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**Ready-to-eat puffed cereals —  
Specification**

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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.

DRS 445 was prepared by Technical Committee RSB/TC 003, *Cereals, pulses, legumes and derived products*.

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

- 1) IS 12566:1989, *Ready-to-eat extruded snacks— Specification*
- 2) PNS/BFAD 22: 2010, *Fried corn snacks (Chichacorn) — Specification*
- 3) KS 523-2:2015, *Breakfast cereals — Specification —Part 2: Flaked / puffed cereals (ready to eat)*.

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

## Committee membership

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

ADMA International

Africa Improved Food (AIF)

MANOSALIWA Food Industries Ltd

Ministry of Agriculture and Animal Resources (MINAGRI)

National Industrial Research and Development Agency (NIRDA)

Radisson Blu Hotel and Convention Centre

Rwanda Consumer's Rights Protection Organization (ADECOR)

SOSOMA Industries

University of Rwanda, College of Agriculture, Animal Science and Veterinary Medicine (UR-CAVM)

ZIMA Enterprise

Rwanda Standards Board (RSB) – Secretariat

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# Ready-to-eat puffed cereals — Specification

## 1 Scope

This Draft Rwanda Standard specifies the requirements, sampling and test methods for ready-to-eat puffed cereals intended for human consumption.

This standard does not apply to popcorn.

## 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 2001.04, *Determination of Fumonisin B-1 and B-2 in Corn and Corn Flakes by Liquid Chromatography with Immunoaffinity*

AOAC 952.13, *Arsenic in food. Silver diethyldithiocarbamate method*

AOAC 999.10, *Official Method Lead, Cadmium, Zinc, Copper, and Iron in Foods Atomic Absorption Spectrophotometry after Microwave Digestion*

ISO 729, *Oilseeds — Determination of acidity of oils*

RS CAC/RCP 1, *General principles for food hygiene— Code of practice*

RS CODEX STAN 192, *General standard for food additives*

RS EAS 1, *Wheat flour— Specification*

RS EAS 128, *Milled rice— Specification*

RS EAS 321, *Edible fats and oils — Specification*

RS EAS 35, *Fortified food grade salt — Specification'*

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

RS EAS 44, *Milled maize (corn) products — Specification*

RS EAS 740, *Cassava flour— Specification*

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

RS EAS 803, *Nutrition labelling — Requirements*

RS EAS 804, *Claims on foods — General requirements*

RS EAS 805, *Use of nutrition and health claims — Requirements*

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

RS 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*

RS 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*

RS ISO 1738, *Butter — Determination of salt content*

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 3960, *Animal and vegetable fats and oils — Determination of peroxide value — Iodometric (visual) endpoint determination*

RS ISO 4833-1, *Microbiology of the food chain — Horizontal method for the enumeration of microorganisms — Part 1: Colony count at 30 °C by the pour plate technique*

RS ISO 5498, *Agricultural food products — Determination crude fibre Content-General method*

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

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

RS ISO 6540, *Maize — Determination of moisture content (on milled grains and on whole grains)*

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*

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

RS ISO 9648, *Sorghum — Determination of tannin content*



### 3 Terms and definitions

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

#### 3.1

##### **ready-to-eat puffed cereals**

ready to eat cereals made by exploding cooked grains from a pressurized chamber

#### 3.2

##### **food grade packaging material**

packaging 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 flavour to the product

### 4 Requirements

#### 4.1 Essential ingredients

Ready-to-eat puffed cereals shall be made from single or combination of the following ingredients complying with relevant standards:

- a) maize flour complying with RS EAS 44;
- b) rice complying with RS EAS 128;
- c) wheat flour RS EAS 1;
- d) other cereals complying with relevant standards; and
- e) edible oil complying with RS EAS 321.

#### 4.2 Optional ingredients

The following ingredients may be used in ready-to-eat puffed cereals and shall comply with relevant standards. They include but are not limited the following:

- a) salt complying with RS EAS 35;
- b) permitted flavouring agents such as tomato, cheese, chili, chicken, onion or garlic powder, and other spices or sweetening agents;
- c) cassava flour complying with RS EAS 740;

- d) sorghum flour; and
- e) soya.

### 4.3 General requirements

Ready-to-eat puffed cereals shall:

- a) be prepared from clean, sound, good quality flour complying with relevant standards;
- b) have characteristic colour, aroma, flavour and taste of cereal, flavours and spices used;
- c) have a soft, crispy and crunchy texture;
- d) have uniform size and shape;
- e) be free from rancid, soap, bitter, musty, sour, burnt and other undesirable tastes and odours;
- f) be free from insects, sand and any other extraneous matter;

### 4.4 Specific requirements

Ready-to-eat puffed cereals shall comply with the specific requirements in table 1 when tested in accordance with test methods specified therein.

**Table 1— Specific requirements for ready-to-eat puffed cereals**

S/N	Characteristic	Requirement	Test method
i.	Moisture content, % by mass, max.	4.5	RS ISO 6540
ii.	Fat (on dry basis), percent by mass max.	25	RS ISO 11085
iii.	Peroxide value meq oxygen/kg max.	5.0	RS ISO 3960
iv.	Free fatty acids on dry weight basis, %, max.	0.5	ISO 729
v.	Crude fibre on moisture free basis % m/m, max.	1.0	RS ISO 5498
vi.	Acid insoluble ash, %, by mass, max	0.15	RS ISO 5985
vii.	Sodium chloride (NaCl) on dry weight basis, %, max.; when used	2.0	RS ISO 1738

### 4.5 Hydrocyanic acid content

If cassava is used as a component of the ready-to-eat puffed cereals the total hydrocyanic acid content of ready-to-eat puffed cereals shall not exceed 10 mg/kg, when tested in accordance with RS EAS 744.

## 4.6 Ant nutritional factors

**4.6.1** If soya flour is used as a component of the ready-to-eat puffed cereals urease activity in ready-to-eat puffed cereals shall not exceed 0.3 mg N/g/min (for trypsin inhibitor activity, 5 mg/g) when tested in accordance with RS ISO 5506.

**4.6.2** If sorghum flour is used as a component of the ready-to-eat puffed cereals, the tannin content of the ready-to-eat puffed cereals shall not exceed 0.3 % by mass on a dry matter basis when tested in accordance with RS ISO 9648.

## 5 Food additives

Food additives which may be used in ready-to-eat puffed cereals shall comply with RS CODEX STAN 192.

## 6 Hygiene

**6.1** Ready-to-eat puffed cereals shall be produced, prepared and handled in accordance with RS CAC/RCP 1.

**6.2** Ready-to-eat puffed cereals shall not exceed microbiological limits given in Table 2 when tested in accordance with the test methods specified therein.

**Table 2— Microbiological limits for Ready-to-eat puffed cereals**

S/N	Microorganism	Maximum limit	Test method
i.	Total Plate Count, cfu/g max.	10 <sup>2</sup>	RS ISO 4833-1
ii.	<i>Escherichia coli</i> , cfu/g	Absent	RS ISO 16649-2
iii.	<i>Salmonella spp</i> in 25 g	Absent	RS ISO 6579-1
iv.	<i>Staphylococcus aureus</i> , cfu/g	Absent	RS ISO 6888-1
v.	Yeasts and moulds, cfu/g	50	RS ISO 21527-2

## 7 Contaminants

### 7.1 Mycotoxin

Ready-to-eat puffed cereals shall comply with mycotoxin limits specified in Table 3 when tested in accordance with test methods specified therein.

**Table 3—Mycotoxin limits for ready-to-eat puffed cereals**

S/N	Mycotoxin	Maximum limit µg/kg	Test method
i.	Total aflatoxins	10	RS ISO 16050
ii.	Aflatoxins B1	5	
iii.	Fumonisin	2 000	AOAC 2001.04

## 7.2 Pesticide residues

Ready-to-eat puffed cereals shall comply with the maximum residue limits established by the Codex Alimentarius Commission.

## 7.3 Heavy metals

Ready-to-eat puffed cereals shall comply with maximum limits for heavy metals as given in Table 4 when tested in accordance with the test methods specified therein.

**Table 4— Heavy metals limits for Ready-to-eat puffed cereals**

S/N	Heavy metal	Limit mg/kg	Test method
i.	Arsenic (As)	0.1	AOAC 952.13
ii.	Lead (Pb)	0.2	AOAC 999.10
iii.	Cadmium (Cd)	0.1	

## 8 Packaging

Ready-to-eat puffed cereals shall be packaged in suitable food grade packaging materials that shall not affect the quality of the product”

## 9 Labelling

### 9.1 General labelling

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

- a) Name of the product as “Ready-to-eat puffed cereals”;
- b) Name of the cereal (s) used;
- c) List of ingredients in descending order;
- d) List of food additives, if used
- e) Name, location and physical address of the manufacturer;
- f) net content;
- g) batch number;
- h) Country of origin;

- i) Date of manufacture;
- j) Expiry date;
- k) declaration of food containing allergens
- l) instructions for use; and
- m) storage conditions.
- n) no claims concerning medicinal, preventive, alleviative, curative or other beneficial effects related to the health of consumers shall be made if not complying with RS EAS 803, RS EAS 804, RS EAS 805

## 10 Sampling

Sampling of ready-to-eat puffed cereals shall be done in accordance RS ISO 24333.

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Price based on **nnn** pages

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