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**Molasses for human consumption —
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 xxx was prepared by Technical Committee RSB/TC 012, *Sugars and Sugary Products*.

Committee membership

The following organizations were represented on the Technical Committee on *Sugars and sugary products* (RSB/TC 012) in the preparation of this standard.

Paragraph of participants

Rwanda Standards Board (RSB) – Secretariat

Introduction

Molasses is a thick liquid produced during the production of sugar. It's manufactured by extracting juice from sugar cane and sugar beets and boiling it to make sugar crystals. Sugar cane and sugar beets release liquid when crushed. Sugar crystallizes on the surface of this juice when it is cooked. Often used as one of the by-sugar Food & Nutrition products, molasses is a sweet, black, viscous liquid that remains after the sugar has been extracted.

The liquid boils and becomes denser once the sugar is removed. Molasses thickens with each cycle of boiling, resulting in three distinct types: light, dark, and blackstrap. The leftover sugar syrup is darker and extremely thick after a third cooking cycle- known as organic blackstrap molasses. It's the gooiest and sticky of all the molasses types, but it's also high in iron, nutrients, and vitamins like B6. Molasses thickens baked beans, sweetens barbeque sauces, and converts gingerbread cookies into darker, velvety, and delicious treats.

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Molasses for human consumption — Specification

1 Scope

This Draft Rwanda Standard specifies the requirements, sampling and test methods for molasses intended for human consumption.

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 CAC/RCP 1, *General principles of food hygiene*

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

RS EAS 12, *Potable water — Specification*

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

RS EAS 5, *Refined white sugar – Specification*

RS EAS 749, *Brown sugar – Specification*

RS EAS 770, *Fortified sugar — Specification*

RS EAS 8, *Raw cane sugar – Specification*

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

RS ISO 2173, *Fruit and vegetable products — Determination of soluble solids — Refractometric method*

RS ISO 2447, *Fruit and vegetable Products — Determination of tin content*

RS ISO 4831, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms — Most probable number technique*

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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 5379:2013, *Starches and derived products – Determination of sulphur dioxide content, Acid metric method and nephelometric method*

RS ISO 6633, *Fruit and vegetables products — Determination of lead content – Flameless atomic absorption spectrometric method*

RS ISO 6634, *Fruit, vegetables and derived products — Determination of arsenic content — Silver diethyldithiocarbamate spectrophotometric method*

RS ISO 6637, *Fruits, vegetables and derived products — Determination of mercury content — Flameless atomic absorption method*

3 Terms and definitions

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

3.1

brix or degrees brix

the concentration of sugar in syrup corresponding approximately to concentration of solutes expressed in percentage as measured with a refractometer or hydrometer and expressed in °Brix units

3.2

food 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.

3.3

Molasses

Is clean, sound, viscous product obtained by evaporating the juice of sugarcane and removal of all or any part of the commercially crystallisable sugar.

4 Requirements

4.1 General requirements

Molasses for human consumption shall;

- a) be characteristic of the product and have a well-balanced flavour
- b) be free from off-odours and off-flavours when assessed using the normal sensory tests.
- c) be free from foreign matter such as impurities of animal origin, including dead insects when assessed using the normal senses.
- d) have a uniform consistency
- e) show no turbidity (except turbidity arising from the ingredients)
- f) shall show no sedimentation (except sedimentation arising from the ingredients)

4.2 Raw material

Sugars or juices from sugarcane and/or other alternative plant sources selected at the proper stage of maturity

4.2.1 Other permitted ingredients

The following ingredients may be used in the production of molasses for human consumption;

- a) Brown sugar added shall comply with RS EAS 749
- a) Refined white sugar added shall comply with RS EAS 5
- b) Fortified white sugar added shall comply with RS EAS 770
- c) Raw cane sugar added shall comply with RS EAS 8

4.3 Specific requirements

Molasses shall comply with the specific requirements stipulated in Table 1 when tested in accordance with test method specified therein

Table 1 — Specific requirements for molasses

S/N	Characteristic	Requirement	Test method
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		Dark sweet molasses	Black strap molasses	
i.	Total soluble solids at 20 ° C Min.	74 ⁰ Brix		RS ISO 2173
ii.	pH of 10% solution m/v	4.0-6.0		ICUMSA/GS1/2/3/4/7/8/9-23
iii.	Total sugars % m/m Min.	45	35	AOAC 996.04
iv.	Ash content % m/m Max.	10		AOAC 900.02
v.	Density, g/cm ³ min.	1.30		AOAC 962.37
vi.	Sulphated ash % m/m Max.	16		ICUMSA GS3/4/7/8-11
vii.	Sulphur dioxide as SO ₂ ppm, Max.	< 100		RS ISO 5379
viii.	Loose Sludge % v/v Max	absent		Annex A

5 Food additives

Food additives which may be used in the manufacture of molasses for human consumption shall comply with RS CODEX STAN 192

6 Hygiene

6.1 Molasses for human consumption shall be manufactured processed, packaged, stored and distributed under hygienic conditions prescribed in RS CAC/RCP 1.

6.2 Molasses for human consumption shall not exceed microbiological limits in Table 2 when tested in accordance with test methods specified therein

Table 2 — Microbiological limits for molasses for human consumption

S/N	Microorganism	Maximum limit	Test method
i.	Total viable count, cfu/g, max.	<25	RS ISO 4833-1
ii.	Coliform count, cfu/g, max.	Absent	RS ISO 4832
iii.	Yeast and mould count, cfu/g, max.	<10	RS ISO 21527-1
iv.	E.coli cfu/, max.	Absent	RS ISO 7251
v.	Staphylococcus aureus cfu/g, max.	Absent	RS ISO 6881-1

7 Contaminants

7.1 Pesticide residues

Molasses for human consumption shall conform to those maximum residue limits for pesticide residues established by Codex Alimentarius Commission for this commodity.

7.2 Heavy metals

Molasses for human consumption shall not exceed the acceptable limits of Heavy metals specified in Table 3

Table 3 — Limits of heavy metals in molasses for human consumption

S/N	Heavy metal	Maximum limit	Test method
i.	Lead (Pb)	0.05	RS ISO 6633
ii.	Arsenic (As)	0.2	RS ISO 6634
iii.	Tin (Sn)	250	RS ISO 2447
iv.	Mercury (Hg)	0.05	RS ISO 6637

8 Packaging

Molasses for human consumption shall be packaged in a food grade material to safe guard the hygienic and nutritional quality of the product.

9 Labelling

9.1 In addition to the requirements of RS EAS 38, the following specific labelling requirements shall be legibly and indelibly marked;

- a) common name of the product, “molasses for human consumption”.
- b) complete list of ingredients shall be declared on the label in descending order of proportion;
- c) net weight in metric units;
- d) name and physical address of the manufacturer/packer/distributor of the product shall be declared on the label;
- e) date of manufacture;
- g) lot identification;
- h) expiry date;
- i) country of origin;
- k) storage instructions; and

l) instructions on disposal of used package.

10 Sampling

Molasses for human consumption shall be done in accordance with Annex B.

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Annex A (normative)

Determination of loose sludge

A.1 Weigh 270 g of raw molasses and add the following quantity of distilled water X g, where

$$X = 6 \times (\text{Brix} - 45) \text{ g of distilled water at } 20 \text{ }^{\circ}\text{C}.$$

A.2 Adjust the pH to 4.5 using 10 % H₂SO₄. Boil for 3 min and allow settling in graduated cones. Note the settled volume after 30 min and express as %, (v/v) loose sludge.

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Annex B (normative)

Sampling

B.1 Sampling of molasses

B.1.1 In drawing, preparing, storing and handling test samples, the following precautions and directions shall be taken:

- a) The sampling instrument shall be clean and dry when used.
- b) The samples, the material being sampled the sampling instrument and the containers for samples shall be protected from adventitious contamination.
- c) To draw a representative sample, the contents of each container selected for sampling shall be mixed as thoroughly possible by shaking or stilling or both, or by rolling so as to bring all portions into uniform distribution.
- d) The sample shall be placed in suitable clean, dry and air-tight metal or glass containers, on which the material has no action
- e) The sample containers shall be of such a size that they are almost, but not completely, filled by the sample.
- f) Each sample container shall be sealed airtight and marked with full details of sampling and the date of sampling.
- g) Sampling can consist of a weighted metal cylinder with removable top, to which a rod is attached (see Figure.1). The cylinder is fasted to suitable rod. For tacking a sample, it is lowered in the tank to the required depth, and the top is removed with the help of the rod and the can then filled.

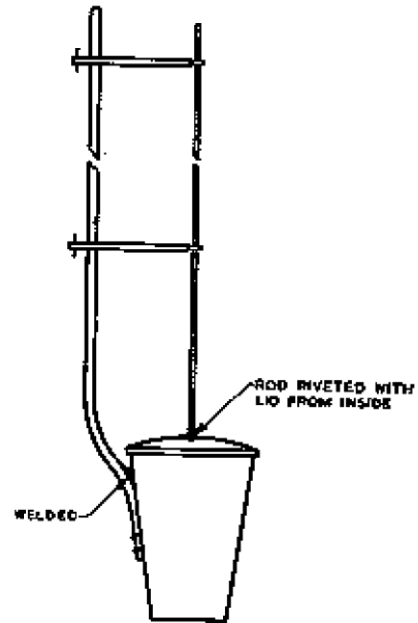


FIG. 1 SAMPLING CAN FOR TANK/TANKER

For other containers, the sampling device of the design shown in Figure 2 may be used.



FIG. 2 SAMPLING DEVICE FOR CONTAINERS

B.2 Scale of sampling

B.2.1 Supply in tank/tankers

Samples shall be drawn from each container/tanker as follows:

Equal portions of the material shall be taken from different layers of the tank/tanker with the help of the sampling can to obtain a composite sample not less than 2.5 litres and mixed thoroughly in a suitable container.

Divide this composite sample into three equal portions of not less than 750 mL in dried bottles or other containers, seal airtight and label with all the particulars of the sample.

B.2.2 Supply in containers

All the containers in a single consignment shall constitute a one lot.

B.2.3 Gross sample.

For the purpose of drawing samples for test a number of containers shall be selected at random from a lot. The number of containers in relation to the size of the lot or scale of sampling shall be as stipulated in table B.1.

Table B.1 — Minimum number of containers to be selected for sampling from various sizes of lots.

Lot size	Sample size
2 - 8	2
9 - 27	3
28 - 64	4
65 - 125	5
126 - 216	6
217 - 343	7
344 - 512	8
513 - 729	9
730 - 1000	10
1001 - 1331	11

B.3 Sampling from containers

B.3.1 General

Mix thoroughly the contents of all the containers in the gross sample whether they are drums or cans of other, by shaking or stirring or both, or by rolling so as to bring all portions into uniform distribution.

B.3.2 Drawing samples

Samples shall be drawn by inserting the sampling device through the bung hole or any other convenient opening. Equal portions of the well-mixed material from each container in the gross sample shall be taken so as to obtain a quantity not less than 2.5 litres. The composite sample thus obtained shall be divided into three equal portions of not less than 750 mL in dried bottles or other containers, sealed airtight and labeled with all the particulars of the sample.

B.3.3 Reference sample

The third sample bearing the seals of sampler and the producer shall be kept in appropriate place to be used in the case of dispute.

B.3.4 Time limit for analysis

All samples shall be tested within two months from the date of sampling.

B.3.5 Criterion for acceptance

If on testing, the sample is found to conform to the requirements specified in the standard, the consignment shall be accepted.

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