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PAKISTAN STANDARD

SPECIFICATION FOR
COOKING OIL (BLENDED) (1ST REV.)



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PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY
Standards Development Centre,
39 – Garden Road, Saddar,
Karachi-74400.

COOKING OIL (BLENDED) (1ST REVISION).

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PAKISTAN STANDARD SPECIFICATION

FOR

COOKING OIL (BLENDED) (1ST REV.)

OILSEEDS & THEIR ALLIED PRODUCTS SECTIONAL COMMITTEE

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University of Karachi,
KARACHI.

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National Institute of Health,
ISLAMABAD.
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4. Director General,
PCSIR Laboratories Complex,
University Road,
KARACHI.
5. Director,
Quality Control Centre (PSQCA),
Block No.77, Pak Secretariat,
KARACHI.
6. Mr. Haq Nawaz Bangash,
Govt. Public Analyst,
Food Laboratory,
Leady Reading Hospital,
PESHAWAR.
7. Govt. Public Analyst,
Food Laboratory,
HYDERABAD.
8. Mrs. Kishwar Shabina,
Public Analyst.
KMC Food Laboratory,
KARACHI.

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9. Mr. Anwaruddin Qazi,
Incharge, KMC Food Laboratory
KARACHI
10. Chairman, All Pakistan Fats & Oil Importers,
KARACHI.
11. Miss Ghazala Sultana,
Senior Microbiologist, Agriculture & Livestock Products
Marketing & Grading Deptt.,
Test House, M.T. Road,
KARACHI.
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Managing Director, Trading Corporation of Pakistan Ltd.,
Press Trust House, I.I. Chundrigar Road,
KARACHI.
13. Director General, Agricultural Research Institute,
Ternab,
PESHAWAR.
14. Mr. Umer Farooq Hashmi,
Manager Quality Assurance, Lever Brothers Pakistan Ltd.,
Awari Plaza, Fatima Jinnah Road,
KARACHI.
15. Secretary, Pakistan Vanaspati Manufacturers
Association,
ISLAMABAD.
16. Director, Oilseeds Research Institute,
FAISALABAD.
17. Director General, Agricultural Research Institute,
TANDOJAM.
18. Mr. Arshad Karim Bhatti, Rafhan Best Foods Ltd.,
Shapur, Multan Road,
LAHORE.
19. Chairman, Pakistan Cooking Oil Manufacturers
Association,
LAHORE.
20. Director General, M/s. Punjab Cooking Oil Mills Ltd.,
Khanewal Road,
KABIRWALA.

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21. General Manager, United Industries Ltd.,
101, First Floor, Regency Arcase,
FAISALABAD.
22. Mr. Nizar G. Hussain, Agro Processors & Atmospheric
Gases (Pvt.) Ltd.,
KARACHI.
23. Mr. Ahsan Ali Shah, Wazir Ali Industries,
Hali Road,
HYDERABAD.
24. Dr. Ehsanullah,
S.S.O., Food Technology Research Lab.,
Pak. Agri. Research Council,
ISLAMABAD.
25. Mr. Iftikhar Ahmed, Malaysian Palm Oil Board,
KARACHI.
26. Raja Bashir Ahmed,
General Manager, Habib Cooking Oil Mills Ltd.,
KARACHI.
27. Mr. Rauf Khan, Pakistan Oils Development Board,
ISLAMABAD.
28. Mrs. Raazia Shakir, Export Advisory Cell,
Ministry of Industries & Production,
ISLAMABAD.
29. Ms. Izzat Afza Siddiqui, Customs Laboratory,
Custom House,
KARACHI.
30. Dr. M. Asad Hasan,
Director (Ex-Officio) Standards Development Centre,
Pakistan Standards & Quality Control
Authority
KARACHI.

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SECRETARIAT

1. Mr. Abdul Hayee,
Deputy Director (Agri. & Food) &
Secretary to the Committee,

2. Mr. Naseem-us-Sami,
Dy.Asstt. Director (Agri. & Food),

Standards Development Centre
Pakistan Standards & Quality Control
Authority
KARACHI.

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PAKISTAN STANDARD SPECIFICATION

FOR

COOKING OIL (BLENDED) (1ST REV.)

0. FOREWORD

- 0.1** This Pakistan Standard was adopted by the Pakistan Standards & Quality Control Authority, Standards Development Centre on 28-01-2003 on the endorsement by the Agricultural & Food Products Divisional Council of the draft finalized by the Oilseeds & their Allied Products Sectional Committee.
- 0.2** Cooking Oil is the product of blending of permissible edible oils of vegetable origin which shall be refined, bleached and deodourized so as to conform to the given standard of quality for cooking oil as reproduced viz, Refined Cotton Seed Oil, Refined Groundnut Oil , Refined Low Erucic Acid Rape Seed (Canola Oil), Refined Sesame Seed Oil, Refined Sunflower Oil, Refined Maize (Corn) Oil, Refined Palmolein, Refined Soya bean Oil and Refined Safflower Oil.
- 0.3** In preparation of this standard, the views of the manufacturers, technologists, and testing authorities etc., have been taken into consideration.
- 0.4** The final value, expressing the results of test or analysis shall be rounded off in accordance with PS-103-1991 (1st Rev.). Method of Rounding of Numerical values”. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

1. SCOPE

- 1.1** This Standard prescribes the requirements and methods of sampling & test for Cooking Oil (blended).

2. TERMINOLOGY:

- 2.1** **Cooking Oil** – means blending of vegetable oils of permissible edible grades of vegetable origin which shall be refined, bleached & deodourized so as to conform to the given standard of quality primarily intended for Cooking and / or frying as produced by blending the following edible oils :

- | | | | |
|------|--|-------|--------------------------|
| i) | Refined Cotton Seed Oil | ii) | Refined Ground Nut Oil |
| iii) | Refined Low Erucic Acid Rape seed (Canola Oil) | iv) | Refined Sesame Seed Oil. |
| v) | Refined Maize (Corn) Oil | vi) | Refined Palmolein. |
| vii) | Refined Soya bean Oil | viii) | Refined Sunflower Oil. |
| ix) | Refined Safflower Oil. | | |

It shall be free from all harmful substances.

3. REQUIREMENTS:

3.1 Vitamin A-33000 I.U. assay variation 10 % I.U. of Vitamin-A shall be added per k.g. of the finished product. Test shall be carried out in the manner prescribed in Clause-23 of PS:56-1996 (1st Rev.) for Method of Sampling & Test for Vegetable Oil and Fats.

3.2 The material shall be clear at ambient temp 25⁰ C and free from adulterants, sediments, suspended and other foreign matter, separated water and shall have acceptable taste and odour. It may contain antioxidants and synergists as prescribed in CAC / WHO be adopted or as prescribed in Pure Food Rules. It may contain any one of the antioxidants and synergists as prescribed in CAC / WHO not excess of the following limits noted against each.

1. <u>ANTIOXIDANTS</u>	<u>MAXIMUM LEVEL OF USE</u>
i. Propyl, Octyl, and dodecyl Gallates.	100 mg/kg individually in combination.
ii. Butylated hydroxy tolence (BHT) Butylated hydroxyanibale (BHA)	200 mg/kg individually or in combination.
iii. Any combination of gallates with BHA or BHT or both.	200 mg/kg but gallates not to exceed 100 mg/kg.
iv. Natural & Synthetic tocopherols.	Not limited.
v. Ascorbyl palmitate	200 mg/kg individually.
vi. Ascorbyl stearate	or in combination.
vii. Dilauryl thiodipropionate	200 mg / kg.
viii. Tertiary Butyl Hydroquinone (TBHQ).	200 mg / kg.

2. <u>ANTIOXIDANTS SYNERGISTS</u>	<u>MAXIMUM LEVEL OF USE</u>
i. Citric Acids and its Sodium Salt.	Limited by GMP.
ii. ISO propyl citrate mixture	100 mg / kg
iii. Phosphoric acid	individually or in combinat

3.2.1. Colour : - It should not contain any added colouring matter and flavour, except permitted natural flavour.

3.2.2. The clarity of the material shall be judged by the absence of turbidity after keeping the filtered sample at 25°C for 24 hours.

3.2.3. The material shall also comply with the requirements given in Table-1.

4. PACKING:

4.1 Cooking Oil shall be packed in well-closed tin containers made from food grade material and it shall conform to PS:4773-2002 for Tinplate containers for Ghee, Banaspati, Cooking Oil/Edible Oils or the material shall be packed in suitable sealed flexible packs of Food Grade material (PS:4797-2002) for Flexible Packs for the packing of Banaspati, Ghee, Cooking Oil & Edible Oils.

4.2 The weight of tin container for packing of Cooking Oil shall be as follows :

WEIGHT OF FINISHED PRODUCT

16 Litre
10 Litre
5 Litre
2.5 Litre

WEIGHT OF TIN CONTAINERS

880 g to 890 g
660 g to 670 g
330 g to 340 g
180 g to 190 g

5. MARKING:

5.1 The Container/Packs shall be marked with the following particulars :-

- i. Name of the material in block letter e.g. "COOKING OIL".
- ii. Name and address of the manufacturer.
- iii. Date of manufacture and Date of expiry
(PS:4449-1999 Expiration periods for food product shall be strictly followed).
- iv. Net volume of the material in litre and weight of Tin Container in gm/kg.
- v. The name of each oil shall be declared on the ingredients list in descending order according to the percentage of each.
- vi. Nutritional values/Chemical parameters & their value should be displayed on the label i.e. Moisture, Iodine value, Peroxide value, FFA and colour etc.
- vii. The words contain 33000 I.U. \pm 10 % (Assay variation) of Vitamin-A per kg of the finished product when packed.
- viii. Pakistan Standard Number and PS Mark.
- ix. Licence Number
- x. Storage conditions.

TABLE – 1 – REQUIREMENTS FOR COOKING OIL (BLENDED)

SL: #	CHARACTERISTIC	LIMITS	*METHOD OF TEST REF. TO CL. NO. PS:56-1996 (1ST Rev.)	
1.	Moisture matter volatile & insoluble impurities at 105 \pm 2°C percent by wt. max.	0.15	4 & 5	*PS-56 1996
2.	Free Fatty Acid (as oleic acid) percent by weight, max.	0.2	6	
3.	Unsaponifiable matter percent by weight, max.	1.50	7	
4.	Colour in a 5¼ inch cell on a lovibond scale max.	R – 5.0 Y – 50.0	12	
5.	Peroxide value, expressed as milliequivalent oxygen per kg, max.	10	20	

6.	Anisidine Value max / Rancidity (Kries Test)***, max.	3.0 R	Appendix-C of PS:221-2003, 3 rd Revision
7.	Cloud point max.	10°C	Annexure-B of this standard
8.	Vitamin-A	33000 I.U. ± 10 % (Assay variation) per kg of the finished product.	23
9.	Iodine value (Wijs) min.	80	13 of PS-56-1996*
10.	Soap content., ppm.max.	50	Appendix-D of PS:221-2003 (3 rd Rev.)**

* Method of Sampling Test for Vegetable Oil & Fats.

** Banaspati (3rd Rev.)

*** Colour produced in Kries Test shall be interpreted alongwith Peroxide Value and shall be sensory test as negative. If the colour is not deeper than 3.0 R 1 inch cell lovibond scale.

6. SAMPLING:

6.1 Representative samples of the material shall be drawn as prescribed in PS-56-1996.

7. TESTS:

7.1 Test should be carried out as prescribed in PS:56-1996.

7.2 Quality of reagents:- Unless specified otherwise analytical grade chemical and distilled water (PS-593-1991) (1st Rev.) shall be used in tests.

NOTE:- Analytical grade chemical shall mean chemical that do not contain impurities which affect the result of analysis.

RANCIDITY KRIES TEST – QUANTITATIVE

1. Principle.

The sample is reacted with phloroglucinol in diethyl ether solution. When the products are extracted with hydrochloric acid a red aqueous solution is obtained, if the material is rancid. The colour is measured by means of a colour comparator or colorimeter, and the results are expressed in red units on the Lovibond scale.

2. Reagents.

The following reagents are required.

2.1 Phloroglucinol solution, 1 g/L in diethyl ether. It is essential to prepare the solution on the day of use.

3. Hydrochloric acid, concentrated, 36% (m/m), 11 N.

3.0 Apparatus.

The following apparatus is required.

3.1 Colour comparator or colorimeter.

NOTE:- It is essential to maintain the colour matching apparatus in good condition in accordance with the manufacturer's instructions.

3.2 Glass cell, 1 inch (25.4 mm) light path.

4. Sampling & preparation of the sample for analysis.
See (PS-56-1996).

4.1 Procedure

Weigh, to the nearest 0.01 g, 0.8 g to 10.2 g of the sample into a 100 ml beaker. Melt the sample on a water bath to a temperature not more than 10⁰ C above its melting point and whilst stirring gently add 20 ml of the phloroglucinol solution (2.1) to dissolve the sample, taking care because of the flammable nature of the warm solvent.

Transfer the solution to a 100 ml separating funnel, add 10 ml of hydrochloric acid (2.2) and shake well. Allow the mixture to settle into two phases, then run off the acid phase into a 1 inch (25.4 mm) glass cell.

CAUTION : Take great care when shaking and handling mixtures of warm ether and hydrochloric acid. Wear eye goggles and perform the operations behind a safety screen.

Read the colour of the solution in the comparator using yellow, red, and, if necessary blue slides in order to obtain the best match.

4.2 Expression of results:

Express the rancidity index as units on the red Lovibond scale; the equivalent CIE (Commission International de l'Eclairage) colour co-ordinates using CIE standard illuminant B are as shown in table – 2.

Table – 2 Equivalence of CIE colour coordinates to Lovibond units.

Lovibond unit	CIE co-ordinates		
	x	x	x
0.1 red	0.348	0.351	0.300
3.0 red	0.380	0.327	0.293
8.0 red	0.430	0.262	0.308
20.0 red	0.543	0.298	0.159
20.0 yellow	0.449	0.494	0.057
10.0 blue	0.201	0.184	0.615

A very faint red colour does not necessarily denote rancidity. A colour up to 3 red units is considered to indicate incipient rancidity. A colour between 3 and 8 red units is considered to indicate rancidity towards the end of the induction stage. Over 8 red units is considered to indicate definite rancidity.

For dark-coloured or green fats the above does not necessarily apply because of interference by water-soluble colouring matter in the material.

Before judging a fat, it is advantageous to have some knowledge of the history of the material under test.

NOTE :- Rancidity develops rapidly, therefore once the induction period is well established, it is necessary to adhere to an agreed time of testing when comparing results obtained by sellers and buyer's premises and the date and time noted on the test certificate. The seller should be notified the same day.

5. Test Report.

See PS-56-1996.

ANNEXURE – B.

DETERMINATION OF CLOUD POINT

DEFINITION

The cloud point is that temperature at which, under the conditions of this test, a cloud is induced in the sample caused by the first stage of crystallization.

SCOPE

Applicable to all normal animal and vegetable fats.

APPARATUS

1. Oil sample bottle – 115 mL (4 oz).
2. Thermometer – range – 2 – 68 °C, AOCS Specification H 6 – 40.
3. Water bath – made up of water, chipped ice and water; or chipped ice, salt and water, depending on the temperature required. The temperature of the cloud point bath shall not be less than 2 °C, nor more than 5 °C below the cloud point. Either a beaker or insulated container is convenient for the test.

PROCEDURE

1. The sample must be completely dry before making the test. If the sample contains traces of moisture, it should be filtered through suitable filter paper. Heat 60 – 75 g of sample to 130 °C (see Notes, 1) just before making the test.
2. Pour 45 ml of the heated fat into the oil sample bottle. Begin to cool the bottle and contents in the water bath, stirring enough to keep the temperature uniform. When the sample has reached a temperature about 10 °C above the cloud point, begin stirring steadily and rapidly in a circular motion so as to prevent supercooling and solidification of fat crystals on the sides or bottom of the bottle.
3. From this point on, do not remove the thermometer from the sample; doing so may introduce air bubbles which will interfere with the test. The test bottle is maintained in such a position that the upper level of the sample in the bottle is level with the water in the bath.
4. Remove the bottle from the bath and inspect regularly. The cloud point is that temperature at which that portion of the thermometer immersed in the oil is no longer visible when viewed horizontally through the bottle and sample.

NOTES

1. It is essential that the sample be heated to 130 °C to destroy any crystal nuclei.