

KENYA STANDARD

DKS 1179:2018
ICS 67.080

Canned fruit cocktail — Specification

PUBLIC REVIEW DRAFT

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Jomo Kenyatta University of Agriculture and Technology- Department of Food Science and Technology
Victoria Juice Co Ltd
Kevian Kenya Ltd
Government chemist
Consumer Information Network
Premier Foods Ltd.
Pest control products board
Kenya Industrial Research and Development Institute
Ministry of Health- Food Safety Unit
Ministry of Agriculture, Livestock and Fisheries
Kenya plant health inspectorate services
National Public Health Laboratory services
Ten senses Africa Ltd
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Del Monte Kenya Ltd
Agri Pro-pak Ltd
Horticultural Crops Directorate
Kenya Bureau of Standards — Secretariat

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Canned fruit cocktail — Specification

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FOREWORD

This Kenya Standard was developed by the Technical Committee on Processed Fruits and Vegetables under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

The standard stipulates the essential compositional, quality, hygiene, microbiological, contaminants and labelling requirements for canned fruit cocktail as defined in this standard.

In the preparation of this standard useful information was derived from members of the technical committee, Codex standard for canned fruit cocktail (CODEX STAN 78-1981) and local manufacturers

This standard cancels and replaces KS 1179: 1996

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KENYA STANDARD
Canned Fruit Cocktail- Specification

1. SCOPE

This standard prescribes the requirements and methods of sampling and test for canned fruit cocktail as defined in Section 3 below, and offered for direct consumption, including for catering purposes or for repacking if required

1. NORMATIVE REFERENCES

KS EAS 38, labeling of prepackaged foods
KS EAS 39, Code of practice for hygiene in the food and drink manufacturing industry
KS EAS 12, Drinking (Potable) water- Specification
KS EAS 803: 2013. Nutrition labeling – Requirements
KS EAS 804:2013 Claims on foods – Requirements
KS EAS 805: 2013 Use of Nutrition and health claims
Codex Stan 195, General Standard for Food Additives
Codex Stan 193, General Standard for contaminants
KS 38, Plantation (mill) white sugar — Specification
KS EAS 36, honey- Specification
KS EAS 5, Refined white sugar — Specification
KS EAS 217-2, Methods for the microbiological examination of foods - Part 2: General Guidance for the Enumeration of Micro-Organisms-Colony Count Technique at 30°C
KS EAS 217-8, Methods for microbiological examination of foods -Part 8: Enumeration of yeasts and moulds
KS ISO 7251, Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of presumptive Escherichia coli - Most probable number technique
KS ISO 2173, Fruit and vegetable products - Determination of soluble solids - Refractometric method
KS ISO 17239; Fruits, vegetables and derived products - Determination of arsenic content - Method using hydridegeneration atomic absorption spectrometry
KS ISO 7952; Fruits, vegetables and derived products - Determination of copper content - Method using flame atomic absorption spectrometry
KS ISO 5517; Fruits, vegetables and derived products - Determination of iron content - 1,10- Phenanthroline photometric method
KS ISO 9526; Fruits, vegetables and derived products - Determination of iron content by flame atomic absorption spectrometry
KS ISO 6633; Fruits, vegetables and derived products - Determination of lead content - Flameless atomic absorption spectrometric method
KS ISO 6637; Fruits, vegetables and derived products - Determination of mercury content - Flameless atomic absorption method
KS ISO2447; Fruits, vegetables and derived products - Determination of tin content
KS ISO 6636-2; Fruits, vegetables and derived products - Determination of zinc content - Atomic absorption spectrometric method

3. PRODUCT DESCRIPTION

3.1 Canned fruit cocktail is the product prepared from a mixture of small fruits and small pieces of fruits which may be fresh, frozen or canned; packed with water or other suitable liquid packing medium and which may contain seasonings or flavourings, and/ or nutritive sweeteners appropriate for the product; and processed by heat in an appropriate manner before or after being hermetically sealed in a container so as to prevent spoilage.

3.2 The fruits shall be of the following kinds and styles.

3.2.1 Peaches

Any firm yellow variety of the species *prunus persica* L. including clingstone and freestone types but excluding nectarines, peeled, pitted and diced.

3.2.2 Pears

Any variety of the species *Pyrus communis* L. or *Pyrus sinensis* L. peeled, cored, and diced.

3.2.3 Pineapple

Any variety of the species *Ananas comosus* L., peeled, cored, in sectors, or diced.

3.2.4 Cherries

Any variety of the species *Prunus cerasus* L., halves or whole, pitted or unpitted, and which may be:

- a) any light, sweet variety; or
- b) artificially coloured red; or
- c) artificially coloured red with added flavourings, whether natural or synthetic.

3.2.5 Grapes

Any seedless variety of the species *Vitis vinifera* L. or *Vitis labrusca* L., whole.

3.2.6 Mangoes

Any variety of the species *Mangifera indica* L.

3.2.7 Papaya

Any variety of the species *Carica papaya* L.

4. PRESENTATION

4.1.1 5 Fruits - Fruit cocktail

A mixture of the five fruits of the kinds and styles described in this standard (3.2(a))

4.1.2 4 Fruits - Fruit Cocktail

A mixture of four fruits of the kinds and styles described in this standard (1.1 (a)) except that:

- (a) Cherries may be omitted; or
- (b) Grapes may be omitted.

4.2 Forms of Packing Media

Canned Fruit Cocktail may be packed in any one of the following packing media with or without sugars and/or optional ingredients:

- (a) **Water** - in which water is the sole liquid packing medium, complying with KS EAS 12
- (b) **Water and Fruit Juice** - in which water and fruit juice(s) from the specified fruits, which may be strained or filtered, is the sole liquid packing medium.
- (c) **Fruit Juice** - in which one or more fruit juice(s) from the specified fruits, which may be strained or filtered, is the sole liquid packing medium.

5. ESSENTIAL COMPOSITION AND QUALITY FACTORS

5.1 Composition

5.1.1 Basic Ingredients

- a) Fruit as defined in 3.2;
- b) Water; and
- c) Fruit Juice.

5.1.2 Other Ingredients

- One or more of the following sugars: sucrose, invert sugar syrup, dextrose, glucose syrup, dried glucose syrup;
- Spices;
- Mint

5.2 Formulation

5.2.1 Fruit Content

5.2.1.1 Proportions of fruits

The products shall contain fruits in the following proportions, based on the individual drained fruit weights in relation to the total drained weight of all the fruits:

Type of fruits	5 Fruits - Fruit Cocktail	4 Fruits - Fruit Cocktail
Peaches	30% to 50%	30% to 50%
Pears	25% to 45%	25% to 45%
Pineapple	6% to 16%	6% to 25% - and either -
Grapes	6% to 20%	6% to 20% or
Cherries	2% to 6%	2% to 15%
Other fruits	60%	

5.2.1.1 Compliance with fruit content requirements

A lot will be considered as meeting the requirements for Proportions of fruits (2.2.1.1) when:

- (a) the average of the individual fruit proportions from all containers in the sample is within the range required for the individual fruits; and
- (b) the number of individual containers which are not within the range for any one or more fruits do not exceed the acceptance number (c) of an appropriate sampling plan with an AQL of 6.5 (see Annex).

5.2.2 Packing media

5.2.2.1 Classification of packing media when sugars are added

a) When sugars are added to water or water and one or more fruit juices the liquid media shall be classified on the basis of the cut-out strength as follows:

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Basic Syrup Strengths

Light Syrup - Not less than 14° Brix

Heavy Syrup - Not less than 18° Brix

Optional Packing Media

When not prohibited in the country of sale, the following packing media may be used:

Water Slightly Sweetened)

Slightly Sweetened Water) Not less than 10° Brix but less than 14° Brix

Extra Light Syrup)

Extra Heavy Syrup Not less than 22° Brix

b) When sugars are added to fruit juice(s), the liquid media shall be not less than 14° Brix and they are classified on the basis of the cut-out strength as follows:

Lightly sweetened

(Name of fruits) juice - Not less than 14° Brix

Heavily sweetened

(Name of fruits) juice - Not less than 18° Brix

5.2.2.2 Compliance with packing media classification

Cut-out strength of sweetened juice of syrup is to be determined on sample average, but no container may have a Brix value lower than that of the minimum of the next category below, if such there be.

5.3 Sizes and shapes of fruits

5.3.1 Diced peaches, pears or pineapple

75% or more of all such drained fruits are of approximate cube-shapes which:

(a) Are not over 20 mm in greatest edge dimension; and

(b) Will not pass through square meshes of 8 mm.

5.3.2 Sectors of pineapple

80% or more of all the drained pineapple portion approximate wedge-shapes of the following dimensions:

(a) Outside arc - 10 mm to 25 mm; and

(b) Thickness - 10 mm to 15 mm; and

(c) Radius (from inside to outside arc) - 20 mm to 40 mm.

5.3.3 Whole grapes or cherries

90% or more by count (based on sample average) of whole grapes, or of whole cherries, approximate normal shape except for proper preparation (such as removing pits or stems) and:

(a) Are not broken into two or more parts;

(b) Are not seriously crushed, mutilated, or torn.

5.3.4 Halved cherries

80% or more by count (based on sample average) of the cherry units are approximate halves which are not broken into two or more parts.

5.4 Quality Criteria

5.4.1 Colour- Canned Fruit Cocktail shall have normal colour except that a slight leaching of colour from the coloured cherries is acceptable.

5.4.2 Flavour- Canned Fruit Cocktail shall have a normal flavour characteristic for each fruit and for the entire mixture.

Canned Fruit Cocktail with special ingredients shall have the flavour characteristic of that imparted by the fruits in the product and the other substances used.

5.4.3 Texture - The fruit ingredients shall not be excessively firm nor excessively soft, as is appropriate for the respective fruit

5.4.4 Defects and Allowances - Canned Fruit Cocktail shall be substantially free from defects within the limits set forth as follows: (see annex).

Sl No.		
a)	Blemished fruit pieces -	20% m/m

	(consisting of pieces of fruit with dark surface areas, spots penetrating the fruit, and other abnormalities)	Total of all fruit units so affected
b)	Peel (based on averages) (considered a defect only when occurring on, or from, those fruits which are peeled)	25 cm ² aggregate area per kg
c)	Pit material (based on averages) - (consisting of pieces of pit or of fruit stones and hard and sharp pit points; very small pit fragments of less than 5 mm in greatest dimension which do not have sharp points or edges are disregarded)	1 piece, of any size per 2 kg
d)	Small stems (based on averages) - (such as capstems from grapes)	5 per kg
e)	Large stems (based on averages) - (such as from peaches, pears, or cherries)	1 large stem, or piece thereof, per kg

5.4.5 Classification of “defectives”

A container shall be considered a “defective” when it fails to meet one or more of:

- (1) The applicable requirements in 5.3.1 through 5.3.4 (except for style and shapes for grapes and cherries which are based on averages); and
- (2) The applicable quality requirements in 5.4.1 through 5.4.4 (except for peel, pit material, and stems which are based on averages).

5.4.6 Lot Acceptance

A lot will be considered as meeting the applicable quality and other requirements referred to in sub-section 5.4.5 when:

- (a) for those requirements which are not based on averages the number of “defectives”, as defined in sub-section 5.4.5, does not exceed the acceptance number (c) of an appropriate sampling plan with an AQL of 6.5 (see Annex); and
- (b) The requirements which are based on sample average are complied with.

6. FOOD ADDITIVES

SL No.	ADDITIVE	MAXIMUM LEVEL
<i>I.</i>	Colours: Erythrosine (to colour cherries Limited by Good Manufacturing Practice only when artificially coloured cherries are used)	Limited by Good Manufacturing Practice
<i>II.</i>	Flavourings	Limited by Good Manufacturing Practice
<i>III.</i>	Natural fruit essence	Limited by Good Manufacturing Practice
<i>IV.</i>	Natural flavours and synthetic flavourings	Limited by Good Manufacturing Practice
<i>V.</i>	Cherry Laurel Oil (<i>artificially coloured</i> 10 mg/kg in the total product <i>cherries only</i>)	10 mg/kg in the total product
<i>VI.</i>	Bitter Almond Oil (<i>artificially coloured</i> <i>cherries only</i>)	40 mg/kg in the total product
<i>VII.</i>	Anti-Oxidant L-ascorbic acid	500 mg/kg

7. Contaminants

The products covered by this Standard shall comply with the maximum levels of the General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995).

7.1 Pesticide residues

The products covered by this Standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

7.2 Heavy Metal Contaminants

The products covered by the provisions of this standard shall conform to those maximum limits for Heavy metals contaminants established by the Codex Alimentarius Commission for these products in table 5 below

TABLE 5- Contaminants

CONTAMINANTS	MAXIMUM LEVEL	Method of Test
Arsenic (As)	1 mg/kg	KS ISO 17239
Lead (Pb)	0.1 mg/kg	KS ISO 6733
Copper (Cu)	5.0 mg/kg	KS ISO 7952
Zinc (Zn)	5.0 mg/kg	KS ISO 6636
Tin (Sn)	250 mg/kg	KS ISO 2447
Mercury (Hg)	0.001 mg/kg	KS ISO 6637
Cadmium (cd)	0.003 mg/kg	KS ISO 6732

7.3 Other contaminants

The products covered by the provisions of this standard shall conform to those maximum levels for contaminants established by the Codex Alimentarius Commission for these products

8. Hygiene

8.1 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the General Principles of Food Hygiene (KS EAS 39), KS 2455; Food Safety -general standard

And other recommended Codes of Practice which are relevant to this product.

8.2 To the extent possible in Good Manufacturing Practice, the product shall be free from objectionable matter.

8.3 When tested by appropriate methods of sampling and examination, the product:

- shall be free from microorganisms in amounts which may represent a hazard to health;
- shall be free from parasites which may represent a hazard to health; and
- shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health

8.2 The products shall conform to microbiological criteria in Table 6

Table 6 - Microbiological limits for canned fruit cocktail

SL No.	Microorganism	Limit	Method of Test
i.	Total viable count, cfu/g, max	50	KS ISO 4833
ii.	Escherichia coli, (cfu/g), max	Absent	KS ISO 7251
iii.	Staphylococcus aureas, (cfu/25g)	Absent	KS ISO 6888-1
iv.	Shigella, cfu/25g	Absent	KS ISO4833
v.	Salmonella. Cfu/25g	Absent	KS ISO 6579
vi.	Clostridium botulinum, cfu/25g	Absent	KS ISO 4833
vii.	Moulds (cfu/25g), max	Absent	KS ISO 7954

9. WEIGHTS AND MEASURES

9.1 Fill of Container

9.1.1 Minimum Fill

The container shall be well filled with fruit and the product (including packing medium) shall occupy not less than 90% of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20°C which the sealed container will hold when completely filled.

This shall be carried out in accordance to KS CAC/RM 46-1972 (Codex General Method for processed fruits and vegetables) and KS SO 90.1:1999

9.1.2 Classification of “Defectives”

A container that fails to meet the requirement for minimum fill (90 percent container capacity) of 9.1.1 shall be considered a “defective”.

9.1.3 Lot Acceptance

A lot should be considered as meeting the requirement of Section 9.1.1 when the number of “defectives”, as defined in Section 9.1.2, does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5.

9.1.4 Minimum Drained Weight

9.1.4.1 The drained weight of the product shall be not less than 60% of the weight of distilled water at 20°C which the sealed container will hold when completely filled.

9.1.4.2 The requirement for minimum drained weight shall be deemed to be complied with when the average drained weight of all containers examined is not less than the minimum required, provided that there is no unreasonable shortage in individual containers

10. LABELLING

In addition to the requirements of the *General Standard for the Labelling of Prepackaged Foods* (KS EAS 38), the following specific provisions apply:

10.1 The Name of the Food

10.1.1 The name of the product shall be “Fruit Cocktail”.

10.1.2 The following, as applicable, shall be included as part of the name or in close proximity to the name, unless in the country where the product is sold a true pictorial representation of the product accompanied by a complete list of the fruits in the statement of ingredients would suffice in accordance with its national legislation:

“5 Fruits” or “With Five Fruits”;

Or

“4 Fruits” or “With Four Fruits”

;

10.1.3 When the packing medium is composed of water, or water and one or more fruit juices in which water predominates, the packing medium shall be declared as part of the name or in close proximity thereto as: “In water” or “Packed in water”.

10.1.4 When the packing medium is composed solely of a single fruit juice, the packing medium shall be declared as part of the name or in close proximity thereto as: “In (name of fruit) juice”.

10.1.5 When the packing medium is composed of two or more fruit juices, it shall be declared as part of the name or in close proximity thereto: “In (name of fruits) juice” or “In fruit juices” or “In mixed fruit juices”.

10.1.6 When sugars are added to water, or water and one or more fruit juices in which water predominates, the packing medium shall be declared as may be appropriate:

- “Water slightly sweetened” or

- “Slightly sweetened water” or

- “Extra light syrup” or

- “Light syrup” or

- “Heavy syrup” or

- “Extra heavy syrup”

10.1.7 When the packing medium contains water and one or more fruit juice(s), in which the fruit juice comprises 50% or more by volume of the packing medium, the packing medium shall be designated to indicate the preponderance of such fruit juice, as for example:

"In (name of fruits) juice(s) and water"

10.1.8 When sugars are added to one or more fruit juices, the packing medium shall be declared as may be appropriate:

"Lightly sweetened (name of fruit(s)) juice"

Or

"Heavily sweetened (name of fruit(s)) juice"

Or

"Lightly sweetened fruit juices"

Or

"Lightly sweetened mixed fruit juices"

Or

"Heavily sweetened fruit juice"

Or

"Heavily sweetened mixed fruit juices"

10.1.9 A declaration, as part of the name or in close proximity to the name, shall be made of any characteristic flavouring; e.g. "With X ", as appropriate.

If an added ingredient, as defined in Section 3.1.2, alters the flavour characteristic of the product, the name of the food shall be accompanied by the term "flavoured with X" or "X flavoured" as appropriate.

10.2 List of Ingredients

10.2.1 A complete list of ingredients shall be declared on the label in descending order of proportion in accordance with KS EAS 38, Labelling of prepackaged foods (*First Revision*), except as provided in 10.2.2 and 10.2.3.

10.2.2 When cherries are artificially coloured and/or have added flavourings, the following declarations are permitted in the list of ingredients in lieu of naming the additive:

"Cherries artificially coloured red"; or "Cherries artificially coloured red with added flavourings "

10.2.3 If ascorbic acid is added to preserve colour, its presence shall be declared in the list of ingredients in the following manner:

"L-ascorbic acid added as an anti-oxidant"

10.3 Pictorial representations- A pictorial representation of fruit(s) on the label should not mislead the consumer with respect to the fruit so illustrated.

10.4 Drain weight declaration content- Canned fruit cocktail must be labelled with a declaration of "Drained weight content ___%.

10.5 Net Contents — the net contents shall be declared by weight in the metric system ('Système international' units).

10.6 Name and Address — the name and address and location of the manufacturer, packer, distributor, importer, exporter, or vendor of the product shall be declared.

10.7 Country of Origin

10.8 The country of origin of the product shall be declared.

10.9 When the product undergoes processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling.

10.10 Date of manufacture shall be indicated.

10.11 Expiry date shall be clearly indicated.

10.12 Instructions for use and storage shall be declared

10.13 Batch or code number;

11. METHODS OF ANALYSIS

The products covered by the provisions of this standard shall be tested using appropriate standard methods declared in this standard. Other test may be performed as per the methods given in the latest AOAC/ Codex/ ISO and other internationally recognized methods. Sampling shall be as described in the Standard, in the Annex

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**DETERMINATION OF WATER CAPACITY OF CONTAINERS
(CAC/RM 46-1972)**

1. SCOPE

This method applies to glass containers.

2. DEFINITION

The water capacity of a container is the volume of distilled water at 20°C which the sealed container will hold when completely filled.

3. PROCEDURE

3.1 Select a container which is undamaged in all respects.

3.2 Wash, dry and weigh the empty container.

3.3 Fill the container with distilled water at 20°C to the level of the top thereof, and weigh the container thus filled.

4. CALCULATION AND EXPRESSION OF RESULTS

Subtract the weight found in 3.2 from the weight found in 3.3. The difference shall be considered to be the weight of water required to fill the container. Results are expressed as ml of water.

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Sampling Plans

The appropriate inspection level is selected as follows:

Inspection level I - Normal Sampling

Inspection level II - Disputes, (Codex referee purposes sample size), enforcement or need for better lot estimate

SAMPLING PLAN 1 (Inspection Level I, AQL = 6.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1 KG (2.2 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
4,800 or less	6	1
4,801 - 24,000	13	2
24,001 - 48,000	21	3
48,001 - 84,000	29	4
84,001 - 144,000	38	5
144,001 - 240,000	48	6
more than 240,000	60	7
NET WEIGHT IS GREATER THAN 1 KG (2.2 LB) BUT NOT MORE THAN 4.5 KG (10 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
2,400 or less	6	1
2,401 - 15,000	13	2
15,001 - 24,000	21	3
24,001 - 42,000	29	4
42,001 - 72,000	38	5
72,001 - 120,000	48	6
more than 120,000	60	7
NET WEIGHT GREATER THAN 4.5 KG (10 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
600 or less	6	1
601 - 2,000	13	2
2,001 - 7,200	21	3
7,201 - 15,000	29	4
15,001 - 24,000	38	5
24,001 - 42,000	48	6
more than 42,000	60	7

SAMPLING PLAN (Inspection Level II, AQL = 6.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1 KG (2.2 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
4,800 or less	13	2
4,801 - 24,000	21	3
24,001 - 48,000	29	4
48,001 - 84,000	38	5
84,001 - 144,000	48	6
144,001 - 240,000	60	7
more than 240,000	72	8
NET WEIGHT IS GREATER THAN 1 KG (2.2 LB) BUT NOT MORE THAN 4.5 KG (10 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
2,400 or less	13	2
2,401 - 15,000	21	3
15,001 - 24,000	29	4
24,001 - 42,000	38	5
42,001 - 72,000	48	6
72,001 - 120,000	60	7
more than 120,000	72	8
NET WEIGHT GREATER THAN 4.5 KG (10 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
600 or less	13	2
601 - 2,000	21	3
2,001 - 7,200	29	4
7,201 - 15,000	38	5
15,001 - 24,000	48	6
24,001 - 42,000	60	7
more than 42,000	72	8

A N NEX B

DETERMINATION OF PROPORTIONS OF FRUITS

B1. PROCEDURE

- (a) Determine drained weight and keep liquid and fruit separate.
- (b) Separate individual fruit ingredients, removing those fruits present in lesser amounts (such as cherries, grapes).
- (c) Weigh the individual fruit ingredients to the nearest gram.
- (d) Record the weight of each fruit and add all of these weights.

B1. CALCULATION AND EXPRESSION OF RESULTS

Calculate the percentage of fruit proportions:

The weight of each fruit x 100 = percentage of the weight of each fruit
Sum of all fruit weights

A N NEX C

DETERMINATION OF DRAINED WEIGHT

C1. APPARATUS

A suitable sieve

C2. PROCEDURE

Carefully weigh the clean and dry sieve. Weigh the can plus contents. Empty the contents of the can into the sieve taking care to distribute the fruits evenly. Without shifting the product, incline the sieve at an angle of approximately 17° to 20° to facilitate drainage. Drain the product for two minutes and then weigh the sieve plus the product. Weigh the empty can.

C3. CALCULATION

Drained weight, in grams = weight of product plus sieve, in grams - weight of sieve, in grams

Net weight of contents of can, in grams = weight of can plus contents - weight of empty can

Drained weight, as per cent of net weight = $\frac{\text{Drained weight, in grams} \times 100}{\text{Net weight of contents of can, in grams}}$

A N NEX D

DETERMINATION OF PROPORTIONS OF DEFECTS

D1. PROCEDURE

- (a) Determine drained weight and keep liquid and fruit separate.
- (b) Separate defective fruits.
- (c) Weigh or count the individual fruit ingredients to the nearest gram.
- (d) Record the weight or number of defectives.

D2. CALCULATION AND EXPRESSION OF RESULTS

Calculate the percentage tolerance:

$$\frac{\text{Weight of defective fruit} \times 100}{\text{Sum of all fruit weights of sample taken}} = \text{percentage of the defective fruits}$$

ANNEX E

DETERMINATION OF SYRUP DENSITY

E1. EXPLANATION

- E1.1** The Brix hydrometer method shall be used. In cases of dispute the Abbe refractometer method shall be used and the final referee method.

E2. APPARATUS

- (a) Brix hydrometer, covering the ranges to be measured and calibrated at 0.1° intervals.
- (b) Abbe refractometer, fitted with a Brix (sugar) scale.
- (c) Thermometer, 0°C to 100°C.
- (d) Glass cylinder, the diameter should be at least 12 mm larger than the hydrometer bulb.

E3. PROCEDURE

- E3.1 Brix Hydrometer Method** — Use the syrup from 6 (KS 05-140, Methods of test for processed fruits and vegetables). Mix the sample thoroughly. Pour into the glass cylinder and allow the sample to stand until all the air bubbles escape. Lower the hydrometer slowly into the sample taking care that the hydrometer does not touch the side of the glass cylinder. Take the reading to the nearest 0.1 and measure the temperature of the samples at which the reading is taken. Make temperature corrections to this reading for temperatures above 20°C (Table 5).
- E3.2 Abbe Refractometer Method** — Use the thoroughly mixed sample, and take the Brix reading on the Abbe refractometer. Circulate water through the refractometer to obtain a constant temperature at the same time the Brix reading is taken. Make temperature corrections to this reading for temperatures above 20°C (Table 5).

**TABLE 5. TEMPERATURE CORRECTION TABLE FOR SUGAR REFRACTOMETER
(STANDARD AT 20°C) ADD TO OBSERVED BRIX (SUGAR) READINGS**

TEMP.	OBSERVED PERCENTAGE BRIX (SUGAR)
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°C	0	5	10	15	20	25	30
21	0.04	0.05	0.06	0.06	0.06	0.07	0.07
22	0.10	0.10	0.11	0.12	0.12	0.13	0.14
23	0.16	0.16	0.17	0.17	0.19	0.20	0.21
24	0.21	0.22	0.23	0.24	0.26	0.27	0.28
25	0.27	0.28	0.30	0.31	0.32	0.34	0.35
26	0.33	0.34	0.36	0.37	0.40	0.40	0.42
27	0.40	0.41	0.42	0.44	0.46	0.48	0.50
28	0.46	0.47	0.49	0.51	0.54	0.56	0.58
29	0.54	0.55	0.56	0.59	0.61	0.63	0.66
30	0.61	0.62	0.63	0.66	0.68	0.71	0.73
35	0.99	1.01	1.02	1.06	1.10	1.13	1.16
40	1.42	1.45	1.47	1.51	1.54	1.57	1.60
45	1.91	1.94	1.96	2.00	2.03	2.05	2.07
50	2.46	2.48	2.50	2.53	2.56	2.57	2.58
55	3.05	3.07	3.09	3.12	3.12	3.12	3.12
60	3.69	3.72	3.73	3.73	3.72	3.70	3.77

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