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**Dairy based Desserts and ice mixes—  
Specification**

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## DKS 1517:2018

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The following organizations were represented on the Technical Committee:

Kenya Dairy Board  
Ministry of Health — Food Safety Unit  
Directorate of Livestock production  
Directorate of Veterinary Services  
Egerton University — Department of Dairy and Food Science Technology  
Government Chemist's Department  
National Public Health Laboratory Services  
Kenya Industrial Research and Development Institute (KIRDI)  
New Kenya Creameries Cooperative (NKCC)  
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Sameer Agriculture and Livestock (K) Limited  
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# **Dairy based Desserts and ice mixes — Specification**

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# DKS 1517:2018

## Foreword

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

Dairy based desserts/confections are products obtained by freezing a pasteurized mix prepared from milk and /or other products derived from milk with or without the addition of nutritive sweetening agents, fruit and fruit products, eggs and egg products, coffee, cocoa, chocolate, condiments, spices, ginger and nuts and it may also contain bakery products such as cake or cookies as a separate layer and/or coating. The said product may be frozen hard or frozen to a soft consistency. The product may contain permitted food additives

The standard covers the compositional, microbiological, contaminants and labelling requirements

During the preparation of this standard, reference was made to the following documents:

CODEX STAN 137-1981, Edible ices and ice mixes.

Acknowledgement is hereby made for assistance derived from these sources.

## **Dairy based Desserts and ice mixes — Specification**

### **1 Scope**

This Kenya Standard prescribes the requirements and methods of sampling and test for dairy based Desserts and ices for direct consumption or further processing as defined in Section 3 of this Standard.

This standard does not cover ice cream which is covered in KS EAS 70.

### **2 Normative references**

The following referenced documents are indispensable in the application of this document. For dated references, only the edition applies. For undated references, the latest edition of the referenced document including any amendments applies.

KS CODEX STAN 192, *Codex general standard for food additives*

KS CODEX STAN 193, *Codex general standard for contaminants and toxins in foods*

KS EAS 38, *Labeling of prepackaged foods — Specification*

KS CAC/GL 23, *Guidelines for use of nutrition claims*  
KS 1552; code of practice for milk and milk products

KS ISO 3594, *Milk fat — Detection of vegetable fat by gas-liquid chromatography of sterols (Reference method)*

KS ISO 3595, *Milk fat — Detection of vegetable fat by the phytosteryl acetate test*

KS ISO 3728, *Ice-cream and milk ice — Determination of total solids content (Reference method)*

KS ISO 6611, *Milk and milk products — Enumeration of colony-forming units of yeasts and/or moulds — Colony-count technique at 25 °C*

KS ISO 6785, *Milk and milk products — Detection of Salmonella spp.*

KS ISO 7328, *Milk-based edible ices and ice mixes — Determination of fat content — Gravimetric method (Reference method)*

KS ISO 8262, *Milk products and milk-based foods — Determination of fat content by the Weibull-Berntrop gravimetric method (Reference method)*

KS ISO 10560, *Milk and milk products — Detection of Listeria Monocytogenes*

KS ISO/TS 11869, *Fermented milks — Determination of titratable acidity — Potentiometric method*

KS ISO 6611, *Milk and milk products — Enumeration of colony-forming units of yeasts and/or moulds — Colony-count technique at 25 degrees C*

KS ISO 14501:2007 *Milk and milk powder - Determination of aflatoxin M content - Clean-up by immunoaffinity chromatography and determination by high-performance liquid chromatography*

AOAC 942.17, *Arsenic in foods Molybdenum blue method*

AOAC 999.10, *Lead, Cadmium, Copper, Iron, and Zinc in foods, Atomic Absorption Spectrophotometry after dry ashing*

AOAC 962.16 Beta-lactam Antibiotics in milk

AOAC 980.21, Aflatoxin M1 in milk and cheese-thin layer chromatographic method

AOAC 980.21, *organochlorine and organophosphorous pesticide residues in milk and milk products*

### 3 Description

**3.1 edible ices** are frozen sweetened food products that have been treated by freezing and are intended for storage, sale, and consumption in a frozen or partially frozen state. They may be obtained from the following:

- a) An emulsion of edible fat and protein with the addition of other permitted ingredients and substances.
- b) A mixture of water, sugars and other permitted ingredients and substances.

**3.2 Sherbet** also known as sorbet Shall be a pasteurized mix consisting of one or more of the optional dairy ingredients specified in sub clause (5.1), one or more of the optional caseinates specified in sub-clause (5.3), and non-milk derived ingredients, one or more of the characterizing fruit ingredients specified in sub clause (6.3) or one or more of the non-fruit characterizing ingredients specified in sub clause (5.4).

Nonfruit sherbet- shall have a characteristic fruit flavor, but shall not contain any fruit or fruit juice and shall comply with all requirements of sherbet in table 1

**3.3 frozen yogurts** a product resulting from the fermentation by specific lactic acid producing bacteria of a pasteurized or ultra-pasteurized mixture of milk and other optional ingredients specified in clause 5

**3.4 milk shakes** is a pure, clean, wholesome semi-viscous drink prepared by stirring while freezing a pasteurized mix consisting of sweetener and the ingredients prescribed in 5.1

**3.5 frozen dietary dairy desserts** is a food for any special dietary use, prepared by freezing, with or without agitation, composed of a pasteurized mix which may contain milk fat and/or edible vegetable fats or oils, protein, carbohydrates, flavoring, stabilizers, emulsifiers, vitamins and minerals

**3.6 (water ices, lolly, popsicle)** is an edible ice obtained from sugar, water, fruit acid and fruit or fruit flavouring with or without other permitted ingredients and food additives

**3.7 Frozen Custard** Also known as French ice cream or French custard ice cream, shall be a pasteurized mix consisting of one or more of the optional dairy ingredients specified in clause (5.1), one or more of the optional caseinates specified in sub-clause 56.3), non-milk-derived ingredients, nutritive sweetener and additional egg yolk solids

**3.8 Milk lollies or Milk Ice** Shall be a frozen pasteurized mix obtained from the ingredients prescribed in clause (5.1), (5.2) and (5.4, with or without addition of sweeteners,, edible flavours and permitted colours

**3.9 Dairy Water ices** shall be a food prepared in the same manner prescribed in sub-clause (3.2) for sherbets, except that the mix need not be pasteurized and that no milk or milk derived and egg ingredient, other than egg white, is used.

**3.10 Novelties** Shall be a milk product made either alone or in combination with other foods such as cookies, wafers, cones, coating, confections, etc

**3.11 Frozen Dairy Confection** Shall be a clean and wholesome frozen product made from water, milk products and sugar, with added harmless natural or artificial flavoring, with or without added coloring, with or without added stabilizer and with or without added emulsifier; and in the manufacture of which freezing has not been accompanied by stirring or agitation (generally known as quiescent freezing).

**3.12 Frozen pudding** shall be a Product made from a pasteurized mix of Milk and milk products, intended to be eaten in the frozen state.

**3.13 Whipped cream confections** shall be a food made with milk products, sweetening agents and flavoring agents, with or without harmless coloring or any other safe and suitable ingredients

**3.14 Ice milk** more commonly called "light" or "reduced-fat" ice cream, is made from pasteurized mix consisting of one or more of the optional dairy ingredients specified in clause (5.1.1), one or more of the optional caseinates specified in sub-clause (5.1.3), fruits in sub clause (5.1.4), nuts or confections, nutritive sweetener and additional egg yolk solids

## 5. ESSENTIAL COMPOSITIONAL AND QUALITY FACTORS

### 5.1 Permitted ingredients

All ingredients used shall comply with the relevant standard.

#### 5.1.1 Optional ingredients

The optional ingredients referred to in clause 3 are:

Cream  
Dried cream  
Plastic cream—sometimes known as concentrated milk-fat  
Sweet cream buttermilk  
Butter  
Butter oil  
Whole Milk  
Concentrated milk  
Evaporated milk  
Sweetened condensed milk  
Dried milk  
Skim milk  
Concentrated skim milk  
Evaporated skim milk  
Sweetened Condensed skim milk  
Nonfat dry milk  
Buttermilk  
Cheese whey  
Egg yolks  
Egg whites

#### 5.1.2 Optional fruit characterizing ingredients

The fruit or the juice of any mature fruit shall mature  
The fruit or fruit juice used shall be clean, fresh, frozen, canned, concentrated, or partially or wholly dried.  
The fruit shall be thickened with pectin or other optional ingredients  
The fruit shall have no pits, seeds, skins, and cores

Fruits or fruit juices shall have moisture contents, which is not less than 2.0% in the case of citrus sherbets, 6.0% in the case of berry sherbets, and 10% in the case of sherbets prepared with other fruits

### **5.1.3 Optional caseinates.**

Casein prepared by precipitation with gums

Ammonium caseinate

Calcium caseinate

Potassium caseinate

Sodium caseinate

The optional caseinates shall contain not less than 20% total milk solids and they may be added in liquid or dry form, but shall be free of excess alkali.

### **5.1.4 Optional non-fruit characterizing ingredients**

These include:

- Ground spice or infusion of coffee or tea.
- Chocolate or cocoa, including syrup.
- Confectionery, honey, sugars, nuts, liqueur, salt

### **5.1.5 Edible fats and oils**

Other than those derived from milk, for which standards have been specified.

### **5.1.6 Edible protein**

Other than that derived from milk

### **5.1.7 Water**

The water shall be of potable quality; conforming to KS EAS 12.

## **5.2 Compositional requirements**

Dairy based desserts/confections and ice mixes shall comply with the following requirements in Table 1.





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**Table 1 — Compositional requirements for Dairy based Desserts and ice mixes**

SL No.	Characteristics	Ice milk	Frozen yoghurt	Frozen Custard	Sherberts	Water ices and lollies	Frozen Dairy Dessert/ Frozen Confection	Milk shake	Milk lollies/Milk ice	Test method
i)	Milk fat, % by mass, (min.)	2-7%	3.25	10%	1.0- 2.0	1.0-2.0	10.0	3.25-6.0	2.0%, max	KS ISO 7328 KS ISO 8262
ii)	Fat included if present, milk fat, % by mass, (min.)	-	-	-	-	-	4	-	-	KS ISO 3594 KS ISO 3595
iii)	Milk solids, not fat, % by mass, (min.)	-	8.25	13.0%	1-3	1-3	-	3.25-6.0	-	KS ISO 3728
iv)	Protein, % by mass, (min.)	-	-	-	-	-	3.5	-	3.5%	AOAC 991.20-23
v)	Egg yolk solids if declared % by mass	-	1.12 (max.)	1.4%	-	-	1.4%, min	-	-	AOAC 991.20-23
vi)	Total Solids, % by mass, (min.)	11%	28	-	2-5	10	36.0	10	20.0 %	KS ISO 3728
vii)	Acidity as %, citric acid, (min.)	-	-	-	0.35	0.35	-	-	0.3%	KS 05-140
viii)	Acidity, expressed as lactic acid, (min.)	-	0.3	-	-	-	-	-	-	KS ISO/TS 11869
ix)	Weight by volume g/L, (min.)	-	475 475	-	475	475	475	-	-	

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**5.2.1 Low fat edible ices** shall have a composition complying with the products above, but with a fat content below the minimum in Table 1.

**5.2.3 Non-fruit sherbet**

Shall have a characteristic fruit flavor, but shall not contain any fruit or fruit juice and shall comply with all requirements of sherbet in Table 1.

**5.2.5 Low-fat milk-shake**

Shall comply with all the requirements for milk shakes in table 1, except that it shall contain at least 0.5 % and not more than 2 % milk fat

**5.2.6 Frozen low fat yogurt or lowfat frozen yogurt**

Shall contain at least 0.5 % but not more than 2 % milk fat and at least 8.25 % milk solids not fat, and has a titratable acidity of at least 0.3 % expressed as lactic acid.

**5.2.7 Frozen nonfat yogurt or nonfat frozen yogurt**

Shall comply with all the requirements of frozen low fat yogurt or low fat frozen yogurt, except that, it shall contain less than 0.5 % milk fat.

**5.2.8 Medium fat frozen dessert/confection** shall contain not more than 2.5% but less than 10% milk fat, and not less than 30% total solids

**5.2.9 Low fat frozen dessert** shall contain not more than 2.5% milk fat, and not less than 26% total solids

**6 Food additives**

Food additives usage shall be in compliance with CODEX STAN 192, established by the Codex Alimentarius Commission (CAC).

**7 Hygiene**

**7.1** It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections KS 1552 and other relevant Kenya standards and regulations. The products should comply with any microbiological criteria established in accordance with KS CAC/GL 21

**7.2** The products shall comply with any microbiological criteria established in accordance with Table 4 below.

**Table 2 — Microbiological requirements/ limits for dairy based dessert/confection and ice mixes**

SL No.	Micro-organisms	Maximum limits	Test method
i)	Total viable count	20 000 CFU/ g	KS ISO 4833

ii)	E.Coli	Nil CFU / g	KS ISO 4833
iii)	Salmonella spp	Nil CFU / 25 g	KS ISO 6785
iv)	L. monocytogenes absent/g	Nil CFU /25 g	KS ISO 10560
v)	Moulds and yeasts	10 CFU/g	KS ISO 6611
vi)	Staphylococcus aureus	Nil CFU /25 g	KS ISO 6611
vii)	Coliforms	10 CFU /g	KS ISO 4832
viii)	shigella	Nil per gram	KS ISO 4833 KS or KS ISO 21567
ix)	Clostridium botulinum	Nil per gram	KS ISO 4833

### 7.3 Pasteurization requirements

**7.3.1** Milk ingredients used in edible ices shall have undergone pasteurization or equivalent heat treatment as indicated by the absence of phosphatase.

**7.3.2** Regarding mixes, with the exception of water ices, the whole mix except for acids, colours and/or flavours and flavouring substances including ingredients in clause 5, shall have undergone pasteurization or equivalent heat treatment as indicated by the absence of phosphatase.

**7.3.3** Further pasteurization may not be required for edible ices manufactured from concentrated or dry ingredients by the addition of only potable water, pasteurized milk and flavouring matter, which has been frozen within one hour after the addition of such substances.

### 8.1 Contaminants

The products covered by this Standard shall comply with the Maximum Levels for contaminants that are specified for the product in the *General Standard for Contaminants and Toxins in Food and Feed* (KS CODEX STAN 193-1995).

The milk used in the manufacture of the products covered by this Standard shall comply with the Maximum Levels for contaminants and toxins specified for milk by the *General Standard for Contaminants and Toxins in Food and Feed* (KS CODEX STAN 193-1995) and with the maximum residue limits for veterinary drug residues and pesticides established for milk by the CAC.

### 8.2 Heavy metals

The products covered by this standard shall comply with the maximum limits in Table 5

**Table 5 — Limits for heavy metal contaminants for Dairy based desserts and ice mixes**

SL No	Heavy metal	MRL (Max.)	Test method
i).	Arsenic (AS)	0.1 mg/kg	AOAC 942.17
ii).	Lead (PH)	0.02 mg/kg	AOAC 972.25 / KS ISO 6733
iii).	Mercury (Hg)	1.0 mg/kg	AOAC 999.10

iv).	Copper (Cu)	5.0 mg/kg	AOAC972.25 / KS ISO 5738
v).	Zinc (Zn)	50 mg/kg	AOAC 999.10
vi).	Tin (Sn)	250 mg/kg	AOAC 999.10
vii).	Cadmium as Cd,	1.5 mg/kg	AOAC 999.10
viii).	Iron (fe),	0.5 mg/kg	AOAC 999.11/ KS ISO 6732

### 8.3 Pesticide residues

In addition to the maximum limits established by the Codex Alimentarius Commission for these products in codex Stan 193; the products covered by the provisions of this standard shall comply with the Maximum Levels for contaminants specified in table 6 below;

Table 6- maximum residue limits for Dairy based desserts and ice mixes

S/N	Parameter	Requirements	Test method
<i>i</i>	ORGANOCHLORINE Group	0.01 ppm	KS ISO 3890-1:2009 OR AOAC 970.52
<i>ii</i>	ORGANOPHOSPHOROUS Group	0.01 ppm	AOAC 970.52

### 8.4 Mycotoxin residues

the products shall not have more than have 0.5 µg/kg aflatoxin M1 content when tested according to KS ISO 14501:2007/ AOAC 980.21, Aflatoxin M1 in milk and cheese- thin layer chromatographic method

### 8.5 Antibiotics

The products shall not have more than 10.0 ppb total antibiotic as (beta lactam) content when tested according to AOAC 962.16, Beta-lactam Antibiotics in milk

## 7 Contaminants

## 7.1 Heavy metals

## 8.3 Pasteurization requirements

**8.3.1** Milk ingredients used in edible ices shall have undergone pasteurization or equivalent heat treatment as indicated by the absence of phosphatase.

Regarding mixes, with the exception of water ices, the whole mix except for acids, colours and/or flavours and flavouring substances including ingredients in clause 5, shall have undergone pasteurization or equivalent heat treatment as indicated by the absence of phosphatase.

**8.3.2** Further pasteurization may not be required for edible ices manufactured from concentrated or dry ingredients by the addition of only potable water, pasteurized milk and flavouring matter, which has been frozen within one hour after the addition of such substances.

## 9 Packaging

**9.1 Dairy based desserts and ice mixes** shall be packaged in containers which will safeguard the hygienic and other qualities of the food.

**9.2** The containers, including packaging material, shall be food grade made only of substances which are safe and suitable for their intended use.

## 10 Labelling

In addition to the general provisions of KS EAS 38, Dairy based desserts and ice mixes shall be labelled with the following information:

- a) The name of the product shall be as defined in Clause 3, 5.2.1 to 5.2.9
- b) The net volume or net weight in grams or kilograms;
- c) Name and address of the manufacturer, packer or distributor;
- e) In the case of mixes, the word "pasteurized" and the date of pasteurization of the mix;
- f) If artificially flavored or colored, a statement that such flavoring and coloring has been added, need to be declared after the name e.g. water ice pineapple flavor, orange flavour, etc.;
- g) List of ingredients used in the descending order
- h) When any edible ices and ice mixes or frozen desserts are represented for special dietary use by man, it shall be sold only in a container, the label on which shall contain the name of the food and the list of ingredients;
- l) When any edible ices and ice mixes or frozen desserts are provided to consumers from soft-serve machines, the name of the type of frozen dessert in conjunction with the serving selections offered shall be conspicuously provided to the consumer;
- j) Bulk containers of edible ices and ice mixes or frozen desserts shall show the manufacturer's name and address or assigned code, type of product and flavor statement;
- k) Country of origin where applicable; and
- l) Expiry date.



m) **Nutrient Declaration:** Nutritional claim shall be made in accordance with the Guidelines for the Use of Nutritional Claims (KS CAC/GL 23-1997)

## **9 Methods of Analysis and Sampling**

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