SRI LANKA STANDARD 967 : 1992

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SPECIFICATION FOR

FROZEN CONFECTIONS AND FREEZE DRINKS

SRI LANKA STANDARDS INSTITUTION

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SLS 967 : 1992

Gr. 7

SRI LANKA STANDARDS INSTITUTION
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Sri Lanka.

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
SPECIFICATION FOR FROZEN CONFECTIONS AND FREEZE DRINKS

FOREWORD

This standard was approved by the Sectoral Committee on Food Safety and Hygiene and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 1992-10-07.

This specification covers a group of frozen confectionery products commonly known by various names such as ice lollies, ice-palam, popsicles and freeze drinks. These products are manufactured and retailed by numerous units all over Sri Lanka and are very popular particularly among young children. It is known that the conditions and methods involved in the preparation, packaging, storage and distribution of some of these products posses a health hazard to the consumer. This standard is intended to safeguard the interests of the consumers and covers safety and basic compositional requirements.

Guidelines for the determination of compliance of a lot with the requirements of this standard based on statistical sampling and inspection are given in Appendix A.

During the formulation of this specification due consideration has been given to the relevant provisions made under the Sri Lanka Food Act No. 26 of 1980. Specific requirements given in this specification, whenever applicable, are in accordance with the relevant regulations. However, general provisions made under the Sri Lanka Food Act have not been included in this specification and therefore, the attention of the user of this specification is drawn to these general provisions.

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 shall be the same as that of the specified value in this specification.

In the preparation of this standard, the assistance derived from the following publications is gratefully acknowledged :
CODEX STAN 137 : 1981 - Edible ices and ice mixes
Food Regulations of the United Kingdom.

1 SCOPE

This specification prescribes the requirements and methods of test for frozen confections and freeze drinks.

2 REFERENCES

SLS 102 Presentation of numerical values
SLS 191 Sugar
SLS 214 Fruit squashes and cordials
SLS 428 Random sampling methods
SLS 467 Labelling of prepackaged foods
SLS 516 Microbiological test methods
Part 1 : Enumeration of microorganisms.
Part 3 : Enumeration of coliforms, faecal coliforms and *Escherichia coli*.
Part 5 : Detection of *Salmonella*.
SLS 614 Potable water.

3 DEFINITIONS

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

3.1 **frozen confections** : Products prepared using a suitable combination of ingredients and additives given in 4 with the exception of preservatives and stored, distributed and consumed in the frozen state.

3.2 **freeze drinks** : Products prepared using a suitable combination of ingredients and additives given in 4.1 to 4.6, with or without preservatives and intended for consumption in the frozen state but stored and distributed in the liquid state or the semi-frozen state .

4 INGREDIENTS AND ADDITIVES

The following ingredients and additives may be used. Perishable ingredients not in immediate use shall be stored hygienically under refrigeration.

4.1 **Potable water**, conforming to SLS 614.

4.2 **Natural carbohydrate sweeteners**

Sugar used shall conform to SLS 191.

4.3 **Flavoring ingredients**, natural/ artificial.

4.4 **Food acids**

4.5 **Colouring matter**, permitted natural/artificial colouring matter not exceeding 200 mg/kg in the final product.

4.6 **Emulsifiers and stabilizers**, not exceeding 10g/kg, singly or in combination.

4.7 **Food ingredients**, coffee, cocoa, ginger, honey etc.

4.8 **Fruit ingredients**, derived from wholesome matured fruits which are free from fungal attack, insect infestation or diseases. Where the name of the product implies the presence of a particular fruit ingredient, that ingredient shall constitute not less than 5 per cent by mass of the product.

4.9 **Dairy ingredients**, conforming to the relevant Sri Lanka Standards. Where the name of the product implies the presence of milk, the milk solids content shall be not less than 8 per cent by mass of the product.

4.10 **Preservatives**, sulfur dioxide, benzoic acid, sorbic acid

5 REQUIREMENTS

5.1 Processing requirements

5.1.1 *Frozen confections*

Products prepared using dairy ingredients, fruit ingredients and/or other food ingredients shall be pasteurized and frozen within 1 hour after heat treatment.

5.1.2 *Freeze drinks*

In the case of all freeze drinks, the mixture, with the exception of colouring matter, flavoring ingredients and preservatives, shall be subjected to adequate heat treatment.

5.2 Storage and distribution

5.2.1 *Hygiene*

Care shall be taken to store the products so that they are free from contamination, particularly through contamination with other raw or unprocessed food items. Products other than frozen desserts shall not be stored together with frozen confections and freeze drinks.

NOTE

This requirement is specially applicable to freeze drinks where the package comes into direct contact with the mouth during consumption.

5.2.2 *Temperatures*

5.2.2.1 Frozen confections

Frozen confections shall be stored and distributed below - 10°C.

5.2.2.2 Freeze drinks

(a) Freeze drinks to which preservatives have been added may be stored and distributed at ambient temperature.

(b) Freeze drinks to which preservatives have not been added shall be stored and distributed at refrigeration temperatures.

5.3 Product requirements

5.3.1 *Flavour, odour and appearance*

The product shall have a pleasant flavour, odour and appearance characteristic of the descriptions appearing on the label. It shall also be free from extraneous matter.

5.3.2 *Other requirements*

The product shall conform to the requirements given in Table 1 when tested according to the methods given in Column 5 of the table.

TABLE 1 - Requirements for frozen confections and freeze drinks

Sl. No.	Characteristic	Requirement		Method of test
		frozen confections	freeze drinks	
(1)	(2)	(3)	(4)	(5)
(i)	Soluble solids content, as °Brix, min.	18.0	18.0	SLS 214
(ii)	Acidity, as anhydrous citric acid, per cent by mass, max.	0.5	0.5	SLS 214
(iii)	Sulfur dioxide, mg/kg, max.*	-	70	SLS 214
(iv)	Benzoic acid, mg/kg, max.*	-	160	SLS 214
(v)	Sorbic acid, mg/kg, max.*	-	50	Appendix B

* *When more than one preservative is 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.*

5.3.3 *Microbiological limits*

The product shall conform to the microbiological limits given in Table 2 when tested as given in Column 7 of the table.

TABLE 2 - Microbiological limits

Sl. No.	Test	n	c	limit/g m	limit/g M	Method of test
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(i)	Aerobic plate count	5	2	2.5×10^4	10^5	SLS 516 : Part 1
(ii)	Coliforms	5	2	10	10^2	SLS 516 : Part 3
(iii)	*Salmonella*	10	0	0	-	SLS 516 : Part 5

where,

n is the number of sample units to be tested;
c is the maximum allowable number of sample units yielding values between m and M;
m Is the limit below which a count is acceptable for any sample unit; and
M is the limit above which a count is unacceptable for any sample unit.

6 PACKAGING AND MARKING

6.1 Packaging

The products shall be hygienically wrapped or packed in a suitable material which neither affects the flavour and odour of the product nor transfer any of its components to the product.

6.2 Marking

The wrapper or package shall be legibly and indelibly marked with the following :

i) Name of the product, as any of the following as applicable;

"ice-lolly"	"water ice"
"ice palam"	"fruit ice"
"milk pop"	"freeze drink"
"popsicle"	

Products solely flavoured by the addition of flavouring ingredients to impart the characteristic flavour of a particular food shall be marked "x -flavoured", where "x" denotes the name of the food;

ii) Brand name or registered trade mark, if any;
iii) Net mass, in grams;
iv) Name and address of the manufacturer, including the country of origin;
v) Batch or code number;
vi) Date of expiry;
vii) The statement "take home and freeze/freeze before eating" or similar instruction, in the case of freeze drinks;
viii) The statement "permitted colours and flavours used";
ix) List of ingredients, in descending order of proportion; and
x) Information for storage and use, where necessary.

NOTE

Attention is drawn to the certification marking scheme offered by the Sri Lanka Standards Institution. See the inside back cover of this standard.

7 METHODS OF TEST

Tests shall be carried out as prescribed in the relevant Sri Lanka Standards given in Tables 1 and 2 and Appendix B of this specification.

APPENDIX A
COMPLIANCE OF A LOT

The sampling scheme given in this Appendix should be applied where compliance of a lot to the requirements of this standard is to be assessed based on statistical sampling and inspection.

Where compliance with this standard is to be assured based on manufacturer's control systems coupled with type testing and check tests or any other procedure, appropriate schemes of sampling and inspection should be adopted.

A.1 LOT

In any consignment, all packages of frozen confections or freeze drinks belonging to one batch of manufacture or supply should constitute a lot.

A.2 GENERAL REQUIREMENTS OF SAMPLING

When drawing samples the following precautions should be taken.

A.2.1 Samples for microbiological analysis should be drawn first.

A.2.2 The samples should be protected against adventitious contamination.

A.2.3 The sampling instruments should be clean and dry when used. When drawing samples for microbiological examination, the sampling instruments should be sterilized.

A.2.4 The samples should be kept in glass or suitable containers. They should be clean and dry when used. The samples for microbiological examination should be kept in sterilized containers.

A.2.5 The samples should be stored in such a manner that there will be no deterioration of the quality of the material.

A.2.6 The sample containers should be sealed air-tight after filling and marked with necessary details of sampling.

A.3 SCALE OF SAMPLING

A.3.1 The number of packages of frozen confections or freeze drinks to be selected form a lot should be in accordance with Table 3.

TABLE 3 - Scale of sampling

Number of packages in the lot (1)	Number of packages to be selected (2)
Upto 3 200	10
3 201 to 10 000	12
10 001 to 35 000	15
35 001 and above	20

A.3.2 The packages should be selected at random. In order to ensure randomness of selection, tables of random numbers as given in SLS 428 should be used.

A.4 PREPARATION OF SAMPLES

A.4.1 *For microbiological examination*

Ten sample units should be drawn from the packages selected as in A.3.1. Approximately 100g should be drawn (see Note) from each sample unit using an appropriate sterile sampling instrument and transferred to ten sample containers.

NOTE

If mass of a package is less than 100 g, sufficient number of packages should be selected to obtain a sample size of about 100 g. The number of packages so selected should be treated as one sample unit.

A.4.2 *Composite sample*

Sufficient quantities should be taken from each package selected as in A.3.1 and mixed to form a composite sample and transferred to a sample container.

A.5 NUMBER OF TESTS

A.5.1 Each package selected as in A.3.1 should be inspected for packaging and marking requirements.

A.5.2 Samples prepared as in A.4.1 should be tested for requirements given in 5.3.3

A.5.3 The composite sample prepared as in A.4.2 should be tested for the requirements given in 5.3.1 and 5.3.2.

A.6 CRITERIA FOR CONFORMITY

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

A.6.1 Each package inspected as in A.5.1 satisfies the packaging and marking requirements.

A.6.2 The samples when tested as in A.5.2 satisfy the microbiological limits.

A.6.3 The test results on the composite sample tested as in A.5.3 satisfy the relevant requirements.

APPENDIX B
DETERMINATION OF SORBIC ACID

B.1 PRINCIPLE

The procedure involves distillation of sorbic acid, separation on a column from interfering substances, and measurement of the absorbance at 254 nm.

B.2 APPARATUS

B.2.1 *Distillation flask*, 500-ml, two-necked flask with ground glass joint, one neck fitted with a separating funnel (B.2.2) and the other, with a Friedrich's condenser having a ground glass joint.

B.2.2 *Separating funnel*, 125-ml

B.2.3 *Chromatographic tube*, 15 mm in diameter and 250 mm in length, with a narrow tube attached at one end.

B.2.4 *Volumetric flasks*, 500-ml, 50-ml.

B.3 REAGENTS

B.3.1 *Silicic acid*, chromatographic grade

B.3.2 *Bromocresol green indicator*, 0.25 per cent (V/V), in methanol

B.3.3 *Methanol*, 70 per cent (V/V)

B.3.4 *Chloroform-iso-octane (1 + 4)*, saturated with methanol

Mix 100 ml of chloroform and 400 ml of iso-octane. Transfer to a 1000-ml separating funnel. Add 20 ml of methanol and shake vigorously. Allow layers to separate and drain off the methanol layer. Filter the chloroform-iso-octane layer through a fluted filter paper into a suitable container.

B.3.5 *Sorbic acid standard solution*

Dissolve 50 mg of sorbic acid in iso-propanol and make upto 500 ml with the same solvent (1 ml = 0.1 mg). Dilute 50 ml of this solution to 250 ml with iso-propanol to obtain the working standard (1 ml = 0.2 mg).

B.4 **PROCEDURE**

Weigh an aliquot of liquid sample containing 1.5 mg to 2.0 mg of sorbic acid, transfer to a distillation flask (B.2.1) and make upto 50 ml with water. In the case of frozen solid samples, weigh a portion containing 15 mg to 20 mg sorbic acid, blend in a blender with water, transfer to a 500-ml volumetric flask and dilute to volume with water. Filter and pipette 50 ml into the distillation flask.

Add 50 g of magnesium sulfate and distil until 40 ml to 45 ml of the distillate collects in a measuring cylinder. Transfer the distillate to a 150-ml separating funnel. To the distillation flask, add another 50 ml of water through the separating funnel. Wash the condenser with hot water, transfer the washings to the separating funnel and allow to cool.

Saturate the distillate with sodium chloride and extract sorbic acid with five 40-ml portions of chloroform. After each extraction, transfer the chloroform layer to a second separating funnel containing 10 ml of distilled water. Filter the chloroform layer through a wad of cotton and combine the chloroform extracts. Evaporate the combined extracts on a steam bath under a current of air to approximately 25 ml. Transfer to a 50-ml beaker and evaporate as before until it is reduced to about 10 ml. Remove the last 10 ml of chloroform in a current of air at a temperature not exceeding 37.5 °C. Dissolve the residue immediately in 2 ml of chloroform-iso-octane mixture.

B.5 CHROMATOGRAPHIC SEPARATION

To 5 g of silicic acid in a motar, add 1 ml of bromocresol green indicator, one drop of ammonium hydroxide and the maximum quantity of methanol (B.3.3) so that the silicic acid will hold without becoming sticky when slurried with chloroform-iso-octane mixture. Mix thoroughly, add enough chloroform-iso-octane mixture to first form a paste and then a slurry. Place a thin wad of cotton at the constricted end and pour the slurry over it. Remove the excess of solvent either by air pressure or mild suction. Do not allow the column to dry below the surface of the gel. When the column is ready, transfer 2 ml of sorbic acid extract contained in the beaker. Wash the beaker thrice with 2-ml portions of chloroform-iso-octane solvent and add to the column, after the extract and each washing has passed into the column. When the last portion of washing has passed into the column, add chloroform-iso-octane solvent and allow to percolate through the column either under air pressure or mild suction. Discard the acid which comes initially and collect the sorbic acid band in a 50-ml volumetric flask. Make up to volume with chloroform-iso-octane solvent.

Pipette an aliquot containing 0.15 mg to 0.20 mg of sorbic acid to a 100-ml volumetric flask and dilute to 100 ml with iso-propanol.

Measure the absorbance of the sample and the standard solution at 254 nm in a spectrophotometer.

B.6 **CALCULATION**

$$\text{Sorbic acid, mg/100 g} = \frac{0.2 \times A_{s_1} \times 100 \times 50 \times 100}{A_{s_2} \times V \times m}$$

where,

A_{s_1} is the optical density of the sample;
A_{s_2} is the optical density of the standard solution;
V is the volume, in ml, taken for the final dilution; and
m is the mass, in g, of the sample taken for the test.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

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.*

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SRI LANKA STANDARDS INSTITUTION

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The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

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