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## Processed (Dehydrated) onions— 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 gazettelement as Rwanda Standards.

DRS 602 was prepared by Technical Committee RSB/TC 38, *Processed fruits and vegetables*.

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

- 1) ISO 5559: 1995 Dehydrated onion (*Allium cepa* Linnaeus) — Specification
- 2) FSSAI Standards for Dehydrated Onion (Sukha Pyaj)

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

## **Committee membership**

The following organizations were represented on the Technical Committee on Processed fruits and vegetables (RSB/TC 38) in the preparation of this standard.

Winners Together Ltd

Zima Health Group Ltd

VeGeT Solutions

Ishyo Foods Ltd

Spices Rwanda Ltd

Plantia Essence Ltd

1000 Hills Products Rwanda Ltd

Vital Agro Industries Ltd

Africa food supply Ltd

Buranga General Business Ltd

Skol brewery Ltd

Rwanda Food and Drugs Authority

Rwanda Standards Board (RSB) – Secretariat

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## Introduction

Onions are a staple in every household. They play a fundamental role in preparing any recipe improving the dish's texture and flavor. However, fresh onion doesn't have a long shelf life due to its high-water content. Also, peeling and cutting onions takes time, and in today's fast-paced world, individuals are short on time. Hence, this brought out the method of peeling, slicing, and chopping onions which further dehydrated to enhance the shelf life as dehydration process stops microorganisms living and multiplying of the final product when packaged safely and stored in appropriate (dry and cold) place.

Dehydrated onion flakes can be further processed into onion powder by proper grinding. Onion powder dissolves very easily and reconstitute quickly compared to raw onion or flakes. It also incorporates the flavour of onion in a variety of foods.

Fresh raw onions are peeled, chopped or minced, and made ready for dehydration. The various commercial forms of dehydrated onions are all produced by slicing peeled sound onions into flat slices (of a thickness agreed between the interested Parties), which are dehydrated, graded and further processed as necessary. During the drying process, moisture is evaporated from the onions to obtain dried onion flakes leading to reduction of the bulk to transport and also increases the shelf-life due to reduction in moisture content and this arrests the growth of microorganisms. Also, the use of suitable packaging techniques plays the most important role to increase the shelf life of dehydrated onion flakes and powder as these are very hygroscopic in nature.

The broad recognized categories/forms in the trade are dehydrated onion slices/ rings; dehydrated grits; flakes or granules; dehydrated onion powder; plus, others. This standard prescribes the requirements for dehydrated and/processed onions ready to eat, to cook or to be used in the food industry.

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# Processed (Dehydrated) onions— Specification

## 1 Scope

This Draft Rwanda standard specifies requirements, sampling and test methods for processed (dehydrated) onions of varieties (cultivars) grown from *Allium cepa* Linnaeus in its various commercial forms intended for direct human consumption or for other use in the food industry.

## 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.

RS CXC 1, *General Principles of Food Hygiene*

RS CXS193, *General Standard for Contaminants and Toxins in Food and Feed*

RS CXS 192, *General standard for food additives*

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

RS EAS 803, *Nutrition labelling — Requirements*

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

RS EAS 805, *Use of nutritional and health claims — Requirement*

RS EAS 894, *Fresh onions — Specification*

RS ISO 1026, *Fruits and vegetable products — Determination of dry matter content by drying under reduced pressure and of water content by azeotropic distillation*

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 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 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 of crude fibre content — General method*

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 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*

RS ISO 927, *Spices and condiments — Determination of extraneous matter and foreign matter content*

RS ISO 928, *Spices and condiments — Determination of total ash*

RS ISO 930, *Spices and condiments — Determination of acid-insoluble ash*

RS ISO 948, *Spices and condiments — Sampling*

### **3 Terms and definitions**

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

#### **3.1**

##### **Processed (dehydrated) onions**

finished product obtained on drying the bulbs of any onion cultivars (*Allium cepa* Linnaeus) without any bleaching or precooking, the bulbs being sound and practically free from moulds, diseases, soil, outer skins, stems, leaves and roots.

#### **3.2**

##### **extraneous matter**

vegetable matter originating exclusively from plants, such as particles from skins and roots.

#### **3.3**

##### **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 General requirements

Processed (dehydrated) onion shall:

- a) upon rehydration, regain characteristics similar to those of fresh onion complying with RS EAS 894;
- b) have characteristic odour, and
- c) be free from foreign odours and off odours.
- d) be free from any added colouring agents and other harmful substance
- e) when in powdered form, it shall be free flowing and free from agglomerates.
- f) be free from scorched, toasted and baked particles.
- g) be free from living insects, and dead insects, insect fragments and rodent contamination
- h) The flavour shall be characteristic of parboiled onions and free from foreign flavours and off flavours.

**Note 1:** The flavour of the dehydrated onion can be assessed only after rehydration, the method described in annex A shall be applied, and then proceed with the sensory evaluation.

### 4.2 Classification

Processed (Dehydrated) onion is classified according to its colour (type), presentation (classes) based on extraneous matter content in accordance with the requirements given in table 1.

**Table 1—Classification of Processed (Dehydrated) onions**

Characteristic	Type of onion							Test method
	White	Yellow				Red		
	Classes							
	Extra class	Extra class	Class 1	Class 2	Extra class	Class 1	Class 2	
Extraneous matter, % m/m, max.	0.5	1	2	5	1	2	5	RS ISO 927
Note 2: Extraneous matter, not applicable to powdered form, Onion powder shall not have any extraneous matter.								

### 4.3 Specific requirements

Processed (Dehydrated) onions shall comply with the specific requirements given in Table 2 when tested in accordance with the test methods specified therein.

**Table 2—Specific requirements for Processed (Dehydrated) onions**

S/N	Characteristic	Requirements	Test method
1.	Moisture content, % (m/m), max.	6	RS ISO 1026
2.	Crude fibre content, % (m/m) max.	30	RS ISO 5498
3.	Acid-insoluble ash, % (m/m), dry basis, max.	1	RS ISO 930
4.	Total ash, % (m/m), on dry basis, max.	5	RS ISO 928

Note 3: Colour of dehydrated onions shall be determined by moisture content level of the processed onions

## 5 Food additives

Only food additives for preservation purpose may be used, and shall comply with RS CXS 192.

## 6 Contaminants

### 6.1 Pesticide residues

Processed (Dehydrated) onions shall comply with the maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

### 6.2 Heavy metals

Processed (Dehydrated) onions shall not exceed maximum limits of heavy metals established in RS CXS 193.

### 6.3 Mycotoxins

Aflatoxins in Processed (Dehydrated) onions shall not exceed 5 µg/kg for aflatoxins B1 and 10µg/kg total aflatoxins when tested in accordance with RS ISO 16050.

## 7 Hygiene

8.1 Processed (Dehydrated) onions shall be produced and handled under hygienic conditions in accordance with RS CXC 1.

8.2 Processed (Dehydrated) onions shall comply with microbiological limits given in Table 2 when tested in accordance with the test methods specified therein.

**Table 2—Microbiological limits in Processed (Dehydrated) onions**

S/N	Microorganism	Maximum Limit	Test method
1.	Total Viable Count, CFU/g, max.	10 <sup>3</sup>	RS ISO 4833-1
2.	<i>Salmonella spp.</i> in 25 g	Absent	RS ISO 6579-1
3.	<i>Staphylococcus aureus</i> , CFU/g	Absent	RS ISO 6888-1
4.	<i>Escherichia coli</i> , CFU/g	Absent	RS ISO 16649-2
5.	Yeasts and moulds, CFU/g, max.	10 <sup>2</sup>	RS ISO 21527-2

## 8 Packaging

Processed (Dehydrated) onions shall be packaged in food grade material that ensures the integrity and safety of the product.

## 9 Labelling

**10.1** In addition to the labelling requirements given in RS EAS 38, Processed (Dehydrated) onions shall be legibly and indelibly labelled with the following information:

- a) name of the product as “processed (dehydrated) onions” accompanied by commercial form.
- b) class
- c) type/colour
- d) preservatives used by common name or international numbering; if any;
- e) date of production/packing;
- f) best before date;
- g) name and address of the producer or packer;
- h) country of origin;
- i) batch/lot number;
- j) net weight in metric units; and
- k) instructions for use.

**10.2** Nutrition labelling and health claims shall comply with the requirements given in RS EAS 803, RS EAS 804 and RS EAS 805.

## 10 Sampling

Sampling of Processed (Dehydrated) onions shall be done in accordance with RS ISO 948.

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## Annex A (normative)

### Method of rehydration for sensory evaluation

#### A.1 Apparatus

**A.1.1** Vessel, of about 500 ml capacity, which will not impart a foreign taste or affect the colour of the preparation.

**A.1.2** Dish, made of porcelain or white earthen-ware.

**A.1.3** Stainless steel spoon

#### A.2 Water

Use natural potable water, as neutral as possible.

#### A.3 Preparation

Weigh 5 g  $\pm$  0.1 g of the sample and transfer it to the vessel (A.1.1) containing 250 ml of cold water (A.2). Bring to the boil and immediately turn off the heat Source. Leave to simmer in this way for 10 min  $\pm$  1 min. Re-adjust the volume to about 250 ml with water (A.2) and pour into the dish (A.1.2).

Immediately carry out sensory evaluation by evaluating the different characteristics in the following order:

- a) appearance of the cooking water (colour, clarity);
- b) colour of the preparation;
- c) odour;
- d) tenderness (in the case of onion in pieces);
- e) Overall flavour.

## Bibliography

[1] RS EAS 946: 2023 Dried fruits—Specification

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