

**SRI LANKA STANDARD 720 : 2016**  
UDC 665.353.4

**SPECIFICATION FOR  
PALM OIL  
(Second Revision)**

**SRI LANKA STANDARDS INSTITUTION**



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SPECIFICATION FOR PALM OIL  
(Second Revision)**

**SLS 720 : 2016**  
(Attached AMD 506)

**Gr. 5**

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**Sri Lanka Standard**  
**SPECIFICATION FOR PALM OIL**  
**(Second 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 2016-03-23.

Palm oil is obtained from the fruits of oil palm (*Elaeis guineensis*) trees. Realizing the importance of this new source of oil, efforts have been made to grow oil palm plants in different parts of the country. Such plantations have already been started in the Western Province and the Southern Province. Presently large quantities of palm oil are being imported into the country.

The fruit of oil palm contain two parts, the outer fleshy part or pulp, called mesocarp and the inner seed or nut. The latter consists of hard shell and kernel inside. The pulp forms about 40 to 70 percent of the fruit and contains 60 to 75 percent of the reddish coloured oil. Palmitic acid is the characteristic fatty acid of the oil. The other major fatty acids are oleic and linoleic acids.

This standard was first published in 1985 and revised in 2001. 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 test 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, wherever applicable.

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**

**1.1** This standard prescribes the requirements and methods of sampling and testing for palm oil derived from the fleshy mesocarp of the fruit of the oil palm (*Elaeis guineensis*) tree by the process of expression.

**1.2** Crude palm oil specified in this standard shall not be suitable for direct human consumption and is used only as a raw material which needs to undergo refining processes.

## 2 REFERENCES

Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC), 18<sup>th</sup> Edition, 2<sup>nd</sup> Revision 2007

- 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 3/Section 8 Determination of anisidine value
  - 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 oil (CPO):** The oil obtained by mechanical expression from the fleshy mesocarp of the fruit of *Elaeis guineensis*.
- 3.2 neutralized palm oil (NPO):** The oil obtained by neutralization of crude palm oil with alkali.
- 3.3 neutralized, bleached palm oil (NBPO):** The oil obtained from crude palm oil by neutralization with alkali and treatment with bleaching earth or activated carbon or both; or from neutralized palm oil by treatment with bleaching earth or activated carbon or both.
- 3.4 neutralized, bleached and deodourized palm oil (NBD palm oil):** The oil obtained from crude or semi-refined palm oil which has been refined by neutralization with alkali, bleached with bleaching earth or activated carbon or both and deodourized by steam.
- 3.5 refined, bleached and deodourized palm oil (RBD palm oil):** The oil obtained from crude or semi-refined palm oil which has been bleached with bleaching earth or activated carbon or both, deodourized by steam and deacidified by physical means.

## 4 GRADES

Palm oil shall be of the following grades:

- a) Crude palm oil (CPO);
- b) Neutralized palm oil (NPO);
- c) Neutralized, bleached palm oil (NBPO); and
- d) Neutralized, bleached and deodourized palm oil (NBD) / Refined, bleached and deodourized palm oil (RBD).

## 5 REQUIREMENTS

### 5.1 General requirements

**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 on melting and free from adulterants, sediments, suspended and other foreign matter, separated water, added colouring substances and added flavouring substances.

**5.1.3** Colour at 50 °C to 55 °C : The colour of crude or neutralized palm oil shall be bright, clear and orange-red. The colour of neutralized, bleached palm oil shall be bright, clear and reddish yellow and the colour for neutralized/refined, bleached and deodourized palm oil shall be bright, clear and golden yellow.

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

## 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 oil**

<b>SI No.</b>	<b>Characteristic</b>	<b>Requirement</b>	<b>Method of Test (Ref. SLS 313)</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
i)	Apparent density, g/ml, at 50 °C	0.8889 to 0.8896	Part 1/Section 3
ii)	Refractive index, $n_D$ 50 °C	1.4521 to 1.4541	Part 1/Section 5
iii)	Slip melting point, °C	33 to 39	Part 1/Section 7
iv)	Saponification value, mgKOH/g oil	194 to 205	Part 2/Section 1
v)	Unsaponifiable matter, per cent by mass, max.	1.2	Part 4/ Section 3
vi)	Iodine value, (Wijs)	50 to 54	Part 2/ Section 2
vii)	Fatty acid composition, (as methyl esters), per cent by mass		Part 4/ Section 2
	C12 : 0	0.0 to 0.5	
	C14 : 0	0.9 to 1.5	
	C16 : 0	39.2 to 45.8	
	C16 : 1	0.0 to 0.4	
	C18 : 0	3.7 to 5.1	
	C18 : 1	37.4 to 44.1	
	C18 : 2	8.7 to 12.5	
	C18 : 3	0.0 to 0.6	
	C20 : 0	0.0 to 0.5	



### 5.3 Quality requirements

The product shall also conform to the requirements given in Table 2, when tested according to the methods given in Column 7 of the table.

**TABLE 2 – Quality requirements for palm oil**

SI No. (1)	Characteristic (2)	Requirement				Method of Test in SLS 313 (7)
		Crude (CPO) (3)	Neutralized (NPO) (4)	Neutralized, bleached (NBPO) (5)	Neutralized/ Refined, bleached and deodourized (NBD/RBD) (6)	
i)	Colour, in 133.4 mm (5 ¼-inch cell) Lovibond, max.	NS	NS	20R*	3R*	Part 1/ Section 4
ii)	Moisture and insoluble impurities, per cent by mass, max.	0.5	0.1	0.1	0.1	Part 3/ Sections 5 and 4
iii)	Free fatty acids (as palmitic), per cent by mass, max.	5.0	0.25	0.25	0.10	Part 2/ Section 6
iv)	Peroxide value, as milliequivalents of active oxygen per kg, max.	10	10	10	10	Part 3/ Section 7
v)	Anisidine value, max.	NS	NS	NS	4.0	Part 3/ Section 8

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**

SI No. (1)	Heavy metal (2)	Maximum Limit (mg/kg) (3)	Method of test (4)
i)	Arsenic, as As, mg/kg, max.	0.1	AOAC 986.15
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 the product 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) Name and grade of the product (see Clause 4);
- b) Brand name or trade mark, if any ;
- c) Net content, in ml, l, g or kg;
- 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.

**7.2** 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 Part 1 / 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, 5,7** and **8** 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** shall 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** shall satisfy the requirements given in **Clause 5** of this standard.

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**Amendment No: 01 approved on 2018-08-10 to SLS 720: 2016**

**SPECIFICATION FOR PALM OIL**

**EXPLANATORY NOTE**

This amendment is issued for the requirement for refractive index, unsaponifiable matter and apparent density to inline the requirements specified in the Standard with Food (Standard) Regulation 1989 and the Codex Alimentarius Commission.

Amendment No: 01 approved on 2018-08-10 to SLS 720: 2016

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### TABLE 1 Identify requirements for palm oil

Delete requirements given in SI No. i), ii) and v) of Table 1 and insert following:

Table 1 – Identify requirements for palm oil

SI No. (1)	Characteristic (2)	Requirement (3)	Method of Test (Ref. SLS 313) (4)
i)	Apparent density, g/ml, at 50 °C	0.889 to 0.895	Part 1 / Section 3
ii)	Refractive index, $n_D$ 50 °C	1.4546 – 1.4560	Part 1 / Section 5
v)	Unsaponifiable matter, per cent by mass, max.	1.0	Part 4 / Section 3



## ***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

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