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FINAL DRAFT EAST AFRICAN STANDARD

Pasta products — 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 014 *Cereals, pulses and their derived products*.

This second edition cancels and replaces the first edition (EAS 173:2000), which has been technically revised.

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.

Introduction

Pasta is a very generic term used to describe a commonly consumed food group which encompasses noodles, spaghetti, macaroni and similar commodities.

These products have gained a fast popularity in catering and home uses. The manufacturing process for macaroni or spaghetti consists of the dough preparation from wheat and cold or lukewarm water, kneading process and extrusion through the extrusion press fitted with a die for the desired shape.

Pasta products — Specification

1 Scope

This Final Draft East African Standard specifies requirements, sampling and test methods for pasta products derived from wheat flour (*Triticum Durum*, *Triticum Aestivum*, *Triticum Compactum*) or any other suitable flour intended for human consumption.

This standard applies to pasta products such as macaroni, spaghetti, vermicelli, noodles, short-cut pasta, lasagna and similar products.

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.

CXS 192, *General standard for food additives*

CXS 193, *Codex general standard for contaminants and toxins in food and feed*

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 901, *Cereals and pulses — Test methods*

ISO 6579-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella spp.*

ISO 6888-1, *Microbiology of the food chain — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 1: Method using Baird-Parker agar medium*

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 21527-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0.95*

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

pasta

type of food typically made from an unleavened dough of wheat flour or any other suitable flour mixed with water with or without addition of eggs, and formed into different shapes

3.2

macaroni

variety of pasta traditionally shaped into narrow tubes produced in various shapes and sizes

3.3

spaghetti

long, thin, cylindrical, solid pasta products

3.4

vermicelli

traditional type of pasta similar to but thinner than spaghetti

3.5

noodles

types of pasta in the form of solid rods or folded ribbons

3.6

egg noodle

narrow strip of pasta with addition of eggs

3.7

lasagna

rectangular or ribbon shaped, thicker than tagliatelle, made from a dough based on flour and eggs, with numerous local variants

4 Product description

4.1 Macaroni

Macaroni may be of two types, namely long macaroni or cut macaroni, with the following characteristics:

- a) Long macaroni shall be in the form of tubular rods, smooth or corrugated. They shall have the outer diameter ranging between 2.5 mm and 7 mm and of wall thickness of about 1 mm with tolerance of ± 0.1 mm.
- b) Cut macaroni shall be obtained by extrusion and may be in the form of tubular elbows, shells, alphabets, numerals, stars, wheels, rings, rice, melon seeds etc.

4.2 Spaghetti

Spaghetti shall be in the form of solid rods of a minimum length of 250 mm and minimum diameter of 1.6 mm with tolerance of ± 0.1 mm.

4.3 Vermicelli

Vermicelli shall be in the form of solid rods of diameter between 250 mm and of diameter between 0.5 mm to 1.25 mm.

4.4 Folded vermicelli

They shall be in the form of folded rods of diameter between 0.5 mm to 1.25 mm.

4.5 Noodles

They shall be in the form of solid rods of minimum length 250 mm and diameter between 1.25 mm and 2.0 mm or ribbons of width from 1.5 mm to 15 mm and thickness ranging from 1.0 mm to 1.25 mm.

4.6 Folded noodles

They shall be in the form of folded ribbons of thickness ranging from 1.25 mm to 2.0 mm.

4.7 Short-cut pasta

They shall be products of various defined forms such as shells, stars and squares.

4.8 Lasagne

They shall be square or rectangular shaped pasta.

4.9 Egg pasta

Special type of pasta that contains eggs, vegetable products and the final products shall have the appearance of the characteristic added material such as yellow for egg pasta and green for spinach pasta.

The egg macaroni, egg spaghetti, egg noodles or egg alimentary pasta shall contain not less than 4 % egg yolk solids when tested in accordance with Annex C. The egg yolk solids shall be derived from whole egg or frozen egg yolk.

4.10 Instant noodle

The product shall be prepared from wheat flour and/or rice flour and/or other flours and/or starches as the main ingredient, with or without the addition of other ingredients. It may be treated by alkaline agents. It is characterized by the use of pre-gelatinization process and dehydration either by frying or by other methods.

5 Requirements

5.1 Ingredients

5.1.1 Essential ingredients

The following ingredients shall be used in the manufacture of pasta products and shall conform to the relevant Standards:

- a) durum semolina/wheat flour or any other suitable flour;
- b) water; and
- c) egg (only in the case of egg pasta).

5.1.2 Optional ingredients

In addition to the essential ingredients specified under 5.1.1, any of the following ingredients may be used in the manufacturer of pasta products in singly or in combination:

- a) milk;
- b) soya flour;

- c) vegetable or vegetable products;
- d) spices;
- e) gluten;
- f) edible oilseeds flour;
- g) edible common salt;
- h) fruit or fruit products (preserved, dehydrated or pulp); and
- i) rice.

5.2 General requirements

Pasta products shall:

- a) be smooth, translucent, hard, brittle and up to a point elastic and when broken the fracture shall appear glassy;
- b) possess a characteristic colour, taste and aroma;
- c) be clean, sound, wholesome and practically free from rodent or insect infestation or any foreign matter;
- d) retain their shapes and show no sign of disintegration and shall swell appreciably when plunged into vigorously boiling water and boiled in accordance with the time declared by the manufacture for each variety of the product; and
- e) retain its shape and a certain firmness and develop a clear characteristic odour of hard wheat and shall not become pasty when cooked.

5.3 Specific requirements

5.3.1 Pasta products shall also comply with the specific requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Specific requirements for pasta products

S/N	Characteristic	Requirement	Test method
i.	Total ash (on dry basis), % by mass, max.	1.0	EAS 901
ii.	Acid insoluble ash (on dry basis), % by mass, max.	0.2	Annex A
iii.	Total protein (N x 5.7) on dry basis), % by mass, min.	8.0	ISO 20483
iv.	Cooking test: Total solids in gruel, % by mass, max.	10	Annex B
v.	Fat acidity, mg NaOH/100 g, max.	80	ISO 7305
vi.	Moisture content, % m/m, max.	12	EAS 901

5.3.2 Instant noodles shall also comply with the specific requirements given in Table 2 when tested in accordance with the test methods specified therein.

Table 2 — Specific requirements for instant noodles

S/N	Characteristic	Requirement	Test method
i.	Moisture content fried noodle, % m/m, max.	10	EAS 901
ii.	Moisture content non-fried noodle	14	EAS 901
iii.	Acid value, mg NaOH/g, oil max. (fried noodle)	2	ISO 7305

6 Hygiene

6.1 Pasta products shall be produced and handled in accordance with EAS 39.

6.2 The products shall comply with the microbiological limits given in Table 3 when tested in accordance with the test methods specified therein.

Table 3 — Microbiological limits for pasta products

S/N	Microorganism	Requirement	Test method
i.	<i>Escherichia coli</i> , per g	Absent	ISO 16649-2
ii.	<i>Salmonella spp.</i> , per 25 g	Absent	ISO 6579-1
iii.	Yeasts and moulds, CFU/g, max.	10 ²	ISO 21527-2
iv.	<i>Staphylococcus aureus</i> , per g	Absent	ISO 6888-1

7 Food additives

Food additives when used in the preparation of pasta products shall comply with CXS 192.

8 Contaminants

8.1 Heavy metal contaminants

Pasta products shall comply with the heavy metal limits as specified in CXS 193.

8.2 Mycotoxins

Pasta products shall comply with the maximum limits for mycotoxins given in Table 4 when tested in accordance with the test methods specified therein.

Table 4 — Mycotoxin limits for pasta products

S/N	Contaminant	Limit	Test method
i.	Aflatoxin B1, µg/kg	5.0	EAS 901
ii.	Total aflatoxins, µg/kg	10.0	EAS 901

9 Packaging

Pasta products shall be packaged in food grade packaging material, which will safeguard the hygienic, nutritional, technological and organoleptic qualities of the products.

10 Labelling

In addition to the requirements given in EAS 38, the product shall be legibly and indelibly labelled with the following information:

- a) name of product in relation to the product description given in Clause 4;
- b) the word “spiced” on the label, if spices have been added;
- c) declaration of all ingredients on the label in descending order of proportions;
- d) name, physical location and address of the manufacturer;
- e) net content in metric units;
- f) date of manufacture;
- g) batch number;
- h) expiry date;
- i) country of origin;
- j) cooking/use instructions;
- k) allergen declaration, if any; and
- l) instruction for the disposal of packaging materials.

11 Sampling

Sampling of pasta products shall be done in accordance with EAS 900.

Annex A (normative)

Determination of acid insoluble ash

A.1 Apparatus

A.1.1 Furnace, capable of maintaining temperature at $600\text{ }^{\circ}\text{C} \pm 20\text{ }^{\circ}\text{C}$

A.1.2 Crucible

A.1.3 Analytical balance, capable of weighing to an accuracy of $\pm 0.01\text{ g}$

A.1.4 Desiccator

A.1.5 Whatman filter paper No 42, or its equivalent

A.2 Reagents

Dilute hydrochloric acid, approximately 5 N prepared by diluting concentrated hydrochloric acid with distilled water

A.3 Procedure

To the ash contained in the dish add 25 ml of dilute hydrochloric acid, cover with watch- glass and heat on water-bath for 10 min. Allow to cool, filter the contents of the dish through Whatman filter paper No. 42 or its equivalent. Wash the filter paper until the washings are free from the acid and return it to the dish. Keep it in an air-oven maintained at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for about 3 h. With the flame of a suitable burner complete the ashing in a muffle furnace at $600\text{ }^{\circ}\text{C} \pm 20\text{ }^{\circ}\text{C}$ for 1 h. Cool the dish in a desiccator and weigh. Heat again at $600\text{ }^{\circ}\text{C} \pm 20\text{ }^{\circ}\text{C}$ in the muffle furnace for 30 min. Cool the dish in the desiccator and weigh. Repeat the process of heating for 30 min, cooling and weighing till the difference in mass between the successive weighing's is less than one milligram. Note the lowest mass.

A.4 Calculation

Acid insoluble ash (on dry basis) expressed as percent by mass shall be calculated using the formula below:

$$\frac{100 (M_2 - M_1)}{M_1 - M}$$

where

M_2 is the mass, in grams, of the dish with acid insoluble ash;

M is the mass, in grams, of the empty dish; and

M_1 is the mass, in grams, of the dish with the dried material.

Annex B

(normative)

Determination of total solids in gruel

B.1 Apparatus

B.1.1 Lipless beaker, tall-form, of capacity 500 mL

B.1.2 Oil bath

B.1.3 Electric heater

B.2 Procedure

B.2.1 Take 250 ml water in the lipless beaker and heat over an oil bath kept at about 102 °C by electric heating. Introduce exactly 25 g of the pasta product (previously) broken into 10 mm lengths in case of long pasta products and cook at a constant temperature of about 98 °C at sea level with occasional stirring.

B.2.2 The cooking time required by this apparatus is on an average 2 min more than that recommended on the package (i.e. more than that required with free boiling water). The cooked pasta should be allowed to drain for 5 min and the volume of gruel collected measured. Pipette out 20 ml of the gruel, after stirring well to a tarred petri dish and evaporate to dryness on a water-bath. Transfer the petri dish and evaporate to dryness on a water-bath. Transfer the petri dish to a hot air-oven maintained at 105 °C ± 2 °C and dry to constant mass.

B.3 Calculation

Total solids in gruel expressed as percent by mass shall be calculated using the formula below:

$$\frac{(M_2 - M_1)V}{5}$$

where

M_2 is the mass, in grams, of petri dish with total solids per cent in 20 mL of gruel;

M_1 is the mass, in grams, of empty petri dish; and

V is the volume, in millilitres, of gruel.

Annex C (normative)

Determination of egg yolk solids

C.1 Preparation of sample

Grind in pestle and mortar about 30 g of the material so that at least 90 % passes through 425 micro sieve. Transfer this prepared sample to a well-stoppered glass bottle for use.

C.2 Procedure

C.2.1 Reflux 100 g sample in a Soxhlet apparatus using 100 cm³ pure methanol for 2 h. Decant and add a further 100 cm³ pure methanol fractions. Evaporate to dryness. Carry out a phosphorus determination as detailed below.

C.2.2 Phosphorus determination, weigh 0.05 g of sample into a platinum dish. Add 5 cm³ of analytical grade chloroform. Add 8 cm³ of 4 % alcoholic potash and evaporate to dryness in an oven held at 105 °C. Char using an Argand burner and then ash at dull red heat in a muffle furnace. When the dish has cooled, add 5 cm³ concentrated hydrochloric acid and evaporate to dryness. Extract the residue with 10-cm³ mL hydrochloric acid. Filter through a Whatman No. 54 grade filter paper into a 100 cm³ graduated flask. Wash any residue well with hot distilled water. Neutralize with normal sodium hydroxide using phenolphthalein as indicator. Make to the mark with distilled water.

Take a sufficient volume by pipette of the prepared solution containing 5 mg to 5 mg phosphorus and transfer to a stout boiling tube.

The total volume should be 5 cm³, if lower than this add distilled water. Add, by fast running pipette, 1 cm³ 10 M sulphuric acid 1 cm³ 2.5 % ammonium molybdate and 1 cm³ 20 % potassium iodide solution (containing 0.5 % sodium carbonate). Swirl stopper with a glass ball and hold in a boiling water bath for 15 min. Remove and cool in an ice bath.

Add sufficient freshly prepared 0.5 % sodium sulphate to remove the iodine colour and to give a light excess. Transfer solution and make up to 50 cm³ in a graduated flask (or smaller volume if found necessary). Measure the colour strength of the solution when held in a 1-cm glass cell using 14 and 608 filters on the Spekker Absorptiometer. Carry out a check on the Absorption meter using distilled water in the cell. Calculate the phosphorus content by reference to the reference curve for a standard phosphorus solution.

This solution can be prepared by dissolving 4.388 g analytical grade potassium dihydrogen phosphate in distilled water, adding 2 cm³ in graduated flask. The solution contains 1 000 µg phosphorus/cm³, lower concentrations can be obtained by dilution. For comparison purposes, in a series of tests 1 µg phosphorus/cm³ gave a Spekker Absorptiometer of 0.285.

C.3 Calculation

Egg yolk solids expressed as percent by mass shall be calculated using the formula below:

$$P_2O_5 \times 56$$

Bibliography

EAS 173:2000, *Pasta products — Specification*

