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Cooked beans — Specification

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In order to match with technological development and to keep continuous progress in industries, standards are subject to periodic review. Users shall ascertain that they are in possession of the latest edition

Rwanda Standards Board

P.O Box 7099 Kigali-Rwanda

KK 15 Rd, 49

Tel. +250 252 586103/582945

Toll Free: 3250

E-mail: info@rsb.gov.rw

Website: www.rsb.gov.rw

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS149 was prepared by Technical Committee RBS/TC 003, *Cereals, Pulses, Legumes derived Products.*

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

1) CODEX STAN. 16-1981*, Recommended international Standard for Canned Green Beans and Canned Wax Beans.*

2) IS 9790: 1981, *Specification for canned fresh beans*

3) MS 998:1986, *Canned Beans - Specification*

4) MS 997:2009, *Canned baked beans in tomato sauce – specification*

The assistance derived from the above source is hereby acknowledged with thanks.

This second edition cancels and replaces the first edition (RS 149:2012) which has been technically revised.

Committee membership

The following organizations were represented on the Technical Committee on Cereals, pulses, legumes and cereal products (RSB/TC 003) in the preparation of this standard.

ADMA International Ltd

FARMFRESH Ltd

Lamane Bakery

Rwanda Agriculture Board

SIMBA Supermarket

SOSOMA Industries

Rwanda Standards Board (RSB) – Secretariat

Cooked beans — Specification

1 Scope

This Draft Rwanda Standard specifies the requirements, sampling and test methods for cooked beans.

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.

CODEX STAN 171, *Codex standard for certain pulses*

CODEX STAN *193, Codex general Standard for Contaminants and Toxins in Food and Feed*

EAS 901, *Cereals and pulses —Test methods*

ISO 16050*, Foodstuffs — Determination of aflatoxin B1, and the total content of aflatoxins B1, B2, G1 and G2in 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 5498, *Agricultural food products — Determination of crude fibre content — General method*

RS 288, *Mixed beans —Specification*

RS 295, *Dry beans —Specification*

RS 362, *Fish flour—Specification*

RS CAC/RCP 1, *Code of practice – General principles of food hygiene*.

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

RS EAS 12, *Potable water –Specification*

RS EAS 35, *Fortified edible salt* —Specification

RS EAS 38, *Labelling of Prepackaged foods and prepared foods*

RS 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*

RS ISO 24333*, Cereals and cereal products — Sampling*

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

3 Terms and definitions

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

drained weight

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

3.3

food grade material

material that is free from substances that are hazardous to human health and may be permitted to come in contact with food.

3.4

loose skin

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

3.5

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;

3.6

mashed

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

3.7

blemished

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

3.8

extraneous vegetable material

vegetable material common to the bean plant or other plants that is harmless upon eating and includes, but is not limited to, peas, lentils, cereal grains and corn.

4 Requirements

4.1 Raw materials

The following materials used in the preparation of Cooked packaged beans shall conform to the relevant standards:

a) Dry beans, mixed beans and iron bio-fortified beans conforming to RS 295, RS 288 and DRS 350 respectively; and

b) Potable water conforming to RS EAS 12.

4.2 Optional ingredients

In addition, the following optional ingredients if used shall conform to the relevant standards:

a) Sweetening ingredients - sucrose, invert sugar, dextrose, glucose syrup;

b) Tomato paste/puree RS EAS 66-3;

c) Aromatic plants, spices or extracts thereof;

d) Cheese;

e) Cooking oil;

f) Fish flour conforming to RS 362;

g) Dried vegetables; and

h) Fortified edible salt conforming to RS EAS 35.

4.3 General requirements

Cooked packaged beans shall:

a) be practically free from extraneous matter;

b) be free of off flavours and odours;

c) be practically free from any insects;

d) be safe and suitable for human consumption;

e) have uniform texture;

f) be practically free from hard beans, mushy beans, and beans with tough skins;

g) be well cooked, slightly soft or slightly firm; and their skins shall be tender;and

h) be homogeneous in color and shape of food.

4.4 Process requirements

The filled containers or retortable pouches shall be exhausted, sealed and sufficiently processed by heat to a scheduled temperature and time to ensure commercial sterility.

4.5 Specific requirements

4.5.1 Cooked packaged beans shall comply with the requirements specified in Table 1 when tested in accordance with test methods specified therein.

Table 1 — Specific requirements for cooked beans

S/N	Parameter	Requirements	Methods of test
i.	Total soluble solid in sauce, Brix, min	12	Annex D
ii.	Salt content (as sodium chloride), % w/w max	1.2	Annex C
iii.	Drained weight, % of net weight min	65	Annex A
iv.	pH	5-6	

4.5.2 For cooked iron bio fortified beans, the levels of iron shall not exceed the limits in Table 2.

Table 2—Iron content in cooked bio fortified beans

S/N	Parameter	Requirement(mg/kg)	Test method
i.	Class 1	≥90	AOAC 999.10

ii.	Class 2	<90 ≥80	
iii.	Class 3	<80 ≥60	

4.6 Defects and tolerances

Cooked beans shall be reasonably free from defects and within the limit set forth herein for common defects as defined in Table 3. A container or product shall be considered as defective' when it fails to meet one or more of the applicable quality requirements in colour, flavour and texture.

Table 3 — Classification of "defects"

S/N	Defects	Maximum limits (based on weight of drained beans)	Test method
1.	Blemished beans (beans which are slightly stained or spotted)	2 % w/w	EAS 901
2.	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)	2 % w/w	
3.	Bean fragments (portions of beans: separated or individual cotyledons; mashed, partial or broken cotyledons; and loose skins)	10 % w/w	
4.	Extraneous plant material (any vine or leaf or pod material from the bean plant, or other plant material)	0.5 % w/w	
5.	Total of the foregoing defects	12 % w/w	
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	

4.7 Microbiological requirements

Cooked beans shall comply with the microbiological requirements specified in Table 4.

Table 4 — Microbiological limits for Cooked beans

S/N	Micro-organism	Maximum limits	Test method
I.	*E .coli, CFU/g*	Absent	ISO 16649-2
II.	*Salmonella, ssp, CFU/ 25g*	Absent	RS ISO 6579-1
III.	*Yeasts and moulds, CFU/g*	10^2	RS ISO 21527-2
IV.	*Clostridium botulinum, CFU/g*	Absent	RS ISO 7937

5 Food additives

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

6 Contaminants

6.1 Pesticide residues

Cooked packaged beans shall conform to maximum residue limits for pesticide residues established by the Codex Alimentarius Commission for this commodity.

6.2 Other contaminants

Cooked beans shall comply with the maximum levels of contaminants and Toxins in Food as stipulated in CODEX STAN 193.

7 Hygiene

Cooked beans shall be prepared and handled in a hygienic manner in accordance with RS CAC/RCP 1

8 Packaging

Cooked beans shall be packaged in food grade materials made of substances which are safe and suitable for their intended use and which will not impart any toxic substance or undesirable odour or flavour to the product.

9 Weights and measures

Cooked beans shall be packaged in accordance with the Weights and Measures requirements.

10 Labelling

10.1 In addition to the requirements of RS EAS 38, the following requirements shall apply and shall be legibly and indelibly marked:

i) Name of the product “Cooked beans”; “cooked mixed beans”, “cooked iron-biofortified beans”;

j) declaration of iron content, if iron bio fortified beans have been used;

k) name, and physical address of the manufacturer/ distributor and /or trade name/ brand name;

l) date of manufacture;

m) lot identification;

n) expiry date;

o) country of origin;

p) the net weight in metric units;

q) the statement ‘Human Food’ shall appear on the package;

r) storage instructions; and

s) Instructions on disposal of used package.

10.2 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.

11 Sampling

Sampling of cooked beans shall be done in accordance with RS ISO 24333.

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 maize 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 =

$$= \frac{100(\mathrm{M1} - \mathrm{m°})}{\mathrm{M3} - \mathrm{M2}}$$

Where,

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

M_1 is the weight, in grams, of the sieve with the product:

M_2 is the weight, in grams, of the empty container;

M_3 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 filed.

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 militres 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 millitres of water.

Annex C
(normative)

Determination of sodium chloride content

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 AgNO3 solution, 0.1 N (16.9888 g AgNO3)

C.4.3 NH4SCN solution, 0.1 N (7.6113 g NH4SCN). In practice a slightly higher weight is taken and the solution is adjusted by dilution against a 0.1 N AgNO3 solution.

C.4.4 Cold saturated NH4Fe (SO4) 2.12H2O solution (approximately 40 %). The ensuing brown colouring is eliminated by adding pure nitric acid drop wise.

C.4.5 HNO3 (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 potato crisp 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 distilledwater 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 mlSubsequently 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 mlether or 1 ml nitrobenzene are added; titration is carried out by means of an ammonium thiocyanate solution0.1 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.

$$\text{Chloride content} = \frac{5.56(V2 - V3) * V * 100}{V1 * P}$$

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

Sieve No. 8 (model: BS410) 2.36 mmin diameter

Analytical balance, capable of weighing to the nearest 0.001 g.

Tin opener

Stainless steel tray

Spoon

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

At ago Hand Refractometer N Types Series Instruction Manual

ICS 67.230