

PS: 1564-2003 (R).

(ICS No: 67.200.20)

PAKISTAN STANDARD  
FOR  
REFINED SUNFLOWER OIL  
(1<sup>ST</sup> REVISION)



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PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY  
Standards Development Centre,  
39 – Garden Road, Saddar,  
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PAKISTAN STANDARD SPECIFICATION

FOR

REFINED SUNFLOWER OIL (1<sup>ST</sup> REV.)

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PAKISTAN STANDARD SPECIFICATION

FOR

REFINED SUNFLOWER OIL  
(1<sup>ST</sup> REVISION)

0. FOREWORD

- 0.1 This Pakistan Standard was adopted by the Pakistan Standards & Quality Control Authority, Standards Development Centre on **28<sup>th</sup> January, 2003**, after the draft finalized by the Oil Seeds & their Allied Products Sectional Committee had been approved by the Agriculture & Food Products Divisional Council.
- 0.2 This Pakistan Standard specification was originally established on 1983 keeping in view the latest development the committee felt it to revise.
- 0.3 This standard specification is based on data available on various varieties of sunflower grown in different parts of the country at present, it is used as a Edible/Vegetable Oil after suitable refining and deodourization and is also used in the manufacture of hydrogenated Vegetable Oil products.
- 0.4 In preparation of this standard, the views of the manufacturers, technologists and testing authorities, have been taken into consideration.
- 0.5 The final value, expressing the results of a test or analysis, shall be rounded off in accordance with PS:103-1991 (1<sup>st</sup> Rev.) "Methods of Rounding off 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.

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1. SCOPE

- 1.1 This standard prescribes the requirements and methods of sampling and test for refined Sunflower Oil.

2. TERMINOLOGY

- 2.1 For the purpose of this standard, the following definition in addition to the definitions given under 2 of PS:56-1961 Methods of Sampling & Test for Vegetable Oil shall apply.

- 2.1.1 Refined Sunflower Oil – Sunflower Oil shall be obtained by chemical or physical refining, bleaching and deodorizing. No harmful chemicals shall be used in the manufacture.

3. REQUIREMENTS

- 3.1 DESCRIPTION – The material shall be obtained from good quality undamaged, mature sunflower seeds from the plant *Helianthus annuus* Linn fam. Composite or from Sunflower Seed Cake thereof by a process of Solvent extraction or by a process of expression.

- 3.1.1 The material shall be clear and free from adulterants, sediments, suspended and other foreign matter, separated water, and shall have acceptable taste and odour. It may contain antioxidants and synergist as follows :-

| ANTIOXIDANTS                                                           | MAXIMUM LEVEL OF USE.                     |
|------------------------------------------------------------------------|-------------------------------------------|
| i. Propyl octyl, and dodecyl gallates.                                 | 100 mg/kg individually or in combination. |
| ii. Butylated hydroxy-toluene (BHT)<br>Butylated Hydroxyanisole (BHA). | 200 mg/kg individually or in combination. |
| iii. Any combination of gallates with BHA or                           | 200 mg/kg but galltes not to exceed 100   |

|       |                                     |                                           |
|-------|-------------------------------------|-------------------------------------------|
|       | BHT or both.                        | mg/kg.                                    |
|       |                                     | (3)                                       |
| iv.   | Natural and synthetic tocopherols.  | Not limited.                              |
| v.    | Ascorbyl palmitate.                 | 200 mg/kg individually or in combination. |
| vi.   | Ascorbyl stearate.                  | 200 mg/kg individually or in combination. |
| vii.  | Dilauryl thiodiprodionate.          | 200 mg/kg individually or in combination. |
| viii) | Tertiary Butyl Hydroquinone (TBHQ). | 200 mg / kg.                              |

**ANTIOXIDANT SYNERGISTS.                      MAXIMUM LEVEL OF USE.**

|      |                                  |                                           |
|------|----------------------------------|-------------------------------------------|
| i.   | Citric acid and its Sodium Salt. | Limited by GMP.                           |
| ii.  | Isopropyl citrate mixture        | 100 mg/kg.                                |
| iii. | Phosphoric acid.                 | 100 mg/kg individually or in combination. |

3.1.2 The following colours are permitted for the purpose of restoring natural colour lost in processing as long as the added colour does not deceive or mislead the consumer by concealing damage or inferiority or by making the product appear to be of greater than actual value.

**MAXIMUM LEVEL OF USE**

|      |                                                        |              |
|------|--------------------------------------------------------|--------------|
| i.   | Beta-carotene.                                         | Not limited. |
| ii.  | Annatto.                                               | Not limited. |
| iii. | Curcumin.                                              | Not limited. |
| iv.  | Canthaxanthine.                                        | Not limited. |
| v.   | Beta-apo-8 carotenal.                                  | Not limited. |
| vi.  | Methyl and ethyl esters of beta-apo-8 carotenoic acid. | Not limited. |

3.1.2.1 When added colour shall be used, the container shall be labeled with the legend “contains added permissible colour”.

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3.1.3 Natural flavours and their identical synthetic equivalents except those. Which are known to represent a toxic hazard and other synthetic flavours approved by the codex Alimentarius commission are permitted for the purpose of restoring natural flavour lost in processing or for the purpose of standardizing flavour as long as the added flavour does not deceive or mislead the consumer by concealing damage or inferiority or by making the product appear to be of greater than actual value.

3.1.3.1 Use of the following solvents in flavour is prohibited :

- i. Diethylene glycol Mono ethyl ether.
- ii. Isopropyl alcohol.

3.1.3.2 When natural flavour or artificial flavour shall be used, the container shall be labeled with legend “containing natural flavour or artificial flavour”.

3.2 The clarity of the material shall be judged by the absence of turbidity after keeping the filtered sample at 40 °C for 24 hours.

3.3 Admixture with other Oils – The material shall be free from admixture with mineral or other oils of vegetable or animal origin when tested according to the methods prescribed in PS: 56 - 1996.

3.4 The material shall also comply with the requirements given in Table – 1.

#### 4. PACKING

4.1 The products shall be packed in suitably sealed and well closed containers made from food grade material in accordance with PS:4797-2002 for Flexible packs for the packing of Banaspati, Cooking Oil and Edible Oils or plastic containers (made from Food Grade Material) or in accordance with PS:4773-2002 for Tinplate Containers for Ghee, Banaspati, cooking Oil/Edible Oils.

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



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WEIGHT OF FINISHED PRODUCT

WEIGHT OF TIN CONTAINERS

|           |                |
|-----------|----------------|
| 16 Litre  | 880 g to 890 g |
| 10 Litre  | 660 g to 670 g |
| 5 Litre   | 330 g to 340 g |
| 2.5 Litre | 180 g to 190 g |

5. MARKING

5.1 The containers shall be marked with the following particulars :-

- i. Name of the material in block letter e.g. "REFINED SUNFLOWER OIL.
- ii. Date of manufacture and Date of expiry.  
(PS:4449-1999 Expiration periods for food product shall be strictly followed).
- iii. Name and address of manufacturer.
- iv. Chemical parameters & their value should be displayed on the label., like Moisture, Iodine Value, Peroxide Value, FFA and Colour etc.
- v. The words contains 33000 I.U.  $\pm$  10 % (Assay variation) of Vitamin-A per kg of the finished product when packed.
- vi. Pakistan Standard Number and PS Mark.
- vii. Licence Number.
- viii. Storage conditions.

5.1.1 No label, declaration, methods of preparation and publicity concerning the product, shall be made in a manner likely to mislead the purchaser and/or consumer as to the true nature/or composition of the product as a whole.

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TABLE – 1  
REQUIREMENTS FOR REFINED SUNFLOWER OIL

| SL. NO. | CHARACTERISTIC                                                    | LIMITS                                                              | REF. TO CLAUSE OF PS: 56-1996*                        |
|---------|-------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------|
| i.      | Moisture and insoluble impurities percent by weight, Max.         | 0.15                                                                | 4 & 5                                                 |
| ii.     | Colour in a 5 ¼ inch cell on lovibond scale                       | R - 5<br>Y - 50                                                     | 12                                                    |
| iii.    | Refractive index* at 40 °C.                                       | 1.4640 to 1.4800                                                    | 9                                                     |
| iv.     | Saponification value.                                             | 188 to 194                                                          | 14                                                    |
| v.      | Iodine value (Wijs).                                              | 100 to 140                                                          | 13                                                    |
| vi.     | Free Fatty Acid (as oleic acid) percent by weight, max.           | 0.25                                                                | 6                                                     |
| vii.    | Unsaponifiable matter, percent by weight, max.                    | 1.5                                                                 | 7                                                     |
| viii.   | Peroxide value, expressed as milliequivalents oxygen per kg, Max. | 10                                                                  | 20                                                    |
| ix.     | Anisidine Value max / Rancidity (Kries Test) ***, max.            | 3.0 R                                                               | See Appendix-C of PS:2212003 (3 <sup>rd</sup> Rev.)** |
| x.      | Vitamin-A                                                         | 33000 I.U. ± 10 % (Assay variation) per kg of the finished product. | 23                                                    |
| xi.     | Linolenic Acid percent by wt. max.****                            | 0.7 (optional)                                                      | (by Gas Chromatographic Analysis).                    |
| xii.    | Phosphorus                                                        | Not more than 4 ppm                                                 | AOAC 986.24 Colorimetry, molybdovanadate              |
| xiii.   | Soap content., ppm, max.                                          | 50                                                                  | Appendix-D of PS:221-2003 (3 <sup>rd</sup> Rev.)**    |

\* Methods of Sampling &amp; Test for Vegetable Oils.

\*\* Banaspati (1<sup>st</sup> 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.

\*\*\*\* The requirements to have equipment for the testing is optional for time being.

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## 6. SAMPLING

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

## 7. TEST METHODS

7.1 Test should be carried out in accordance with the methods prescribed in PS:56-1996 and PS: 221-2003.

7.2 Quality of Reagents – Unless specified otherwise analytical grade chemicals and distilled water (PS:593-1991) shall be used in tests.

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

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