

SRI LANKA STANDARD 905: 2018
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**SPECIFICATION FOR
CORN (MAIZE) OIL**
(First Revision)

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard
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(First Revision)

SLS 905: 2018

Gr. 4

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Sri Lanka Standard
SPECIFICATION FOR CORN (MAIZE) OIL
(First Revision)

FOREWORD

This Sri Lanka Standard was approved by the Sectoral Committee on Food Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2018-08-10

This Standard was first published in 1990. In this first revision, chemical requirements have been revised and limits for aflatoxins and the levels for heavy metals have been introduced to safeguard the consumers. Fatty acid profile has been inserted to assure the quality of the product.

This Standard is subject to the restrictions imposed under the Sri Lanka Food Act No. 26 of 1980 and the regulations framed thereunder.

For the purpose of deciding whether a particular requirement of this Standard is complied with the final value observed or calculated, expressing the results of a test or analysis shall be rounded off as in accordance with **SLS 102**. The number of significant figures to be retained in the rounded off value shall be the same as that of the specified value in this Standard.

In the revision of this Standard, valuable assistance derived from the relevant publications of the Codex Alimentarius Commission and the Bureau of Indian Standards is gratefully acknowledged.

1 SCOPE

This Standard prescribes the requirements and methods of sampling and test for corn (synonym: maize) oil, derived from corn germ (the embryos of *Zea mays* L.) by the process of expression and/ or extraction.

2 REFERENCES

| | | |
|-----|-----|---|
| SLS | 102 | Rules for rounding off numerical values |
| SLS | 143 | Code of practice for general principles of food hygiene |
| SLS | 313 | Methods for analysis of animal and vegetable fats and oils |
| | | Part 1/ Section 1 Determination of physical characteristics/ Preparation of test sample |
| | | Part 1/ Section 2 Determination of physical characteristics/ Determination of the relative density at t °C/ t_0 °C in air |
| | | Part 1/ Section 4 Determination of physical characteristics/ Determination of Lovibond colour |
| | | Part 1/ Section 5 Determination of physical characteristics/ Determination of refractive index |

Part 2/ Section 1 Determination of chemical characteristics/ Determination of saponification value

Part 2/ Section 2 Determination of chemical characteristics/ Determination of iodine value

Part 2/ Section 6 Determination of chemical characteristics/ Determination of acid value and acidity

Part 3/ Section 4 Determination of foreign substances and parameters affecting quality and stability/ Determination of insoluble impurities

Part 3/ Section 5 Determination of foreign substances and parameters affecting quality and stability/ Determination of moisture and volatile matter content

Part 3/ Section 7 Determination of foreign substances and parameters affecting quality and stability/ Determination of peroxide value – Iodometric (visual) end point determination

Part 4/ Section 2 Determination of principle constituents and natural constituents/ Analysis by gas chromatography of methyl esters of fatty acids

Part 4/ Section 3 Determination of principle constituents and natural constituents/ Determination of unsaponifiable matter – Method using diethyl ether extraction

SLS 467 Code of practice for labelling of pre-packaged foods

SLS 664 Method of sampling animal and vegetable fats and oils

SLS 962 Method for determination of aflatoxin in food

Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC), 20th Edition, 2016

3 DEFINITIONS

For the purpose of this Standard the following definitions shall apply:

3.1 crude corn oil: Product obtained from the corn germ (the embryos of *Zea mays* L.) by the process of expression and/ or extraction

Not suitable for direct consumption.

3.2 refined, bleached and deodorized (RBD) corn oil: Crude corn oil which has been refined by neutralization with alkali, bleached with bleaching earth or activated carbon or both and deodorized with steam or any other acceptable commercial process

Suitable for direct consumption.

4 TYPES

Corn oil shall be of the following 2 types:

4.1 Crude corn oil; and

4.2 Refined, bleached and deodorized (RBD) corn oil.

5 REQUIREMENTS

5.1 General requirements

Corn oil shall be free from admixtures with other oils and fats. The edible (RBD) corn oil shall be free from rancidity, sediments, suspended matter, separated water, added colours and flavouring substances. The edible corn oil shall be prepared from the crude corn oil which is not previously used.

5.2 Hygienic requirements

The edible corn oil shall be manufactured, processed, packaged, stored and distributed in accordance with the hygienic conditions prescribed in **SLS 143**.

5.3 Permitted antioxidants

The edible corn oil may contain permitted antioxidants as prescribed in the relevant regulations of the Food Act.

5.4 Identity requirements

Corn oil shall conform to the requirements given in Table 1, when tested according to the methods given in Column 4 of the table.

TABLE 1 – Identity requirements for corn oil

| SI No (1) | Characteristic (2) | Requirement (3) | Method of test (SLS 313) (4) |
|--------------|--|--------------------|------------------------------------|
| i) | Relative density 30 °C | 0.913 to 0.920 | Part 1/ Section 2 |
| ii) | Refractive index (nD 40 °C) | 1.465 to 1.468 | Part 1/ Section 5 |
| iii) | Iodine value | 103 to 128 | Part 2/ Section 2 |
| iv) | Saponification value | 187 to 195 | Part 2/ Section 1 |
| v) | Fatty acid composition, (as methyl esters), per cent by mass | | Part 4/ Section 2 |
| | C12:0 | ND to 0.3 | |
| | C14:0 | ND to 0.3 | |
| | C16:0 | 8.6 to 16.5 | |
| | C16:1 | ND to 0.5 | |
| | C18:0 | ND to 3.3 | |
| | C18:1 | 20.0 to 42.2 | |
| | C18:2 | 34.0 to 65.6 | |
| | C18:3 | ND to 2.0 | |
| | C20:0 | 0.3 to 1.0 | |
| | C20:1 | 0.2 to 0.6 | |
| | C20:2 | ND to 0.1 | |

NOTES

1. *Checking for fatty acids may not be necessary for routine analysis and may be carried out if only required or requested.*
2. *ND: Not detectable (defined as ≤ 0.05)*

5.5 Quality requirements

Corn oil shall also comply with requirements specified in Table 2, when tested according to the methods given in Column 5 of the table.

TABLE 2 – Quality requirements for corn oil

| SI No | Characteristic | Requirement | | Methods of test (SLS 313) |
|-------|---|----------------|---|--|
| | | Crude corn oil | Refined, bleached and deodorized corn oil | |
| (1) | (2) | (3) | (4) | (5) |
| i) | Colour, in a 133 mm (5 1/4") cell, Lovibond tintometer scale, combination of yellow and red units, max. | NS | 30 Y 2.5 R | Part 1/ Section 4 |
| ii) | Moisture and volatile matter at 103 ± 2 °C and insoluble impurities per cent by mass, max. | 0.25* | 0.1* | Part 3/ Section 4 Part 3/ Section 5 |
| iii) | Free fatty acids, as oleic acid, per cent by mass, max. | 4.0 | 0.15 | Part 2/ Section 6 |
| iv) | Unsaponifiable matter per cent by mass, max. | 2.5 | 1.5 | Part 4/ Section 3 |
| v) | Peroxide value, meq per kg, max. | 20 | 10 | Part 3/ Section 7 |

**Sum of test results obtained by the test methods given in Section 4 and Section 5 of Part 3 of SLS 313.*

NOTE

NS: Not specified

6 CONTAMINANTS**6.1 Aflatoxins**

The product shall not exceed the level 5.0 µg/ kg for aflatoxin B₁ and 10.0 µg/ kg for total aflatoxin, when determined according to the method given in SLS 962.

6.2 Potentially toxic elements

The product shall not exceed the limits given in Table 3, when tested in accordance with the methods given in Column 4 of the table.

TABLE 3 - Limits for potentially toxic elements

| SI No | Potentially toxic element | Limit | Methods of test |
|--------------|----------------------------------|--------------|-------------------------------|
| (1) | (2) | (3) | (4) |
| i) | Arsenic, as As, mg/ kg, max. | 0.1 | AOAC 986.15 or 2013.06 |
| ii) | Lead, as Pb, mg/ kg, max. | 0.1 | AOAC 999.11 or 2013.06 |
| iii) | Cadmium, as Cd, mg/ kg, max. | 0.1 | AOAC 999.11 or 2013.06 |

NOTE

Test for heavy metals may not be necessary for routine analysis and may be carried out if only required or requested.

7 PACKAGING

7.1 The product shall be packaged in appropriate, clean and food grade packages or containers.

7.2 The packaging material which comes into contact directly with the product shall be sufficiently inert to preclude substances from being transferred to food in quantities large enough to endanger human health or to bring about an unacceptable change in the composition of the product or deterioration in its organoleptic properties.

8 MARKING AND/ OR LABELLING

8.1 The following shall be marked or labelled legibly and indelibly on each package or container:

- a) Name of the product with type;
- b) Brand name or trademark, if any;
- c) Net content, in 'ml' or 'l';
- d) Name and address of the manufacturer/ processor;
- e) Name and address of the packer/ distributor;
- f) Batch number or code number or a decipherable code marking;
- g) Date of manufacture;
- h) Date of expiry;
- j) Date of repackaging, if relevant;
- k) Declaration of antioxidants added, if any; and
- m) Country of origin, in-case of imported products.

8.2 The marking and labelling shall also be in accordance with **SLS 467**.

9 SAMPLING

9.1 A representative sample of the product for ascertaining conformity to the requirements of this Standard shall be obtained in accordance with the relevant Clauses of **SLS 664**.

9.1.1 The sampling method shall be applied where compliance of a lot to the requirements of this Standard is to be assessed based on statistical sampling and inspection.

9.1.2 Where compliance with this Standard is to be assured based on manufacturer's control systems coupled with type testing and check tests or any other procedure, appropriate method of sampling and inspection shall be adopted.

9.2 Number of tests

9.2.1 Each package/ container selected as in relevant Clauses of **SLS 664** shall be examined for packaging and marking/ labelling requirements of this Standard.

9.2.2 The laboratory sample prepared as in relevant Clauses of **SLS 664** and Section **1**, Part **1** of **SLS 313** shall be inspected/ tested for the requirements given in Clauses **5** and **6** of this Standard.

10 METHODS OF TEST

Tests shall be carried out as prescribed in Sections **2**, **4** and **5** of Part **1**, Sections **1**, **2** and **6** of Part **2**, Sections **4**, **5** and **7** of Part **3**, Sections **2** and **3** of Part **4** of **SLS 313**, **SLS 962** and Official Methods of Analysis of the Association of Official Analytical Chemists (**AOAC**).

11 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this Standard if the following conditions are satisfied:

11.1 Each package/ container examined as in **9.2.1** satisfies the packaging and marking/ labelling requirements of this Standard.

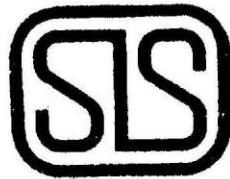
11.2 The test results of the laboratory sample when tested as in **9.2.2** satisfy the requirements given in Clauses **5** and **6** of this Standard.

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SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI which includes surveillance inspection of the factory, testing of both factory and market samples.

Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.



SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

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