vegetable products — Determination of soluble solids — Refractometric method

TZS 481:2015 (EAS 803:2014) - Nutrition labelling – Requirements

TZS 482:2015 (EAS 804:2014) - Claims – General Requirements

TZS 550:2015 (EAS 805:2014) - Use of nutrition and health claims - Requirements

TZS 1503:2016/ ISO 763-2003 Fruit and vegetable products — Determination of ash insoluble in hydrochloric acid

TZS 1491:2015 / ISO 1842-1991 Fruits and Vegetables – Determination of Ph

TZS 1497/ISO 5523 Liquid fruit and vegetable products — Determination of sulphur dioxide content (Routine method)

TZS 1496:2016 Fruits, vegetables and derived products – Sampling and methods of test – Part 10: Determination of soluble solids

TZS 1504:2016/ ISO 2448-1998 Fruits and vegetable products – Determination of ethanol content

TZS 118:2018(1st Ed) ISO 4833-1:2003 - Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of microorganisms – Colony-count technique at 30°C

TZS 118:2018(1st Ed) ISO 4833-1:2003 - Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of microorganisms- Part 2: Colony count at 30 degrees C by the pour plate technique

TZS 729: 2018 (3rd Ed) ISO 4832: 2006 - Microbiology of food and animal feeding stuffs –Horizontal method for the enumeration of coliforms – Colony count technique

TZS 963 (Part 3):2007 (1st Ed), Starch and derived products – Heavy metals content – Part 3 – Determination of lead content by atomic absorption spectrometry with electro-thermal atomization

TZS 731: 2018 (3rd Ed) ISO 7251: 2005 - Microbiology of food and feeding-stuffs – Horizontal method for the detection and enumeration of presumptive Escherichia Coli – Most Probable Number Technique

FTZS 2426-2: 2019/ISO 21872-2: 2008- Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of yeasts and moulds - Part 2: Colony count technique in products with water activity less than or equal to 0.95

TZS 1496:2016/ ISO 2173-2003 Fruits, vegetables and derived products – Sampling and methods of test – Part 10: Determination of soluble solids

TZS 1503:2016/ ISO 763-2003 Fruits and vegetable products – Determination of ash insoluble in hydrochloric acid

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:

— ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

fruit juice

unfermented but fermentable liquid obtained from the edible part of sound, appropriately mature and fresh fruit or of fruit maintained in sound condition by suitable means including post harvest surface treatments

3.2

authenticity

maintenance of the product's essential physical, chemical, organoleptic, and nutritional characteristics of the fruit(s) from which it comes

3.3

Brix

soluble solids content of the juice

3.4

nectar

unfermented but fermentable product obtained by adding water to fruit juices and fruit puree and concentrated fruit puree, concentrated fruit juices, fruit juice from concentrate, water extracted fruit juice, dehydrated fruit juice, powdered fruit juice with or without the addition of sugars

3.5

food grade material

material that will safeguard the hygienic, safety, nutritional, technological and organoleptic qualities of the product

Product description

4.1 Fruit juice

The juice is prepared by suitable processes, which maintain the essential physical, chemical, organoleptic and nutritional characteristics of the juices of the fruit from which it comes. The juice may be cloudy or clear and may have restored aromatic substances and volatile flavour components, all of which shall be obtained by suitable physical means, and all of which shall be recovered from the same kind of fruit.

Pulp and cells obtained by suitable physical means from the same kind of fruit may be added.

A single juice is obtained from one kind of fruit. A mixed juice is obtained by blending two or more juices or juices and purées, from different kinds of fruit.

Fruit juice is obtained as follows:

- a) fruit juice directly expressed by mechanical extraction processes; and

- b) fruit juice from concentrate by reconstituting concentrated fruit juice (4.2) with potable water that meets the requirements of TZS 789

Some juices may be processed with pips, seeds and peel, which are not usually incorporated in the juice, but some parts or components of pips, seeds and peel, which cannot be removed by Good Manufacturing Practices (GMP), will be acceptable.

4.2 Concentrated fruit juice

Concentrated fruit juice is the product that complies with the definition given in 3.1, except water has been physically removed in an amount sufficient to increase the Brix level to a value at least 50 % greater than the Brix value established for reconstituted juice from the same fruit, as indicated in the Table 1.

In the production of juice that is to be concentrated, suitable processes are used and may be combined with simultaneous diffusion of the pulp cells or fruit pulp by water provided that the water extracted soluble fruit solids are added in-line to the primary juice, before the concentration procedure.

Fruit juice concentrates may have restored (see Note 1 in 4.10) aromatic substances and volatile flavour components, all of which shall be obtained by suitable physical means, and all of which shall be recovered from the same kind of fruit. Pulp and cells (see Note 2 in 4.10) obtained by suitable physical means from the same kind of fruit may be added.

4.3 Water extracted fruit juice

Water extracted fruit juice is the product obtained by diffusion with water of:

- a) pulpy whole fruit whose juice cannot be extracted by any physical means;
- b) dehydrated whole fruit; or
- c) Dehydrated/powdered fruit juice.

Water extracted fruit juice may be concentrated and reconstituted.

The solids content of the finished product shall meet the minimum Brix level for reconstituted juice specified in the Table 1 when tested in accordance with TZS 1496

4.4 Fruit purée

Fruit purée for use in the manufacture of fruit juices and nectars is the unfermented but fermentable product obtained by suitable processes for example, by sieving, grinding, and milling the edible part of the whole or peeled fruit without removing the juice. The fruit shall be sound, appropriately mature, and fresh or preserved by physical means or by treatment(s) applied in accordance with the applicable provisions of the Codex Alimentarius Commission.

Fruit purée may have restored aromatic substances and volatile flavour components, all of which shall be obtained by suitable physical means, and all of which shall be recovered from the same kind of fruit. Pulp and cells obtained by suitable physical means from the same kind of fruit may be added.

4.5 Concentrated fruit purée

Concentrated fruit purée for use in the manufacture of fruit juices and nectars is obtained by the physical removal of water from the fruit purée in an amount sufficient to increase the Brix level to a value at least 50 % greater than the Brix value established for reconstituted juice from the same fruit, as indicated in Table 1.

Concentrated fruit purée may have restored aromatic substances and volatile flavour components, all of which shall be obtained by suitable physical means, and all of which shall be recovered from the same kind of fruit.

4.6 Dehydrated/powdered fruit juice (fruit juice powder)

Dehydrated/powdered fruit juice is the product obtained from fruit juice of one or more kinds by the physical removal of virtually all the water content.

4.7 Fruit nectar

Fruit nectar is the unfermented but fermentable product obtained by adding water with or without the addition of sugars as defined in 5.1.2.1, honey and/or syrups as described in 5.1.2.2, or food additive sweeteners to products such as fruit juices and fruit puree and concentrated fruit puree, concentrated fruit juices, fruit juice from concentrate, water extracted fruit juice, or to a mixture of those products. Aromatic substances, volatile flavour components, pulp and cells all of which shall be recovered from the same kind of fruit and be obtained by suitable physical means may be added. That product moreover shall meet the requirements defined for fruit nectars in the Table 1. Mixed fruit nectar is obtained from two or more different kinds of fruits.

When non-nutritive sweetener is used the amount and type shall be declared as such in accordance with clause 11.

4.8 Fruit pulp

Edible portions of the fruit, mashed, or cut into pieces, but not reduced to a pureé.

4.9 Blended or mixed fruit juice and nectar

Blended or mixed fruit juice and nectar is the unfermented but fermentable product obtained by adding water with or without the addition of sugars, syrups and/or honey, or sweeteners, obtained from two or more different kinds of fruits. The blend can be obtained from the following:

- a) fruit juice,
- b) fruit juice from concentrate,
- c) concentrated fruit juice,
- d) water extracted fruit juice,
- e) dehydrated fruit juice,
- f) powdered fruit juice,
- g) fruit puree, and
- h) Concentrated fruit purée.

4.10 Fresh fruit juice

Fresh fruit juice is the unfermented but fermentable liquid obtained from the edible part of sound, appropriately mature, ripe and fresh fruit, freshly squeezed or extracted and packaged as appropriate and which:

- a) contains no additives;
- b) has not been subjected to any preserving process other than chilling;
- c) clean and free from exogenous foreign matter;
- d) is practically free from endogenous foreign matter like seeds and bits of peel; and
- e) is intended to be sold for consumption within two hours of extraction or six hours with refrigeration

NOTE 1 Introduction of aromas and flavours are allowed to restore the level of aromatic substances and volatile flavour components in accordance with good manufacturing practices (GMP).

NOTE 2 For citrus fruits, pulp or cells are the juice sacs obtained from the endocarp.

5 Requirements

5.1 Ingredients

5.1.1 Essential ingredients

5.1.1.1 Directly expressed fruit juices

The Brix level for directly expressed fruit juices shall be the Brix as expressed from the fruit and the soluble solids content of the single strength juice shall not be modified, except by blending with the juice of the same kind of fruit.

5.1.1.2 Reconstituted juice and nectar

The Brix level of the fruit juice that requires reconstitution of concentrated juices or dehydrated/powdered fruit juice (fruit juice powdered) shall be in accordance with the minimum Brix level established in Table 2, exclusive for the solids of any added optional ingredients and additives.

If there is no Brix level specified in Table 2, the minimum Brix shall be calculated on the basis of the soluble solids content of the single strength juice used to produce such concentrated juice.

The potable water used in reconstitution shall, at a minimum, meet the requirements of TZS 789

5.1.2 Other permitted ingredients

5.1.2.1 Sucrose, glucose (dextrose anhydrous) or fructose with less than 2 % moisture may be added only to products intended for sale to the consumer or for catering purposes. Addition of both sugars (defined in 5.1.2.1 and 5.1.2.2) and acidifying agents (listed in CODEX STAN 192) to the same fruit juice is prohibited.

Note: The use of both nutritive sweeteners and non-nutritive sweeteners (blending) in the same product is prohibited

Table 1 – Requirements for name and Brix content of common fruit juices and nectars

Botanical Name	Fruit's Common Name	Minimum Brix level for reconstituted fruit juices and reconstituted purée	Minimum Juice and/or purée content, for fruit nectars %, v/v ^{b)}
<i>Actinidia deliciosa</i> (A. Chev.) C. F. Liang & A. R. Ferguson	Kiwi	(*) ^{b)}	(*) ^{c)}
<i>Anacardium occidentale</i> L.	Cashewapple	11.5	25.0
<i>Ananas comosus</i> (L.) Merrill <i>Ananas sativis</i> L. Schult. f.	Pineapple	10	40.0
<i>Annona muricata</i> L.	Soursop	14.5	25.0
<i>Annona squamosa</i> L.	Sugar Apple	14.5	25.0
<i>Averrhoa carambola</i> L.	Carambola / Starfruit	7.5	25.0
<i>Carica papaya</i> L.	Papaya	(*) ^{b)}	25.0
<i>Chrysophyllum cainito</i>	Star Apple	(*) ^{b)}	(*) ^{c)}
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai var. Lanatus	Water Melon	8.0	40.0
<i>Citrus aurantifolia</i> (Christm.) (swingle)	Lime	8.0 ^{c)}	According to the legislation of the importing country
<i>Citrus aurantium</i> L.	Sour Orange	(*) ^{b)}	50.0
<i>Citrus limon</i> (L.) Burm. f.	Lemon	8.0 ^{c)}	According to the

<i>Citrus limonum</i> Rissa			legislation of the importing country
<i>Citrus paradisi</i> Macfad	Grapefruit	10.0 ^{c)}	50.0
<i>Citrus paradisi</i> , <i>Citrus grandis</i>	Sweetie grapefruit	10.0	50.0
<i>Citrus reticulata</i> Blanca	Mandarine/ Tangerine	11.8 ^{c)}	50.0
<i>Citrus sinensis</i> (L.)	Orange	10.	50.0
<i>Cocos nucifera</i> L. ^{d)}	Coconut	5.0	25.0
<i>Cucumis melo</i> L.	Melon	8.0	35.0
<i>Cucumis melo</i> L subsp. <i>melo</i> var. <i>inodorus</i> H. Jacq.	Casaba Melon	7.5	25.0
<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>inodorus</i> H. Jacq	Honeydew Melon	10.0	25.0
<i>Cydonia oblonga</i> Mill.	Quince	11.2	25.0
<i>Diospyros khaki</i> Thunb.	Persimmon	(*) ^{b)}	40.0
<i>Empetrum nigrum</i> L.	Crowberry	6.0	25.0
<i>Eriobotrya japonesa</i>	Loquat	(*) ^{b)}	(*) ^{c)}
<i>Eugenia syringe</i>	Guavaberry Birchberry	(*) ^{b)}	(*) ^{c)}
<i>Eugenia uniflora</i> Rich.	Suriname Cherry	6.0	25.0

a) If a juice is manufactured from a fruit not mentioned in the above list, it shall, nevertheless, comply with all the provisions of the Standard, except that the minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.

b) No data currently available. The minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.

c) Acid corrected as determined by the method for total titratable acids in Clause 10 on methods of analysis.

d) For mixed and blended fruit juices the Brix of the product shall be the minimum Brix level of the single fruit juice of the lowest Brix in the mix.

Botanical Name	Fruit's Common Name	Minimum Brix level for reconstituted fruit juices and reconstituted purée	Minimum Juice and/or Purée Content for Fruit Nectars %, v/v ^{b)}
<i>Ficus carica</i> L.	Fig	18.0	25.0
<i>Fortunella</i> Swingle sp.	Kumquat	(*) ^{b)}	(*) ^{c)}
<i>Fragaria x. ananassa</i> Duchense (<i>Fragaria chiloensis</i> Duchesne x <i>Fragaria virginiana</i> Duchesne)	Strawberry	7.5	40.0
<i>Genipa americana</i>	"Genipap"	17.0	25.0
<i>Hippophae elaeagnaceae</i>	Sea Buckthorn	(*) ^{b)}	25.0
<i>Hippophae rhamnoides</i> L.	Buckthornberry = Sallow-thornberry	6.0	25.0
<i>Litchi chinensis</i> Sonn.	Litchi/Lychee	11.2	20.0
<i>Lycopersicum esculentum</i> L.	Tomato	5.0	50.0
<i>Malpighia</i> sp. (Moc. & Sesse)	Acerola (West Indian Cherry)	6.5	25.0
<i>Malus domestica</i> Borkh.	Apple	10	50.0
<i>Malus prunifolia</i> (Willd.) Borkh. <i>Malus sylvestris</i> Mill.	Crab Apple	15.4	25.0

<i>Mammea americana</i>	Mammee Apple	(*) ^{b)}	(*) ^{c)}
<i>Mangifera indica</i> L.	Mango	13.	25.0
<i>Morus sp.</i>	Mulberry	(*) ^{b)}	30.0
<i>Musa species</i> including <i>M. acuminata</i> and <i>M. paradisiaca</i> but excluding other plantains	Banana	12	25.0
<i>Passiflora edulis</i>	Yellow Passion Fruit	(*) ^{b)}	(*) ^{c)}
<i>Passiflora edulis</i> Sims. f. <i>edulis</i> <i>Passiflora edulis</i> Sims. f. <i>Flavicarpa</i> O. Def.	Passion Fruit	12 ^{c)}	25.0
<i>Passiflora quadrangularis</i>	Passion Fruit	(*) ^{b)}	(*) ^{c)}
<i>Phoenix dactylifera</i> L.	Date	18.5	25.0
<i>Pouteria sapota</i>	Sapote	(*) ^{b)}	(*) ^{c)}
<i>Prunus armeniaca</i> L.	Apricot	11.5	40.0
<i>Prunus avium</i> L.	Sweet Cherry	20.0	25.0
<i>Prunus cerasus</i> L.	Sour Cherry	14.0	25.0
<i>Prunus cerasus</i> L. cv. Stevnsbaer	Stonesbaer	17.0	25.0
<i>Prunus domestica</i> L. subsp. <i>domestica</i>	Plum	12.0	50.0
<i>Prunus domestica</i> L. subsp. <i>domestica</i>	Prune	18.5	25.0
<i>Prunus domestica</i> L. subsp. <i>domestica</i>	Quetsche	12.0	25.0
<p>a) If a juice is manufactured from a fruit not mentioned in the above list, it shall, nevertheless, comply with all the provisions of the standard, except that the minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.</p> <p>b) No data currently available. The minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.</p> <p>c) Acid corrected as determined by the method for total titratable acids in the Section on methods of analysis.</p>			

Botanical Name	Fruit's Common Name	Minimum Brix level for reconstituted fruit juices and reconstituted purée	Minimum Juice and/or Purée Content for Fruit Nectars % v/v ^{b)}
<i>Prunus persica</i> (L.) Batsch var. <i>nucipersica</i> (Suckow) c. K. Schneid.	Nectarine	10.5	40.0
<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>	Peach	10.5	40.0
<i>Prunus spinosa</i> L.	Sloe	6.0	25.0
<i>Psidium guajava</i> L.	Guava	8.5	25.0
<i>Punica granatum</i> L.	Pomegranate	12.0	25.0
<i>Pyrus arbustifolia</i> (L.) Pers.	Aronia/Chokeberry	(*) ^{b)}	(*) ^{c)}
<i>Pyrus communis</i> L.	Pear	12.0	40.0
<i>Ribes nigrum</i> L.	Black Currant	11.0	30.0
<i>Ribes rubrum</i> L.	Red Currant	10.0	30.0
<i>Ribes rubrum</i> L.	White Currant	10.0	30.0
<i>Ribes uva-crispa</i>	Red Gooseberry	(*) ^{b)}	30.0
<i>Ribes uva-crispa</i> L.	Goosberry	7.5	30.0
<i>Ribes uva-crispa</i> L.	White Goosberry	(*) ^{b)}	30.0
<i>Rosa canina</i> L.	Cynorrhodon	(*) ^{b)}	40.0
<i>Rosa sp.</i> L.	Rosehip	9.0	40.0
<i>Rubus chamaemorus</i> L.	Cloudberry	9.0	30.0
<i>Rubus chamaemorus</i> L. <i>Morus</i> hybrid	Mulberry	(*) ^{b)}	40.0
<i>Rubus fruitcosus</i> L.	Blackberry	9.0	30.0

<i>Rubus hispidus</i> (of North America) <i>R. caesius</i> (of Europe)	Dewberry	10.0	25.0
<i>Rubus idaeus</i> L. <i>Rubus strigosus</i> Michx.	Red Raspberry	8.0	40.0
<i>Rubus loganobaccus</i> L. H. Bailey	Loganberry	10.5	25.0
<i>Rubus occidentalis</i> L.	Black Raspberry	11.1	25.0
<i>Rubus ursinus</i> Cham. & Schtdl.	Boysenberry	10.0	25.0
<i>Rubus vitifolius</i> x <i>Rubus idaeus</i> <i>Rubus baileyanus</i>	Youngberry	10.0	25.0
<i>Sambucus nigra</i> L. <i>Sambucus canadensis</i> .	Elderberry	10.5	50.0
<i>Solanum quitoense</i> Lam.	"Lulo"	(*) ^b	(*) ^c
<i>Sorbus aucuparia</i> L.	Rowanberry	11.0	30.0
<i>Sorbus domestica</i>	Sorb	(*) ^b	30.0
<i>Spondia lutea</i> L.	"Cajá"	10.0	25.0
<i>Spondias tuberosa</i> Arruda ex Kost.	"Umbu"	9.0	25.0
<i>Syzygiun jambosa</i>	Pome Apple	(*) ^b	(*) ^c
<i>Tamarindus indica</i>	Tamarind (Indian date)	13.0	Adequate content to reach a minimum acidity of 0.5

^a If a juice is manufactured from a fruit not mentioned in the above list, it shall, nevertheless, comply with all the provisions of the Standard, except that the minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.

^b No data currently available. The minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.

^c Acid corrected as determined by the method for total titratable acids in the Section on methods of analysis.

Botanical Name	Fruit's Common Name	Minimum Brix Level for Reconstituted Fruit Juices and Reconstituted Purée	Minimum Juice and/or Purée Content for Fruit Nectars, %, v/v ^b
<i>Theobroma cacao</i> L.	Cocoa pulp	14.0	50.0
<i>Theobroma grandiflorum</i> L.	"Cupuaçu"	9.0	35.0
<i>Vaccinium macrocarpon</i> Aiton <i>Vaccinium oxycoccos</i> L.	Cranberry	7.5	30.0
<i>Vaccinium myrtillus</i> L. <i>Vaccinium corymbosum</i> L. <i>Vaccinium angustifolium</i>	Bilberry/Blueberry	10.0	40.0
<i>Vaccinium vitis-idaea</i> L.	Lingonberry	10.0	25.0
<i>Vitis Vinifera</i> L. or hybrids thereof <i>Vitis Labrusca</i> or hybrids thereof	Grape	16.0	50.0
	Other: High acidity		Adequate content to reach a minimum acidity of 0.5
	Other: High pulp content, or Strong flavour		25.0
	Other: Low acidity, Low pulp content, or Low/medium flavour		50.0

^a If a juice is manufactured from a fruit not mentioned in the above list, it shall, nevertheless, comply with all the provisions of the Standard, except that the minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.

^b No data currently available. The minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.

^c Acid corrected as determined by the method for total titratable acids in Clause 10 on methods of analysis.

5.1.2.2 Syrups, liquid sucrose, invert sugar solution, invert sugar syrup, fructose syrup, liquid cane sugar, isoglucose and high fructose syrup may be added only to fruit juice from concentrate, concentrated fruit juices (4.2), concentrated fruit purée (4.5) and fruit nectars (4.7).

5.1.2.3 Honey and Sugars derived from fruits may be added only to fruit nectars.

5.1.2.4 Lemon (*Citrus limon* (L.) Burm. f. *Citrus limonum* Rissa) juice or lime (*Citrus aurantifolia* (Christm.)) juice, or both, may be added to fruit juice up to 3 g/L anhydrous citric acid equivalent for acidification purposes to unsweetened juices as defined in 4.1, 4.2, 4.3, 4.4 and 4.5.

Lemon juice or lime juice, or both, may be added up to 5 g/L anhydrous citric acid equivalent to fruit nectars as defined in 4.6.

5.1.2.5 The juice from *Citrus reticulata* and/or hybrids with *reticulata* may be added to orange juice in an amount not to exceed 10 % of soluble solids of the *reticulata* to the total of soluble solids of orange juice.

5.1.2.6 Salt and spices and aromatic herbs (and their natural extracts) may be added to tomato juice.

5.1.2.7 For the purposes of product fortification, essential nutrients such as vitamins and minerals may be added to fruit juice (Clause 4). Such additions shall comply with national legislation established for this purpose.

NOTE Any optional ingredients added are subject to ingredient labelling requirements (see Clause 11).

5.2 General requirements

The fruit juices and fruit nectars shall have the characteristic colour, aroma and flavour of juice from the same kind of fruit from which it is made.

5.3 Specific requirements

5.3.1 The fruit juices and fruit nectars shall comply with the specific requirements in Table 2 when tested in accordance with the methods specified therein.

Table 2 — Specific requirements for fruits juices and nectars

Characteristic	Requirement	Test method
Ethanol content, %, max.	0.3	TZS 1504 ISO 2448
Acid insoluble ash, %, max.	0.02	TZS 1503 /ISO 763
Carbon dioxide (CO ₂) content (if added)	Not less than one volume	Annex A

5.3.2 The minimum juice and/or purée content for fruit juices and nectar shall comply with the requirements given in Table 1 in line with Good Manufacturing Practice.

5.3.3 The minimum Brix for fruit juices and nectar shall comply with the requirements given in Table 1 when tested in accordance with TZS 1496.

6 Food additives and processing aids

6.1 Fruit juices and nectar may contain only permitted additives in accordance with CODEX STAN 192.

6.2 Food processing aids listed in Table 3 may be used in the processing of products subject to this standard.

Table 3 – Maximum level of use of food processing aids in line with good manufacturing practices

Function	Substance
Antifoaming Agent	Polydimethylsiloxane ^{a)}
Clarifying Agents	Adsorbent clays (bleaching, natural or activated earths)
	Adsorbent resins
	Activated carbon (only from plants)
	Bentonite
	Calcium hydroxide ^{b)}
	Cellulose
	Chitosan
	Colloidal silica
	Diatomaceous earth
	Gelatin (from skin collagen)
Ion exchange resins (cation and anion)	
Filtration Aids	Isinglass ^{c)}
Flocculating Agents	Kaolin
	Perlite
	Polyvinylpolypyrrolidone
	Potassium casseinate ^{c)}
	Potassium tartrate ^{b)}
	Precipitated calcium carbonate ^{b)}
	Rice hulls
	Silicasol
	Sodium caseinate ^{c)}
	Sulphur dioxide ^{b), d)}
Tannin	
Enzyme preparations ^{e)}	Pectinases (for breakdown of pectin), Proteinases (for breakdown of proteins), Amylases (for breakdown of starch) and Cellulases (limited use to facilitate disruption of cell walls).
Packing gas ^{f)}	Nitrogen Carbon dioxide
<p>a) 10 mg/L is the maximum residue limit of the compound allowed in the final product.</p> <p>b) Only in grape juice</p> <p>c) Use of these processing aids should take into account their allergenic potential. If there is any carryover of these processing aids into finished product, they are subject to ingredient declaration in accordance with TZS 538</p> <p>d) 10 mg/L maximum limit (as residual SO₂) when determined in accordance with TZS 1497/ISO 5523</p> <p>e) Enzyme preparations may be used as processing aids provided these preparations do not result in a total liquefaction and do not substantially affect the cellulose content of the processed fruit.</p> <p>f) May also be used for example, for preservation</p>	

7 Contaminants

7.1 Pesticide residues

Fruit juices and nectar shall comply with the pesticide residue limits as per CODEX STAN 193

7.2 Heavy metal contaminants

Fruit juices and nectar shall not contain heavy metal contaminants in excess of the limits specified in Table 4 when tested in accordance with the methods specified therein.

Table 4 – Heavy metal contaminants limit in fruit juices and nectar

Heavy metals	Maximum limit mg/kg	Test method
Arsenic (As)	0.2	TZS 1502/ISO 6634
Lead (Pb)	0.03	TZS 963-3/ISO 6633
Cadmium (Cd)	0.05	TZS 268 /AOAC 999.10

8 Hygiene

8.1 Fruit juices and nectar shall be produced and handled under hygienic conditions in accordance with TZS 114

8.2 Fruit juices and nectar shall comply with microbiological limits given in Table 5 when tested in accordance with the methods specified therein.

Table 5 – Microbiological limits in fruit juices and nectars

Microorganism	Maximum limit cfu/g	Test method
Total plate count	10 ³	TZS 118 /ISO 4833-2
<i>Escherichia coli</i>	Absent	TZS 731 /ISO 16649-2
Yeasts and moulds	30	FTZS 2426-2: 2019/ISO 21872-2

9 Packaging

Fruit juices and nectars shall be packaged in food grade material that ensures the integrity and safety of the product.

10 Weights and measures

The volume filled shall comply with the weights and measures regulations

11 Labelling

11.1 General labeling requirements

In addition to the provisions covered under TZS 538 (see clause 2) Fruit drink shall be legibly and indelibly marked on the label with the following information.

- a) Name of the product

The fruit name shall be filled in the blank of the product name mentioned under this clause. These names may only be used if the product conforms to the definition in 4.1 or which otherwise conform to this standard.

The name of the product shall bear the name of the fruit used as defined in 4.1 as follows:

- i. Fruit Juice: “_____ juice” or “juice of _____”;
- ii. Concentrated fruit juice: “concentrated _____ juice” or “_____ juice concentrate”;

- iii. Water extracted fruit juice “water extracted _____ juice” or “water extracted juice of _____”;
 - iv. Fruit Purée; “_____ purée” or “Purée of _____”;
 - v. Concentrated Fruit Purée; “concentrated _____ purée” or “_____ purée concentrated”;
 - vi. Fruit Nectar; “_____ nectar” or “nectar of _____”;
 - vii. Fruit juice blend: In the case of fruit juice products (4.1) manufactured from two or more fruits, the product name shall include the names of the fruit juices comprising the mixture in descending order of proportion by weight (m/m) or the words "fruit juice blend", "a fruit juice mixture", "mixed fruit juice" or other similar wording; and
 - viii. Products from concentrate: For fruit juices, fruit nectars and mixed fruit juice/nectar, if the product contains or is prepared from concentrated juice and water or the product is prepared from juice from concentrate and directly expressed juice or nectar, the words “from concentrate” or “reconstituted” shall be entered in conjunction with or close to the product name, standing out well from any background, in clearly visible characters, not less than half the height of the letters in the name of the juice.
- b) date of manufacture;
 - c) expiry date;
 - d) brand /trade name;
 - e) list of ingredients;
 - f) net contents;
 - g) instructions for use;
 - h) storage conditions;
 - i) name and address of the manufacturer; and
 - j) country of origin.

11.2 Additional requirements

11.2.1 Products prepared by physically removing water from the fruit juice

For fruit juices, fruit nectars, fruit purée and mixed fruit juices/nectars/purées, if the product is prepared by physically removing water from the fruit juice in an amount sufficient to increase the Brix level to a value at least 50 % greater than the Brix value established for reconstituted juice from the same fruit, as indicated in Table 1, it shall be labelled “concentrated”.

11.2.2 Products one or more of the optional sugar or syrup ingredients are added

For products defined in 4.1 to 4.10, where one or more of the optional sugar or syrup ingredients as are added, the product name shall include the statement called “sugar(s) added” after the fruit juice or mixed fruit juice’s name.

If non- nutritive sweetener is used, the following words ‘contain non-nutritive sweetener’ shall be declared on the label.

The name, type and the amount of non-nutritive sweeteners used shall be indicated in the label.

11.2.3 Products to be reconstituted before consumption

Where concentrated fruit juice, concentrated fruit purée, concentrated fruit nectar or mixed concentrated fruit juice/nectar/purée is to be reconstituted before consumption as fruit juice, fruit purée, fruit nectar or mixed fruit juices/nectars/purées, the label shall bear appropriate directions for reconstitution on a volume/volume basis with water to the applicable Brix value in the Table 1 for reconstituted juice.

11.2.4 Varietal denominations

Distinct varietal denominations may be used in conjunction with the common fruit names on the label where such use is not misleading.

11.2.5 Juice content declaration

Fruit nectars and mixed fruit nectars shall be conspicuously labelled with a declaration of "juice content ___%" with the blank being filled with the percentage of purée and/or fruit juice computed on a volume/volume basis.

The words "juice content ___%" shall appear in close proximity to the name of the product in clearly visible characters, not less than half the height of the letters in the name of the juice.

11.2.6 Nutrition declaration

Nutritional labelling, nutrition and health claims may be made in accordance with TZS 481, TZS 482 and TZS 550.

An ingredient declaration of "ascorbic acid" when used as an antioxidant does not, by itself, constitute a "Vitamin C" claim.

11.2.7 Pictorial representations

A pictorial representation of fruit(s) on the label shall not mislead the consumer with respect to the fruit so illustrated.

11.2.8 Products containing added carbon dioxide

Where the product contains added carbon dioxide more than one volume the term "carbonated" or "sparkling" shall appear on the label near the name of the product.

11.2.9 Tomato juice containing spices and/or aromatic herbs

Where tomato juice contains spices and/or aromatic herbs in accordance with 5.1.2.6 the term "spiced" and/or the common name of the aromatic herb shall appear on the label near the name of the juice.

11.2.10 Juice containing added pulp, cells, aromatic substances or volatile flavour components

Pulp and cells added to juice over that normally contained in the juice shall be declared in the list of ingredients.

Aromatic substances, volatile flavour components, pulp and cells added to nectar over that normally contained in the juice shall be declared in the list of ingredients.

11.3 Non-retail containers

Information for non-retail containers not destined to final consumers shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, net contents and the name and address of the manufacturer, packer, distributor or importer, as well as storage instructions, shall appear on the container, except that for tankers the information may appear exclusively in the accompanying documents.

However, lot identification, and the name and address of the manufacturer, packer, distributor or importer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents. For non-retail containers, the information required shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name and address of the manufacturer or packer shall appear on the container.

12 Sampling

Sampling shall be done in accordance with Annex B.

12.1 The language on the label shall be “Kiswahili” or Kiswahili and English. A second language may be used depending on the designated market.

12.2 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 manufactures only under licence from TBS. Particulars of Conditions under which the licences are granted may be obtained from TBS

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Annex A **(normative)**

Method of measuring gas volume

A.1 Principle

The method involves sniffting of the top gas. The pressure reading should drop to 2 psi, to remove the air before testing for carbon dioxide volume. In so doing correction of altitude as per table should be considered as pressure is affected by altitude.

The apparatus consists of pressure gauge having a hollow spike with holes in its side. The bottle is inserted from the side into the slot provided in the neck of the carbon dioxide tester and is secured in place by tightening with a threaded system. The pressure gauge is inserted until the needle point touches the crown cork. There is a snift valve on the gauge stem which is kept closed until the needle point of the pressure gauge is forced through the crown cork. The reading is noted on the gauge.

A.2 Procedure

Clamp the bottle in the frame of the gas volume tester. Pierce the crown cork but do not shake the bottle. Snift off the top gas quickly until the gauge reading drops to zero. Make certain to close the valve instantly the needle touches zero in the pressure gauge. Shake the bottle vigorously until the gauge gives the reading that additional shaking does not change. Record the pressure. Note the temperature and record. Obtain the volume of gas from pressure-temperature chart (Carbon dioxide chart)

Annex B (normative)

Sampling

B.1 Definitions

B.1.1

lot

collection of primary containers or units of the same size, type, and style manufactured or packed under similar conditions and handled as a single unit of trade

B.1.2

lot size

number of primary containers or units in the lot

B.1.3

sample size

total number of sample units drawn for examination from a lot

B.1.4

sample unit

container, a portion of the contents of a container, or a composite mixture of product from small containers that is sufficient for the examination or testing as a single unit. For fill of container, the sample unit shall be the entire contents of the container

B.2 Sampling plans

Sampling shall be done in accordance with the plan specified in Table B.1.

1. Table B.1 – Sampling plan

Lot size (primary containers)	Size of container, n^a
Net weight equal to or less than 1 kg (2.2 lb)	
4 800 or less	13
4 801 to 24 000	21
24 001 to 48 000	29
48 001 to 84 000	48
84 001 to 144 000	84
144 001 to 240 000	126
Over 240 000	200
Net weight greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)	
2 400 or less	13
2 401 to 15 000	21
15 001 to 24 000	29

24 001 to 42 000	48
42 001 to 72, 000	84
72 001 to 120 000	126
Over 120 000	200
Net weight greater than 4.5 kg (10 lb)	
600 or less	13
601 to 2 000	21
2 001 to 7 200	29
7 201 to 15 000	48
15 001 to 24 000	84
24 001 to 42 000	126
Over 42 000	200
^a n = number of primary containers in sample.	

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Bibliography

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