RWANDA STANDARD

DRS 571

First edition

2023-mm-dd

Bread improver — Specification

ICS 67.220.20

Reference number

DRS 571: 2023

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

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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 571 was prepared by Technical Committee RSB/TC 019, Spices, culinary herbs, condiments and food additives.

Committee membership

The following organizations were represented on the Technical Committee on Spices, culinary herbs, condiments and food additives (RSB/TC 19) in the preparation of this standard.

E& Foods Direct Ltd

Innopro Ltd

Inyange Industries Ltd

Ishyo foods ltd

Nyarutarama Business Incubation Center

Rwanda Consumer's Rights Protection Organization (ADECOR)

Rwanda Food and Drugs Authority (Rwanda FDA)

Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA)

Skai Ltd

Umurage Enterprise

Zamura Feeds Ltd

Rwanda Standards Board (RSB) – Secretariat

Introduction

In the last decade a number of additives and technological aids have been developed for improving the breadmaking process and the quality of the fresh bread.

Bread improvers have a range of functional benefits; they improve the flour quality by strengthening the gluten structure during fermentation or proofing. Also, they increase dough resilience during dough development. They improve the overall quality of the yeast raised products by producing good crumb structure, overall volume, and crust color.

Bread improvers may also carry within them a blend of enzymes that assist in the gluten matrix modification as well as yeast foods or sources of sugars for the yeast to use. Therefore, this standard is developed to keep up with advancements of the food industry and to ensure the safety and quality of the products traded in the markets in order to safeguard the health of the consumers.

Bread improver — Specification

1 Scope

This Draft Rwanda Standard specifies the requirements, sampling and test methods for bread improver used in bread making.

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 942.17, *Arsenic in foods Molybdenum blue method*

AOAC 999.11, *Lead, Cadmium, Copper, Iron and zinc in foods. Atomic absorption spectrophotometry after dry ashing*

RS ISO 16050, *Food stuffs — Determination of aflatoxin B1, B2, G1 and G2 in cereals, nuts and derived products — High-performance liquid chromatographic method*

RS ISO 712, *Cereals and cereal products — Determination of moisture content — Routine reference method*

RS ISO 2171, *Cereals, pulses and by-products — Determination of ash yield by incineration*

RS ISO 15141, *Cereals and cereal products — Determination of ochratoxin A — High performance liquid chromatographic method with immunoaffinity column cleanup and fluorescence detection*

RS CAC/RCP 1, *Code of practice — General Principles of Food Hygiene*

RS CODEX STAN 192, *General Standard for Food Additives*

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

RS ISO 16649-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of ß-glucuronidase-positive Escherichia coli — Part 2: Colony-count technique at 44 °C using 5-bromo-4-chloro-3-indolyl ß-D-glucuronide*

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 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 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 24333, *Cereals and cereal products — Sampling*

3 Terms and definitions

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

3.1

bread improver

flour-based blend of several components with specific functional properties designed to modify dough characteristics and give quality attributes to bread. Bread improvers are mostly made from a combination of enzymes in addition to various emulsifiers, wheat flour, soy flour and calcium carbonate as carriers for the micro-ingredients.

3.2

gluten

component of wheat protein which provides elasticity of the dough. Gluten can also be found in some cereals in small amounts.

3.3

oxidizing agent

substance that oxidizes other substances in the reaction by gaining or accepting electrons from them. They act on the gluten in flour to increase its strength and produce larger, more-uniform finished products.

3.4

reducing agent

substance that reduces a chemical compound usually by donating electrons. They act on the gluten in flour to increase extensibility, and shorten dough development time.

3.5

enzyme

natural catalysts that break down heavy compounds such as starches and proteins to improve dough rheology.

3.6

wheat flour

product prepared from common wheat grain (*Triticum aestivum* L.) or club wheat (*Triticum compactum* Host) or their mixtures by grinding or milling process.

3.7

emulsifier

food additives used to help mix two substances that typically separate when they are combined (water and oil).

4 Ingredients

4.1 Essential ingredients

The following ingredients are suitable in the preparation of bread improver.

a) wheat flour conforming to relevant standards;

b) enzymes:

   i) amylase;

   ii) lipase;

   iii) xylanase; and

   iv) glucose oxidase conforming to RS CODEX STAN 192

c) pH regulators:

   i) calcium carbonate; and

   ii) calcium sulphate conforming to RS CODEX STAN 192

d) oxidizing agent:

   ascorbic acid; or any other conforming to RS CODEX STAN 192.

4.2 Optional ingredients

The following optional ingredients complying with RS CODEX STAN 192 may be used:

a) emulsifiers; and

b) stabilizers

4.3 General requirements

Bread improver shall be:

a) free from extraneous matter;

b) in powder form;

c) free from any objectionable flavour and odour; and

d) free from adulterants.

4.4 Specific requirements

Bread improver shall comply with the requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Specific requirements for bread improver

S/N	Characteristic	Requirement	Test method
i.	Moisture content, % m/m, max.	12.0	RS ISO 712
ii.	Insoluble ash, % m/m,	1.5 – 2.0	RS ISO 2171
iii.	pH of aqueous extract	3.0 – 7.0	Annex A

5 Contaminants

5.1 Heavy metals

Bread improver shall comply with the maximum levels for heavy metal contaminants given in Table 2 when tested in accordance with the test methods specified therein.

Table 2 — Permitted maximum levels of heavy metal contaminants in bread improver

S/N	Characteristic	Requirement mg/kg, max.	Test method
i.	Arsenic (As)	0.5	AOAC 942.17
ii.	Lead (Pb)	0.1	AOAC 999.11
iii.	Cadmium (Cd)	0.2	

5.2 Mycotoxins

Bread improver shall comply with mycotoxin limits given in Table 3 when tested in accordance with the test methods specified therein.

Table 3 — Mycotoxins limits for bread improver

S/N	Mycotoxin	Maximum limit µg/kg	Test method
i.	Total aflatoxins	10	RS ISO 16050
ii.	Aflatoxin B1	5	
iii.	Fumonisins	2000	
iv.	Ochratoxins A	5	RS ISO 15141

5.3 Pesticide residues

Pesticide residues shall not exceed maximum residue limits established by the Codex Alimentarius Commission.

6 Hygiene

Bread improver shall be manufactured and handled in a hygienic manner in accordance with RS CAC/RCP 1 and shall comply with the microbiological limits stipulated in Table 4 when tested in accordance with the test methods specified therein.

Table 4 — Microbiological limits for bread improver

S/N	Microorganism	Maximum limit	Test method
i.	Total viable count, CFU/g, max	4×10^3	RS ISO 4833-1
ii.	*Escherichia Coli,* CFU/g	Absent	RS ISO 16649-2
iii.	*Staphylococcus aureus,* CFU/g	Absent	RS ISO 6888-1
iv.	Yeasts and moulds, CFU/g, max	25	RS ISO 21527-2
v.	*Salmonella spp* in 25g	Absent	RS ISO 6579-1

7 Packaging

Bread improver shall be packaged in food grade packaging material that secures the integrity and the safety of the product.

8 Labelling

8.1 the following specific labelling requirements shall apply and shall be legibly and indelibly marked.

a) the name of the product; "Bread improver";

b) list of ingredients;

c) net contents by mass in the SI units;

d) name, physical location and address of the manufacturer or, packer, distributer, importer, exporter, vendor;

e) country of origin;

f) manufactured date;

g) instruction for use;

h) storage instructions;

i) expiry date.

j) batch number and lot identification; and

k) instructions on disposal of used package.

8.2 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, batch number and lot identification and the name and address of the manufacturer or packer shall appear on the packages.

9 Sampling

Sampling of bread improver shall be done in accordance with RS ISO 24333.

Annex A
(normative)

Determination of pH of aqueous extract

A.1 Apparatus

pH meter

A.2 Procedure

A.2.1 Preparation of aqueous extract of the material

Grind to a fine paste about 10 g of the material in a glass pestle and mortar, add 100 mL of water and mix thoroughly. Allow the mixture to stand for about 15 min.

A.2.2 Determination of pH of aqueous extract

Determine the pH of the solution using the pH meter.

Bibliography

[1] RS EAS 1, *Wheat flour — Specification*

[2] RS EAS 995, *Baker's yeast — Specification*

[3] RS EAS 43, *Bread — Specification*

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Price based on nnn pages