

C O D E X A L I M E N T A R I U S

INTERNATIONAL FOOD STANDARDS



Food and Agriculture
Organization of the
United Nations



World Health
Organization

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REGIONAL STANDARD FOR UNREFINED SHEA BUTTER

CXS 325R-2017

Adopted in 2017.

1. SCOPE

This standard applies to unrefined shea butter intended for direct consumption, or as an ingredient in the manufacture of food products.

2. DESCRIPTION

2.1 Product definitions

The following definitions apply:

Shea butter is vegetable fat derived from the kernels of the shea nut (nut kernels from the tree) scientifically known as *Vitellaria paradoxa*, C.F. Gaertn (synonyms: *Butyrospermum paradoxum*, *Butyrospermum parkii*), from the Sapotaceae family.

Unrefined shea butter is the oleaginous material obtained from the nut kernel of the *Vitellaria paradoxa*, C.F. Gaertn (synonyms: *Butyrospermum paradoxum*, *Butyrospermum parkii*), from the Sapotaceae family by manual or mechanical methods. It is obtained through a thermal process or cold pressed, which does not alter the nature of the fat. It can be purified by washing with water, settling, filtering and centrifuging.

2.2 Other definition(s)

Lot is a specified quantity of unrefined shea butter that has uniform characteristics, enabling the quantity to be assessed.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Raw materials

The raw materials shall be stored and handled under hygienic conditions while maintaining their physico-chemical and microbiological characteristics.

3.2 General characteristics

Unrefined shea butter shall not be mixed with other fats. It shall be free of all foreign matter.

3.2.1 Organoleptic characteristics

The product shall have the characteristic colour, aroma and flavour of unrefined shea butter and be free from any rancidity. The colour varies from ivory-coloured to yellowish.

3.2.2 Quality criteria

Unrefined shea butter shall meet the quality criteria specified in Table 1 of this standard.

Table 1. Quality criteria

Characteristics	Unrefined shea butter		
	Grade 1 ^a	Grade 1 ^b	
	Maximum level	Minimum level	Maximum level
Water content (%)	0.05	0.06	0.2
Free fatty acids (%)	1	1.1	3
Peroxide value (milliequivalents of active oxygen/kg oil)	10	11	15
Insoluble impurities (% m/m)	0.09	0.1	0.2

The limits of these descriptive key variables of composition and quality of generic unrefined shea butter may appear very broad, with a large range of values between minimum and maximum values. This is because the descriptors consider the actual variation in characteristics found in shea butter in all production areas.

- The first grade of unrefined shea butter can be used for direct consumption;
- The second grade of unrefined shea butter can be used for the food industry (confectionery, chocolate, edible oil or the base for margarines).

3.3 Chemical and physical characteristics

Table 2: Chemical and physical characteristics of unrefined shea butter

Parameter	Range
Relative density ($x= 20^{\circ}\text{C}$)	0.91 – 0.98
Density ($x= 40^{\circ}\text{C}$)	0.89 – 0.93
Saponification value (mg KOH/g fat)	160 - 195
Iodine value (g I ₂ /100g)	30- 75
Unsaponifiable matter (% m/m)	1 – 19
Refractive index at 44°C	1.4620 – 1.4650
Melting point (°C)	35 – 40

3.4 Fatty acid composition

Samples falling within the appropriate ranges specified below are in compliance with this standard.

Table 3: Fatty acid composition of unrefined shea butter as determined by gas liquid chromatography from authentic samples (expressed as percentage of total fatty acids)

<u>Fatty Acid</u>	<u>% levels of fatty acids</u>
Lauric acid (C 12:0)	< 1
Myristic acid (C 14:0)	<0.7
Palmitic acid (C 16:0)	2 - 10
Palmitoleic acid (C 16:1)	<0.3
Stearic acid (C 18:0)	25-50
Oleic acid (C 18:1)	32-62
Linoleic acid (C 18:2)	1-11
Linolenic acid (C 18:3)	1-11
Arachidonic acid (C 20:0)	<3.5

4. FOOD ADDITIVES

No food additives are permitted for use in unrefined shea butter.

5. CONTAMINANTS

The product shall comply with the relevant provisions of the *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995)

The products covered by this Standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

6. HYGIENE

It is recommended that unrefined shea butter be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CXC 1-1969) and other relevant Codex codes of hygienic practice.

The product should comply with any microbiological criteria established in accordance with the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997).

7. LABELLING

7.1 Name of the food

The product shall be labelled in accordance with the provisions of the *General Standard for the Labelling of Prepackaged Foods* (CXS 1-1985). Furthermore, each container shall be marked with a label containing the following information:

- (a) Name of the product and grade – to be consistent with table 1
- (b) Name and address of the manufacturer and/or the trademark
- (c) County of origin
- (d) Net weight in kg
- (e) Date of manufacture
- (f) Product shelf life
- (g) Production lot number or code
- (h) Storage instructions.

7.2 Labelling of non-retail containers

The information required by this standard and by section 4 of the *General Standard for the Labelling of Prepackaged Foods* shall be given either on the container or in accompanying documents, except that the name of the product, the net weight of the product, date of manufacture, the production lot number as well as the name and address of the manufacturer, the packer, the distributor and/or importer shall appear on the container.

However, lot identification, and the name and address of the manufacturer, packer, distributor, and/or importer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

8. METHODS OF ANALYSIS AND SAMPLING

8.1 Sampling

Sampling shall be done in accordance with the provisions of ISO 5555:2001, Animal and vegetable fats and oils Sampling.

8.2 Analysis

To ensure compliance with this quality standard, the samples selected as specified in clause 9 shall be tested in accordance with the appropriate testing procedures:

Test parameter	Method
Determination of moisture content	- AOAC 920.116 - IUPAC2.60 - ISO 662: 1998
Determination of free fatty acid content: acid value and acidity	- ISO 660: 1996 - IUPAC 2. 201
Determination of relative density	- IUPAC 2. 101
Determination of saponification value	- ISO 3657: 1988 (revised 1992) - IUPAC 2. 202
Determination of iodine value	- AOAC 925.56 - ISO 3961: 1999
Determination of peroxide value	- AOCS cd. 8b - 90 - IUPAC 2501 - ISO 3960: 2005
Determination of unsaponifiable matter	- ISO 3596-1: 1996 - IUPAC 2. 401
Determination of insoluble impurities content	- ISO 663: 2000 - IUPAC 2604

Determination of melting point	- ISO 6321: 2002
Determination of lead content (Pb)	- ISO 12193: 1994 - AOAC 972.25 - AOAC 994.02 - IUPAC 2632
Determination of arsenic content (As)	- AOAC 952.13 - IUPAC 3136
Determination of iron content (Fe)	- ISO 8294: 1994 - AOAC 990.05 - IUPAC 2631