

PAKISTAN STANDARDS SPECIFICATION
FOR
REFINED MAIZE CORN OIL
(2ND REVISION)



(ALL RIGHTS RESERVED)

**PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY,
STANDARDS DEVELOPMENT CENTRE,
Plot No. ST.7/A, Block-3, Scheme-36, Gulistan-e-Jouhar,
Karachi-Pakistan**

PAKISTAN STANDARD SPECIFICATION
FOR
REFINED MAIZE (CORN) OIL
(2ND REVISION)

0. FOREWORD

- 0.1 This Pakistan Standard was adopted by the Pakistan Standards & Quality Control Authority, Standards Development Centre on **23-06-2023**, 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 first formulated in 1983 and was revised in 2003 for the first time. Now keeping in view the latest developments are made in the industries therefore, the committee felt it to revise.
- 0.3 Maize (Corn) Oil is obtained from the grains of the plant *Zea mays* Linn. Fam., Gramineae, which are separated from the remainder of the Kernel by the wet or dry milling process.
- 0.4 In preparation of this standard, the views of the manufacturers, technologists and testing authorities, etc., have been taken into account.
- 0.5 The final value, expressing the results of a test or analysis, shall be rounded off in accordance with PS:103-1991 (1st 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.
- 0.6 All the ingredients and preparation, processing, packaging, storage and/or transportation shall be in accordance with PS 3733-2022 ® /OIC SMIIC 1 :2019 –Second Revision (Modified Adoption) for General Requirements for Halal Food.

1. SCOPE

- 1.1 This standard prescribes requirements and methods of sampling and test for Refined Maize (Corn) Oil.

2. TERMINOLOGY

- 2.1 For the purpose of this standard, the following definition in addition to the definitions given under 2 of PS:56-1996 Methods of Sampling & Test for Vegetable Oil & Fats (1st Rev.) shall apply.
- 2.1.1 **Refined Maize Oil** – Maize Oil shall be obtained by chemical or physical refining, bleaching and deodorizing. The final products shall be free from harmful chemical.

3. REQUIREMENTS

3.1 **Description** – The material shall be obtained from the germs of clean sound grains harvested from the plant *Zea mays* Linn. Fam. Gramineae by a suitable process of expression or solvent extraction.

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

i.	Propyl octyl, and dodecyl gallates.	100 mg/kg individually or in combination.
ii.	Butylated hydroxy-toluene (BHT) Butylated Hydroxyanisole (BHA).	200 mg/kg individually or in combination.
iii.	Any combination of gallates with BHA or BHT or both.	200 mg/kg but galltes not to exceed 100 mg/kg.
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.
viii)	Tertiary Butly Hydroquinone (TBHQ).	200 mg / kg.

ANTIOXIDANT SYNERGISTS.

MAXIMUM LEVEL OF USE.

i.	Citric acid and its Sodium Salt.	0.01 %. Max.
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”.

3.1.2 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 monoethyl ether.
- ii. Isopropyl alcohol.

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

3.1.4 The clarity of the material shall be judged by the absence of turbidity after keeping the filtered sample at 30 °C for 24 hours.

4. **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.

4.1 The material shall also comply with the requirements given in Table – 1 and Table – 2.

5. PACKING

5.1 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 Tinsplate Containers for Ghee, Banaspati, cooking Oil/Edible Oils.

5.2 The weight of container for Refined Maize Corn Oil should be as follows :

Volume of Finished Product Litre	Weight of Tin Containers (gm)
16	880 to 890
10	660 to 670
05	330 to 340
03	200 to 210
01	-
500 ml	-
250 ml	-
100 ml	-

6. MARKING

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

- i. Name of the material in block letter e.g. "REFINED MAIZE (CORN) 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. Net volume of the contents in litre.
- v. The words contains 33000 I.U. \pm 10 % (Assay variation) per kg of the finished product when packed.
- vi. Pakistan Standard Number and PS Mark.
- vii. Licence Number.
- viii. Storage conditions.
- ix. Product shall be labelled in accordance with the Pakistan Standard for Labelling of Prepackaged Foods (PS: CXS 1-2021), in addition to category specific labelling / marking requirement(s)

6.1.1 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.

TABLE – 1
REQUIREMENTS FOR REFINED MAIZE (CORN) OIL

SL. NO.	CHARACTERISTIC	LIMITS	REF. TO CLAUSE OF PS: 56-1996*
i.	Moisture, percent by weight, Max.	0.1	4 & 5
ii.	Colour in a 5 ¼ inch cell on lovibond scale, max.	R - 5 Y - 50	12
iii.	Refractive index* at 40 °C.	1.4645 to 1.4675	9
iv.	Saponification value.	187 to 195	14
v.	Iodine value (Wijs).	103 to 130	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:221-2003 (3 rd Rev.)**
x.	Vitamin-A	33000 I.U. to 45000 I.U. per kg of the finished product.	23
xi.	Vitamin-D ₃	3000 I.U. to 4500 I.U. per kg of the finished product.	
xii.	Soap content, ppm, max.	50	Appendix-D of PS:221-2003 (3 rd Rev.)**

* Methods of Sampling & Test for Vegetable Oils.

** Banaspati (3rd Revision).

*** 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.

NOTE: Vitamin-A & D₃ in Bulk Oils on Import Stage is not necessary.

TABLE-2
REQUIREMENTS FOR CONTAMINANTS

	Contaminant Limits
Matter volatile at 105°C	Not more than 0.2%
Insoluble impurities	Not more than 0.05% m/m
Iron (Fe)	Not more than 1.5 mg/kg
Copper (Cu)	Not more than 0.1 mg/kg
Lead (Pb)	Not more than 0.1 mg/kg
Arsenic (As)	Not more than 0.1 mg/kg

7. SAMPLING

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

8. TEST

8.1 Test should be carried out as prescribed in PS:56-1996 and PS: 221-2003.

8.2 **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.