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**Sugar confectionery — Specification
Part 2: Caramel**

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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 65-2 was prepared by Technical Committee RBS/TC 12, Sugars and sugar products.

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

KS 05-319:1992, Sugar confectionary—Part 2: Caramel, Toffees and Fudges.

The assistance delivered from the above source is hereby acknowledged with thanks. DRS 65-2 consists of the following parts, under the general Sugar confectionary-:

- *Part 1: Part1: High Boiled Sweets*
- *Part 2: Caramel, toffees and Fudge*
- *Part 3: Chewing Gum and Bubble Gum*

Committee membership

The following organizations were represented on the Technical Committee on Sugars and sugar products (RBS/TC 12) in the preparation of this standard.

ADMA International Ltd

Benya Co. Ltd

Kabuye Sugar Works

National Industrial Research and Development Agency (NIRDA)

Nyarutarama Business Incubation Center (NBIC)

Res Populi Ltd

Rwanda Consumers' Rights Protection Organization (ADECOR)

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

Rwanda Standards Board (RSB) – Secretariat

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Sugar confectionery — Specification — Part 2: Caramel

1 Scope

This Draft Rwanda Standard specifies the requirements, sampling and test methods for caramel intended for human consumption or to be used in food industry.

2 Normative references

The following referenced documents are indispensable for the application 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 952.13, *Arsenic in food. Silver diethyldithiocarbamate method*

AOAC 963.15, *Official Method for determination of Fat in Cacao Products Soxhlet Extraction Method*

AOAC 977.10, *Official Method for determination of Moisture in Cacao Products Karl Fischer Method*

AOAC 985.16, *Official method, Tin in canned foods*

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

ISO 5809, *Starches and derived products — Determination of sulphated ash*

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

RS EAS 38, *General standard for the Labelling of pre-packaged foods*

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 5bromo-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 degrees C by the pour plate technique*

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

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

3.1

caramel

complex blend of hard fat globules in varying size groupings surrounded by a high concentration of sugar solution with doctor syrups (glucose) in which milk solids, not-fat are dispersed or dissolved. They are non-grained sugar confections

4 Requirements

4.1 Ingredients

4.1.1 Essential ingredients

The following essential ingredients shall be used and shall comply with relevant standards:

- a) Milk products;
- b) Confectioners hardened vegetable fat;
- c) Sugar;
- d) Emulsifiers; and
- e) Salt.

4.1.2 Optional ingredients

The following optional ingredients which may be used, shall comply with relevant standards:

- a) glycerine;
- b) sorbitol;
- c) fondant;
- d) creamed or whipped egg white in glucose syrup;
- e) ghee;
- f) gelatine;

- g) ammonium bicarbonate;
- h) butter; and
- i) vanillin.

4.2 General requirements

Caramel shall:

- a) be free from dirt, filth and extraneous matter;
- b) not be sticky;
- c) not be too hard; and
- d) not be grained.

4.3 Specific requirements

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

Table1 — Specific requirements for caramel

S/N	Characteristic	Requirements	Test methods
i.	Moisture content % by mass max.	10	AOAC 977.10
ii.	Protein, % max.	2.5	Annex A
iii.	Fat content, % min.	5	AOAC 963.15
iv.	Ash Sulphated, percent by mass, max	0.8	ISO 5809

5 Food additives

Food additives which may be used shall comply with RS CODEX STAN 192.

6 Heavy metals

Heavy metals in caramel shall not exceed maximum limits in table 2.

Table 2 — Heavy metal limits in caramel

S/N	Heavy metal	Maximum limit	Test method
i.	Lead, mg/kg max.	0.5	AOAC 999.10

ii.	Arsenic, mg/kg max.	1.0	AOAC 952.13
iii.	Tin, mg/kg max.	50 250 (when packaged in tin cans)	AOAC 986.15

7 Hygiene

7.1 Caramel shall be produced, handled and distributed in accordance with RS CAC/RCP 1.

7.2 Caramel shall not exceed microbiological limits in Table 3 when tested in accordance with test methods specified therein.

Table 3 — Microbiological limits in Caramel

S/N	Microorganism	Maximum limits	Test methods
i.	Coliforms, cfu/g	<10	RS ISO 4832
ii.	<i>Salmonella spp</i> per 25g	Absent	RS ISO 6579-1
iii.	<i>Staphylococcus aureus</i> , cfu/g	Absent	RS ISO 6888-3
iv.	Yeast and moulds cfu/g max.	<10	RS ISO 21527-2

8 Packaging

Caramel shall be packaged in food grade packaging materials that ensures the integrity and safety of the products. In case of printed packaging material, the printing ink shall not come into direct contact with the product.

9 Labelling

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

- a) name of the product as “caramel”
- b) country of origin;
- c) expiry date; and
- d) list of ingredients.

10 Sampling

Sampling shall be done in accordance with CAC/GL 50.

Annex A (normative)

Determination of protein

A.1 Apparatus

A.1.1 A recommended apparatus, as assembled, is shown in Figure 1.

Description, the assembly consists of a round bottom flask A of 1 000 ml capacity fitted with a rubber stopper through which passes one end of the connecting bulb tube B. The other end of the bulb B is connected to the condenser C which is attached, by means of rubber tube, to a dip tube D which dips into a known quantity of standard sulphuric acid contained in a beaker E of 250 ml capacity.

A.1.2 Kjeldahl flask, Capacity 500 ml

A.2 Reagents

A.2.1 Anhydrous sodium sulphate

A.2.2 Copper sulphate

A.2.3 Concentrated sulphuric acid, Sp. gr. 1.84.

A.2.4 Sodium hydroxide solution: dissolve about 225g of sodium hydroxide in 500 ml of water.

A.2.5 Standard sulphuric acid, 0.1 N

A.2.6 Methyl red indicator solution: dissolve 1g of methyl red in 200 ml of rectified spirit (95% v/v).

A.2.7 Standard sodium hydroxide solution, 0.1N

A.3 Procedure

A.3.1 Transfer carefully about 1g to 2g of the material, accurately weighed, to the Kjeldahl flask, taking precaution to see that particles of the material do not stick on to the neck of the flask. Add about 10 g of anhydrous sodium sulphate, about 0.2g to 0.3g of copper sulphate and 20 ml of concentrated sulphuric acid. Place the flask in an inclined position. Heat below the boiling point of the acid until frothing ceases. Increase heat until the acid boils vigorously and digests for 30 min after the mixture becomes clear and pale green or colourless. Cool the contents of the flask. Transfer quantitatively to the round bottom flask with water, the total quantity of water used being about 200 ml. Add with shaking a few pieces of pumice stone to prevent bumping. Add about 50 ml of the sodium hydroxide solution (which is sufficient to make the solution alkaline) carefully along the side of the flask so that it does not mix at once with the acid solution but forms a layer below the acid layer. Assemble the apparatus as shown on Figure 1 taking care that the dip tube extends below the surface of the standard sulphuric acid contained in the beaker. Mix the contents of the flask by

shaking and distil until all ammonia has passed over into the standard sulphuric acid. Shut off the burner and immediately detach the flask from the condenser. Rinse the condenser thoroughly with water into the beaker. Wash the dip tube carefully so that all traces of the condensate are transferred to the beaker. When all the

A.3.2 washings have been drained into the beaker, add two drops or three drops of methyl red indicator and titrate with the standard sodium hydroxide solution.

A.3.3 Carry out a blank determination using all reagents in the same quantities but without the material to be tested.

A.4 Calculation

Total protein (N x 6.25), per cent by weight = $8.75 \frac{(B-A)}{W}$

Where;

B = the volume, in milliliters, of the standard sodium hydroxide solution used to neutralize the acid in the blank determination;

A = the volume, in milliliters, of the standard sodium hydroxide solution used to neutralize the excess acid in the test with the material;

N = the normality of the standard sodium hydroxide solution; and W= the weight, in g, of the material taken for the test.

Bibliography

- [1] RS 65-2: 2013 Sugar confectionery—Requirements Part 2: Caramel, toffees and fudges

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