

### 3.2 Specification of Rice Bran Oil:

#### 3.2.1 REQUIREMENTS

**3.2.2 Description-** Rice bran oil shall be obtained from the layer around the endosperm of rice obtained from paddy of *Oryza sativa* Linn., fam. Gramineae, which is removed during the process of rice milling and is generally known as rice bran.

**3.2.2.1** The fortified edible rice bran oil shall be obtained from the solvent-extracted oil, neutralized with alkali, bleached with bleaching earth or activated carbon or both and deodorized with steam or by the other approved refining method and fortified with vitamin A.

**3.2.2.2** The material shall be clear and free from rancidity, adulterants, sediment, suspended and other foreign matter, separated water and added colouring and flavouring substance.

**3.2.2.3** The clarity of the material shall be judge by the absence of turbidity after heating the sample to 50 °C and filtering the sample through a filter paper and maintaining the filtered sample at 35 °C for 24 hours.

**3.2.3 Admixture with other Oils** – The material shall be free from admixture of other oils.

**3.2.4 Hygienic Requirements-** The material shall be manufactured and handled according to the hygienic requirements as prescribed in BDS 822.

#### 3.2.5 ESSENTIAL COMPOSITION AND QUALITY FACTORS

#### 3.2.6 GLC Ranges of Fatty Acid Composition (Expressed as percentage)

Samples falling with the appropriate ranges specified in the table below are in compliance with the standard. Supplementary criteria, for example national, geographical and/or climatic variation, may be considered, as necessary, to confirm that a sample is in compliance with the standard.

Fatty acid	% of total fatty acids	Fatty acid	% of total fatty acids
C6:0	ND	C18:2	33-40
C8:0	ND	C18:3	0.2-2.9
C10:0	ND	C20:0	ND-0.5
C12:0	Less than 0.2	C20:1	ND-0.5
C14:0	0.4-0.6	C20:2	ND
C16:0	14-22	C22:0	ND-0.5
C16:1	ND-0.5	C22:1	ND
C17:0	ND	C22:2	ND
C17:1	ND	C24:0	ND
C18:0	0.9-2.5	C24:1	ND
C18:1	38-46	-	-

#### 3.2.7 FOOD ADDITIVES

**3.2.7.1 Flavour** – No food additives are permitted in Fortified Edible Rice Bran Oil.

#### 3.2.7.2 Antioxidants

INS No.	Antioxidants	Maximum Level
304	Ascorbyl Palmitate	500mg/kg singly
305	Ascorbyl Stearate	Or in combination
306	Mixed tocopherols concentrate	GMP
307	Alpha – tocopherol	GMP
308	Synthetic gamma – Tocopherol	GMP
309	Synthetic Delta – tocopherol	GMP
310	Propyl gallate	100 mg/ kg
319	Tertiary butyl hydroquinone [TBHQ]	120 mg/ kg
320	Butylated hydroxyanisole [BHA]	175 mg/ kg
321	Butylated Hydroxytoluene [BHT] Any combination of gallates, BHA, BHT and/or TBHQ	75 mg/ kg 200 mg/kg, but limits above not to be exceeded.
389	Dilaury thiodipropionate	200 mg/ kg

### 3.2.7.3 Antioxidants Synergists

INS No.	Additive	Maximum level of use
330	Citric Acid	GMP
331	Sodium Citrate	GMP
384 472C	Isopropyl citrates Monoglyceride citrate	100mg/kg singly Or in combination

### 3.2.8 Antioxidants Synergists

900a Dimethyl polysiloxan 10 mg/kg

### 3.2.9 CONTAMINATES

3.2.9.1 The product shall also comply with the requirements given in Table-1

**TABLE -1 REQUIREMENTS FOR FORTIFIED EDIBLE RICE BRAN OIL**

Sl. No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST REF. TO BDS 1584
(1)	(2)	(3)	(4)
(i)	Moisture and insoluble impurities, percent by mass, Max.	0.1	9 & 10
(ii)	Colour in 1-inch cell on the lovibond scale expressed as Y+ 5 R, not deeper than	20 (No dominant green colour)	4
(iii)	Refractive index at 40°C	1.460 to 1.470 0	7
(iv)	Specific gravity at 30°/30°C	0.910 to 0.920	8
(v)	Saponification Value	180 to 195	15
(vi)	Iodine Value (Wijs)	90 to 105	19
(vii)	Peroxide value, expressed as milliequivalents of oxygen per kg, Max	8.0	20
(viii)	Acid value, mg KOH/g, Max	0.5	11
(ix)	Unsaponifiable matter, percent by mass, Max	3.5	17
(x)	Flash point, Pensky-Martens (closed) °C, Min.	250	BDS ISO 2719
(xi)	Vitamin A, mg/kg	15-30	Appendix-B or C of this standard

### 3.2.10 Heavy Metals

The products covered by the provisions of this Standard shall comply with maximum limits are as Table-2.

**Table-2 Limits for Heavy Metals**

Sl. No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST REF TO
i)	Lead, mg/litre, Max	0.1	AOAC Method 974.27, 1990/2005
ii)	Arsenic, mg/litre, Max	0.1	AOAC Method 986.15, 1990/2005
iii)	Cadmium, mg/litre, Max	1.0	AOAC Method 974.27, 1990/2005
iv)	Mercury, mg/litre, Max	0.25	AOAC Method 971.21, 1990/2005
v)	Iron, mg/litre, Max	1.5	AOAC Method 920.197, 1990/2005/ App. A of BDS 1769
vi)	Copper, mg/litre, Max	0.1	AOAC Method 911.11, 1990/2005/ App. B of BDS 1769