



DRAFT EAST AFRICAN STANDARD

Prepackaged cooked beans — 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.

In order to achieve this objective, the Community established an East African Standards Committee mandated to develop and issue East African Standards.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. 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 procedures of the Community.

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.

Introduction

Cooked beans are prepared by heating threshed field and garden beans, whole, or broken, and split seed obtained from different variety of *Phaseolus* spp commonly used for edible purpose.

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Prepackaged cooked beans — Specification

1. Scope

This draft East African Standard specifies the requirements, sampling and test methods for prepacked cooked beans obtained from different varieties of *Phaseolus* spp intended for human consumption.

2. Normative references

The following referenced documents are indispensable for the application 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.

EAS 46, Dry beans — Specification

EAS Biofortified dry beans- Specification

EAS Mixed beans - Specification

AOAC 999.11, Determination of Lead, Cadmium, Copper, Iron, and Zinc in Foods, Atomic

Absorption Spectrophotometry after Dry Ashing

CXS 193, General standard for contaminants and toxins in food and feed

EAS 805 Guidelines for nutrition and health claims.

EAS 38, Labelling of pre-packaged foods — Specification

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

EAS 900, Cereals and pulses — Sampling

EAS 901, Cereals and pulses — Test methods

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 11085, Cereals, cereals-based products and animal feeding stuffs — Determination of crude fat and total fat content by the Randall extraction method

ISO 20483, Cereals and pulses — Determination of the nitrogen content and calculation of the crude protein content — Kjeldahl method

ISO 21527-1, Microbiology of food and animal feedstuffs — Horizontal method for the enumeration of yeasts and moulds — Part 1: Colony count technique in products with water activity greater than or equal to 0.95

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 16050:2003)

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

3.0 Terms and definitions

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

3.1

dry beans

dry threshed field and garden beans, whole, or broken, and split, seed obtained from different variety of *Phaseolus* spp commonly used for edible purpose.

3.2

prepackaged cooked beans

beans which have been subjected to heat but not limited to boiling, steaming and packed in food grade packaging materials

3.3

drained weight

weight of the contents of the container after draining according to the procedure set out in annex A.

3.4

food grade packaging material

material made of substances which are safe and suitable for their intended use and which will not impart any toxic substance or undesirable odour or flavor to the product.

3.5

loose skin

skin or portions of a skin which have become separated wholly from the cotyledons;

3.6

broken

cotyledon or portions of a cotyledon which have become separated; or a bean or portions of a bean with the skin or portions of the skin missing;

3.7

Mashed beans

bean that is crushed or flattened to the extent that the appearance is seriously affected;

3.8

Blemished beans

bean that is affected or damaged by any means to the extent that its appearance or eating quality is adversely affected;

3.9

severely blemished beans

beans which are spotted, discoloured or otherwise blemished to an extent that the appearance or eating quality is seriously affected; these shall include worm eaten beans.

3.10

extraneous matter

organic and inorganic materials other than cooked beans or any optional ingredients used.

3.11 biofortified beans

beans that nutrient content (mainly iron and zinc) has been improved through agronomic practices, convectional breeding or biotechnology.

3.12 mixed dry beans

dry beans that consist of a mixture of same size groups, different colour and shape groups irrespective of their varieties

3.13

objectional odour

a distinct odour e.g musty, rotten, putrid, rancid, gamey or pungent

4 Requirements

4.1 Ingredients

4.1.1 Essential ingredients

The following ingredients shall be used in the preparation of prepackaged cooked beans and shall conform to the relevant East African standards:

- a) Dry beans,/mixed dry beans /bio fortified beans ; and
- b) Potable water

4.1.2 Optional ingredients

In addition to the essential ingredients in 4.1.1, the following ingredients but not limited to, may be used in the making of prepackaged cooked beans and shall comply with relevant East African standards;

- a) Sweetening ingredients - sucrose, invert sugar, dextrose, glucose syrup;
- b) Tomato paste/puree ;
- c) Aromatic plants, spices or extracts thereof;
- d) Cheese;
- e) Cooking oil;
- f) Dried vegetables;
- g) Fortified edible salt; and
- h) Starch thickening agent

4.2 General requirements

Prepackaged cooked beans shall:

- a) be free of off flavors and objectional odours;
- b) be free from insects, worms, filth, fungi and extraneous matter;
- c) have uniform texture;
- d) be practically free from hard beans, mushy beans, and beans with tough skins;
- e) be well cooked, slightly soft or slightly firm; and their skins shall be tender; and
- f) be well cooked, slightly soft and firm; and their skins shall be tender.

4.3 Specific requirements

4.3.1 Prepackaged cooked beans shall comply with the requirements specified in Table 1 when tested in accordance with test methods specified therein.

Table 1 — Specific requirements for prepackaged cooked beans

S/N	Parameter	Requirements	Test methods
i.	Total soluble solid in sauce, Brix, min	2 [6 max]	Annex D
ii.	Salt content (as sodium chloride), % m/m max	1.2	Annex C
iii.	Drained weight, % of net weight min	65 [80]	Annex A
iv.	pH	5-6	Annex E

4.3.2 For prepackaged cooked bio fortified beans, the levels of iron and zinc shall comply with the limits specified in Table 2 when tested in accordance with test methods specified therein

Table 2 — Requirements for Prepackaged cooked bio fortified beans

S/N	Characteristic	Target limits (mg/kg)	Test Method
1	Iron, min	60	AOAC 944.02
2	Zinc	26 – 43	AOAC 2011.14

4.3.3 Defects and tolerances

Prepackaged cooked beans shall not exceed limits sets for common defects as defined in Table 3.

Table 3 — Classification of “defects”

S/N	Defects	Maximum limits (based on weight of drained beans)	Test method
1.	Blemished beans %m/m	2	EAS 901
2.	Severely blemished beans	2	
3.	Bean fragments	10	
4.	Extraneous plant material	0.5	
5.	Total defects	10	
6.	Minimum fill of container	The container shall be filled with beans and the product (including packing medium) shall occupy not less than 90% of the water Capacity of the container. The water capacity of the container is the volume of water at room temperature which the sealed container will hold when completely filled (see annex B).	Annex B

		A container that fails to meet the requirement for minimum fill (90 per cent container capacity) of 3.6 shall be considered as fail	
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NOTE 1: The parameter, Total defective grains is not the sum total of the individual defects. It is limited to 70 % of the sum total of individual defects.

5.0 Hygiene

5.1 Prepackaged cooked beans shall be manufactured and handled in accordance with EAS 39.

5.2 Prepackaged cooked beans shall comply with the microbiological requirements specified in Table 4.

Table 4 — Microbiological limits for prepackaged cooked beans

S/N	Micro-organism	Limits	Test method
i.	<i>E .coli</i> , CFU/g	Absent	ISO 16649-2
ii.	<i>Salmonella</i> , spp, per 25g	Absent	ISO 6579-1
iii.	Yeasts and moulds, CFU/g, max	10 ²	ISO 21527-2
iv.	<i>Clostridium botulinum</i> , CFU/g	Absent	ISO 7937

6.0 Food additives

Food additives which may be used in the preparation of prepackaged cooked beans shall comply with CODEX STAN 192.

7.0 Contaminants

Prepackaged cooked beans shall comply with the maximum levels of contaminants and Toxins in Food as stipulated in Table 5 when tested with test methods specified therein.

Table 5 — Maximum limits for heavy metal in prepackaged cooked beans

S/N	Heavy metal	Maximum limits(mg/kg)	Test method
i.	Cadmium	0.1	AOAC 999.11
ii.	Lead	0.1	
iii.	Tin ^a	250	

^a For canned cooked beans

8 Packaging

Prepackaged cooked beans shall be packaged in food grade materials that will safeguard the hygienic, nutritional and organoleptic qualities of the product.

9 Labelling

9.1 The following specific labelling requirements shall apply and shall be legibly and indelibly marked in accordance with the requirements of EAS 38;

- a. Name of the product “Cooked beans”; “cooked mixed beans”, “cooked biofortified beans”;
- b. declaration of micronutrient contents, if bio fortified beans have been used;
- c. name, and physical address of the manufacturer/ distributor and /or trade name/ brand name;
- d. date of manufacture;
- e. lot identification;
- f. expiry date;
- g. country of origin;
- h. the net weight in metric units;
- i. the statement ‘Human Food’ shall appear on the package;
- j. storage instructions; and
- k. Instructions on disposal of used package.
- l. Instruction for use
- m. declaration of genetic modified organism, if the product is derived from GMO raw materials
- n. declaration of allergens, if any

9.2 When labelling non-retail packages, information for non-retail packages shall either be given on the packages or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer or packer shall appear on the packages.

10 Sampling

Sampling of cooked beans shall be done in accordance with EAS 900.

Annex A (normative)
Determination of drained weight

A.1 Definition

Drained weight expresses percentage of solid content as determined by the procedure described below

A.2 Apparatus

A sieve 20 cm (check) in diameter. The meshes of such sieves are made by so weaving wire as to form square openings of 2.8 mm by 2.8 mm.

A.3 Procedure

Carefully weigh the clean and dry sieve. Weigh the container plus the contents. Empty the contents of the container into the sieve taking care to distribute the beans evenly. Without shifting the product, incline the sieve at an angle of approximately 17° to 20° to facilitate drainage. Drain the product for two minutes and then weigh the sieve plus the product. Weigh the dry empty container

A.4 Calculation

Drained weight, as per cent of net weight $=x = \frac{100(M1 - M)}{M3 - M2}$

Where,

M is the weight, in Grams, of the sieve:

M1 is the weight, in grams, of the sieve with the product:

M2 is the weight, in grams, of the empty container;

M3 is the weight, in grams, of the container with the contents

Annex B (normative)

Determination of water capacity of containers

B.1 Scope

B.1.1 This method applies to metals and glass containers

B.2 Definitions

The water capacity of a container is the volume of water at room temperature which the sealed container will hold when completely filled.

B.3 Procedures

B.3.1 Metal containers

B.3.1.1 Select a container which is undamaged in all respects

B.3.1.2 Wash, dry and weigh the empty container after cutting out the lid without removing or altering the height of the double seam.

B.3.1.3 Fill the container with water at room temperature to 4.8 mm vertical distance below the top level of the container, and weigh the container thus filled.

B.3.2 Glass containers

B.3.2.1 Select a container which is undamaged in all aspects

B.3.2.2 Fill the container with water at room temperature to the level of the top thereof, and weigh the container thus filled

B.4 Calculation

B.4.1 Metal containers

Subtract the weight found in B.3.1.2 from the weight found in B.3.1.3. The difference shall be considered to be the weight of water required to fill the container. Results are expressed as millilitres of water.

B.4.2 Glass containers

Subtract the weight found in B.3.2.2 from the weight found in B.3.2.3. The difference shall be considered to be the weight of water required to fill the container. Results are expressed as millilitres of water.

Annex C (normative)

Determination of salt content as sodium chloride

C.1 Scope

This method determines the content of chlorides

C.2 Definition

The chloride content corresponds to the sum of all anions (halides) calculated as sodium chloride precipitable with silver ions in a nitric acid solution.

C.3 Principle

Quantitative precipitation of the halides extracted from the ash in a nitric acid solution with AgNO_3 in excess. Back titration of the surplus AgNO_3 with ammonium thiocyanate, using ferric alum (ferric ammonium sulphate) as the indicator.

C.4 Reagents

C.4.1 Distilled or demineralized water

C.4.2 AgNO_3 solution, 0.1 N (16.9888 g AgNO_3)

C.4.3 NH_4SCN solution, 0.1 N (7.6113 g NH_4SCN). In practice a slightly higher weight is taken and the solution is adjusted by dilution against a 0.1 N AgNO_3 solution.

C.4.4 Cold saturated $\text{NH}_4\text{Fe}(\text{SO}_4) \cdot 2.12\text{H}_2\text{O}$ solution (approximately 40 %). The ensuing brown colouring is eliminated by adding pure nitric acid drop wise.

C.4.5 HNO_3 (approximately 30 %)

C.4.6 Diethyl ether of nitrobenzene

C.5 Apparatus

C.5.1 Measuring flask, 100 ml

C.5.2 Burette, 50 ml

C.5.3 Erlenmeyer flask, 200 ml

C.5.4 Pipettes

C.5.5 Funnel, filtering paper

C.6 Procedure

The ash (residue after carbonization and incineration of the beans at a maximum temperature of 550 °C in a muffle furnace) obtained from 1 g – 2 g dry matter is extracted by means of 80 ml – 90 ml hot distilled water acidified with a few drops of nitric acid. The washings are filtered off into a 100 ml measuring flask; after cooling distilled water is added until the mark is reached (stock solution). In proportion to the expected chloride content aliquot part of this solution, which should preferably contain 50mg – 100 mg NaCl, taken off, distilled water being added to obtain a quantity of approximately 100 ml Subsequently 5 ml ferric alum solution (see C.4.4), 20 ml 0.1 N AgNO_3 solution (see C.4.2) and 5 ml – 10 ml ether

or 1 ml nitrobenzene are added; titration is carried out by means of an ammonium thiocyanate solution 0.1 N (see C.4.3), until the red coloring remains after stirring.

C.7 Expression of results

Report in percentage by weight to one decimal place.

$$\text{Sodium Chloride content} = x = \frac{5.56(V_2 - v_3) \times V \times 100}{V_1 \times P}$$

where,

P is the test portion, in mg, incinerated;

V is the ml of the stock solution derived from the ash;

V_1 is the volume, in ml, stock solution used from titration;

V_2 is the volume, in ml, AgNO_3 added;

V_3 is the volume, in ml, NH_4SCN necessary for back titration.

Annex D (normative)
Determination of soluble solids (Brix)

D.1 Definition

Determination of Total Soluble Solids (Brix)

D.2 Scope

All range of products with aqueous solution

D.3 Apparatus

D.4 Procedure

D.4.1 Adjust the temperature of the sample to room temperature

D.4.2 Open the cover (day light plate) at the refracting prism of the refractometer.

D.4.3 Stir the samples thoroughly and wet the surface of the prism.

D.4.4 Cover the prism with the day light plate.

D.4.5 Look through the eyepiece at the opposite end of the refracting prism directly under the light source.

D.4.6 Focus the eyepiece by turning the adjustment knob until a clear reading and a boundary line is seen.

D.4.7 Record the reading.

D.4.8 Flush the prism surface with distilled water.

D.4.9 Dry the surface with soft tissue.

D.5 Reference

Atago Hand Refractometer N Types Series Instruction Manual

Annex E Determination of pH

E.1 Apparatus

E.1.1 pH Meter

E.1.2 Standard buffer solutions

E.1.3 Beaker

E.2 Procedures

E.2.1 Standardization of pH Meter

1. Switch on the instrument and let the electronic component to warm up and stabilize before proceeding.
2. Standardize the instrument according to manufacturer's instructions by using the standard buffer solution (B. 1. 2)
3. Rinse the electrode and blot.

E.2.2 Preparation of test sample.

1. Open the container containing sample
2. Blend the sample to ensure it is homogenous.

E.2.3 Determination of pH of the sample

1. Pour sufficient amount of the sample in beaker (B. 1.3), 10 – 20 ml of distilled water may be added if necessary.
2. Immerse the electrode inside the beaker containing test product and read pH.
3. Let the meter to stabilize for at least 1 min before taking readings.
4. Rinse and blot the electrode and repeat on fresh portion of the test product.

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