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ICS 67.060

DRAFT EAST AFRICAN STANDARD

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

EAST AFRICAN COMMUNITY

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Copyright notice

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*.

This fourth edition cancels and replaces the third edition (EAS 72: 2021), which has been technically revised.

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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 and young children as a complementary food and as part of diversified diet.

The standard excludes both fortified and unfortified composite flours as covered in EAS 1024, EAS 782 and EAS 741.

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 942.05, *Ash of animal feed*

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

AOAC 986.18, *Determination of Deoxynivalenol in wheat — Gas chromatographic 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 2001.06, *Total fumonisins in corn. Competitive direct enzyme-linked immunosorbent assay*

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

CODEX STAN 192, *General standard for food additives*

CODEX STAN 234, Recommended methods of analysis and sampling

EAS 38, *Labelling of pre-packaged foods — General requirements*

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

EAS 744, *Cassava and cassava products — Determination of total cyanogens — Enzymatic assay method*

EAS 900, *Cereals and pulses — Sampling*

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

ISO 4832, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms — Colony-count technique*

ISO 5506, *Soya bean products — Determination of urease activity*

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

ISO 6561-1, *Fruits, vegetables and derived products — Determination of cadmium content — Part 1: Method using graphite furnace atomic absorption spectrometry Fruits, vegetables and derived products — Determination of cadmium content — Part 1: Method using graphite furnace atomic absorption spectrometry*

ISO 6561-2, *Fruits, vegetables and derived products — Determination of cadmium content — Part 2: Method using flame atomic absorption spectrometry*

ISO 6579-1, *Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella — Part 1: Detection of Salmonella spp.*

ISO 6633, *Fruits, vegetables and derived products — Determination of lead content — Flameless atomic absorption spectrometric 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 8968-2, *Milk — Determination of nitrogen content — Part 2: Block-digestion method (Macro method)*

ISO 9648, *Sorghum — Determination of tannin content*

ISO 14902, *Animal feeding stuffs — Determination of trypsin inhibitor activity of soya products*

ISO 16050, *Foodstuffs — Determination of aflatoxin B1, and the total content of aflatoxins B1, B2, G1 and G2 in cereals, nuts and derived products — High-performance liquid chromatographic method*

ISO 16649-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli — Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide*

ISO/TS 17919, *Microbiology of the food chain — Polymerase chain reaction (PCR) for the detection of food-borne pathogens — Detection of botulinum type A, B, E and F neurotoxin-producing clostridia*

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*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
older infant
person from the age of six months and not more than 12 months

3.2
young children
person from the age of more than 12 months up to 36 months

3.3
complementary food
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 matter originating from food plants and/or their products other than the designated product

3.5
foreign matter
organic and inorganic materials (such as sand, soil, glass) other than extraneous matter in the designated product.

3.6
Cereal based foods;
food product prepared primarily from milled cereals such as wheat, rice, barley, oats, rye, maize, millet, finger millet, bulrush millet sorghum and buckwheat which should constitute at least 25 % of the final mixture on dry weight basis'

3.7
processed cereal based foods'
food product prepared primarily from one or more milled cereals

4 Product categories

The products are distinguished in four categories:

a) cereals which are or have to be prepared for consumption with milk or other suitable liquids;

b) cereals with an added high protein food which are or have to be prepared for consumption with water or other suitable protein-free liquid (e.g coconut water and liquids from other food products);

c) pasta which are to be used after cooking in boiling water or other suitable liquids; and

d) 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 which shall constitute not less than 25 % of the final mixture on dry weights basis.

5.2 Optional ingredients

Optional ingredients for preparing processed cereal based foods for older infants and young children shall comply with the relevant East African Standards. They may include the following:

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);

l) roots and tubers;

m) starches, including enzyme-modified starches and starches treated by physical means;

n) legumes and pulses;

o) nuts and oilseeds;

p) only L (+) lactic acid producing cultures;

q) fish;

r) banana; and

s) Vitamin and minerals

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;

c) have no rancid or musty odour or flavour; and

d) free from any living insects and foreign matter;

e) free from mold and objectionable colours

5.4 Specific requirements

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

Characteristic	Requirement				Test method
	Cereals which are or have to be prepared for consumption with milk or other suitable liquids	**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**	**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: 7 Products for further processing: 8.0	Products ready for use:7 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, %	N/A	6-15 of total energy	N/A	6-15 of total energy	ISO 20483
Added protein content [a], min.	N/A	0.48 g/100 kJ (2 g/100 kcal)	N/A	0.36 g/100 kJ (1.5 g/ 100 kcal)	ISO 8968-2
Added carbohydrates[c], %, max.		1.2 g/100 kJ (5 g/100 kcal);	N/A	1.8 g/100 kJ (7.5 g/100 kcal)	AOAC 995.13
Added fructose, max.	0.9 g/100 kJ (3.75 g/100 kcal)	0.6 g/100 kJ (2.5 g/100 kcal)	N/A	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]	N/A	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.	N/A	20 mg/100 kJ (80 mg/100 kcal)	N/A	12 mg/100 kJ (50 mg/100 kcal)	ISO 6869
Vitamin B1 (thiamin), min	12.5 µg/100 kJ (50 µg/100 kcal)	12.5µg/100 kJ (50 µg/100 kcal)	12.5 µg/100 kJ (50 µg/100 kcal)	12.5µg/100 kJ (50 µg/100 kcal)	AOAC 2015.002
Vitamin A (µg retinol equivalents)	14 - 43 µg/100 kJ (60 - 180 µg/100 kcal)	14 - 43 µg/100 kJ (60 - 180 µg/100 kcal)	14 - 43 µg/100kJ (60 -180 µg/100 kcal)	14 - 43 µg/100 kJ (60 - 180 µg/100 kcal)	ISO 20633
Vitamin D	0.25 - 0.75 µg/100 kj (1 - 3 µg/100 kcal)	0.25 - 0.75 µg/100 kj (1 - 3 µg/100 kcal)	0.25 - 0.75 µg/100 kJ (1 - 3 µg/100 kcal)	0.25 - 0.75 µg/100 kJ (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

a The 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.

b If the lipid content exceeds 0.8g/100kJ (3.3g/100kcal):

- 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.

[c] If sucrose, fructose, glucose syrup or honey are added to the product , the amount of added carbohydrates from these sources shall not exceed 5 g per 100 kcal.

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.

6 Specific prohibition

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

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

7 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.

8 Contaminants

8.1 Heavy metals

S/N	Heavy metal	Maximum limit (mg/kg)	Test method
i.	Lead	0.2	AOAC 999.11
ii.	cadmium	0.1	

8.2 Pesticide residues

Processed cereal-basedfoods shall comply with the maximum residue limit established by the codex Alimentarius commission for this commodity

8.3 Natural occurring toxin and anti-nutrient factors

8.3.1 If soya flour is used as a component of the processed cereal-based foods, urease activity shall not exceed 0.3 mg N/g/min (for trypsin inhibitor activity, 5 mg/g) when tested in accordance with ISO 5506.

8.3.2 If sorghum flour is used as a component of the processed cereal-based foods, the tannin contentshall not exceed 0.3 % by mass on a dry matter basis when tested in accordance with ISO 9648.

8.3.3 If cassava is used as a component of the processed cereal-based foods, the total hydrocyanic acid content shall not exceed 2 mg/kg, when tested in accordance with EAS 744.

8.4 Mycotoxins

Processed cereal-based foods shall conform to those permissible mycotoxin limits established in Table 3.

Table 3 — Permissible mycotoxin limits

S/N	Parameters	Limits	Methods of test
i.	Total aflatoxins (B1, B2, G1, and G2), µg/kg	5	RS ISO 16050
ii.	Aflatoxin B1, µg/kg	3	
iii.	Fumonisin, mg/kg	2	AOAC 2001.04
iv.	Ochratoxin A, µg/kg	5	RS ISO 15141-1
v.	Deoxynivalenol (DON), mg/kg	0.2	AOAC 986.18

10 Packaging

10.1 The product shall be packaged in food grade, material; which will safeguard the hygienic and other quality of the product.

10.2 Each package shall be securely closed and easily re-closable during use

11 Labelling

11.1 General

In addition to the requirements of EAS 38 and EAS 803, each package shall be legibly and indelibly marked with the following:

a) name of the product as Fortified processed Cereal Based Food;

b) type of fortificants;

c) a statement that this product is not breast-milk substitute ; and

d) serving/dosage instruction

12 Sampling

Sampling shall be done in accordance with the RS ISO 24333.

Annex A (informative)

Recommended levels of minerals and vitamins

Table A.1 —Recommended levels of minerals and vitamins

Nutrients	Units	Limits per 100kcl
Vitamin A	µg	60-225
Vitamin D3	µg	1-3
Vitamin E	mg	0.34-1.25
Vitamin K	µg	2.25-5
Vitamin B1	mg	min, 0.05
Vitamin B2	mg	min, 0.05
Niacinamide	mg	min, 0.56
Panthotenic Acid	mg	min, 0.19
Vitamin B6	mg	min, 0.05
Biotin	µg	min, 1.13
Folic acid	µg	min, 15
Vitamin B12	µg	min, 0.09
Vitamin C	mg	min, 3.75
Copper	mg	0.03 - 0.35
manganese	mg	min, 0.11
Iodine	µg	5.63 - 22
Iron	mg	0.83 - 7.5
Zinc	mg	0.53 - 2
Calcium	mg	min 80

Bibliography

EAS 72: 2021, Processed cereal-based foods for older infants and young children —Specification

