

SRI LANKA STANDARD 214 : 2010

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**SPECIFICATION FOR
FRUIT SQUASHES, FRUIT SYRUPS
AND FRUIT CORDIALS
(Second Revision)**

SRI LANKA STANDARDS INSTITUTION

**Sri Lanka Standard
SPECIFICATION FOR FRUIT SQUASHES, FRUIT SYRUPS AND
FRUIT CORDIALS
(Second Revision)**

**SLS 214 : 2010
(Attached AMD 492 and AMD 567)**

Gr. 7

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Sri Lanka Standard
SPECIFICATION FOR FRUIT SQUASHES, FRUIT SYRUPS AND
FRUIT CORDIALS
(Second Revision)

FOREWORD

This Sri Lanka standard was approved by the Sectoral Committee on Agricultural and Food Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standard Institution on 2010-10-15.

This standard was first published in 1973 and subsequently revised in 1985. Fruit squashes occupy an important place among the fruit beverages manufactured in the country. It is, however, necessary to ensure the quality of the products, if the demand is to be maintained and further developed. In order to ensure maintenance of proper quality, it is necessary to have strict quality control based on specifications.

The need was felt to identify a test method for the determination of fruit content. However, in view of the non-availability of a suitable test method, it was decided that it may be included at a later stage. Till such time manufacturers are required to maintain a record showing the quantity of the fruit ingredient added to each batch.

This specification is subject to the restrictions imposed under the Sri Lanka Food Act No. 26 of 1980 and the regulations framed thereunder, wherever applicable.

For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test or an analysis shall be rounded off in accordance with **SLS 102**. The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

In revising this standard, the assistance derived from the General Standards for Food Additives of Codex Alimentarius Commission is gratefully acknowledged.

1 SCOPE

1.1 This specification prescribes the requirements and methods of sampling and testing for fruit squashes, fruit syrups and fruit cordials intended for consumption after dilution.

1.2 This specification does not cover fruit juices and fruit nectars.

1.3 This specification does not cover artificial /flavoured cordials or syrups intended for consumption after dilution

2 REFERENCES

- SLS 102 Presentation of numerical values
SLS 143 Code of practice for general principles of food hygiene
SLS 191 White sugar
SLS 209 Code of hygienic practice for the manufacture of fruit and vegetable products (processed)
SLS 428 Random sampling methods
SLS 464 Honey
SLS 467 Code of practice for labelling of prepackaged foods
SLS 614 Potable water
SLS 617 Glucose
SLS 772 Treacle
SLS 883 Brown sugar
SLS 1332 Methods of test for fruits and vegetable products
Part 2 : Determination of soluble solids – Refractometric method
Part 3 : Determination of benzoic acid and sorbic acid concentrations
Part 5 : Determination of total sulphur dioxide content
Part 6 : Determination of sulphur dioxide content
Part 7 : Determination of cadmium content
Part 8 : Determination of lead content
Part 9 : Determination of arsenic content
Part 10 : Determination of tin content

3 DEFINITION

For the purpose of this specification, the following definition shall apply :

3.1 fruit squash, fruit syrup and fruit cordial : A fruit beverage requiring dilution before use and prepared from unfermented but fermentable fruit juice /purée/ concentrate with or without some of the pulp and containing any soluble sweetener and potable water. The product shall be processed by heat in an appropriate manner before or after being sealed in a container. Aromatic substances, volatile flavour/aroma components, pulp and cells* all of which must be recovered from the same kind of fruit and be obtained by suitable physical means may be added.

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

4 INGREDIENTS

All ingredients used shall comply with the Food Act No. 26 of 1980 and the regulations framed thereunder.

4.1 Basic ingredients

4.1.1 *Fruit ingredient*

The fruit ingredient shall be fruit juice/purée/pulp/concentrate which is free from seeds and peel. It shall be obtained from fruits which are wholesome, clean and of suitable ripeness. The fruits shall be free from any sign of fermentation.

The fruit content of the product shall be not less than 25 per cent by mass for all products except for ‘Nelli’, ‘Lime’ and ‘Ginger’ products, for which it shall be not less than 15 per cent by mass.

4.1.2 *Sweeteners*

4.1.2.1 Sugars

White sugar conforming to **SLS 191**

Brown sugar conforming to **SLS 883**

4.1.2.2 Non-nutritive sweeteners only for products which are identified as “energy reduced” or with “no added sugar”. The limits given are for the reconstituted products.

Aspartame - 600 mg/kg (max.)

Acesulfame – K - 350 mg/kg (max.)

Sucralose - 300 mg/kg (max.)

Sorbitol - Limited by GMP

4.1.3 *Potable water*, conforming to **SLS 614**

4.2 Optional ingredients

In addition to the ingredients given in **4.1**, one or more of the following may be used.

4.2.1 Syrups - liquid glucose, invert sugar syrup, fructose syrup, liquid cane sugar, isoglucose, high fructose syrup, honey, conforming to **SLS 464** and treacle, conforming to **SLS 772**.

4.2.2 *Ascorbic acid*

4.2.3 *Acidulants*

citric acid, tartaric acid, malic acid, fumaric acid, lactic acid and/or their sodium, potassium or calcium salts.

4.2.4 *Preservatives* - (see Table 1)

Sulphites
Benzoates
Sorbates

4.2.5 *Colouring substances*

4.2.6. *Flavouring substances* (see 5.3.2)

4.2.7 *Emulsifying or stabilizing agents*

Pectins
Alginates
Sodium carboxy methyl cellulose
Xanthan gum – 5000 mg/kg (max.)

} limited by GMP

5 REQUIREMENTS

5.1 Hygiene

The product shall be processed, packaged, stored, transported and distributed in accordance with the conditions prescribed in **SLS 143** and **SLS 209**.

5.2 Appearance

The product shall be of a uniform consistency and of a characteristic colour of juice from the same kind of fruit from which it is made and shall be free from any discolouration. It shall be free from pips, seeds, peel and other extraneous matter, but some parts or components of pips, seeds and peel, which cannot be removed by Good Manufacturing Practices may be acceptable. For citrus fruits, juice sacs from the same kind of fruit may be present.

5.3 Flavour and aroma

5.3.1 The product shall have a pleasant flavour and aroma characteristic of juice from same kind of fruit from which it is made. It shall be free from scorching, caramalization and fermentation.

5.3.2 Natural volatile fruit juice components (flavours) may be restored to that fruit juice from which natural volatile fruit juice components have been lost during processing.

5.4 Requirements for undiluted product

5.4.1 *Total soluble solids content*

The total soluble solids content shall be not less than 40 per cent by mass of the product, when tested as prescribed in Appendix **B**.

5.5 Requirements for reconstituted product

The product, after reconstitution to drinking strength according to label directions, shall comply with the requirements given in Table 1, when tested according to the methods prescribed in Column 4 of the Table.

TABLE 1 – Requirements for reconstituted product

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of Test (4)
i)	Total soluble solid content, per cent by mass (max.)	16	Appendix B
ii)	Acidity (as anhydrous citric acid), per cent by mass (max.)	1.0	Appendix C
iii)	Sulphur dioxide content, mg/kg (max.)	50	Appendix D
iv)	Benzoic acid content, mg/kg (max.)	120	} Appendix E
v)	Sorbic acid content, mg/kg (max.)	300	

NOTES : + *Canned products shall not contain sulphur dioxide.*

** When combinations of above preservatives are present, the quantity of each preservative, expressed as a percentage of the maximum permitted limit of that preservative, shall be calculated. The sum of these percentages shall not exceed 100.*

5.6 Contaminants

5.6.1 Pesticide residues

The product shall be prepared with special care under Good Manufacturing Practices, so that residues of those pesticides which may be required in the production, storage or processing of the raw materials or the finished food ingredient do not remain, or, if technically unavoidable, are reduced to the maximum extent possible.

5.6.2 Heavy metals

The product shall not exceed the limits for heavy metals given in Table 3, when tested according to the methods given in Column 4 of the Table.

TABLE 2 - Limits for heavy metals

Sl. No. (1)	Heavy metal (2)	Limit (3)	Method of test (4)
i)	Arsenic (as As), mg/kg ,(max.)	0.1	} Appendix F
ii)	Cadmium (as Cd), mg/kg, (max.)	1.0	
iii)	Lead (as Pb), mg/kg, (max.)	0.5	
iv)	Tin (as Sn), mg/kg, (max.)	40*	

* For canned products (max.) 150 mg/kg

6 PACKAGING

- 6.1** The product shall be packaged in food grade, clean containers under strict hygienic conditions and the containers shall be sealed air-tight. Products packaged in metal containers shall not contain sulphur dioxide.
- 6.2** The containers also shall be capable of withstanding the temperatures involved in processing.

7 MARKING AND /OR LABELLING

- 7.1** The following shall be marked or labelled legibly and indelibly on each container destined for the final consumer.
- a) The common name of the fruit squash/ fruit cordial as “(X)SQUASH” or “(X)CORDIAL”, where the common name of the fruit used for making the fruit squash or fruit cordial is inserted to describe (X).

In the case of products manufactured from two or more fruits, the product name shall include the names of the fruit ingredient comprising the mixture in descending order of proportion by mass (m/m) or the words, “MIXED FRUIT ” in place of ‘X’.

- b) Brand name or trade mark, if any;
- c) Net volume, in millilitres or litres;
- d) Any permitted food additive’s name or class and INS number;
- e) Instructions for storage and use, if any ;
- f) Name and address of the manufacturer and packer / distributor in Sri Lanka;
- g) Batch number or code number or a decipherable code marking;
- h) Date of manufacture;
- j) Date of expiry;
- k) Complete list of ingredients, in descending order of their proportions. Pulp and cells (for citrus fruits juice sacs) added to the product over that normally contained in the fruit shall be declared in the list of ingredients;
- m) Country of origin, in case of imported products;
- n) A pictorial representation of fruit(s) on the label shall not mislead the consumer with respect to the fruit so illustrated;
- o) When non-nutritive sweeteners are added as substitutes for sugars, the statement, “with non-nutritive sweetener(s)” and “energy reduced” or “with no added sugar” as the case may be, shall be included in conjunction with or in close proximity to the product name; and
- p) Directions for reconstitution to drinking strength.

- 7.2** The marking and labelling shall also be in accordance with **SLS 467**.

8 SAMPLING

Representative samples of the product for ascertaining conformity to the requirements of this standard shall be drawn as prescribed in Appendix A.

9 METHODS OF TEST

Tests shall be carried out as prescribed in **Part 2, 3, 5, 6, 7, 8, 9** and **10** of **SLS 1332** and Appendix C of this standard.

10 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied:

10.1 Each container examined as in **A.5.1** satisfies the packaging and marking requirements.

10.2 Each container tested as in **A.5.2** satisfies the requirements given in **5.2** and **5.3** .

10.3 The composite sample tested as in **A.5.3** satisfies the requirements given in **5.4, 5.5** and **5.6.2**.

APPENDIX A SAMPLING

A.1 LOT

In any consignment, all the containers of the same size and belonging to one batch of manufacture or supply shall constitute a lot.

A.2 GENERAL REQUIREMENTS OF SAMPLING

In drawing, preparing, sorting and handling samples, following precautions and directions shall be taken:

A.2.1 Samples shall be drawn in a protected place not exposed to damp air, dust or soot.

A.2.2 The sampling instruments shall be clean and dry when used.

A.2.3 Samples shall be protected against adventitious contamination.

A.2.4 The samples shall be placed in clean and dry containers. The size of the sample containers shall be of such that they are almost completely filled by the sample.

A.2.5 The sample containers shall be sealed air-tight after filling and marked with the necessary details of sampling.

A.2.6 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the room temperature.

A.3 SCALE OF SAMPLING

A.3.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.

A.3.2 The number of containers to be selected from a lot shall be in accordance with Column 2 of Table 4.

A.3.3 If the containers are packed in cases at least 10 per cent of the cases, subject to a minimum of two shall be selected. As far as possible an equal number of containers shall be drawn from each case so selected to form a sample as given in Table 4.

TABLE 4 - Scale of sampling

Number of containers in the lot (1)	Number of containers to be selected (2)
Up to 180	02
181 to 300	03
301 to 500	04
501 to 800	05
801 to 1 300	07
1 301 to 3 200	10
3 201 to 8 000	15
8 001 and above	20

A.3.4 The cases and containers shall be selected at random. In order to ensure randomness of selection, random number tables as given in **SLS 428** shall be used.

A.3.5 The containers selected shall be marked with necessary details of sampling.

A.4 REFERENCE SAMPLE

If a reference sample is required, the number of containers to be selected from a lot shall be three times the number given in Column 2 of Table 4 (see Note). The containers so selected shall be divided into three equal parts. One of these parts shall be marked for the purchaser, one for the supplier and the third for the referee.

A.5 NUMBER OF TESTS

A.5.1 Each container selected as in **A.3.2** or **A.3.3** shall be examined for packaging and marking requirements.

A.5.2 Each of the remaining containers selected as in **A.3.2** or **A.3.3** shall be individually tested for the requirements given in **5.2** and **5.3**.

A.5.3 After testing for requirements as stated in **A.5.2** equal quantities of material shall be taken from each container and mixed together to form a composite sample. The composite sample thus obtained shall be tested for the requirements given in **5.4**, **5.5** and **5.6.2**.

NOTE : Test for pesticide residues given in 5.6.1 may not be necessary for routine analysis. This shall be carried out only if requested.

APPENDIX B
DETERMINATION OF TOTAL SOLUBLE SOLIDS CONTENT

Determination of soluble solids content shall be carried out according to the method described in **SLS 1332 : Part 2** (Methods of test for Fruit and vegetable products – Determination of Soluble solids - Refractometric method).

APPENDIX C
DETERMINATION OF ACIDITY

C.1 REAGENTS

C.1.1 *Standard sodium hydroxide solution*, approximately 0.1 mol/dm³

C.1.2 *Phenolphthalein indicator solution*

Dissolve 0.5 g of phenolphthalein in 200 ml of 50 per cent ethyl alcohol by volume.

C.2 PROCEDURE

Weigh, to the nearest milligram, about 10 g, of the sample and transfer to a conical flask with 100 ml to 150 ml of recently boiled and cooled distilled water. Add 1 ml of the phenolphthalein indicator solution and titrate against the standard sodium hydroxide solution. For observing the colour change at the end point use another portion of the sample diluted to the same proportion in a similar flask.

C.3 CALCULATION

$$\text{Acidity (as anhydrous citric acid), per cent by mass} = \frac{6.404 VM}{m}$$

where,

- V is the volume, in ml, of standard sodium hydroxide required for titration;
- M is the molarity of the standard sodium hydroxide solution; and
- m is the mass, in g, of the sample taken for the test.

APPENDIX D
DETERMINATION OF SULPHUR DIOXIDE CONTENT

Determination of sulphur dioxide content shall be carried out according to the method described in **SLS 1332 : Part 5** (Methods of test for fruits and vegetables products – Determination of total sulphur dioxide content) or **SLS 1332 : Part 6** (Methods of test for fruits and vegetables products – Determination of sulphur dioxide content – Routine method) or AOAC method 962.16.

APPENDIX E
DETERMINATION OF BENZOIC ACID AND SORBIC ACID CONTENTS

Determination of benzoic acid and sorbic acid contents shall be carried out according to the method described in **SLS 1332 : Part 3** (Methods of test for Fruit and vegetable products – Determination of benzoic acid and sorbic acid concentrations – High-performance liquid chromatography method) or AOAC methods 960.38 and 983.16.

APPENDIX F
DETERMINATION OF HEAVY METALS

Determination of heavy metals shall be carried out according to the methods given in **Part 7, 8, 9 and 10** of **SLS 1332** or the Official Methods of Analysis of the AOAC (Association of Official Analytical Chemist), 18th edition, 2007, as given in Table 5.

TABLE 5 – Methods for analysis of heavy metals

Sl. No. (1)	Heavy metal (2)	Method of analysis (3)
i)	Arsenic	SLS 1332 : Part 9 or AOAC 986.15
ii)	Cadmium	SLS 1332 : Part 7 or AOAC 999.11
iii)	Lead	SLS 1332 : Part 8 or AOAC 999.11
iv)	Tin	SLS 1332 : Part 10 or AOAC 999.11

Amendment No: 1 Approved on 2017-07-21 to SLS 214: 2010

AMENDMENT NO: 1 TO SLS 214: 2010

SRI LANKA STANDARD SPECIFICATION FOR FRUIT SQUASHES, FRUIT SYRUPS AND FRUIT CORDIALS (SECOND REVISION)

EXPLANATORY NOTE

This amendment is issued after a decision taken by the Working group on Processed Fruits and Vegetables in order to insert new definitions, include the INS numbers of the food additives given under basic and optional ingredients, amend their limits as per CODEX General Standard on Food Additives (GSFA) and to amend the labelling clause to align with the regulations published under Sri Lanka Food Act.

Amendment No: 1 Approved on 2017-07-21 to SLS 214: 2010

**AMENDMENT NO: 1 TO SLS 214: 2010
SRI LANKA STANDARD SPECIFICATION FOR FRUIT SQUASHES, FRUIT SYRUPS AND FRUIT CORDIALS (SECOND REVISION)**

Page 3

Foreword, Paragraph 4, Line 2

Delete the words “wherever applicable”.

Page 4

Delete the title of clause 3 and substitute by “**Definitions**”

Insert new clauses as follows after the note given under clause 3.1.

3.2 sweetener: Any food additive that is used or intended to be used to impart a sweet taste or as a tabletop sweetener, and does not include carbohydrate sugars

3.3 energy reduced: Food to which it refers has an energy value reduced by at least thirty per cent as compared with the original or a similar preparation”

Page 5

Delete the title of 4.1.2 and substitute by “*Sugars and sweeteners*”

Insert the word “AND/ OR” between clauses 4.1.2.1 and 4.1.2.2.

Clause 4.1.2.2

Delete clause 4.1.2.2 and insert the following as clause 4.1.2.2.

4.1.2.2 Sweeteners

Only for products which are identified as “energy reduced” or with “no added sugar”. The limits given are for the beverage at the point of consumption.

Aspartame	INS 951 (600 mg/ l, max)
Acesulfame K	INS 950 (350 mg/ l, max)
Sucralose	INS 955 (300 mg/ l, max)
Steviol glycoside	INS 960 (80 mg/ l, max as Steviol equivalents)
Sorbitol	INS 420 - Limited by GMP”

Clause 4.2.2

Delete the clause 4.2.2 and substitute by following.

4.2.2 Ascorbic acid	INS 300	} Limited by GMP”
Sodium ascorbate	INS 301	
Calcium ascorbate	INS 302	

AMD 492:2017

Clause 4.2.3

Delete the clause **4.2.3** and insert the following.

“4.2.3 Acidity regulators

Citric acid	INS 330	} Limited by GMP”
Potassium dihydrogen citrate	INS 332 (i)	
Sodium dihydrogen citrate	INS 331 (i)	
Malic acid DL	INS 296	
Calcium malate	INS 352 (ii)	
Sodium hydrogen DL malate	INS 350 (i)	
Fumaric acid	INS 297	
Sodium fumarate	INS 365	
Lactic acid	INS 270	
Calcium lactate	INS 327	
Sodium lactate	INS 325	
Potassium lactate	INS 326	

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Delete the clause **4.2.7** and insert following.

“4.2.7 Emulsifying or stabilizing agents

Pectins	INS 440	} Limited by GMP”
Alginic acid	INS 400	
Sodium alginates	INS 401	
Potassium alginate	INS 402	
Calcium alginate	INS 404	
Sodium carboxymethyl cellulose (Cellulose gum)	INS 466	
Xanthan gum	INS 415	

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Clause 7.1

Delete the items given after item “n)” and insert following

“p) When non- nutritive sweeteners are added as substitutes for sugars, the statement , “with non-nutritive sweetener(s)” and “energy reduced” or “with no added sugar” as the case may be, shall be included in conjunction with or in close proximity to the product name, and carry a statement “NOT RECOMMENDED FOR CHILDERN UNDER 3 YEARS OF AGE”;

q) Directions for reconstitution to drinking strength.”

AMENDMENT NO: 2 TO SLS 214: 2010

SPECIFICATION FOR FRUIT SQUASHES, FRUIT SYRUPS AND FRUIT CORDIALS

(Second Revision)

EXPLANATORY NOTE

This amendment is issued after a decision taken by the Working group on Processed Fruits and Vegetables in order to be in line with Food (Preservatives) Regulation, 2019 under the Food Act 26 of 1980.

Amendment No: 2 Approved on 2022-07-07 to SLS 214: 2010

SPECIFICATION FOR FRUIT SQUASHES, FRUIT SYRUPS AND FRUIT CORDIALS

(Second Revision)

Page 6

Clause 4.2.4

Replace clause 4.2.4 using following.

“4.2.4 Preservatives

Sorbates

Sulphites”

Page 7

TABLE 1

Delete Sl No iii), iv) and v) of Table 1 and insert following.

Sl No (1)	Characteristic (2)	Requirement (3)	Method of test (4)
iii)	Sulphites, mg/ kg, max.	250	Appendix D
iv)	Sorbates, mg/ kg, max.	1500	Appendix E

SRI LANKA STANDARDS INSTITUTION

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Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.

