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Oils for cosmetic use—Specification

Part 4: Castor oil

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Contents

Page

Foreword

Rwanda Standardsarepreparedby 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 a+pplication 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.

DRS489-4 was prepared by Technical Committee RSB/TC 011, *Cosmetics and related products.*

DRS 489 consists of the following parts, under the general title *Oils for cosmetic use — Specification*:

- *Part 1: Baobab seed oil*
- *Part 2: Chia seeds oil*
- *Part 3: Passion fruits (maracuja) seed oil*
- *Part 5: Macadamia oil*

Committee membership

The following organizations were represented on the Technical Committee on *Cosmetics and related products*(RSB/TC 011) in the preparation of this standard.

University of Rwanda -College of Science and Technology (UR-CST)

Rwanda Food and Drugs Authority (Rwanda-FDA)

Rwanda Inspectorate, Competition and Consumer protection Authority (RICA)

Rwanda Forensic Laboratory (RFL)

Kipharma

SULFO Industries Rwanda

ORIBUT Company Ltd

Uburanga products

Rwanda Medical Supply (RMS)

Rwanda Standards Board(RSB) – Secretariat

Introduction

Oils and fats are among the most important cosmetic ingredients and are frequently used for a variety of external applications. They can be used directly as skin and hair care products but also as the basic substances for the manufacture of cosmetic products. Many of the cosmetic and hair care products on the market today rely on hydrocarbon molecules, derived from either mineral or vegetable oils, to provide antistatic, plasticiser and viscosity properties. Vegetable oils made from almonds, castor, coconut and palm oil consist of ethereal salts of glycerine plus a large number of organic acids forming stearin, olein and palmitin,essential ingredients of these products.

Castor oil and derivatives are used in soaps, creams (tretinoin), shampoos, perfumes, lip gels, lipsticks, hair oils (increases hair luster), deodorants, lubricants, sunscreens, and many other personal hygiene and beauty products.

Castor oil has been used in skin care products for centuries and continues to play an important part in the production of soaps and cosmetics. Cosmetic manufacturers use castor oil and its derivatives in formulating non-comedogenic cosmetics (cosmetics that don't exacerbate or contribute to acne) and emollients.

Oils for cosmetic use — Specification— Part 4: Castor oil

1 Scope

This Draft Rwanda Standard specifies the requirements, sampling and test methods for castor oil for cosmetic 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 editioncited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

RS EAS 346, *Labelling of cosmetics — General requirements*

RS EAS 846, *Glossary of terms relating to the cosmetic industry*

RS EAS 847-2, *Cosmetics — Analytical methods — Part 2: Determination of moisture content and volatilematter content*

RS EAS 847-5, *Cosmetics — Analytical methods — Part 5: Determination of unsaponifiable matter*

RS EAS 847-7, *Cosmetics — Analytical methods — Part 7: Determination of specific gravity*

RS EAS 847-9, *Cosmetics — Analytical methods — Part 9: Determination of colour*

RS EAS 847-10, *Cosmetics - Analytical methods - Part 10: Determination of acetyl value and hydroxyl value*

RS EAS 847-12, *Cosmetics — Analytical methods — Part 12: Determination of flash point by Pensky — Martens Closed Cap Tester*

RS EAS 847-13, *Cosmetics — Analytical methods — Part 13: Determination of rancidity*

RS EAS 847-16, *Cosmetics — Analytical methods — Part 16: Determination of lead, mercury and arseniccontent*

RS ISO 660, *Animal and vegetable fats and oils — Determination of acid value and acidity*

RS ISO 663, *Animal and vegetable fats and oils — Determination of insoluble impurities content*

RS ISO 3657, *Animal and vegetable fats and oils — Determination of saponification value*

RS ISO 3961, *Animal and vegetable fats and oils — Determination of iodine value*

RS ISO 6320, *Animal and vegetable fats and oils — Determination of refractive index*

RS ISO 24153, *Random sampling and randomisation procedures*

3 Terms and definitions

For the purposes of this standard, terms and definitions given in RA EAS 846 and the following apply.

3.1

castor oil

pure oil obtained from castor seeds (*Ricinus. Communis Linn., fan. Euphoribiaceae*) by a process of cold expression or solvent extraction using solvent hexane

4 Requirements

4.1 General requirements

4.1.1 The product shall be castor oil obtained from high quality seeds *Ricinus. Communis Linn., fan. Euphoribiaceae*by a process of cold expression. The product shall further undergo bleaching withbleaching earth or activated carbon or both, and deodorization with steam.

4.1.2 The product shall be practically odourless or have a very mild odour characteristic of castor oil.

4.1.3 When examined visually, the product shall be clear and free from sediments and other foreign matter, separated water and added colouring and flavouring substances.

4.1.4 Test for detection of cold pressed or hotpressed oilshall be cold pressed only as described in Annex A

4.1.5 The product shall be free from admixture with other oils.

4.2 Specific requirements

4.2.1 The product shall comply with the requirements given in Table 1 when tested in accordance with the test methods specified therein

Table 1— Specific requirements for castor oil for cosmetic industry

S/N	Characteristic	Requirement	Test method
i.	Moisture content, % m/m, max.	0.5	RS EAS 847-2
ii.	Insoluble impurities, % m/m, max.	0.25	RS ISO 663
iii.	Colour in a 1" cell on the Lovibond scale, expressed as Y + 5R, max. deepness	4.0	RS EAS 847-9
iv.	Refractive index at 20°C,	1.4770-1.4810	RS ISO 6320
v.	Specific gravity at 30/30°C,	0.954-0.960	RS EAS 847-7

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vi.	Saponification value, range	177-187	RS ISO 3657
vii.	Iodine value, range	82-90	RS ISO 3961
viii.	Acid value, max.	4.0	RS ISO 660
ix.	Unsaponifiable matter, % m/m, max.	1.0	RS EAS 847-5
x.	Acetyl value, min	143	RS EAS 847-10
xi.	Flash point, ºC (Pensky Martens closed), min.	127	RS EAS 847-12
xii.	Test for rancidity	Shall be free from rancidity	RS EAS 847-13
xiii.	Critical solution temperature, ºC, max	0	Annex B

4.2.2 Heavy metals limits

The Product shall comply with the limits for heavy metal contaminants in accordance with Table 2 when tested in accordance with the test methods specified therein.

Table 2— Limits of heavy metals contaminants for castor oil

S/N	Characteristics	Requirements mg/kg, max	Test method
i.	Lead	10	RS EAS 847-16
ii.	Arsenic	2	
iii.	Mercury	2	
NOTE1 The total amount of heavy metals as lead, mercury and arsenic, in combination, in the finished product should not exceed 10 mg/kg. NOTE 2 The heavy metals including lead, mercury and arsenic may be as a result of contamination during processing and should not be deliberately added as ingredients			

5 Packaging

The product shall be packaged in suitable well-sealed containers that shall protect the contents and shall not cause any contamination or react with the products.

6 Labelling

6.1 In addition to the requirements of RS EAS 346, the Material Safety Data Sheet shall be provided.The product

6.2 The phrase ‘For external use only’ shall be conspicuously marked (either printed on the label affixed to the container, or lithographed, or stenciled thereon with indelible ink).

7 Sampling

Sampling of the product shall be done in accordance with RS 278.

Annex A
(normative)

Method for detection of the processing (cold pressed or hot pressed) of castor oil

A.1 General

The method involves the isolation of toxic components (Ricinine, etc.) from the castor oil by its treatment with acetone solution, followed by its extraction with chloroform. The chloroform extract is cleaned up, concentrated and spotted on TLC plates. The plates are developed at chamber saturation and excited under fluorescent light for visualization of the alkaloid(s). The hot pressed castor oil yields typical fluorescent spots in U.V. light (365 nm).

A.2 Apparatus

A.2.1 UV lamp, for fluorescent excitation in the long wave region (Chromato-Vue may be used with special advantage).

A.2.2 Mechanical shaker/Magnetic stirrer

A.2.3 TLC plates, (20 cm x 10 cm) and a suitable developing chamber

A.2.4 A suitable spreading device, for adjusting layer thickness

A.2.5 Conical flask, 300 mL to 500 mL

A.2.6 Porcelain dishes, 50 mL

A.2.7 Separating funnel, 500 mL

A.2.8 Electric oven, with temperature control device

A.2.9 Desicator, containing an efficient dryer

A.2.10 Graduated micro-pipettes/Micro syringes

A.3 Reagents

A.3.1 Kieselegal 'G' or Equivalent grade silica gel, containing suitable amount of calcium sulphate askinder (*b*).

A.3.2 Whatman filter paper no. 42 (or equivalent).

A.3.3 Anhydrous sodium sulphate.

A.3.4 Acetone.

A.3.5 Acetone: water (1:1, v/v).

A.3.6 Chloroform.

A.3.7 Methanol.

A.3.8 Solvent system, chloroform:methanol (85:15, v/v).

A.4 Preparation

The plates are coated with silica gel 'G' using a suitable spreading device, adjusting the layer thickness at 300 nm, allowed to set and activated at 115 ºC ± 1 ºC for an hour. The plates are stored in desiccators.

A.5 Procedure

A.5.1 The procedure shall be done as follows:

a) take 10 mL of sample in a conical flask and add 50 mL acetone solution (B.3.5);

b) heat the mixture on a boiling water bath till simmering starts;

c) shake/stir the mixture using a mechanical shaker/magnetic stirrer for 15 minutes;

d) let the mixture attain room temperature and the only layer float on the surface;

e) filter through a water-soaked filter paper (no. 42);

f) discontinue the filtration after the acetone extract stops trickling;

g) transfer the filtrate into a separating funnel and extract with 5.3 mL of purified chloroform, shaking the mixture well each time;

h) break the emulsion (if formed) by dropping a few crystals of anhydrous sodium sulphate;

i) clean up both the portions of this extract by passing it slowing through a column containing suitable amounts of anhydrous sodium sulphate;

j) receive the evaluate in a porcelain dish;

k) evaporate the solvent on a boiling water bath and re-dissolve the residue in 0.2 mL dry chloroform;

l) spot 0.05 mL on a silica gel coated plate (B.4);

m) develop the plate at chamber saturation, using the above solvent system (B.3.8) till the solvent front reaches the height of 10 cm; and

n) dry the plate using a blow-dryer and place it in an oven (maintained at 60 ºC to 80 ºC) for 5 minutes to 10

A.5.2 Visualization of fluorescent spots, the plate is visualized under U.V. light in the long waveregion (365 µm). In case of hot pressed castor oil, two green fluorescent spot at Rf 0.5 and one deep blue spot at Rf 0.9 appear. A blue spot around Rf 0.7 may also appear sometimes. In case of cold pressed castor, oil bluespots Rf 0.9 and 0.7 may appear but the specific green spot shall be absent.

A.5.3 Sensitivity, the method is highly sensitive in detecting the type of processing of castor oil. The genuine cold drawn (medicinal grade) castor oil, even after refining and bleaching, fails to pass the test. The method is also capable of detecting a mixture of as low as 5% to 10% of hot pressed castor oil with cold pressed castor oil.

NOTE 1 Development at chamber saturation is recommended in order to achieve sharpness in resolution and improve the reproducibility of Rf values.

NOTE 2 Solvent mixture should be prepared with care and as far as possible prepared freshly before each use.

Annex B
(normative)

Determination of critical solution temperature

B.1 Reagent

The reagent shall be prepared by diluting ethyl alcohol or rectified spirit with distilled water till the relativedensity of the mixture at 15.5 ºC is 0.8303 ± 0.0001, when compared with distilled water at the sametemperature. De-natured alcohol shall not be used for this test.

B.2 Procedure

Mix in a test tube, 1.0 g of the oil, with 4.15 times its mass of the reagent. Upon examination, the solution thus obtained shall be perfectly clear at 20 ºC and shall remain clear when cooled and maintained for 5 minutes at a temperature of 0 ºC.

Bibliography

[1] RS 86:2018, *Castor oil for cosmetic industry — Specification*

DRS 489-4: 2023

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