SRI LANKA STANDARD 862: 2017

UDC 665.35

SPECIFICATION FOR
PALM KERNEL OIL
(First Revision)

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard
SPECIFICATION FOR PALM KERNEL OIL
(First Revision)

SLS 862: 2017

(incorporating Erratum No 01)

Gr. 5

SRI LANKA STANDARDS INSTITUTION
17, Victoria Place
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Sri Lanka

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This Standard does not purport to include all the necessary provisions of a contract.

Sri Lanka Standard

SPECIFICATION FOR PALM KERNEL OIL
(First Revision)

FOREWORD

This 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 2017-05-04.

Palm kernel oil is obtained by mechanical expression and/or solvent extraction of the kernel of the fruit of oil palm (*Elaeis guineensis*) trees. Presently a considerable quantities of palm kernel olein are being imported into the country.

This Standard was first published in 1989. In this revision, quality requirements have been updated and a new requirement for heavy metals has been introduced. Also, the references to the latest methods of tests have been given.

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 result of a test or an analysis shall be rounded off in accordance with **SLS 102**. The number of significant places retained in the rounded off value should be the same as that of the specified value in this Standard.

In revising this Standard, the assistance derived from the publications of the Codex Alimentarius Commission, Department of Standards Malaysia and International Organization for Standardization (ISO) is gratefully acknowledged.

1 SCOPE

This Standard prescribes the requirements and methods of sampling and testing of palm kernel oil derived from the kernels of the fruit of oil palm (*Elaeis guineensis*) tree by the process of expression and/or solvent extraction.

2 REFERENCES

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

SLS 102 Rules for rounding off numerical values

SLS 143 General principles of food hygiene

SLS 313 Methods for analysis of animal and vegetable fats and oils

- Part 1/Section 1 Preparation of test sample
- Part 1/Section 3 Determination of conventional mass per volume (litre weight in air)
- Part 1/Section 4 Determination of Lovibond colour

Part 1/Section	5	Determination of refractive index
Part 1/Section	7	Determination of melting point in open capillary tubes (slip point)
Part 2/Section	1	Determination of saponification value
Part 2/Section	2	Determination of iodine value
Part 2/Section	6	Determination of acid value and acidity
Part 3/Section	4	Determination of insoluble impurities content
Part 3/Section	5	Determination moisture and volatile matter content
Part 3/Section	7	Determination of peroxide value-Iodometric (visual) endpoint determination
Part 4/Section	2	Analysis by gas chromatography of methyl esters of fatty acids
Part 4/Section	3	Determination of unsaponifiable matter- Method using diethyl ether extraction

SLS 428 Random sampling methods
SLS 467 Code of practice for labelling of prepackaged foods
SLS 664 Methods of sampling animal and vegetable fats and oils

3 DEFINITIONS

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

3.1 crude palm kernel oil: The product obtained from the kernels of the fruit of the oil palm (*Elaeis guineensis*) tree by the process of mechanical expression and /or solvent extraction

3.2 refined, bleached and deodorized palm kernel oil: The crude palm kernel oil which has been refined by pre-treatment with acids or alkali, bleached with bleaching earth or activated carbon or both and deacidified and deodorized with steam or any other acceptable commercial process

3.3 neutralized, bleached and deodorized palm kernel oil: The product obtained from crude palm kernel oil and subsequently refined by neutralization with alkali, treated with bleaching earth or activated carbon or both, and deodorized by steam

4 GRADES

Palm kernel oil shall be of the following grades:

4.1 Crude palm kernel oil
4.2 Refined, bleached and deodourized palm kernel oil (RBD palm kernel oil)
4.3 Neutralized, bleached and deodourized palm kernel oil (NBD palm kernel oil)

NOTE: *Grades given in Clause 4.2 and 4.3 may contain permitted antioxidants.*

5 REQUIREMENTS

5.1 General characteristics

5.1.1 The product shall be processed, packaged, stored, transported and distributed in accordance with the conditions prescribed in **SLS 143**.

5.1.2 The product shall be clear and free from adulterants, sediments, suspended and other foreign matter, separated water, added colouring and flavouring substances.

5.1.3 Colour at 45 ^{o}C to 50 ^{o}C : The colour of crude palm kernel oil shall be bright, clear dark yellow in colour. The colour of refined or neutralized, bleached and deodorized palm kernel oil shall be clear and yellow.

5.1.4 The odour and flavour of each product shall be characteristic of the designated product. It shall be free from foreign and rancid odour and flavour.

5.2 Identity requirements

The product 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 palm kernel oil

Sl No. (1)	**Characteristic** (2)	**Requirement** (3)	**Method of Test in SLS 313** (4)
i)	Apparent density, g/ml, at 40 °C	0. 904 to 0.905	Part 1/Section 3
ii)	Refractive index, n_D at 40 °C	1.4500 to 1.4518	Part 1/Section 5
iii)	Slip melting point, °C	25.9 to 28.0	Part 1/Section 7
iv)	Saponification value, mg KOH/g oil	243 to 249	Part 2/Section 1
v)	Unsaponifiable matter, per cent by mass, max.	1.0	Part 4/Section 3
vi)	Iodine value (Wijs)	16.2 to 19.2	Part 2/Section 2
vii)	Fatty acid composition, (as methyl esters), per cent by mass		Part 4/ Section 2
	C6 :0	0.2 to 0.4	
	C8 :0	3.2 to 4.7	
	C10:0	2.9 to 3.5	
	C12:0	45.5 to 55.0	
	C14:0	15.4 to 17.2	
	C16:0	7.6 to 9.2	
	C18:0	1.5 to 2.8	
	C18:1	11.5 to 16.9	
	C18:2	1.0 to 2.9	

NOTE: *The identity requirements of processed palm kernel oil do not differ significantly from those of crude palm kernel oil.*

5.3 Quality characteristics

The product shall also conform to the quality characteristics given in Table **2**, when tested according to the methods given in Column **4** of the table.

TABLE 2 – Quality characteristics for palm kernel oil

Sl No.	**Characteristic**	**Requirement**		**Method of Test in SLS 313**
		Crude Palm kernel oil	**Refined/neutralized, bleached and deodorized palm kernel oil (RBD/NDB)**	
(1)	(2)	(3)	(4)	(5)
i)	Colour, in a 133.4 mm (5 ¼-inch cell) Lovibond, max.	NS	1.5 R	Part 1/Section 4
ii)	Moisture and insoluble impurities, per cent by mass, max.	0.5	0.1	Part 3/Section 5 and Part 3/ Section 4
iii)	Free fatty acids (as lauric acid), per cent by mass, max.	5.0	0.1	Part 2/Section 6
iv)	Peroxide value, as milliequivalents of active oxygen per kg, max.	NS	10	Part 3/Section 7

NS: Not specified
R : Red

5.4 Heavy metals

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 heavy metals

Sl No. (1)	**Heavy metal** (2)	**Limit** (3)	**Method of test** (4)
i)	Arsenic, as As, mg/kg, max.	0.1	AOAC 985.16
ii)	Lead, as Pb, mg/kg, max.	0.1	AOAC 994.02

NOTE: *Tests for heavy metals may not be necessary for routine analysis and carried out only if required or requested.*

6 PACKAGING

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

6.2 The packaging material which comes into contact directly with the product shall be sufficiently inert to preclude substances from being transferred to oil 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.

7 MARKING AND/ OR LABELLING

7.1 The following shall be marked or labelled legibly and indelibly on each package or container destined for the final consumer :

a) Common Name and grade of the product (see Clause 4);
b) Brand name or trade mark, if any ;
c) Net content, in SI units;
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 applicable;
k) Declaration of antioxidants added, if any;
m) Country of origin, in case of imported products; and
n) Following expressions shall not be used on the package label:

"Super Refined", "Extra Refined", "Micro Refined", "Double Refined", "Ultra Refined", "Anti Cholesterol", "Cholesterol Fighter", "Soothing to the Heart", "Cholesterol Friendly", "Saturated Fat Free" or other such expressions which are an exaggeration of the quality of the product.

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

8 SAMPLING

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

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.

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.

8.2 Number of tests

8.2.1 Each package/container selected as in **6.8** of **SLS 664** shall be examined for packaging and marking/ labelling requirements of this Standard.

8.2.2 The laboratory sample prepared as in **6.9** of **SLS 664** and **SLS 313 Part1/Section-1**shall be tested for the requirements given in Clause **5** of this Standard.

9 METHODS OF TESTS

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

10 CRITERIA FOR CONFORMITY

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

10.1 Each package/container examined as in **8.2.1** satisfies the packaging and marking/labelling requirements of this Standard.

10.2 The test results of the laboratory sample when tested as in **8.2.2** satisfy the requirements given in Clause **5** of this Standard.

Erratum No 01 Published on 2022.10.05 to SLS 862: 2017

ERRATUM NO: 1 TO SLS 862: 2017

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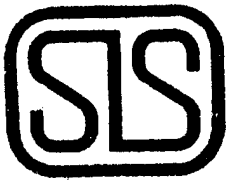
Clause 5.2

Delete the term "crude" from the title of Table 1.

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.*



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SRI LANKA STANDARDS INSTITUTION

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The Principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote Standardization and quality control by educational, consultancy and research and research activity.

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All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution Endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of Standardization as are of special interest to Sri Lanka.

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