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DRAFT EAST AFRICAN STANDARD

Processed cereal-based foods for older infants and young children —
Specification

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 018, *Nutrition and foods for special dietary uses*.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

This third edition cancels and replaces the second edition (EAS 72: 2013), which has been technically revised.

Processed cereal-based foods for older infants and young children — Specification

1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for processed cereal-based foods intended for feeding older infants as a complementary food generally from the age of six months onwards, taking into account the infants' nutritional requirements, and for feeding young children as part of a progressively diversified diet.

The standard excludes both fortified and unfortified blended and composite flours.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AOAC 936.14, *Vitamin D in milk, vitamin preparations and feed concentrates — Rat bioassay*

AOAC 942.05, *Ash of animal feed*

AOAC 961.14, *Niacin and niacinamide in drugs, foods and feeds — Colorimetric method*

AOAC 984.26, *Vitamin C (Total) in food — Semi automated fluorometric method*

AOAC 984.27, *Calcium, Copper, Iron, Magnesium, Manganese, Phosphorus, Potassium, Sodium, and Zinc in Infant Formula — Inductively Coupled Plasma Emission Spectroscopic method*

AOAC 985.35, *Minerals in Infant Formula, Enteral Products, and Pet Foods — Atomic Absorption Spectrophotometric method*

AOAC 986.24, *Phosphorus in infant formula and enteral products — Spectrophotometric method*

AOAC 995.13, *Carbohydrate in Coffee: AOAC Method 995.13 vs a New Fast Ion Chromatography Method*

AOAC 2000.17, *Determination of Trace Glucose and Fructose*

AOAC 986.27, *Thiamine (Vitamin B₁) milk based infant formula — Fluorometric method*

AOAC 992.04, *Vitamin A (Retinol isomers) in milk and milk-based infant formula — Liquid chromatographic method*

AOAC 995.05, *Vitamin D in infant formulas and internal products — Liquid chromatographic method*

AOAC 983.23, *Simplified gravimetric determination of total fat in food composites after chloroform-methanol extraction*

AOAC 2015.002, *Standard Method Performance RequirementsSM (SMPRs) for Total Vitamin B1 (Thiamin) in Infant and Adult/ Pediatric Nutritional Formula*

CAC/GL 10-1979, *Advisory lists of mineral salts and vitamin compounds for use in foods for infants and children*

CAC/GL 23, *Guidelines for use of nutrition and health claims*

CODEX STAN 192-1995, *General standard for food additives*

EAS 38, *General standard for the labelling of pre-packaged foods*

EAS 39, *Hygiene in the food and drink manufacturing industry — Code of practice*

EAS 82, *Milled cereal products — Methods of test*

ISO 711, *Cereals and cereal products — Determination of moisture content (Basic reference method)*

ISO 8262-1, *Milk products and milk-based foods — Determination of fat content by the Weibull-Berntrop gravimetric method (Reference method) -- Part 1: Infant foods*

ISO 8968-2, *Milk — Determination of nitrogen content — Part 2: Block-digestion method (Macro method)*

ISO 6869, *Animal feeding stuffs — Determination of the contents of calcium, copper, iron, magnesium, manganese, potassium, sodium and zinc — Method using atomic absorption spectrometry*

ISO 20633, *Infant formula and adult nutritionals — Determination of vitamin E and vitamin A by normal phase high performance liquid chromatography*

ISO 20636, *Infant formula and adult nutritionals — Determination of vitamin D by liquid chromatography-mass spectrometry*

ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

- 3.1
older infant**
person of 6 months and not more than 12 months of age
- 3.2
young children**
person from the age of more than 12 months up to the age of three years
- 3.3
complementary foods**
food other than breast milk or infant formula whether manufactured or locally prepared and fed to older infants and young children in addition to breast milk or to infant formula when either becomes insufficient to satisfy their nutritional requirements
- 3.4
extraneous matter**
organic or inorganic impurities

4 Product categories

The products are distinguished in four categories:

1. products consisting of cereals which are or have to be prepared for consumption with milk or other suitable liquids such as infant formula;
2. cereals with an added high protein food which are or have to be prepared for consumption with water or other suitable protein-free liquid;
3. pasta which are to be used after cooking in boiling water or other suitable liquids; and
4. rusks and biscuits which are to be used either directly or, after pulverization, with the addition of water, milk or other suitable liquids.

5 Requirements

5.1 Raw materials

Processed cereal-based foods for older infants and young children shall be prepared primarily from one or more milled cereal products, such as wheat, rice, barley, oats, rye, maize, millet, finger millet, bulrush millet sorghum and buckwheat complying with the relevant East African Standards.

5.2 Optional ingredients

Optional ingredients suitable for use by older infants and young children may be used and shall comply with the relevant East African Standards. They may include:

- a) protein concentrates and other high protein ingredients suitable for consumption by infants and young children. Essential amino acids may be added to improve protein quality, in which case only natural forms may be used;
- b) salt (sodium chloride);
- c) milk and milk products;
- d) eggs;
- e) meat;
- f) fats and oils;
- g) fruits and vegetables;
- h) sugars (only nutritive carbohydrate sweeteners);
- i) malt;
- j) products containing honey or maple syrup
- k) cocoa (only in products to be consumed after nine months of age, and at a maximum level of 5 % m/m on a dry basis);
- k) roots and tubers;
- l) starches, including enzyme-modified starches and starches treated by physical means;
- m) legumes and pulses;

- n) nuts and oilseeds;
- o) only L (+) lactic acid producing cultures may be used;
- p) fish; and
- q) banana.

5.3 General requirements

Processed cereal-based foods for older infants and young children shall:

- a) be based primarily on one or more milled cereals, which shall constitute at least 25 % of the final mixture on a dry weight basis;
- b) be free from dirt and extraneous matter; and
- c) have no rancid or musty odour or flavour.

5.4 Specific requirements

The processed cereal-based foods for older infants and young children shall comply with the specific requirements given in Table 1 when tested in accordance with test methods specified therein.

Table 1 — Specific requirements for processed cereal-based foods for older infants and young children

Characteristics	Requirement				Test method
	Products consisting of cereals which are or have to be prepared for consumption with milk or other suitable liquids such as infant formula;	Cereals with an added high protein food which are or have to be prepared for consumption with water or other suitable protein-free liquid;	Pasta which are to be used after cooking in boiling water or other suitable liquids; and	Rusks and biscuits which are to be used either directly or, after pulverization, with the addition of water, milk or other suitable liquids.	
Moisture content, % by mass, max.	Products ready for use: 4.0 Products for further processing: 8.0	Products ready for use: 4.0 Products for further processing: 8.0	Products ready for use: 4.0 Products for further processing: 8.0	Products ready for use: 4.0 Products for further processing: 8.0	ISO 711
Protein content, max.	-	1.3 g/100 kJ (5.5 g/100 kcal).	-	1.3 g/100 kJ (5.5 g/100 kcal).	ISO 8968-2
Added protein content ^a min.	-	0.48 g/100 kJ (2 g/100 kcal)	-	0.36 g/100 kJ (1.5 g/100 kcal)	ISO 8968-2
Added carbohydrates,	1.8 g/100 kJ	1.2 g/100 kJ (5 g/100 kcal);	-	1.8 g/100 kJ	AOAC 995.13

max.	(7.5 g/100 kcal)			(7.5 g/100 kcal)	
Added fructose, max.	0.9 g/100 kJ (3.75 g/100 kcal)	0.6 g/100 kJ (2.5 g/100 kcal)	-	0.9 g/100 kJ (3.75 g/100 kcal)	AOAC 2000.17
Energy density, min.	3.3 kJ/g (0.8 kcal/g)	3.3 kJ/g (0.8 kcal/g)	3.3 kJ/g (0.8 kcal/g)	3.3 kJ/g (0.8 kcal/g)	AOAC 988.06
Lipid content, max.	0.8 g /100 kJ (3.3 g/100 kcal).	1.1g/100 kJ (4.5 g/100 kcal) ^b	-	0.8 g /100 kJ (3.3 g/100 kcal).	AOAC 983.23
Sodium content, max.	24 mg/100 kJ (100 mg/100 kcal)	24 mg/100 kJ (100 mg/100 kcal)	24 mg/100 kJ (100 mg/100 kcal)	24 mg/100 kJ (100 mg/100 kcal)	ISO 6869
Calcium content, min.	-	20 mg/100 kJ (80 mg/100 kcal) f	-	12 mg/100 kJ (50 mg/100 kcal)	ISO 6869
vitamin B1 (thiamin), min	12.5µg/100 kJ (50µg/100 kcal)	12.5µg/100 kJ (50µg/100 kcal)	12.5µg/100 kJ (50µg/100 kcal)	12.5µg/100 kJ (50µg/100 kcal)	AOAC 2015.002
vitamin A (µg retinol equivalents)	14-43 µg/100kJ(60-180 µg/100 kcal)	14-43 µg/100kJ(60-180 µg/100 kcal)	14-43 µg/100kJ(60-180 µg/100 kcal)	14-43 µg/100kJ(60-180 µg/100 kcal)	ISO 20633
Vitamin D,	0.25-0.75 µg/100kJ (1-3 µg/100 kcal)	0.25-0.75 µg/100kJ (1-3 µg/100 kcal)	0.25-0.75 µg/100kJ (1-3 µg/100 kcal)	0.25-0.75 µg/100kJ (1-3 µg/100 kcal)	ISO 20636
Total ash, % by mass, max.	5.0	5.0	5.0	5.0	AOAC 942.05
Ash insoluble in HCl, % by mass, max.	0.05	0.05	0.05	0.05	ISO 5985
Crude fibre (on dry basis), % by mass, max.	5	5	5	5	ISO 5498
Vitamin C mg/100 g, min.	25	25	25	25	AOAC 984.26
Nicotinic acid, mg/100 g, min	5	5	5	5	AOAC 961.14
Phosphorus mg/100 g, min	250	250	250	250	AOAC 986.24

Iron mg/100 g, min	10	10	10	10	AOAC 985.35
Zinc, min.	1.2 mg/100g.	1.2 mg/100g	1.2 mg/100g.	1.2 mg/100g.	ISO 6869
<p>^aThe chemical index of the added protein shall be equal to at least 80% of that of the reference protein casein or the Protein Efficiency Ratio (PER) of the protein in the mixture shall be equal to at least 70% of that of the reference protein casein. In all cases, the addition of amino acids is permitted solely for the purpose of improving the nutritional value of the protein mixture, and only in the proportions necessary for that purpose. Only natural forms of L-amino acids should be used.</p> <p>^bIf the lipid content exceeds 0.8g/100kJ (3.3g/100kcal):</p> <ul style="list-style-type: none"> -the amount of linoleic acid (in the form of triglycerides=linoleates) shall not be less than 70 mg/100 kJ (300 mg/100 kcal) and shall not exceed 285 mg/100 kJ (1200 mg/100 kcal) - the amount of lauric acid shall not exceed 15% of the total lipid content; - the amount of myristic acid shall not exceed 15% of the total lipid content. 					

5.5 Consistency and particle size

5.5.1 When prepared according to the label directions for use, processed cereal-based foods shall be of a texture appropriate for the spoon feeding of older infants or young children of the age for which the product is intended.

5.5.2 Rusks and biscuits may be used in the dry form so as to permit and encourage chewing or they may be used in a liquid form, by mixing with water or other suitable liquid that would be similar in consistency to dry cereals.

5.6 Anti-nutritional factors

5.6.1 Processed cereal-based foods shall be processed such that they are practically free from anti-nutritional factors which may present a hazard to health or compromise nutrient absorption of the food.

5.6.2 When cassava is used, it shall not contain more than 10 mg/kg of cyanide.

5.6.3 When sorghum is used, tannin shall not be more than 0.3 %, m/m max.

5.6.4 When soybean is used, trypsin inhibitor shall not be more than 5 mg/g.

7 Specific prohibition

7.1 The product and its components shall not have been treated by ionizing radiation.

7.2 The use of partially hydrogenated fats for these products is prohibited.

8 Food additives

Food additives permitted in the preparation of processed cereal-based foods for older infants and young children shall be in accordance with CODEX STAN 192.

9 Contaminants

9.1 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 of the finished food ingredient do not remain or if technically unavoidable, are reduced to the maximum extent possible provided that the residual amounts do not impair the health of the infant and young children.

9.2 Heavy metals

Heavy metals in processed cereal-based foods for older infants and young children shall not exceed limits in Table 2 when tested in accordance with test methods specified therein.

Table 2 — Heavy metal limits in processed cereal-based foods for older infants and young children

S/N	Heavy metal	Maximum limit (mg/kg)	Test method
1.	Arsenic (As)	0.1	AOAC 952.13
2.	Lead (Pb)	0.2	ISO 6633
3.	Cadmium (Cd).	0.1	ISO 6561-1 ISO 6561-2

9.3 Mycotoxins

Mycotoxins in processed cereal-based foods for older infants and young children shall not exceed limits in Table 3 when tested in accordance with test methods specified therein.

Table 3 — Mycotoxin limits in processed cereal-based foods for older infants and young children

S/N	Mycotoxin	Maximum limit	Test method
1.	Total Aflatoxin, µg/kg	10	ISO 16050
2.	Aflatoxin B1, µg/kg	5	
3.	Fumonisin, mg/kg	2000	AOAC 2001.06

10 Hygiene

10.1 The processed cereal-based foods for older infants and young children shall be prepared and packaged in the premises built and maintained under hygienic condition in accordance with EAS 39.

10.2 The products shall not exceed microbiological limits specified in Table 4 when tested in accordance with test methods specified therein.

Table 4 — Microbiological limits for processed cereal-based foods for older infants and young children

Type of food	Type of organism	Maximum limit	Methods of test
Dried products ready for consumption	Coliform , cfu/g	20	ISO 4832

	<i>Salmonella spp per 25g</i>	absent	ISO 6579-1
	<i>Escherichia coli, cfu/g</i>	<10	ISO 7521
Dried and instant products for constitution without cooking	Coliform cfu/g	20	ISO 4832
	<i>Salmonella spp per 25g</i>	absent	ISO 6579-1
	<i>Escherichia coli cfu/g</i>	<10	ISO 7521
Dried products requiring cooking before consumption	Coliform cfu/g	10 ²	ISO 4832
	<i>Salmonella spp per 25g</i>	absent	ISO 6579-1
Products containing honey or maple syrup	<i>Clostridium botulinum</i> , per 25 g	absent	EAS 217-7

11 Packaging

11.1 The product shall be packaged in containers which will safeguard the hygienic and other qualities of the food.

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

12 Weights and measures

Processed cereal-based foods shall comply with the Weights and Measures Regulations of the respective Partner States.

13 Labelling

13.1 General

In addition to the requirements of EAS 38, the specific requirements in 13.2 – 13.8 shall apply and shall be legibly and indelibly marked.

13.2 Name of the product

13.2.1 The name of the product shall be "Cereal-based food"

13.2.2 Product categories shall be declared.

13.3 List of ingredients

13.3.1 A complete list of ingredients shall be declared on the label in descending order of proportion except that in the case of added vitamins and added minerals, these ingredients shall be arranged as separate groups for vitamins and minerals, respectively, and within these groups the vitamins and minerals need not be listed in descending order of proportion.

13.3.2 The specific name shall be declared for ingredients of animal or plant origin and for food additives. In addition, appropriate class names for these ingredients and additives may be included on the label.

13.4 Declaration of nutritive value

13.4.1 The declaration of nutrition information shall contain the following information in the following order:

- a) energy value, expressed in kilocalories (kcal) and kilojoules (kJ), and the amount of protein, carbohydrate and fat expressed in grams (g) per 100 g or 100 mL of the food as sold, and where appropriate, as per specified quantity of the food as suggested for consumption; and
- b) average amount of each vitamin and mineral for which specific levels are defined in Table 1, expressed in numerical form per 100 g or 100 mL of the food as sold and, where appropriate, as per specified quantity of the food as suggested for consumption; and

13.4.2 The labelling may bear the average amount of the vitamins and minerals when their declaration is not covered by the provisions of 13.4.1 b) expressed in numerical form per 100 g or 100 mL of the product as sold and, where appropriate, per specified quantity of the food as suggested for consumption

13.5 Date marking and storage instructions

13.5.1 The date of minimum durability (preceded by the words "best before") shall be declared by the day, month and year in un-coded numerical sequence except that for products with a shelf-life of more than three months, the month and year will suffice. The month may be indicated by letters. In the case of products requiring a declaration of month and year only, and the shelf-life of the product is valid to the end of a given year, the expression "end (stated year)" may be used as an alternative.

13.5.2 In addition to the date, any special conditions for the storage of the food shall be indicated if the validity of the date depends thereon.

13.5.3 Where practicable, storage instructions shall be in close proximity to the date marking.

13.6 Name and address

The name and address of the manufacturer, packer, distributor, importer, exporter, or vendor of the food shall be declared.

13.7 Country of origin

13.7.1 The country of origin of the food shall be declared.

13.7.2 When the food undergoes processing in a second country, which changes its nature, the latter country shall be considered the country of origin for the purpose of labelling.

13.8 Lot identification

Each container shall be embossed or otherwise permanently marked, in code or in clear, to identify the producing factory and the lot.

13.9 Information for use

13.9.1 Directions as to the preparation and use of the food, and its storage and keeping before and after the container has been opened, shall appear on the label and may also appear on the accompanying leaflet.

13.9.2 For products intended to be consumed with milk or formula, directions on the label shall state "Milk or formula but no water shall be used for dilution or mixing" or an equivalent statement.

13.9.3 When the product is composed of gluten-free ingredients and food additives, the label may show the statement "gluten-free".

13.9.4 The label shall have a statement warning against possible presence of allergens in relation to the ingredients used.

13.9.5 The label shall indicate clearly from which age the product is recommended for use. This age shall not be less than six months for any product. In addition, the label shall include a statement indicating that the decision when precisely to begin complementary feeding, including any exception to six months of age, should be made in consultation with a health worker, based on the individual infant's specific growth and development needs.

14 Sampling

Processed cereal-based foods for older infants and young children shall be sampled in accordance with EAS 900.

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