

## CHAPTER 2

### FOOD PRODUCT STANDARDS

#### 2.2: FATS, OILS AND FAT EMULSIONS

##### 2.2.1 OILS:

1. **Coconut oil (naryal ka tel)** means the oil expressed from copra obtained from the kernel of *Cocos nucifera* nuts. It shall be clear and free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, or mineral oil. It shall conform to the following standards: —

Butyro-refractometer reading at 40°C	34.0 to 35.5
OR	OR
Refractive Index at 40°C	<sup>77</sup> [1.4480- 1.4500]
Saponification value	Not less than 250
Iodine value	7.5 to 10.
Polenske Value	Not less than 13
Unsaponifiable matter	Not more than 1.0 percent.
Acid value	Not more than 6.0.

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these regulations and appendices.

<sup>26</sup>[omitted]

<sup>39</sup>[1 (A) **Virgin Coconut Oil** means the oil expressed from the kernel of *Cocos nucifera* nuts by mechanical or natural means with or without the application of heat, which does not lead to alteration of the oil and virgin coconut oil is suitable for human consumption in its natural state without refining. It shall be clear and free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, or mineral oil and it shall conform to the following standards, namely:-

S. No.	Parameters	Limits
1.	Refractive index at 40°C	1.4480 - 1.4492
2.	Moisture	Not more than 0.5 per cent by weight
3.	Insoluble impurities	Not more than 0.05 per cent by weight
4.	Saponification Value	Not less than 250
5.	Iodine value	4.0 – 11.0
6.	Unsaponifiable matter	Not more than 0.5 per cent by weight
7.	Acid Value	Not more than 4.0
8.	Polenske Value	Not less than 13
9.	Peroxide Value	Not more than 15 milliequivalent per kg of oil

Test for argemone oil shall be negative.

- (i) **Food Additives** not permitted.
- (ii) **Contaminants, Toxins and Residues:** The product shall comply with the Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.
- (iii) **Hygiene:** The products shall be prepared and handled in accordance with the practices prescribed in Schedule 4 of the Food Safety and Standards (Licensing and Registration of Food Businesses) Regulations, 2011 and any other such practices prescribed from time to time under the provisions of the Food Safety and Standard Act, 2006.  
  
The product shall conform to the microbiological requirement prescribed in Appendix B.
- (iv) **Labelling:** The provisions of the Food Safety and Standards (Packaging and Labelling) Regulations, 2011 shall apply.
- (v) **Methods of Sampling and Analysis:** As provided in the relevant Food Safety and Standards Authority of India Manual of Methods of Analysis of Food.]

**2. Cotton seed oil (binola ka tel)** means the oil extracted from clean, sound delinted and decorticated cotton seeds (genus *Gossypium*). It shall be refined. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances or mineral oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40°C OR	55.6 to 60.2 OR
Refractive Index at 40°C	1.4630-1.4660
Saponification value	190 to 198
<sup>14</sup> [Iodine value	98 to 123]
Unsaponifiable matter	Not more than 1.5 per cent.
Acid value	Not more than 0.50

There shall be no turbidity after keeping the filtered sample at 30°C for 24 hours  
<sup>72</sup>[omitted]

Test for Argemone oil shall be negative

However, it may contain food additives permitted in these regulations and appendices

Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 0.5 ppm.

**3. Groundnut oil (moongh-phali-ka tel)** means the oil expressed from clean and sound groundnuts (*Arachis hypogae*). It shall be clear, free from rancidity, suspended or other foreign matter, separated water added colouring or flavouring substances or mineral oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40°C OR	54.0 to 57.1 OR
Refractive Index at 40°C	1.4620-1.4640
Saponification value	188 to 196
Iodine value	85 to 99
Unsaponifiable matter	Not more than 1.0 per cent.
Acid value	Not more than 6.0
<sup>72</sup> [omitted]	

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

<sup>39</sup>[**4. Flaxseed or Linseed oil (tisi ka tel)** means the oil obtained by process of expressing clean and sound Flaxseed or Linseed (linum usitatissimum). It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substance, or mineral oil. It shall conform to the following standards, namely:-

S. No.	Parameters	Limits
1.	Butyro-refractometer reading at 40°C OR  Refractive Index at 40°C	69.5-74.3 OR  1.4720-1.4750
2.	Saponification value	188 to 195
3.	Iodine value	Not less than 170
4.	Unsaponifiable matter	Not more than 1.5 per cent
5.	Acid value	Not more than 4.0

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices.

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**5. Mahua oil** means the oil expressed from clean and sound seeds or nuts of Madhuca (Bassi latifolia or B. longifolia or a mixture of both). It shall be clear and shall be free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, or mineral oil. It shall be refined and shall conform to the following standards:-

Butyro-refractometer reading at 40°C OR	49.5 to 52.7 OR
Refractive Index at 40°C	1.4590 - 1.4611
Saponification value	187 to 196
Iodine value	58 to 70
Unsaponifiable matter	Not more than 2.0 per cent
Acid value	Not more than 0.50

Test for argemone oil shall be negative

However, it may contain food additives permitted in these Regulations and Appendices

Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain Hexane more than 5.00 ppm.

<sup>54</sup>[**6. Rapeseed oil (toria oil) or mustard oil (sarson ka tel)** means the oil expressed from clean and sound mustard seeds belonging to the compestris, juncea or napus varieties of Brassica which is clear and free from rancidity,

suspended or foreign matter, separated water, added colouring or flavouring substances and mineral oil and conforms to the following parameters and limits, namely:-

S. No.	Parameters	Limits
1.	Butyro-refractometer reading at 40°C OR Refractive index at 40°C	58.0 to 60.5 OR 1.4646 to 1.4662
2.	Saponification value	168-177
3.	Iodine value	96-112: Polybromide test shall be Negative
4.	Unsaponifiable matter	Not more than 1.2 per cent by weight
5.	Acid value	Not more than 6.0
6.	<sup>72</sup> [omitted]	
7.	Test for Hydrocyanic Acid	Passes the test

Note 1.-Test for Argemone oil shall be negative.

Note 2.-The oil may be labelled as Kachi Ghani or Cold Pressed if the content of natural allyl isothiocyanate in the oil is not less than 0.20 % by weight.

Note 3.- The oil may contain food additives permitted in these regulations and appendices.

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

<sup>39</sup>[**7. Rapeseed or mustard oil-low erucic acid** means the oil obtained from clean and sound, low erucic acid oil bearing seeds of rapeseed belonging to compestris, juncea, or napus varieties of Brassica by the method of expression or solvent extraction and it shall be clear, free from rancidity, suspended or other

foreign matter, separated water, added colouring or flavouring substances or mineral oil and shall contain not more than 2% erucic acid (as % of total fatty acids) and shall conform to the following standards, namely:-

S. No.	Parameters	Limits
1.	Butyro-refractometer reading at 40°C OR Refractive index at 40°C	58.6 to 61.7 OR 1.465 to 1.467
2.	Iodine value (Wij's method)	105 to 126
3.	Saponification value	182-193
4.	Unsaponifiable matter	Not more than 20g/kg
5.	Acid value	Not more than 6.0
6.	<sup>72</sup> [omitted]	
7.	Test for Hydrocyanic Acid (Ferric Chloride test)	Passes the test

Test for argemone oil shall be negative.

Further, Rapeseed oil obtained by solvent extraction shall be supplied for human consumption only if it is refined and it shall conform to the standard laid down under regulation 2.2.1 (16) except acid value which shall be not more than 0.6. Additionally, it shall have Flash Point (Pensky Marten Closed Method) not less than 250°C and the oil so refined shall contain Hexane not more than 5.00 ppm:

Provided further that it may contain food additives permitted under these Regulations and Appendices.]

### <sup>3</sup>[ 8 (1) Description:

(i) **Olive oil** is the oil obtained solely from the fruit of the olive tree (*Olea europaea* L.), to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds and it shall be free from

rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances or mineral oil.

(ii) **Virgin olive oils** are the oils obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions, particularly thermal conditions, that do not lead to alterations in the oil, and which have not undergone any treatment other than washing, decanting, centrifuging and filtration and it shall be free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances or mineral oil.

(iii) **Olive-pomace oil** is the oil obtained by treating olive pomace with solvents or other physical treatments, to the exclusion of oils obtained by re-esterification processes and of any mixture with oils of other kinds and it shall be free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances or mineral oil.

(2) Essential composition and quality factors:

(A) (i) **Refined olive oil**: Olive oil obtained from virgin olive oils by refining methods which do not lead to alterations in the initial glyceridic structure and it has a free acidity(FFA), expressed as oleic acid, of not more than 0.3 grams per 100 grams.

(ii) **Olive oil**: Oil consisting of a blend of refined olive oil and virgin olive oils suitable for human consumption and it has a free acidity(FFA), expressed as oleic acid, of not more than 1 gram per 100 grams.

(iii) **Extra virgin olive oil**: Virgin olive oil with a free acidity (FFA), expressed as oleic acid, of not more than 0.8 grams per 100 grams.

(iv) **Virgin olive oil**: Virgin olive oil with a free acidity (FFA), expressed as oleic acid, of not more than 2.0 grams per 100 grams.

(v) **Ordinary virgin olive oil**: Virgin olive oil with a free acidity (FFA), expressed as oleic acid, of not more than 3.3 grams per 100 grams.

(vi) **Refined olive-pomace oil**: Oil obtained from crude olive-pomace oil by refining methods which do not lead to alterations in the initial glyceridic structure and it has a free acidity (FFA), expressed as oleic acid, of not more than 0.3 grams per 100 grams.



(vii) **Olive-pomace oil:** Oil consisting of a blend of refined olive-pomace oil and virgin olive oils and it has a free acidity (FFA), expressed as oleic acid, of not more than 1 gram per 100 grams.

(B) The aforesaid olive oils shall conform to characteristic given in, sub clause (3)

<sup>82</sup>[(3)(i)] Quality characteristics:

Parameters	Virgin olive oil, extra virgin olive oil and ordinary virgin olive oil	Refined olive oil	Olive oil	Refined olive pomace oil	Olive pomace oil
Moisture and volatile matter: (Max)	0.2 %	0.1 %	0.1 %	0.1 %	0.1 %
Insoluble impurities (Max)	0.1%	0.05 %	0.05 %	0.05 %	0.05 %
Trace Metals(Max) Iron (Fe) Copper(Cu)	3 mg/kg 0.1 mg/kg	3 mg/kg 0.1 mg/kg	3 mg/kg 0.1 mg/kg	3 mg/kg 0.1 mg/kg	3 mg/kg 0.1 mg/kg
Refractive Index at 20°C.	1.4677-1.4705	1.4677-1.4705	1.4677-1.4705	1.4680-1.4707	1.4680-1.4707
Saponification value (mg KOH/g oil)	184-196	184-196	184-196	182-193	182-193
Iodine value(Wijs)	75-94	75-94	75-94	75-92	75-92

Unsaponifiable matter (Max)	15g/kg	15g/kg	15g/kg	30g/kg	30g/kg
<sup>72</sup> [omitted]					
Semi-Siccative oil test	Negative	Negative	Negative	Negative	Negative
Olive pomace oil test	Negative	Negative	Negative	Positive	Positive
Cotton seed oil test	Negative	Negative	Negative	Negative	Negative
Teaseed oil test	Negative	Negative	Negative	Negative	Negative
Sesame seed oil test	Negative	Negative	Negative	Negative	Negative
Test for Argemone oil	Negative	Negative	Negative	Negative	Negative

<sup>82</sup>[(ii) Absorbency in ultra-violet K270:

<b>Variants</b>	<b>Absorbency in ultra-violet at 270 nm</b>	<b>Delta K</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Extra virgin olive oil	$\leq 0.22$	$\leq 0.01$
Virgin olive oil	$\leq 0.25$	$\leq 0.01$
Ordinary virgin olive oil	$\leq 0.30^*$	$\leq 0.01$
Refined olive oil	$\leq 1.10$	$\leq 0.16$
Olive oil	$\leq 0.90$	$\leq 0.15$
Refined olive-pomace oil	$\leq 2.00$	$\leq 0.20$

Olive-pomace oil	$\leq 1.70$	$\leq 0.18$
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\*Note: After passage of the sample through activated alumina, absorbency at 270 nm shall be equal to or less than 0.11.]

(4) Food additives:

(i) Virgin olive oils

No additives are permitted in these products.

(ii) Refined olive oil, olive oil, refined olive-pomace oil and olive pomace oil

The addition of alpha-tocopherols [d-*alpha* tocopherol (INS 307a)]; mixed tocopherol concentrate [(INS 307b); dl-*alpha*-tocopherol (INS 307c)] to the above products is permitted to restore natural tocopherol lost in the refining process and the concentration of alpha-tocopherol in the final product shall not exceed 200 mg/kg.

(5) Contaminants:

Heavy metals - The products covered by the provisions of this standard shall comply with maximum limits as follows:-

	Maximum permissible concentration
Lead (Pb)	0.1 mg/kg
Arsenic (As)	0.1 mg/kg

(6) Labelling: The provisions relating to labelling shall be as laid down under the Food Safety and Standards (Packaging and labelling) Regulation, 2011.]

**9. Poppy seed oil** means the oil expressed from poppy seeds (papaver somniferum). It shall be clear, free from rancidity, suspended or other foreign matter separated water, added colouring or flavouring substances or mineral oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40°C OR	60.0 to 64.0 OR
Refractive Index at 40°C	1.4659 - 1.4685
Saponification value	186 to 194

Iodine value	133 to 143
Unsaponifiable matter	Not more than 1.0 per cent
Acid value	Not more than 6.0

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices.

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**10. Safflower seed oil (barrey ka tel)** means the oil expressed from the seeds of *Carthamus tinctorius*. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, or mineral oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40°C OR	62.4 to 64.7 OR
Refractive Index at 40°C	1.4674-1.4689
Saponification value	186-196
Iodine value	135-148
Unsaponifiable matter	Not more than 1.0 per cent
Acid value	Not more than 6.0
<sup>72</sup> [omitted]	

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**10.1 Imported Safflower seed oil and Safflower seed oil (High Oleic Acid – Imported or domestic)** means the oil expressed from the seeds of *Carthamus tinctorious* L. It shall be clear, free from rancidity, suspended or foreign matter, separated water, added colouring or flavouring substances, or mineral oil. Safflowerseed oil (High Oleic Acid) shall contain not less than 70% oleic acid as percent of total fatty acid shall conform to the following standards:-

<i>Parameters</i>	<i>High Oleic Acid</i>	
	<i>Safflowerseed Oil</i>	<i>Imported Safflower seed Oil</i>
B.R. Reading at 40°C	51.0-57.1	61.7-66.4
Or		
Refractive Index at 40°C	1.460-1.464	1.467-1.470
Iodine value (wijs method)	80-100	136-148
Saponification value	186-194	186-198
Unsaponifiable matter	Not more than 10g/kg	Not more than 15g/kg
Acid Value	Not more than 4.0 mg/KOH/g oil	Not more than 4.0 mg/KOH/g oil
<sup>72</sup> [omitted]		
Test for Argemone oil	Negative	Negative

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**11. TARAMIRA OIL** means the oil expressed from clean and sound seeds of *Taramira* (*Eruca sativa*). It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, or mineral oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40 °C	58.0 to 60.0
OR	OR

Refractive Index at 40°C	1.4646-1.4659
Saponification value	174 to 177
Iodine value	99 to 105
Unsaponifiable matter	Not more than 1.0 per cent
Acid value	Not more than 6.0

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**12. TIL OIL** (Gingelly or sesame oil) means the oil expressed from clean and sound seeds of Til (*Sesamum indicum*), black, brown, white, or mixed. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, or mineral oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40 °C	58.0 to 61.0
OR	OR
Refractive Index at 40°C	1.4646-1.4665
Saponification value	188 to 193
Iodine value	103 to 120
Unsaponifiable matter	Not more than 1.5 per cent
Acid value	Not more than 6.0
<sup>72</sup> [omitted]	

Provided that the oil obtained from white sesame seeds grown in Tripura, Assam and West Bengal shall conform to the following standards:-

Butyro-refractometer reading at 40 °C OR	60.5 to 65.4 OR
Refractive Index at 40°C	1.4662-1.4694
Saponification value	185 to 190
Iodine value	115 to 120
Acid value	Not more than 6.0
Unsaponifiable matter	Not more than 2.5 per cent
<sup>72</sup> [omitted]	

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these regulations and Appendix A

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**13. NIGER SEED OIL (Sargiya ka tel)** means the edible oil obtained by process of expressing clean and sound seeds of *Guizotia abyssinica*. It shall be clear and free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, mineral or other oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40 °C OR	61.0-65.0 OR
Refractive Index at 40°C	1.4665-1.4691
Saponification value	188-193
Iodine value	110 to 135
Acid value	Not more than 6.0
Unsaponifiable matter	Not more than 1.0 per cent
<sup>72</sup> [omitted]	

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices.

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**14. Soyabean oil** means the oil expressed from clean and sound soyabeans (Soja max) from which the major portion of the gums naturally present have been removed by hydration and mechanical or physical separation. It shall be clear, free from rancidity, suspended or other foreign matter, separated water added colouring or flavouring substances or mineral oil. It shall conform to the following standards:-

Test for argemone oil shall be negative. However, it may contain food additives	Butyro-refractometer reading at 40 °C OR	58.5 to 68.0 OR
	Refractive Index at 40°C	1.4649-1.4710
	Saponification value	189 to 195
	Iodine value	120 to 141
	Unsaponifiable matter	Not more than 1.5 per cent
	Acid value	Not more than 2.50
	Phosphorus	Not more than 0.02

permitted in these Regulations and Appendices.

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**15. Maize (corn) oil** means the oil, extracted from the germ of clean and sound seeds of zea mays linn. fam. graminiae, refined. it shall be free from rancidity, suspended or other foreign matter, separated water, added colouring or



flavouring substances or Mineral oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40°C	56.7 to 62.5
OR	OR
Refractive Index at 40°C	1.4637-1.4675
Saponification value	187 to 195
Iodine value	103 to 128
Unsaponifiable matter	Not more than 1.5 per cent
Acid value	Not more than 0.50

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

<sup>72</sup>[**16. Refined vegetable oil.**-(1) Refined Vegetable Oil means any vegetable oil which is obtained by expression or solvent extraction of vegetable oil bearing materials, deacidified with alkali and/or physical refining and/or by miscella refining using permitted food grade solvents and/or degumming using phosphoric/citric acid and /or any suitable food grade enzyme, followed by bleaching with adsorbent earth and/or activated carbon and deodourised with steam. No other chemical agent shall be used. The name of the vegetable oil from which the refined oil has been manufactured shall be clearly specified on the label of the container. In addition to the under-mentioned standards to which refined vegetable oils shall conform to, the standards prescribed in these regulations for the specified edible oils shall also apply except for acid value which shall be not more than 0.6. Moisture shall not exceed 0.10 per cent by weight. Trans fatty acids shall not be more than 5 % by weight. Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1<sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1<sup>st</sup> January, 2022. Test for argemone oil shall be negative. The refined vegetable oil shall be obtained from the vegetable oils standardized in these regulations.

(2) The refined vegetable oil shall comply with the following requirements.-The oils shall be clear and free from rancidity, adulterants, sediments, suspended and other foreign matter, separated water, added colouring and flavouring substances and mineral oil.

(3) However, it may contain food additives permitted in these Regulations and Appendices.]

**17. Almond oil** means the oil expressed from the seeds of *Prunus amygdalus* Batach var, *Dulcius Koehne* (sweet almond) or of *Prunus amygdalus* Batach, var *Amara Focke* (bitter almond) without the application of heat. It shall be clear from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances or mineral oil. It shall conform to the following standards:-

Butyro-refractometer reading at 40 °C OR	54 to 57 OR
Refractive Index at 40°C	1.4620-1.4639
Saponification value	186 to 195
Iodine value	90 to 109
Acid value	Not more than 6.0
<sup>72</sup> [omitted]	

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices

**18. Water-melon seed oil** means the oil extracted from the clean, sound seeds of the fruit of water-melon (*Citrullus vulgaris* Schrad, family: Cucurbitaceae). It shall be clear, free from rancidity, adulterants, sediments, suspended and other foreign matter, separated water, added colouring and flavouring substances and mineral oil. It shall conform to the following standards:-

Moisture and volatile matter	Not more than 0.25 per cent
Butyro-refractometer reading at 40 °C OR Refractive Index at 40°C	55.6 - 61.7 OR 1.4630-1.4670
Saponification value	190 - 198
Iodine value	115 - 125
Acid value	Not more than 6.0
Unsaponifiable matter	Not more than 1.5 %

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices.

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

<sup>39</sup>[**19. Palm oil** means the oil obtained from fleshy mesocarp of fruits of the oil palm (*Elaeis Guinensis*) tree by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring and flavouring substances or mineral oil. It shall conform to the following standards, namely:-

S. No.	Parameters	Limits
1	Butyro-refractometer reading at 50° C OR Refractive Index at 50° C	35.5 - 44.0 OR 1.4491-1.4552
2	Melting point (capillary slip method)	<sup>54</sup> [Not more than 39°C]
3	Iodine value(Wij's method)	45-56
4	Saponification value	195-205
5	Unsaponifiable matter	Not more than 1.2 per cent

6	Free Fatty Acid (expressed as Palmitic Acid)	Not more than 10.0 per cent
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Indigenously produced raw Palm Oil obtained by method of expression may be supplied for human consumption as such provided Free Fatty Acid value (%) (expressed as Palmitic Acid) is not more than 3.0. But palm oil imported into the country or domestically produced having Free Fatty Acid value more than 3.0 and upto 10.0 or obtained by solvent extraction shall be refined before it is supplied for human consumption and it shall conform to the standards laid down under regulation 2.2.1 (16). Additionally, it shall have Flash Point (Pensky-Marten closed method) – Not less than 250° C.

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these regulations and appendices.

The oil so refined shall not contain hexane more than 5.00 ppm.]

**20. Palmolein means** the liquid fraction obtained by fractionation of palm oil obtained from the fleshy mesocarp of fruits of oil palm (*Elaeis Guineensis*) tree by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter separated water, added colouring and flavouring substances or mineral oils. It shall conform to the following standards, namely:-

Butyro-refractometer reading at 40° C OR Refractive Index at 40° C	43.7 - 52.5 OR 1.4550 - 1.4610
Iodine value(Wij's method)	54-62
Saponification value	195-205
Cloud Point	Not more than 18°C
Unsaponifiable matter	Not more than 1.2 per cent
Acid value	Not more than 6.0

Further, if the palmolein is obtained from solvent extracted palm oil, it shall

be refined before it is supplied for human consumption and it shall conform to the standards laid down under regulation 2.2.1 (16). Additionally, it shall have Flash Point (Pensky Marten closed method) - not less than 250°C.

Test for argemone oil shall be negative. However, it may contain food additives permitted in these Regulations and Appendices

The oil so refined shall not contain Hexane more than 5.00 ppm.

<sup>39</sup>[**21. Palm kernel oil** means the oil obtained from sound kernel of the fruits of oil palm (*Elaeis guinensis*) tree by the method of expression or solvent extraction. It shall be clear and free from rancidity suspended, or other foreign matter, separated water, added colouring and flavouring substances or mineral oil. It shall conform to the following standards, namely:-

S. No.	Parameters	Limits
1.	Butyro-refractometer reading at 40° C OR Refractive Index at 40° C	35.3 - 39.5 OR 1.4490 - 1.4520
2.	Iodine value (Wij's method)	10 - 23
3.	Saponification value	237-255
4.	Unsaponifiable matter	Not more than 1.2 per cent
5.	Free Fatty Acid (expressed as Lauric Acid)	Not more than 10.0 per cent

Further, Palm kernel oil imported into the country or domestically produced having Free Fatty Acid value(%) more than 3.0 and upto 10.0 or obtained by solvent extraction shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). Additionally, it shall have flash point (Pensky–Martens closed method) – not less than 250°C.

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these regulations and appendices.

The oil so refined shall not contain hexane more than 5.00 ppm.]

**22. Sun flower seed oil** means the oil obtained from clean and sound sunflower seeds or cake from the plants *Helianthus annus linn* (Family:compositae) by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances or mineral oil. It shall conform to the following standards, namely:-

Butyro-refractometer reading at 40° C OR	57.1 - 65.0 OR
Refractive Index at 40° C	1.4640 - 1.4691
Iodine value (Wij's method)	100 - 145
Saponification value	188 - 194
Unsaponifiable matter	Not more than 1.5 per cent
<sup>72</sup> [Acid value	Not more than 6.0 and Not more than 4.0 (for imported sunflower seed oil)]

Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). Additionally, it shall have Flash Point (Pensky Marten closed method) - not less than 250°C.

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices The oil so refined shall not contain Hexane more than 5.00 ppm.

**22.01 <sup>72</sup>[Sunflower seed Oil-High Oleic acid]** means the oil obtained from clean and sound Sunflower seed or the High Oleic acid oil bearing Sunflower seeds of *Helianthus annuus L.* by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended foreign matter, separated water, added colouring or flavouring substance or mineral oil. It shall contain not less than 75% oleic acid as percent of total fatty acids. It shall conform to the following standards:-

<sup>72</sup> [S.No.	Parameters	Limits
1.	Butyro-refractometer reading at 25°C OR Refractive Index at 25°C	61.7-68.0 OR 1.467-1.471
2.	Iodine value (Wij's method)	78-90
3.	Saponification value	182-194
4.	Unsaponifiable matter	Not more than 1.5%
5.	Acid value	Not more than 4.0
6.	Test for Argemone oil	Negative]

<sup>75</sup>[Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

**23. Rice bran oil** means the oil 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.

Refined Rice Bran Oil shall be obtained from solvent extracted oil, neutralised with alkali, bleached with bleaching earth or activated carbon or both and deodorised with steam. Alternatively deacidification bleaching and deodorisation may be done by physical means.

The oil shall be clear and free from rancidity, adulterants, sediments, suspended and other foreign matters, separated water and added colouring and flavouring substances. The clarity of the oil shall be judged by the absence of turbidity after keeping the filtered sample at 35°C for 24 hrs. Rice Bran Oil shall be sold for human consumption only after refining. It shall conform to the following standards, namely:-

Moisture and Volatile Matter	Not more than 0.1 percent by weight
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Refractive Index at 40 °C	1.4600 - 1.4700
OR	OR
Butyro-refractometer reading at 40 °C	51.0 - 66.4
Saponification value	180 - 195
Iodine value (Wij's method)	90 - 105
Acid value	Not more than 0.5
Unsaponifiable matter, percent by weight	
(a) for chemically refined	Not more than 3.5 percent
(b) for physically refined	Not more than 4.5 percent
- Oryzanol Content	Not less than 1.0 percent
Flash Point (Pensky Marten Closed method)	Not less than 250 °C

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices

Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.00 ppm.

<sup>72</sup>[24. <sup>77</sup>[**Multi-Source Edible Oil**] means an admixture of any two edible vegetable oils where the proportion by weight of any edible vegetable oil used in the admixture is not less than 20 per cent. The individual oils in the blend shall conform to the respective standards prescribed by these regulations.

<sup>77</sup>[Multi-Source Edible Oil] shall not contain more than 33% of saturated fatty acids.

<sup>77</sup>[Multi-Source Edible Oil] may have an ideal ratio of omega 3 and omega 6 to be in the range of 1:5 to 1:10. Third oil namely Chia oil and/or Flaxseed/Linseed Oil, upto 5 % of the total oil, may be added if the <sup>77</sup>[Multi-Source Edible Oil] is claimed to have an ideal ratio of omega 3: omega 6.

The blend shall be clear, free from rancidity, suspended or insoluble matter or any other foreign matter, separated water, added colouring matter, flavouring substances, mineral oil, or any other animal and non-edible oils, or fats, argemone



oils, hydrocyanic acid, castor oil and tricresyl phosphate. It shall also conform to the following standards].

a)	Moisture and volatile matter	Not more than 0.2 per cent by weight;
b)	Acid value:—	
	<b>Nature of oil</b>	<b>Acid Value</b>
	(1) Both raw edible vegetable oils in the blend	Not more than 6.0
	(2) One raw edible vegetable oil(s) and one refined vegetable oil(s) in the blend	Not more than 5.0
	(3) Both refined edible vegetable oils in the blend	<sup>72</sup> [Not more than 0.6]
	(4) Unsaponifiable matter, percent by weight (i) Blended with chemically refined rice bran oil (ii) Blended with other edible vegetable oil <sup>14</sup> [(iii) Blended with physically refined rice bran oil	Not more than 3.0 percent by weight  Not more than 1.50 percent by weight  Not more than 4.0 percent by weight; provided that oryzanol content be minimum of 0.20 % (by weight) with rice bran oil at 20% level and with a increment of 0.05% with every 5% rise in rice bran oil content in the blend]
	Flash point (Pensky Martin closed method)	Not less than 250°C

Test for Argemone oil shall be negative

However, it may contain food additives permitted in these Regulations and Appendices

Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16).

The oil so refined shall not contain hexane more than 5.00 ppm.

<sup>54</sup>[**25. Avocado oil** means the oil obtained from the avocado fruit (*Persea Americana*) which is clear and free from rancidity, suspended or other foreign matter, separated water and added colouring or flavouring substances and conforms to the following parameters and limits, namely: -

S.No.	Parameters	Limits
1.	Refractive index at 40°C	1.4650 – 1.4740
2.	Saponification value	177 - 198
3.	Iodine value	63 - 95
4.	Unsaponifiable matter	Not more than 12.0% by weight
5.	Acid value	Not more than 2

Note 1.-Test for Argemone oil shall be negative.

<sup>75</sup>[Note 2- Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

Note 3-The Oil may contain food additives permitted in these regulations and appendices.

**26. Palm Stearin** means the high melting fraction obtained by fractionation of palm oil which is derived from the fleshy mesocarp of fruits of oil palm (*Elaeis guinensis*) tree by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring and flavouring substances or mineral oils. It shall conform to the following standards, namely:

S.No.	Parameters	Limits
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1.	Refractive index at 60°C	1.447-1.452
2.	Saponification value	193-205
3.	Iodine value	Not more than 48
4.	Unsaponifiable matter	Not more than 0.9 per cent by weight
5.	Slip point or Slip melting point	Not less than 44°C
6.	Free Fatty Acid (expressed as Palmitic Acid)	Not more than 5.0 per cent by weight

Note 1.- Test for Argemone oil shall be negative.

Note 2- Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain Hexane more than 5.00 ppm. Additionally, it shall have Flash Point (Pensky Marten closed method) - not less than 250°C.

Note 3-The Oil may contain food additives permitted in these regulations and appendices.

**27. Palm Kernel Stearin** means the solid fraction obtained by fractionation of palm kernel oil obtained from sound kernel of the fruits of oil palm (*Elaeis guinensis*) tree by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring and flavouring substances or mineral oil. It shall conform to the following standards, namely:-

S.No.	Parameters	Limits
1.	Refractive index at 40°C	1.449-1.451
2.	Saponification value	244-255

3.	Iodine value	4-8.5
4.	Unsaponifiable matter	Not more than 1.5 per cent by weight
5.	Free Fatty Acid (expressed as Lauric Acid)	Not more than 5.0 per cent by weight
6.	Slip point or Slip melting point	31 -34 °C

Note 1.- Test for Argemone oil shall be negative.

Note 2- Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain Hexane more than 5.00 ppm. Additionally, it shall have Flash Point (Pensky Marten closed method) - not less than 250°C.

Note 3-The Oil may contain food additives permitted in these regulations and appendices.

**28. Palm Kernel Olein** means the liquid fraction obtained by fractionation of Palm Kernel oil obtained from sound Kernel of the fruits of oil Palm (*Elaeis guinensis*) tree by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring and flavouring substances or mineral oil. It shall conform to the following standards, namely:

S.No.	Parameters	Limits
1.	Refractive index at 40°C	1.451-1.453
2.	Saponification value	231-244
3.	Iodine value	20-28
4.	Unsaponifiable matter	Not more than 1.5 per cent by weight

5.	Free Fatty Acid (expressed as Lauric Acid)	Not more than 5.0 per cent by weight
6.	Slip point or Slip melting point	21 - 26 °C

Note 1.-Test for Argemone oil shall be negative.

Note 2- Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain Hexane more than 5.00 ppm. Additionally, it shall have Flash Point (Pensky Marten closed method) - not less than 250°C.

Note 3-The Oil may contain food additives permitted in these regulations and appendices.

**29. Palm Superolein** means the liquid fraction obtained by fractionation of Palm oil obtained from the fleshy mesocarp of fruits of oil Palm (*Elaeis guinensis*) tree by the method of expression or solvent extraction. It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring and flavouring substances or mineral oils. It shall conform to the following standards, namely:-

S.No.	Parameters	Limits
1.	Refractive index at 40°C	1.463-1.465
2.	Saponification value	180-205
3.	Iodine value	Not less than 60
4.	Unsaponifiable matter	Not more than 1.3 per cent by weight
5.	Free Fatty Acid (expressed as Palmitic Acid)	Not more than 3.0 per cent by weight

Note 1.-Test for Argemone oil shall be negative.”

Note 2- Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain Hexane more than 5.00 ppm. Additionally, it shall have Flash Point (Pensky Marten closed method) - not less than 250°C.

Note 3-The Oil may contain food additives permitted in these regulations and appendices.]

<sup>60</sup>[**30. Chia oil** means the oil expressed from the clean and sound seeds of chia (*Salvia hispanica*) without the application of heat which shall be clear from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances and mineral oil and conforms to the following parameters and limits, namely:-

S.No.	Parameters	Limits
1.	Refractive index at 40°C	1.470 – 1.480
2.	Saponification value	185-199
3.	Iodine value	Not less than 180
4.	Acid Value	Not more than 2.0mg KOH/g Oil
5.	Unsaponifiable matter	Not more than 1.5%

Note.- Test for Argemone oil shall be negative.]

<sup>75</sup>[**31. Grape seed oil** means the oil expressed from the clean and sound Grape seeds (*Vitisvinifera* L.) It shall be clear from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances and mineral oil. It shall conform to the following specifications, namely:-

S. No.	Parameters	Limits
1.	Refractive index at 40°C	1.467 - 1.477

2.	Saponification value	188 - 194
3.	Iodine value	128 - 150
4.	Unsaponifiable matter	Not more than 2.0 percent
5.	Acid Value	Not more than 4.0

Test for Argemone oil shall be negative.

Further, if the oil is obtained by the method of solvent extraction, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain hexane more than 5.0 ppm. The oil obtained by expelled pressed method shall be free from hexane residues.]

<sup>82</sup>[**32. (1) Moringa oil** means the oil obtained by the process of expressing clean and sound Moringa Seed (*Moringa oleifera*).

(2) It shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substance, or mineral oil and shall conform to the following specifications, namely: —

S. No.	Parameter	Limit
(1)	(2)	(3)
1.	Refractive index at 40°C	1.4520 – 1.4680
2.	Saponification value	167-192
3.	Iodine value	65-70
4.	Unsaponifiable matter	Not more than 1.5 percent by mass
5.	Acid Value	Not more than 6.0

Test for Argemone oil shall be negative]

**2.2.2 Interesterified <sup>26</sup>[vegetable fat/Oil]:** means an edible fatty material that has been so treated as to bring about a rearrangement of fatty acid positions within the glyceride entities and hence a change in the physical properties like melting point, viscosity, specific gravity and the like with very little change in the constitution of the fatty acids themselves by a process of interesterification of the essentially neutral edible oil or fat, singly or in mixtures generally through <sup>2</sup>[enzymatic process or] the use of alkaline catalysts exemplified by sodium or potassium metals, or their ethoxides or hydroxides in the form either of anhydrous powders or in anhydrous glycerol medium followed by such post-process steps as washing, bleaching and deodourisation, the last of which can be omitted if the interesterified fat is to be incorporated as part of the raw material for further processing in edible fat products.

The interesterified fat shall be clear, free from soap, flavouring substances, rancidity, suspended or other foreign matter, separated water and mineral oil. It shall conform to the following standards, namely:-

- (i) It shall not contain any harmful colouring, flavouring or any other matter deleterious to health;
- (ii) No colour shall be added to interesterified fat unless so authorised by Government, but in no event any colour resembling the colour of ghee shall be added;
- (iii) If any flavour is used, it shall be distinct from that of ghee in accordance with a list of permissible flavours and in such quantities as may be prescribed by Government:  
<sup>72</sup>[omitted]
- (iv) It shall not have moisture exceeding 0.25 per cent;
- (v) <sup>72</sup>[It shall not contain trans fatty acids more than 5 % by weight:  
Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1<sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1<sup>st</sup> January, 2022.]
- (vi) <sup>26</sup>[omitted]
- (vii) It shall not have unsaponifiable matter exceeding 2.0 per cent;
- (viii) It shall not have free fatty acids (calculated as Oleic acid) exceeding 0.25 per cent;
- (ix) The product on melting shall be clear in appearance and shall be free



- from staleness or rancidity, and pleasant to taste and smell;
- <sup>75</sup>[(x) It shall contain raw or refined sesame oil (Til oil) in sufficient quantity so that when it is mixed with refined groundnut oil in the proportion of 20:80, the colour produced by the Baudouin Test shall not be lighter than 2.0 red units in a 1 cm. cell on a Lovibond scale.]
- (xi) It shall contain not less than 25 I.U. of synthetic Vitamin A per gram at the time of packing and shall show a positive test for Vitamin A when tested by Antimony Trichloride (Carr-Price) reagent (As per IS: 5886-1970);
- (xii) No anti-oxidant, synergist, emulsifier or any other such substance shall be added to it except with the prior sanction of the Authority.

Test for argemone oil shall be negative.

However, it may contain food additives permitted in these Regulations and Appendices

Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain Hexane more than 5.00 ppm.

### **2.2.3 PARTIALLY HYDROGENATED SOYABEAN OIL**

**1. Partially hydrogenated and winterised soyabean oil** means deodourised product obtained by light (mild or "Brush") hydrogenation of degummed, deacidified, decolourised and winterised soyabean oil. The oil shall be degummed by water with or without a food grade additive, deacidified by either neutralisation with alkali or steam distillation (physical refining) or miscella refining using permitted food grade solvent, decolourised with bleaching earth and/or carbon, partially hydrogenated using nickel catalyst, winterised with or without the use of a food grade solvent, filtered in a suitable filter press and deodourised with steam.

The product shall be clear, free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, castor oil, mineral oil, and other vegetable and animal fats.

It may contain food additives permitted in these Regulations and Appendices.  
It shall conform to the following standards:

Moisture	Not more than 0.1 percent by weight
Refractive Index at 40°C OR Butyro-refractometer reading at 40°C	1.4630 - 1.4690 OR 55.6 - 64.8
Saponification value	189 - 195
Iodine value (Wij's method)	107 - 120
Acid value	Not more than 0.50
Unsaponifiable Matter	Not more than 1.5 percent by weight
Linolenic Acid (c18: 3)	Not more than 3 percent by weight
Cloud Point (°C)	Not more than 10°C
Flash Point (Pensky Marten Closed method)	Not less than 250 °C

Test for argemone oil shall be negative

Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain Hexane more than 5.00 ppm.

<sup>72</sup>[The oil shall not contain trans fatty acids more than 5 % by weight:

Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1<sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1<sup>st</sup> January, 2022.]

**2. Partially hydrogenated soyabean oil** means deodourised product obtained by light (mild or "brush") hydrogenation of degummed, deacidified, decolourised soyabean oil. The oil shall be degummed by water with or without a food grade additive, deacidified by either neutralisation with alkali or steam distillation (physical refining) or miscella refining using permitted food grade solvent, decolourised with bleaching earth and/or carbon and partially hydrogenated using nickel catalyst. The product shall again be deacidified, bleached and deodourised with steam.

The product shall be clear liquid at 35 degree C. It shall be clear on melting,

free from rancidity, suspended or other foreign matter, separated water, added colouring or flavouring substances, castor oil, mineral oil or other vegetable and animal Oils & fats.

It may contain food additives permitted in these Regulations and Appendices  
It shall conform to the following standards:

Moisture	Not more than 0.1 percent by weight
Refractive Index at 40°C OR Butyro-refractometer reading at 40°C	1.4630 - 1.4670 OR 55.6 - 61.7
Saponification value	189 - 195
Iodine value (Wij's method)	95 - 110
Acid value	Not more than 0.50
Unsaponifiable Matter	Not more than 1.5 percent by weight
Linolenic Acid (c18: 3)	Not more than 3 percent by weight
Cloud Point (°C)	Not more than 25°C
Flash Point (Pensky Marten Closed method)	Not less than 250 °C

Test for argemone oil shall be negative

Note: The edible oils prescribed under regulation 2.2.1 shall be free from Castor oil.

Further, if the oil is obtained by the method of solvent extraction and the oil imported into India whether obtained by solvent extraction or otherwise, it shall be supplied for human consumption only after refining and shall conform to the standards laid down under regulation 2.2.1 (16). The oil so refined shall not contain Hexane more than 5.00 ppm.

<sup>72</sup>[The oil shall not contain trans fatty acids more than 5 % by weight:

Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1<sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1<sup>st</sup> January, 2022.]

#### **2.2.4 EDIBLE FATS:**

1. **Beef fat or suet means fat** obtained from a beef carcass. It shall have a saponification value varying from 193 to 200 and an iodine value from 35 to 46.

It may contain food additives permitted in these regulations and appendices

2. **Mutton fat means fat** obtained from the carcass of sheep. It shall have a saponification value varying from 192 to 195 and an iodine value from 35 to 46.

It may contain food additives permitted in these regulations and appendices

3. **Goat fat** means the rendered fat from goat. it shall have a saponification value varying from 193 to 196 and iodine value from 36 to 45.

It may contain food additives permitted in these Regulations and Appendices

4. **Lard** means the rendered fat from hogs and shall not contain more than one per cent of substances other than fatty acids and fat. it shall have a saponification value varying from 192 to 198 and iodine value from 52 to 65.

It may contain food additives permitted in these regulations and appendices

- <sup>39</sup>[5. **Cocoa butter** means the fat produced by extraction or expression from cocoa beans, the fermented and dried seeds of *Theobroma cacao* L, or its constituent parts (except the shell), or its products, cocoa nib, cocoa fines, cocoa mass, cocoa press cake or expeller press cake. It shall be free from rancidity or other off odours, adulterants or other harmful ingredients. It shall have the colour, odour and taste characteristic of cocoa butter. If the fat is obtained by the method of solvent extraction, it shall not contain hexane more than 5ppm. It shall conform to the following standards, namely:-

S. No.	Parameters	Limits
1.	Percentage of free fatty acids (calculated as oleic acid)	Not more than 1.75
2.	Iodine value	32 to 42

3.	Melting point	29° C to 34° C
4.	Butyro-refractometer reading at 40° C OR Refractive Index at 40° C	40.9 to 48.0  OR 1.4530-1.4580
5.	Saponification value	188 to 200
6.	Unsaponifiable matter and in case of press cocoa butter	Not more than 0.7 per cent by weight  Not more than 0.35 per cent by weight.]

**6. Refined salseed fat** means the fat obtained from seed kernels of sal trees, shorea robusta Gaertn, F.(N..diperrocaspaeae which has been neutralized with alkali, bleached with bleaching earth or activated carbon or both, and deodorized with steam, no other chemical agents being used. Alternatively, deacidification, bleaching and deodorisation may be done by physical means. The material shall be clear on melting and free from adulterants, sediment, suspended or other foreign matter, separated water or added colouring substance. However, it may contain food additives permitted in these Regulations and Appendices. There shall be no turbidity after keeping the filtered sample at 40°C for 24 hours. It shall conform to the following standards:-

(i)	Moisture	Not more than 0.1 percent
(ii)	Butyro refractometer reading at 40°C OR Refractive Index at 40°C	36.7 - 51.0  OR 1.4500 - 1.4600
(iii)	Iodine Value (Wijs' Method)	31 - 45
(iv)	Saponification value	180 - 195
(v)	Unsaponifiable matter	Not more than 2.5 percent by weight

(vi)	Free fatty acids (expressed as Oleic acid) OR Acid value	Not more than 0.25 percent by weight OR Not more than 0.5
(vii)	9:10 epoxy and 9:10 Dihydroxy stearic acid	Not more than 3.0 percent by weight
(viii)	Flash point (Pensky Marten closed method)	Not less than 250°C

Test for argemone oil shall be negative

**7. Kokum Fat** means the fat obtained from clean and sound kernels of Kokum (*Garcinia indica choisy*) "also known as kokum, by process of expression or by a process of solvent extraction from cake or kernel. It shall be refined. The fat shall be clear on melting and free from rancidity, adulterants, sediments, suspended or other foreign matter, separated water, added colouring and flavouring matters and mineral oil." However, it may contain food additives permitted in these regulations and Appendix A.

It shall also conform to the following standards, namely:-

(a)	Butyro-refractometer reading at 40°C OR Refractive Index at 40°C	45.9-47.3 OR 1.4565 to 1.4575
(b)	Saponification value	187-191.7
(c)	Unsaponifiable matters	Not more than 1.5 per cent by weight
(d)	Iodine value (Wijs)	32-40
(e)	Acid value	Not more than 0.5
(f)	Flash Point Pensky-Martens (closed) method	Not less than 250°C

Test for argemone oil shall be negative.

**8. Mango Kernel Fat** means the fat obtained from clean and sound kernels of Mango (*Magifera Indica Linn*) by process of expression or by a process of solvent extraction from cake or kernel. It shall be refined. The fat shall be clear on melting and free from rancidity, adulterants, sediment suspended or other foreign matter,

separated water, added colouring and flavouring matters and mineral oil. However, it may contain food additives permitted in these Regulations and Appendices.

It shall also conform to the following standards, namely:-

(a)	Butyro-refractometer reading at 40°C OR Refractive Index at 40°C	43.7-51.6 OR 1.4550 to 1.4604
(b)	Saponification value	185-198
(c)	Unsaponifiable matters	Not more than 1.5 per cent by weight
(d)	Iodine value (wijs)	32-57
(e)	Acid value	Not more than 0.5
(f)	Flash Point Pensky-Martens (closed) method	Not more than 250°C

Test for argemone oil shall be negative.

**9. Dhupa Fat** means the fat obtained from clean and sound seed kernels of Dhupa, also known as Indian Copal (*Vateria Indica* Linn) tree by process of expression or by a process of solvent extraction from cake or kernel. It shall be refined. The fat shall be clear on melting and free from rancidity, adulterants, sediment, suspended or other foreign matter, separated water, added colouring and flavouring matter and mineral oil. However, it may contain food additives permitted in these Regulations and Appendices

It shall also conform to the following standards, namely:-

	Butyro-refractometer reading at 40°C OR (a) Refractive Index at 40°C	47.5-49.5 OR 1.4576 to 1.4590
(b)	Saponification value	187-192
(c)	Unsaponifiable matters	Not more than 1.5 per cent by weight
(d)	Iodine value (wijs)	36-43
(e)	Acid value	Not more than 0.5
(f)	Flash Point Pensky-Martens (closed) method	Not more than 250°C

Test for argemone oil shall be negative.

**10. Phulwara Fat** means the fat obtained from clean and sound seed kernels of Phulwara [variously named Aisandra Butyrace (Roxb) Baehni, Madhuca Butyracea or Bassia Butyracea] by a process of expression or by a process of solvent extraction from cake or Kernel. It shall be refined. The fat shall be clear on melting and shall be free from rancidity, adulterants sediments, suspended on other foreign matters, separated water, added colouring and flavouring substances and mineral oil. However, it may contain food additives permitted in these Regulations and Appendices.

It shall also conform to the following Standards, namely:-

(a)	Butyro-refractometer reading at 40°C OR Refractive Index at 40°C	48.6-51.0 OR 1.4584 to 1.4600
(b)	Saponification value	192.5-199.4
(c)	Unsaponifiable matters	Not more than 1.5 per cent by weight.
(d)	Iodine value (wijs)	43.8-47.4
(e)	Acid value	Not more than 0.5
(f)	Flash Point Penske-Martens (closed) method	Not less than 250°C

Test for argemone oil shall be negative.

<sup>39</sup>[**11. Peanut Butter** means cohesive, comminuted food product prepared from clean, sound, shelled peanuts or groundnuts (*Arachis hypogaea L.*) by grinding roasted mature kernels from which the seed coats have been removed. It may contain sugar, liquid glucose and edible oils and fats permitted in these regulations. It shall conform to the following standards, namely: -

S. No.	Parameters	Limits
1.	Moisture	Not more than 3.0 per cent by weight



2.	Fat	Not less than 40.0 per cent by weight(on dry basis)
3.	Protein	Not less than 25.0 per cent by weight(on dry basis)
4.	Total ash	Not more than 5.0 per cent by weight(on dry basis)
5.	Acid value of extracted fat	Not more than 4.0
6.	Salt as NaCl	Not more than 2 per cent by weight

Test for argemone oil shall be negative.

(i) **Food Additives:** The product may contain food additives permitted in Appendix A.

(ii) **Contaminants, Toxins and Residues:** The product shall comply with the Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

(iii) **Hygiene:** The products shall be prepared and handled in accordance with the practices prescribed in the Schedule 4 of the Food Safety and Standards (Licensing and Registration of Food Businesses) Regulations, 2011 and any other such practices prescribed from time to time under the provisions of the Food Safety and Standard Act, 2006.

The product shall conform to the microbiological requirement prescribed in Appendix B.

(iv) **Labelling:** The provisions of the Food Safety and Standards (Packaging and Labelling) Regulations, 2011 shall apply.

(v) **Methods of Sampling and Analysis:** As provided in the relevant Food Safety and Standards Authority of India Manual of Methods of Analysis of Food.]

<sup>74</sup>[**12. Shea butter.-** Shea butter means the product obtained by pressing and extraction from shea kernels derived from Shea tree (*Butyrospermum parkii*). It shall be refined to make it fit for human consumption. The refined shea butter may be used as such or fractionated using dry fractionation or solvent fractionation technique to obtain stearin/olein fractions to be suitably used for different food applications.

Shea butter shall be free from admixture with other oils and fats and free from adulterants, any foreign matter or added colouring substance. It shall be clear on melting.

It shall conform to the following standards:

Serial No.	Parameters	Shea butter (Unrefined)	Shea butter (Refined)
1.	Refractive index at 44°C	1.4620 – 1.4650	1.4620 – 1.4650
2.	Iodine value	30 - 75	30 - 75
3.	Saponification value	160 - 200	160 - 200
4.	Unsaponifiable matter	Not more than 19 per cent.	Not more than 10 per cent.
5.	Free Fatty acids (as oleic acid)	Not more than 8 per cent.	Not more than 0.25 per cent
6.	Moisture	-	Not more than 0.1 per cent
7.	Flash point (Pensky-Marten closed method)	-	Not less than 250°C

- Note:**
1. Test for argemone oil shall be negative
  2. It may contain food additive as per appendix A of these regulations.

**13. Borneo tallow/ Illipe butter.-** Borneo tallow/ Illipe butter means the fat obtained by pressing and extraction from Illipe seeds (*Shorea stenoptera*). Illipe butter shall be free from admixture with other oils and fats and free from adulterants, rancidity, suspended or any foreign matter, separated water, added colouring or flavouring substance, or mineral oil. It shall be clear on melting.

It shall conform to the following standards:

Serial No.	Parameters	Borneo tallow/ Illipe butter
1.	Refractive index at 40°C	1.4560 – 1.4570
2.	Iodine value	25 - 38
3.	Saponification value	180 - 200
4.	Unsaponifiable matter	Not more than 2.5 per cent.
5.	Free Fatty acids (as oleic acid)	Not more than 3 per cent.

- Note:** 1. Test for argemone oil shall be negative  
2. It may contain food additive as per appendix A of these regulations.]

### 2.2.5 MARGARINE AND FAT SPREADS:

**1. Table margarine** means an emulsion of edible oils and fats with water. It shall be free from rancidity, mineral oil and animal body fats. It may contain common salt not exceeding 2.5 per cent, skimmed milk powder not exceeding 2 per cent; it may contain food additives permitted in these Regulations and Appendices. It shall conform to the following specifications, namely:-

Fat	Not less than 80 per cent mass/mass
Moisture	Not less than 12 per cent and not more than 16 per cent mass/ mass.
Vitamin A	Not less than 30 I.U. per gram of the product at the time of sale.
Melting point of extracted fat (Capillary Slip Method)	31°C to 37°C
Unsaponifiable matter of extracted fat	Not more than 1.5 per cent by weight extracted fat.
Free fatty acids (as oleic acid) of extracted fat OR Acid Value	Not more than 0.25 per cent by weight OR Not more than 0.5

<sup>75</sup>[It shall contain raw or refined sesame oil (Til oil) in sufficient quantity so that when it is mixed with refined groundnut oil in the proportion of 20:80, the colour produced by the Baudouin Test shall not be lighter than 2.5 red units in a 1 cm. cell on a Lovibond scale.]

Provided that such coloured and flavoured margarine shall also contain starch not less than 100 ppm and not more than 150 ppm.

Provided further that such coloured and flavoured margarine shall only be sold in sealed packages weighing not more than 500gms.

Test for Argemone oil shall be negative.

<sup>72</sup>[It shall not contain trans fatty acids more than 5 % by weight:

Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1<sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1<sup>st</sup> January, 2022.]

**2. Bakery and Industrial Margarine-** means an emulsion of vegetable oil product with water. It shall be free from added colour and flavour, rancidity, mineral oil and animal body fats. It may contain common salt not exceeding 2.5 percent. However, it may contain food additives permitted in these Regulations and Appendices. It shall conform to the following standards, namely:-

Fat	Not less than 80 per cent m/m.
Moisture	Not less than 12 per cent and Not more than 16 per cent m/m.

The separated fat of the products shall conform to the following:-

(i)	Vitamin A	Not less than 30 IU per gram at the time of packaging and shall show a positive test for Vitamin 'A' when tested by Antimony trichloride (carrprice) reagents (as per IS 5886-1970).
(ii)	<sup>72</sup> [Trans fatty acids  Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1 <sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1 <sup>st</sup> January, 2022.]	Not more than 5 % by weight.

(iii)	Unsaponifiable matter	Not exceeding 2.0 per cent but in case of the products where proportion of Rice bran oil is more than 30 per cent by wt. the unsaponifiable matter shall be not more than 2.5 per cent by wt. provided quantity of Rice bran oil is declared on the label of such product as laid down in Regulation 2.4.5 (34) of Food Safety and Standards (Food Products Standards and Food Additive) Regulations, 2011.
(iv)	Free Fatty Acid calculated as Oleic acid OR Acid value	Not more than 0.25 per cent.  OR Not more than 0.5.

It shall contain raw or refined sesame oil (Til oil) in sufficient quantity so that when the product is mixed with refined groundnut oil in the proportion of 20 : 80, the colour produced by the Boudouin test shall not be lighter than 2.0 red unit in a 1 cm. cell on a Lovibond scale.

Test for argemone oil shall be negative.

**3. Fat spread** means a product in the form of water in oil emulsion, of an aqueous phase and a fat phase of edible oils and fats excluding animal body fats. The individual oil and fat used in the spread shall conform to the respective standards prescribed by these regulations.

Fat spread shall be classified into the following three groups:-

S.No	Types	Characteristics
(a)	Milk fat spread	Fat content will be exclusively milk fat.
(b)	Mixed fat spread	Fat content will be a mixture of milk fat with any one or more of hydrogenated, unhydrogenated refined edible vegetable Oils or interesterified fat.
(c)	Vegetable fat spread	Fat content will be a mixture of any two or more of hydrogenated, unhydrogenated refined vegetable oils

or interesterfied fat.

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The fat content shall be declared on the label. In mixed fat spread, the milk fat content shall also be declared on the label alongwith the total fat content.

<sup>72</sup>[The Vegetable fat spread and Mixed fat spread shall not contain trans fatty acids more than 5 % by weight.

Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1<sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1<sup>st</sup> January, 2022.]

The word 'butter' will not be associated while labelling the product.

It may 'contain' edible common salt not exceeding 2 per cent by weight in aqueous phase; milk solid not fat: It may contain food additives permitted in these Regulations and Appendices. It shall be free from animal body fat, mineral oil and wax. Vegetable fat spread shall contain raw or refined Sesame oil (Til oil) in sufficient quantity so that when separated fat is mixed with refined groundnut oil in the proportion of 20:80 the red colour produced by Baudouin test shall not be lighter than 2.5 red units in 1 cm cell on a Lovibond scale.

It shall also conform to the following standards, namely:-

(i)	Fat	Not more than 80 per cent and not less than 40 per cent by weight.
(ii)	Moisture	Not more than 56 per cent and not less than 16 per cent by weight.
(iii)	Melting point of Extracted fat (capillary slip method) in case of vegetable fat spread	Not more than 37°C
(iv)	Unsaponifiable matter of extracted fat	
	(a) In case of milk fat and	Not more than 1 per cent by weight

	mixed fat spread	
	(b) In case of vegetable fat spread	Not more than 1.5 per cent
(v)	Acid value of extracted fat	Not more than 0.5
(vi)	The vegetable fat spread shall contain	Not less than 25 IU synthetic vitamin 'A' per gram at the time of packing and shall show a positive test for vitamin 'A' when tested by Antimony Trichloride (Carr-Price) reagents (as per I.S. 5886 - 1970)".
(vii)	It shall contain Starch	Not less than 100 ppm and Not more than 150 ppm

It shall be compulsorily sold in sealed packages weighing not more than 500g. under Agmark certificate mark.

## 2.2.6 HYDROGENATED VEGETABLE OILS

**1.Vanaspati** means any refined edible vegetable oil or oils, subjected to a process of hydrogenation in any form <sup>2</sup>[or chemical or enzymatic interesterification]. It shall be prepared by hydrogenation from groundnut oil, cottonseed oil and sesame oil or mixtures thereof or any other harmless vegetable oils allowed by the government for the purpose. Refined sal seed fat, if used, shall not be more than 10 per cent of the total oil mix.

<sup>54</sup>[Vanaspati shall be prepared from any of the edible vegetable oils whose standards have been prescribed in these regulations or from any other edible vegetable oil with prior approval of the Food Safety and Standards Authority of India. Provided that Refined Salseed fat, if used, shall not be more than 10 per cent of the total oil mix.]

It shall conform to the standards specified below:-

(i) It shall not contain any harmful colouring, flavouring or any other matter deleterious to health;

(ii) No colour shall be added to hydrogenated vegetable oil unless so authorised

by Government, but in no event any colour resembling the colour of ghee shall be added;

(iii) If any flavour is used, it shall be distinct from that of ghee in accordance with a list of permissible flavours and in such quantities as may be prescribed by Government:

<sup>72</sup>[omitted]

(iv) The product on melting shall be clear in appearance and shall be free from staleness or rancidity, and pleasant to taste and smell;

(v) It shall contain raw or refined sesame (til) oil in sufficient quantity so that when the vanaspati is mixed with refined groundnut oil in the proportion of 20:80, the colour produced by the Baudouin test shall not be lighter than 2.0 red units in a 1 cm. cell on a Lovibond scale;

(vi) It may contain Food Additives permitted in these regulations and appendices.

<sup>54</sup>[omitted]

(vii) The product shall conform to the following requirements:

a) Moisture, percent by mass: Not more than 0.25

b) <sup>72</sup>[Trans fatty acids - Not more than 5 % by weight:

Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1<sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1<sup>st</sup> January, 2022.]

c) it shall not have unsaponifiable matter exceeding 2.0 percent but in case of vanaspati where proportion of rice bran oil is more than 30 percent by weight, the unsaponifiable matter shall not be more than 2.5 percent by weight provided quantity of rice bran is declared on the label of such vanaspati as laid down in regulation 2.4.2(8) of packaging and labelling regulations.



<sup>75</sup>[In case physically refined rice bran oil is used, the unsaponifiable matter shall not be more than 4.0 percent by weight; provided that oryzanol content be minimum of 0.20 % (by weight) with rice bran oil at 20% level and with an increment of 0.05% with every 5% rise in rice bran oil content.]

<sup>54</sup>[ d) Acid Value: Not more than 0.6]

e) Synthetic Vitamin 'A': Not less than 25.0 International units (IU) per gram at the time of packing and shall test positive when tested with Antimony Trichloride (carr-price Reagent) as per IS:5886-1970.

f) Residual Nickel: Not more than 1.5 ppm

g) Test for argemone oil shall be negative.

**2. Bakery shortening** means vanaspati meant for use as a shortening or leavening agent in the manufacture of bakery products, that is, for promoting the development of the desired cellular structure in the bakery product with an accompanying increase in its tenderness and volume; this will also confirm to the standards prescribed in regulation 2.2.6 (1) excepts that—

(a) <sup>72</sup>[Trans fatty acids - Not more than 5 % by weight:

Provided that maximum limit of trans fatty acid shall not be more than 3% by weight, on and from 1<sup>st</sup> January, 2021 and not more than 2% by weight, on and from 1<sup>st</sup> January, 2022.]

(b) if aerated, only nitrogen, air or any other inert gas shall be used for the purpose and the quantity of such gas incorporated in the product shall not exceed 12 per cent by volume thereof.

(c) it may contain added mono-glycerides and diglycerides as emulsifying agents.

Test for argemone oil shall be negative.

#### <sup>43</sup>[**2.2.7 FATTY ACID COMPOSITION:**

The oils and fats covered under this regulation shall comply with the fatty acid composition of the oils and fats specified in the table, namely:-

**TABLE**  
**Fatty acid composition of vegetable oils as determined by gas liquid chromatography (expressed as percentage of total fatty acids)**

Fatty acid	Groundnut oil	Cocconut oil	Cotton-seed oil	Maize oil	Palm oil	Palm kernel oil	Palmolein	Rice bran oil	Safflower seed oil	Safflower seed oil (high oleic acid)	Soyabean oil
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
C6:0	ND	ND-1.0	ND	ND	ND	ND-2.5	ND	ND	ND	ND	ND
C8:0	ND	4.0-10.0	ND	ND	ND	2.0-6.3	ND	ND	ND	ND	ND
C10:0	ND	5.0-10.0	ND	ND	ND	2.7-7.0	ND	ND	ND	ND	ND
C12:0	ND-1.0	44.0-53.2	ND-0.2	ND-0.3	ND-1.5	39.7-55.0	0.1-0.5	ND-0.2	ND	ND-0.2	ND-0.1
C14:0	ND-0.5	13.0-21.9	0.6-1.0	ND-0.3	0.5-2.0	11.5-19.0	0.5-1.5	ND-1.0	ND-0.2	ND-0.2	ND-0.2
C16:0	6.0-14	7.5-11.0	21.4-26.4	8.6-16.5	32.0-47.5	6.0-14.0	38.0-43.5	14-23	5.3-8.0	3.6-6.0	8-13.5
C16:1	ND-0.2	ND	ND-1.2	ND-0.5	ND-0.6	ND-0.1	ND-0.6	ND-0.5	ND-0.2	ND-0.2	ND-0.2
C17:0	ND-0.1	ND	ND-0.1	ND-0.1	ND-0.2	-	ND-0.2	ND	ND-0.1	ND-0.1	ND-0.1
C17:1	ND-0.1	ND	ND-0.1	ND-0.1	ND	-	ND-0.1	ND	ND-0.1	ND-0.1	ND-0.1
C18:0	0.6-7.0	1.0-4.9	2.1-3.4	ND-3.3	3.5-6.0	1.0-4.0	3.5-5.4	0.9-5.2	1.9-2.9	1.5-2.4	2-5.4

C18 :1	35.0- 69	5.0- 10.0	14.7- 23.5	20.0 - 42.2	36.0- 44.0	10.5- 24.6	39.8- 47.0	38-48	8.4 -21.3	70.0- 83.7	17- 30
C18 :2	12.0- 43.0	1.0- 2.5	46.7- 58.2	34.0 - 65.6	8.5-12	0.5- 4.3	10.0- 13.5	21.0- 42.0	67. 8- 83.2	9.0- 19.9	48.0 - 59.0
C18 :3	ND- 0.3	ND- 0.2	ND- 0.4	ND- 2.0	ND- 0.5	ND- 0.3	ND- 0.6	0.1- 2.9	N D-0.1	ND- 1.2	4.5- 11
C20 :0	1.0- 4.0	ND- 0.2	0.2- 0.5	0.3- 1.0	ND- 1.0	ND- 0.5	ND- 0.9	ND- 0.9	0.2 - 0.4	0.3-0.6	0.1- 0.6
C20 :1	0.7- 1.7	ND- 0.2	ND- 0.1	0.2- 0.6	ND- 0.4	ND- 0.2	ND- 0.4	ND- 1.1	0.1 - 0.3	0.1-0.5	ND- 0.5
C20 :2	ND	ND	ND- 0.1	ND- 0.1	ND	ND	ND	-	N D	ND	ND- 0.1
C22 :0	1.5- 4.5	ND	ND- 0.6	ND- 0.5	ND- 0.2	-	ND- 0.2	ND- 1.0	N D-1.0	ND- 0.4	ND- 0.7
C22 :1	ND- 0.3	ND	ND- 0.3	N D- 0.3	ND	ND	ND	ND	N D-1.8	ND- 0.3	ND- 0.3
C22 :2	ND	ND	ND- 0.1	N D	ND	ND	ND	ND	N D	ND	ND
C24 :0	0.5- 2.5	ND	ND- 0.1	N D- 0.5	ND	-	ND	ND- 0.9	N D-0.2	ND- 0.3	ND- 0.5
C24 :1	ND- 0.3	ND	ND	N D	ND	ND	ND	ND	N D-0.2	ND- 0.3	ND

ND - non detectable, defined as  $\leq 0.05\%$

Fatt y acid	Mustar d-seed oil	Rapesee d oil	Rapesee d oil (low erucic acid)	Sesame seed oil	Sunflowe r seed oil	Sunflowe r seed oil (high oleic acid)	Virgi n olive oils	Olive oil (Refi ned olive oil)	Olive Pomace oil (Refine d Olive Pomace oil)
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(1)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
C6: :0	ND	ND	ND	ND	ND	ND	-	-	-
C8: :0	ND	ND	ND	ND	ND	ND	-	-	-
C10: :0	ND	ND	ND	ND	ND	ND	-	-	-
C12: :0	ND	ND	ND	ND-1.5	ND-0.3	ND	-	-	-
C14: :0	ND-1.0	ND-0.2	ND-0.2	ND-0.8	ND-0.3	ND-0.1	0-0.1	0-0.1	0-0.1
C16: :0	0.5-5.0	1.5-6.0	2.5-7.0	7.9-14.6	4.0-8.0	2.6-5.0	7.5-20.0	7.5-20.0	7.5-20.0
C16: :1	ND-0.5	ND-3.0	ND-0.6	ND-0.2	ND-0.3	ND-0.1	0.3-3.5	0.3-3.5	0.3-3.5
C17: :0	ND	ND-0.1	ND-0.3	ND-0.2	ND-0.2	ND-0.1	0-0.03	0-0.03	0-0.03
C17: :1	ND	ND-0.1	ND-0.3	ND-0.1	ND-0.1	ND-0.1	0-0.3	0-0.3	0-0.3
C18: :0	0.5-2.0	0.5-3.1	0.8-3.0	2.0-8.0	1.0-7.0	2.9-6.2	0.5-5.0	0.5-5.0	0.5-5.0
C18: :1	8.0-23.0	8.0-60.0	51.0-70.0	34.4-48.0	14.0-39.4	75-90.7	55.0-83.0	55.0-83.0	55.0-83.0
C18: :2	10.0-24.0	11.0-23.0	15.0-30.0	28-47.9	48.3-74.0	2.1-17	2.5-21.0	2.5-21.0	2.5-21.0
C18: :3	6.0-18.0	5.0-13.0	5.0-14.0	ND-1.0	ND-0.3	ND-0.3	-	-	-
C20: :0	ND-1.5	ND-3.0	0.2-1.2	0.1-0.8	0.1-0.5	0.2-0.5	0-0.8	0-0.8	0-0.8
C20: :1	5.0-13.0	3.0-15.0	0.1-4.3	ND-0.5	ND-0.3	0.1-0.5	0-0.4	0-0.4	0-0.4
C20: :2	ND-1.0	ND-1.0	ND-0.1	ND	ND	ND	-	-	-
C22: :0	0.2-2.5	ND-2.0	ND-0.6	ND-1.1	0.3-1.5	0.5-1.6	0-0.3	0-0.3	0-0.3

C22 :1	40.0- 58.0	> 2.0- 60.0	ND- 2.0	ND	ND-0.3	ND-0.3	-	-	-
C22 :2	ND- 1.0	ND- 2.0	ND- 0.1	ND	ND	ND	-	-	-
C24 :0	ND- 0.8	ND- 2.0	ND- 0.3	ND-0.5	ND-0.3	ND-0.5	0-1.0	0-1.0	0-1.0
C24 :1	0.5- 2.5	ND- 3.0	ND- 0.4	ND	ND-0.5	ND	-	-	-

<sup>54</sup> [Fatt y acid	Avocado Oil	Palm Stearin	Palm Kernel Stearin	Palm Kernel Olein	Palm superolein
(1)	(22)	(23)	(24)	(25)	(26)
C6:0	ND	ND	0.2 max.	0.7 max.	ND
C8:0	ND	ND	1.3-3.0	2.9-6.3	ND
C10:0	ND	ND	2.4-3.3	2.7-4.5	ND
C12:0	ND	0.1-0.5	52.0-59.7	39.7-47.0	0.1-0.5
C14:0	0.3 max.	1.0-2.0	20.0-25.0	11.5-15.5	0.5-1.5
C16:0	7.0-35.0	48.0- 74.0	6.7-10.0	6.2-10.6	30.0-39.0
C16:1	2.0-16.8	0.2 max.	ND	0.1 max.	0.5 max.
C17:0	0.3 max.	0.2 max.	ND	ND	0.1 max.
C17:1	0.3 max.	0.1 max.	ND	ND	ND
C18:0	1.5 max.	3.9-6.0	1.0-3.0	1.7-3.0	2.8-4.5
C18:1	36.0-80.0	15.5- 36.0	4.1-8.0	14.4-24.6	43.0-49.5
C18:2	6.0-21.2	3.0-10.0	0.5-1.5	2.4-4.3	10.5-15.0
C18:3	3.0 max.	0.5 max.	0.1 max.	0.3 max.	0.2-1.0
C20:0	0.5 max.	1.0 max.	0.5 max.	0.5 max.	0.4 max.
C20:1	0.2 max.	0.4 max.	0.1 max.	0.2 max.	0.2 max.
C20:2	ND	ND	ND	ND	ND
C22:0	ND	0.2 max.	ND	ND	0.2 max.
C22:1	ND	ND	ND	ND	ND
C22:2	ND	ND	ND	ND	ND
C24:0	0.1 max.	ND	ND	ND	ND
C24:1	ND	ND	ND	ND	ND

<sup>60</sup> [Fatty acid	Chia Oil	<sup>75</sup> [Grapeseed Oil	<sup>82</sup> [Moringa Oil
(1)	(27)	(28)	(29)
C6:0	-	-	ND
C8:0	-	-	0.4 max
C10:0	-	-	0.4 max
C12:0	-	-	0.4 max
C14:0	0.1 max	0.3 max	1.4 max
C16:0	6.0 – 8.0	5.5-11.0	3.0-13.0
C16:1	0.5 max	1.2 max	0.9-2.9
C17:0	-	0.2 max	0.09 max
C17:1	-	0.1 max	ND
C18:0	3.0 - 4.5	3.0 – 6.5	2.5-8.5
C18:1	6.0 -9.0	12.0-28.0	67-78
C18:2	17.0 – 22.0	58.0-78.0	4.0 max
C18:3	58.0 – 65.0	1.0 max	2.5 max
C20:0	0.5 max	1.0 max	2.0-4.2
C20:1	-	0.3 max	1.2-3.0
C20:2	-	-	ND
C22:0	0.2 max	0.5 max	5.0-8.0
C22:1	-	0.3 max	0.3 max
C22:2	-	-	ND
C24:0	-	0.4 max	1-3.5

C24:1	-]	-]	ND
C26:0			1.4 max]

Note 1.- ND-not detectable, defined as  $\leq 0.05\%$

#### <sup>54</sup>[2.2.8. PEROXIDE VALUE OF OILS AND FATS

The Peroxide Value of various categories of oils and fats shall be as follows, namely: -

- (i) Refined oils up to 10 milliequivalents of active oxygen/kg oil (except olive oil);
- (ii) Cold pressed and virgin oils up to 15 milliequivalents of active oxygen/kg oil (except olive oil);
- (iii) Cold pressed fats and oils up to 15 milliequivalents of active oxygen/kg oil (except olive oil);
- (iv) Virgin olive oils < 20 milliequivalents of active oxygen/kg oil;
- (v) Refined olive oil < 5 milliequivalents of active oxygen/kg oil;
- (vi) Olive oil < 15 milliequivalents of active oxygen/kg oil;
- (vii) Refined olive-pomace oil < 5 milliequivalents of active oxygen/kg oil;
- (viii) Olive-pomace oil < 15 milliequivalents of active oxygen/kg oil;
- (ix) Other expelled edible oils and fats up to 10 milliequivalents of active oxygen/kg oil or fat.]

<sup>82</sup>[2.2.9 Solvent Extracted Crude Vegetable Oils (not for direct human consumption). - (1) Solvent extracted crude vegetable oils mean vegetable oils extracted using food grade hexane from sources mentioned in standards of respective edible oils under sub-regulation 2.2.1.

(2) The oil shall be clear, free from rancidity, adulterants, sediment, suspended and other foreign matter, separated water and added colouring and flavouring substances and shall also be free from Argemone oil.

(3) These oils as such are not for direct human consumption and shall be refined before human consumption, which shall conform to the standards specified for refined vegetable oils laid down under clause 16 of regulation 2.2.1.

(4) These oils shall conform to the standards specified in the table below:

<b>Solvent Extracted Crude Oils</b>	<b>Moisture and insoluble impurities (% by mass Max)</b>	<b>Refractive index at 40°C</b>	<b>Saponification Value</b>	<b>Iodine Value (Wij's)</b>	<b>Acid Value Max.</b>	<b>Unsaponifiable matter (% by mass Max.)</b>	<b>Flash point Penskey Martens (closed cup method) °C Min.</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>
Coconut Oil	1.0	1.4481- 1.4491	250 (Min)	7.5 - 10	10.0	1.0	90
Cottonseed Oil	0.75	1.4630- 1.4660	190- 198	98 - 123	10.0	2.0	100
Groundnut Oil	0.70	1.4620- 1.4640	188 -196	85-99	12.5	1.0	100
Nigerseed Oil	0.75	1.4665- 1.4691	188-193	110- 135	10.0	1.5	100
Safflower Oil	1.0	1.4674- 1.4689	186-196	135- 148	6.0	1.5	100
Sesame Oil	0.5	1.4646- 1.4665	188-193	103- 120	6.0	2.5	90
Soyabean Oil	0.5	1.4649- 1.4710	189 - 195	120- 141	6.0	1.5	100
Sunflower Oil	0.5	1.4640 - 1.4691	188-194	100- 145	5.0	2.0	100
Mustard Oil	1.0	1.4646- 1.4662	168-177	96-112	12.0	2.0	100
Rice Bran Oil	1.0	1.4600 - 1.4700	180-195	90-105	40.0	6.0	100



Olive Pomace Oil	1.5	1.4680- 1.4707 at 20 °C	182-193	75-92	40.0	3.0	≥ 120 °C]
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Insertion of the provision

[2.2.9. CRUDE SOLVENT EXTRACTED CORN (MAIZE) OIL

Solvent Extracted Crude Oils (1)	Moisture and insoluble impurities (% by wt. Max) (2)	Refractive index at 40°C (3)	Saponifica- tion value (4)	Iodine Value (Wij’s) (5)	Acid Value (Max.) (6)	Unsaponifiable matter (% by wt. Max.) (7)	Flash point Panskey Martens (closed) °C Min. (8)
Corn (Maize) Oil	0.25	1.4637 - 1.4675	187-195	103- 128	8.0	2.5	100]

[Operationalized vide direction F.No. SS-T008/1/2022-Standard-FSSAI dated 20<sup>th</sup> June, 2022

Re-operationalized w.e.f 20.12.2022 vide direction F.No. SS-T008/1/2022-Standard-FSSAI dated 24<sup>th</sup> April, 2023]