SRI LANKA STANDARD 960 : 2016

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SPECIFICATION FOR
PALM STEARIN
(First Revision)

SRI LANKA STANDARDS INSTITUTION

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SLS 960 : 2016

Gr. 5

SRI LANKA STANDARDS INSTITUTION
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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 STEARIN
(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 2016-03-23.

Palm stearin is obtained by fractionation of palm oil derived from the fleshy mesocarp of the fruits of oil palm (*Elaeis guineensis*) tree by process of expression. On fractionation palm oil is separated into liquid and semi-solid fractions and the semi solid fraction is called palm stearin. Presently large quantities of palm stearin are being imported into the country.

This standard was first published in 1992. Taking into consideration the new developments made in the palm oil industry and to align with the international practices, a revision of this standard was considered necessary. In this revision, quality requirements have been updated and a new requirement for heavy metals have 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.

While revising of 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 for palm stearin.

2 REFERENCES

Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC), 18th Edition, 2nd 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 4/Section 2	Analysis by gas chromatography of methyl esters of fatty acids
	Part 4/Section 3	Determination of unsaponifiable matter- Method using diethyl l 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	
SLS 720	Palm oil	

3 DEFINITIONS

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

3.1 palm stearin: The high-melting fraction obtained from fractionation process of palm oil obtained from the fleshy mesocarp of the fruit of the oil palm *Elaeis guineensis*, through any of the following processes;

a) Dry fractionation through crystallization of the oil by controlled cooling and subsequent filtration.
b) Detergent fractionation through crystallization of the oil by controlled cooling and separation of the fractions after addition of a surface active agent, after fractionation, the surface active agent is removed by washing.
c) Solvent fractionation through controlled crystallization of the oil in a solvent followed by separation of the fractions; after separation, the solvent is removed from each fraction.

3.2 crude palm stearin: The high-melting fraction obtained by a one-stage or multi-stage fractionation of crude palm oil (see **SLS 720**).

3.3 neutralized palm stearin: The high-melting fraction obtained by a one-stage or multi-stage fractionation either from neutralized palm oil or from crude palm oil (see **SLS 720**) and subsequently neutralized with alkali.

3.4 neutralized, bleached palm stearin: The high melting fraction obtained by a one-stage or multi-stage fractionation either from neutralized and bleached palm oil or crude palm oil (see **SLS 720**) and subsequently neutralized with alkali and bleached with bleaching earth or activated carbon or both, or from neutralized palm oil and subsequently bleached with bleaching earth or activated carbon or both.

3.5 neutralized, bleached and deodourized palm stearin: The high-melting fraction obtained by a one-stage or multi-stage fractionation of crude palm oil (see **SLS 720**) and subsequently refined by neutralization with alkali, treatment with bleaching earth or activated carbon or both, and deodourized by steam; or the high-melting fraction obtained from the fractionation of neutralized, bleached and deodourized palm oil.

3.6 refined, bleached and deodourized palm stearin: The high-melting fraction obtained by one-stage or multi-stage fractionation from refined, bleached and deodourized palm oil (see **SLS 720**).

4 GRADES

Palm stearin shall be of the following grades:

a) Crude palm stearin;
b) Neutralized palm stearin;
c) Neutralized, bleached palm stearin; and
d) Neutralized, bleached and deodourized (NBD) palm stearin / Refined, bleached and deodourized (RBD) palm stearin.

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 adultarants, sediments, suspended and other foreign matter, added colouring substances and added flavouring substances.

5.1.3 Colour at 55 ^{o}C to 70 ^{o}C: The colour of crude or neutralized palm stearin shall be bright, clear and reddish yellow. The colour of neutralized, bleached palm stearin shall be bright, clear and orange yellow and the colour of refined/ neutralized, bleached and deodourized palm stearin shall be bright, clear and light 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 stearin

SI No.	Characteristic	Requirement	Method of Test Ref. SLS 313
(1)	(2)	(3)	(4)
i)	Apparent density, g/ml, at 60°C	0.8813 to 0.8844	Part 1/Section 3
ii)	Refractive index, n_D 60°C	1.4482 to 1.4501	Part 1/Section 5
iii)	Slip melting point, °C, min.	44	Part 1/Section 7
iv)	Saponification value, mgKOH/g oil	193 to 205	Part 2/Section 1
v)	Unsaponifiable matter, per cent by mass, max.	0.9	Part 4/Section 3
vi)	Iodine value, (Wijs) max.	48	Part 2/Section 2
vii)	Fatty acid composition, (as methyl esters), per cent by mass		Part 4/Section 2
	C12 : 0	0.1 to 0.3	
	C14 : 0	1.1 to 1.7	
	C16 : 0	49.8 to 80.0	
	C16 : 1	< 0.05 to 0.1	
	C18 : 0	3.9 to 5.6	
	C18 : 1	11.0 to 34.4	
	C18 : 2	2.0 to 8.9	
	C18 : 3	0 to 0.5	
	C20 : 0	0.3 to 0.6	

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 stearin

SI No.	Characteristic	Requirement				Method of test Ref. SLS 313
		Crude	Neutralized	Neutralized, bleached	Refined, bleached and deodourized/neutralized, bleached and deodourized	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Colour, in 133.4mm (5 ¼-inch cell) Lovibond, max.	NS	NS	20R*	3R*	Part1/ Section4
ii)	Moisture and insoluble impurities, per cent by mass, max.	0.25	0.15	0.15	0.15	Part3/ Sections 5 and 4
iii)	Free fatty acids (as palmitic), per cent by mass, max.	5.0	0.25	0.25	0.20	Part 2/ Section 6

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)	Limit (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 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.

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 applicable;
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.

7.3 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** and **5** 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.

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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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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