

# PHILIPPINE NATIONAL STANDARD

PNS/BAFPS 22:2004  
ICS 67.200.10

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**Virgin coconut oil (VCO)**



**BUREAU OF PRODUCT STANDARDS**

**Foreword**

The development of Philippine National Standard for Virgin Coconut Oil was initially undertaken by the Center for International Trade Expositions and Missions (CITEM) of the Department of Trade and Industry (DTI) in view of the increasing demand of commodity for domestic and export markets. After which, an interim technical committee spearheaded by the Philippine Coconut Authority (PCA) was created.

In close coordination with the members of the interim committee of PCA, the Bureau of Agriculture and Fisheries Product Standards (BAFPS) Sub-Committee on Crops created through Special Order No. 411 convened series of technical reviews and public consultation on the draft standard for virgin coconut oil.

BAFPS deemed it necessary to adopt a standard providing common understanding on the definition of virgin coconut oil, essential composition and quality factors, labeling and methods of analysis and sampling.

**Virgin coconut oil (VCO)**

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**1 Scope**

This standard applies to virgin coconut oil in a state for human consumption.

**2 References**

The titles of the standards publications referred to in this standard are listed on the inside back cover.

**3 Definitions**

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

**3.1 General****3.1.1****free fatty acids (FFA)**

a specified fatty acid liberated by hydrolysis from naturally occurring fats

**3.1.2****glyceride**

an ester formed by the combination of glycerol and fatty acid. Glycerides occur naturally in oils and fats

**3.1.3****iodine number**

measure of the degree of unsaturation of oils and fats

**3.1.4****virgin coconut oil (VCO)**

oil obtained from the fresh, mature kernel of the coconut by mechanical or natural means, with or without the use of heat, without undergoing chemical refining, bleaching or deodorizing, and which does not lead to the alteration of the nature of the oil. Virgin coconut oil is an oil which is suitable for consumption without the need for further processing

Virgin coconut oil (VCO) consists mainly of medium chain triglycerides, which are resistant to peroxidation. The saturated fatty acids in VCO are distinct from animal fats, the latter consisting mainly of long chain saturated fatty acids.

**4 Essential composition and quality factors**

**4.1 Identity characteristics**

**4.1.1** Gas liquid chromatography (GLC) ranges of fatty acid composition<sup>1</sup> shall be in accordance with Table 1.

**Table 1– Gas liquid chromatography range of fatty acid composition**

Common name	Composition	(%)
Caproic acid	C 6:0	ND - 0.7
Caprylic acid	C 8:0	4.6- 10.0
Capric acid	C 10:0	5.0- 8.0
Lauric acid	C 12:0	45.1- 53.2
Myristic acid	C 14:0	16.8 - 21
Palmitic acid	C 16:0	7.5- 10.2
Palmitoleic acid	C 16:1	ND
Stearic acid	C 18:0	2.0- 4.0
Oleic acid	C 18:1	5.0- 10.0
Linoleic acid	C 18:2	1.0- 2.5
Linolenic acid	C 18:3	ND - 0.2
	C 24:1	ND

NOTE ND means non-detectable.

**4.2 Quality characteristics**

**4.2.1** Colour, odor and taste

Virgin coconut oil shall be colorless, sediment free, with natural fresh coconut scent and free from rancid odors or tastes.

**4.2.2** Virgin coconut oil shall conform to the requirements specified in Table 2.

<sup>1</sup> Percent fatty acid composition is based on Codex Stan 210-1999

**Table 2– Virgin coconut oil property requirements**

<b>Properties</b>	<b>Specification</b>
Moisture and volatile content, %, max	0.20
Free fatty acids (expressed as lauric acid), %, max.	0.20
Peroxide value, meq/kg oil, max	3.0
Food additives	None permitted
Contaminants	
Matter volatile at 105°C, %, max	0.20
Heavy metal, mg/kg, max.	
Iron (Fe)	5.0
Copper (Cu)	0.40
Lead (Pb)	0.10
Arsenic (As)	0.10

## **5 Hygiene**

It is recommended that the product covered by the provisions of this standard shall be in accordance with the appropriate Sections of the General Principle of Food Hygiene recommended by the Codex Alimentarius Commission (CAC/RCP 1-1969, Rev.3-1997).

## **6 Labelling**

The label of each package shall have the following information:

1. Name of product: “Virgin coconut oil”
2. Brand name or trade name
3. Net content
4. Lot identification
5. Name and address of the manufacturer and/or packer, or distributor
6. The phrase “Product of the Philippines”
7. Type of Process
8. Date manufactured and “Best Before”
9. BFAD registration number and bar code (optional)

## **7 Methods of analysis and sampling**

### **7.1 Determination of fatty acid composition**

According to IUPAC 2.301, 2.302 and 2.304 or ISO 5508:1999 and ISO 5509:1999.

### **7.2 Determination of iodine value**

According to IUPAC 2.205/1, Wijs method or ISO 3961:1996, Hanus Method, AOAC 920.158. Results are expressed as % m/m absorbed iodine.

## **8 Compliance and specification**

When found to comply with the requirements specified in this Philippine Standard Specification, the lot, the batch, or the consignment from which the samples have been drawn, shall be deemed to comply with this Philippine National Standard Specification and shall be provided with the Philippine Standard (PS) mark.

## References

PNS/BAFPS 22:2004

Codex Alimentarius Commission, Recommended International Code of Practice General Principles of Food Hygiene. CAC/RCP 1-1969 (Rev. 4 2003 1)

Codex Standard for Olive Oil, Virgin and Refined, and for Refined Olive-Pomace Oil, Codex Stan 33-1981 (Rev.1-1989)

Codex Standard for Edible Fats and Oils Not Covered by Individual Standards. Codex Stan 19-1981 (Rev. 2-1999)

Codex Standard for Named Vegetable Oils. Codex Stan 210-1999

CYB Group Plc: Glossary of Terms. <http://www.cybgroup.co.uk>

Fennema O.R. Food Chemistry 2<sup>nd</sup> Edition: Revised and Expanded, Marcel Dekker, Inc.: New York

Gonzales, L. A. 2004. Assessment and Development of Quality Standards for Virgin Coconut Oil Produced From Different Processes. PQCRD: Philippine Coconut Authority

ISO 3961:1996 Animal and vegetable fats and oils -- Determination of iodine value

ISO 5508:1999 Animal and vegetable fats and oils -- Analysis by gas chromatography of methyl esters of fatty acids

ISO 5509:1999 Animal and vegetable fats and oils -- Preparation of methyl esters of fatty acids

Kokonut Pacific: Oil composition and quality factors. <http://www.kokonutpacific.com.au>

Nielsen, S.S. Introduction to the Chemical Analysis of Foods. Jones and Bartlett

# BPS

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The use of the PS Certification Mark is governed by the provisions of Department Administrative Order No. 01 series of 1997 – Revised Rules and Regulations Concerning the Philippine Standard (PS) Quality and / or Safety Certification Mark Scheme by the Bureau of Product Standards. This mark on a product/container is an assurance by the manufacturer/producer that the product conforms with the requirements of a Philippine standard. Details of conditions under which a license to use the PS Certification Mark may be granted can be obtained from the Bureau of Product Standards, Department of Trade and Industry, 361 Sen. Gil J. Puyat Avenue, Makati City.



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