

(Unofficial)

Notification of the Ministry of Public Health

(No.421) B.E 2564 (2021)

Issued by virtue of the Food Act B.E. 2522

Re: Edible oils and fats

It deems appropriate to revise the Notification of Ministry of Public Health regarding oils and fats in order to comply with international standards and current development of production technology.

By the virtue of the provisions in the first phase of Section 5 and Section 6 (3)(4)(5)(6)(7) and (10) of the Food Act B.E. 2522 (1979), the Minister of Public Health hereby issues the notification as follows:

Clause 1 The following Notifications shall be repealed:

(1) The Notification of Ministry of Public Health (No.23) B.E. 2522 (1979) Re: Prescribe Peanut Oil as Specific Controlled Food and Prescribed Quality and Standards and Method of Production Process and its label, dated 13th September B.E. 2522 (1979);

(2) The Notification of Ministry of Public Health (No. 233) B.E. 2544 (2001) Re: Amendment of the Notification of the Ministry of Public Health (No. 23), B.E. 2522 (1979), Re: Prescribed Peanut Oil to be Specific Controlled Food and Prescribed Qualities or Standards, Production Processes, and its label, dated 20th August B.E. 2544 (2001);

(3) The Notification of Ministry of Public Health (No. 56) B.E. 2524 (1981) Re: Palm Oil, dated 20th January B.E. 2524 (1981);

(4) The Notification of Ministry of Public Health (No. 184) B.E. 2542 (1999) Re: Palm Oil (No. 2), dated 7th April B.E. 2524 (1999);

(5) The Notification of Ministry of Public Health (No. 234) B.E. 2544 (2001) Re: Amendment of the Notification of the Ministry of Public Health No. 56 B.E. 2524 (1981) Re: Palm Oil, dated 20th August B.E. 2544 (2001);

(6) The Notification of Ministry of Public Health (No. 57) B.E. 2524 (1981) Re: Coconut Oil, dated 20th January B.E. 2524 (1981);

(7) The Notification of Ministry of Public Health (No. 235) B.E. 2544 (2001) Re: Amendment of the Notification of the Ministry of Public Health No. 57 B.E. 2524 (1981), Re: Coconut Oil, dated 20th August B.E. 2524 (1981);

(8) The Notification of Ministry of Public Health (No. 205) B.E. 2543 (2000) Re: Oil and Fat, dated 19th September B.E. 2543 (2000).

Clause 2 Edible oils and fats is prescribed food to have qualities and standards.

Clause 3 Edible oils and fats (or oils and fats) mean glycerides of fatty acids obtained from plants, animal, or marine origin for human consumption, excluding fish oils.

Clause 4 Oils and fats can be classified as follows;

(1) Oils and fats from plant origin mean oils and fats that obtained from plants as specified in Annex 1 of this notification.

(2) Oils and fats from animal origin mean oils and fats that obtained from animals as specified in Annex 2 of this notification.

(3) Oils and fats from marine origin mean oils and fats that obtained from marine organisms as specified in Annex 3 of this notification.

(4) Oils and fats other than specified in Annex 1, 2 and 3 of this notification that permitted by the Thai Food and Drug Administration (Thai FDA)

(5) Mixed oils and fats mean oils and fats that obtained from two or more different kinds of oils and fats described in (1) (2) (3) (4) or a particular oils and fats which are specifically issued under the Notification of Ministry of Public Health whether obtained by natural process or processing process that are mixed together by physical means or interesterification or other mixing process that permitted by Thai FDA.

Clause 5 The production processes of oils and fats described in clause 4(1) (2) (3) and (4) shall be as follows:

(1) Natural process by mechanical procedure with heat or with cold pressing, cold extraction, heat application only, distillation and fractionation by mechanical methods or other natural process permitted by Thai FDA. Then they may be purified by washing with water, setting, filtering, or centrifuging.

(2) Processing process by purifying of oils and fats, which are obtained from natural process or obtained from extraction by solvent to remove free fatty acids, and may be further processed by bleaching, or deodorization. This includes fractionation, full hydrogenation, interesterification, re-esterification, or may use of chemical substance, enzyme, or heat as catalyze agent of the process, as a case may be.

(3) Other processes that permitted by the Thai Food and Drug Administration (Thai FDA)

Clause 6 Oils and fats described in clause 4(1) (2) and (3) shall have qualities or standards as follows;

(1) Color shall be inherent of that specific characteristic of such oil and fat.

(2) Odor and taste shall be inherent of that specific characteristics of such oil and fat with free from foreign substances, and rancidity.

(3) Chemical and physical characteristics as specified in Annex 4 of this notification.

(4) Fatty acid composition of oils and fats as specified in Annex 5 of this notification.

(5) Acid value as a case may be as follows:

(5.1) Oils and fats obtained from plants derived from natural process shall not exceed 4.0 milligram of potassium hydroxide per 1 gram of oil or fat, except

(a) Extra virgin olive oil shall not exceed 1.6 milligram of potassium hydroxide per 1 gram of oil or fat.

(b) Ordinary virgin olive oil shall not exceed 6.6 milligram of potassium hydroxide per 1 gram of oil or fat.

(c) Virgin palm oil shall not exceed 10.0 milligram of potassium hydroxide per 1 gram of oil or fat.

(5.2) Oils and fats obtained from plants derived from processing process shall not exceed 0.6 milligram of potassium hydroxide per 1 gram of oil or fat, except olive oil and olive-pomace oil shall not exceed 2.0 milligram of potassium hydroxide per 1 gram of oil or fat.

(5.3) Lard shall not exceed 1.3 milligram of potassium hydroxide per 1 gram of oil or fat.

(5.4) Rendered pork fat, edible tallow, and rendered chicken fat shall not exceed 2.5 milligram of potassium hydroxide per 1 gram of oil or fat.

(5.5) Premiere jus or oleo stock shall not exceed 2.0 milligram of potassium hydroxide per 1 gram of oil or fat.

(5.6) Algal oil shall not exceed 3.0 milligram of potassium hydroxide per 1 gram of oil or fat.

Acid value specified in (5) can be expressed by percentage of free fatty acid (% free fatty acid) depending on analytical method. However, conversion of percentage of free fatty acid to acid value shall not exceed the limit specified in the first phase.

(6) Peroxide value as a case may be as follows:

(6.1) Oils and fats obtained from plants derived from natural process shall not exceed 15 milliequivalents per 1 kilogram of oil or fat, except virgin olive oils shall not exceed 20 milliequivalents per 1 kilogram of oil or fat.

(6.2) Oils and fats obtained from plants derived from processing process shall not exceed 10 milliequivalents per 1 kilogram of oil or fat, except refined olive oil and refined olive-pomace oil shall not exceed 5 milliequivalents per 1 kilogram of oil or fat.

(6.3) Olive oil and olive-pomace oil shall not exceed 15 milliequivalents per 1 kilogram of oil or fat.

(6.4) Oils and fats obtained from animals shall not exceed 10 milliequivalents per 1 kilogram of oil or fat.

(6.5) Algal oils shall not exceed 5 milliequivalents per 1 kilogram of oil or fat.

(7) Water and volatile matter at 105 °C as a case may be as follows:

(7.1) Oils and fats obtained from plants shall not exceed 0.2 percent by weight.

(7.2) Oils and fats obtained from animals shall not exceed 0.3 percent by weight.

(7.3) Olive oils and olive-pomace oils derived from processing process shall not exceed 0.1 percent by weight.

(7.4) Algal oils shall not exceed 0.05 percent by weight.

(8) Soap content shall not exceed 0.005 percent by weight, except lard, premiere jus (or oleo stock) shall not be found.

(9) Insoluble impurities shall not exceed 0.05 percent by weight, except virgin olive oils shall not exceed 0.1 percent by weight.

(10) Other substance that may be contaminated shall not exceed limit as a case may be as follows:

(10.1) Free of mineral oil.

(10.2) Iron

(a) Oils and fats obtained from plants by natural process shall not more than 5.0 milligram per 1 kilogram of oil or fat.

(b) Oils and fats obtained from plants by processing process shall not more than 1.5 milligram per 1 kilogram of oil or fat.

(c) Olive oils derived from both natural and processing process shall not more than 3.0 milligram per 1 kilogram of oil or fat.

(d) Palm kernel olein shall not exceed 5.0 milligram per 1 kilogram of oil or fat.

(e) Palm kernel stearin shall not exceed 7.0 milligram per 1 kilogram of oil or fat.

(f) Oils and fats obtained from animals shall not exceed 1.5 milligram per 1 kilogram of oil or fat.

(g) Algal oils derived from natural process shall not exceed 5.0 milligram per 1 kilogram of oil or fat.

(h) Algal oils derived from processing process shall not exceed 2.5 milligram per 1 kilogram of oil or fat.

(10.3) Copper

(a) Oils and fats obtained from plants by natural process shall not exceed 0.4 milligram per 1 kilogram of oil or fat.

(b) Oils and fats obtained from plants by processing process shall not exceed 0.1 milligram per 1 kilogram of oil or fat.

(c) Olive oils derived from both natural and processing process shall not exceed 0.1 milligram per 1 kilogram of oil or fat.

(d) Oils and fats obtained from animals shall not exceed 0.4 milligram per 1 kilogram of oil or fat.

(e) Algal oils derived from natural process shall not exceed 0.4 milligram per 1 kilogram of oil or fat.

(f) Algal oils derived from processing process shall not exceed 0.1 milligram per 1 kilogram of oil or fat.

Clause 7 Oils and fats described in clause 4(4) shall have qualities or standards as described in clause 6 (1) (2) (7) (8) (9) and (10) by considering source of raw material used for oil production and production process of such oils and fats. In addition, these oils shall also have other qualities or standards permitted by Thai FDA as a case may be.

Clause 8 Mixed oils and fats described in clause 4(5) shall have qualities or standards correspond to each type of oil before mixing as described in clause 6 and clause 7 as a case may be. In addition, mixed oils shall also have other qualities or standards permitted by Thai FDA as a case may be.

Clause 9 Oils and fats in powder form shall have qualities or standards as follows;

(1) Shall be in powder, not agglomerated or shall be in a form of a particular characteristics.

(2) Moisture shall not exceed 5 percent by weight

(3) Oils and fats that used as raw material shall have qualities or standards complied with clause 6, clause 7, or clause 8 as a case may be.

(4) Other compositions, qualities, standards shall be permitted by the Food and Drug Administration.

Clause 10 Contaminants in oils and fats described in clause 4(1) (2) (3) (4) and (5) shall not be found in amount exceed the maximum levels specified in the notification of Ministry of Public Health regarding standard for contaminants in food.

Clause 11 Usage of food additives shall follow the notification of Ministry of Public Health regarding food additives.

Clause 12 Pathogenic microorganisms shall follow the notification of Ministry of Public Health regarding prescribing the quality or standard, principles, conditions and methods of analysis for pathogenic microorganisms in foods.

Clause 13 Producers or importers of oils and fats for sale shall:

(1) Follow the notification of Ministry of Public Health regarding production processes, production equipments and food storages.

(2) Not produce oils and fats from reused cooking oil

Clause 14 Use of oil and fat containers shall follow the notification of Ministry of Public Health regarding containers.

Clause 15 Labeling of oils and fats shall follow the notification of the Ministry of Public Health regarding Labeling of Prepackaged Foods and shall display additional information as a case may as follows:

(1) Express production process followed by the name of food for oils and fats described in clause 4(1) (2) (3) and (4)

(2) Express type of oils or fats used as ingredients and mixing ratios in descending orders together with production process of each oil or fat before mixing followed by the name of food, for mixed oils and fats described in clause 4 (5).

Clause 16 Producers or importers of oils and fats, whose permits issued prior to the date of this notification come into force, that oils and fats can be continuously sold but not exceed two years from the date of this notification come into force.

Producers or importers of oils and fats in the first phase shall follow this notification within two years from the date of this notification come into force.

Clause 17 This Notification shall come into force as from the day following date of its publication in the Government Gazette onwards.

Notified on 11th January B.E. 2564 (2021)

(Signed) Anutin Charnvirakul

(Mr. Anutin Charnvirakul)

Minister of Public Health

(Published in the Government Gazette Vol. 138, Special Part 31 Ngor, dated 9th January 2021.)

Note: This English version of the notification is translated to meet the need of the non-Thai speaking people. In case of any discrepancy between the Thai original and the English translation, the former will take priority.

Annex 1

Attachment to the Notification of the Ministry of Public Health (No.421) B.E 2564 (2021)

Issued by virtue of the Food Act B.E. 2522

Re: Edible oils and fats

List of kinds of oils and fats from plant origin

1. Arachis oil (peanut oil, groundnut oil) is derived from groundnuts scientific name as *Arachis hypogaea* L.

2. Babassu oil is derived from the kernel of the fruit of several varieties of the palm scientific name as *Orbignya spp.*

3. Coconut oil is derived from the kernel of the coconut scientific name as *Cocos nucifera* L.

4. Cottonseed oil is derived from the seeds of cotton scientific name as *Gossypium spp.*

5. Grapeseed oil is derived from the seeds of the grape scientific name as *Vitis vinifera* L.

6. Maize oil (corn oil) is derived from the embryos of maize scientific name as *Zea mays* L.

7. Mastardseed oil is derived from seeds of white mustard scientific name as *Sinapis alba* L. or *Brassica hirta Moench*, brown and yellow mustard scientific name as *Brassica juncea* (L.) Czernajew and Cossen, and of black mustard scientific name as *Brassica nigra* (L.) Koch.

8. Oils derived from fruit of palm scientific name as *Elaeis guineensis* can be classified as follows:

(1) Palm kernel oil is derived from the kernel of the palm fruit.

(2) Palm kernel olein is the liquid fraction derived from fractionation of palm kernel oil.

(3) Palm kernel stearin is the solid fraction derived from fractionation of palm kernel oil.

(4) Palm oil is derived from the fleshy mesocarp of the palm fruit.

(5) Palm olein is the liquid fraction derived from the fractionation of palm oil.

(6) Palm stearin is the solid fraction derived from fractionation of palm oil.

(7) Palm superolein can be divided as follows:

(a) Palm superolein is the liquid fraction derived from palm oil produced through a specially controlled crystallization process to achieved an iodine value of 60 or higher.

(b) Palm superolein is derived from fleshy mesocarp of hybrid palm fruit between *Elaeis oleifera* and *Elaeis guineensis* (OxG)

9. Rapeseed oil (turnip rape oil, colza oil, ravisson oil, sarson oil or toria oil) is derived from seeds of rapeseed species scientific name as *Brassica napus* L., *Brassica rapa* L., *Brassica juncea* L., and *Brassica tournefortii* Gouan.

10. Rapeseed oil – low erucic acid (low erucic acid turnip rape oil, low erucic acid colza oil or canola oil) is derived from low erucic acid oil-bearing seeds of rapeseed varieties scientific name as *Brassica napus* L., *Brassica rapa* L. and *Brassica juncea* L.

11. Oils derived from the bran of rice scientific name as *Oryza sativa* L. can be classified as follows:

(1) Rice bran oil (rice oil) is derived from the rice bran.

(2) Rice bran stearin is the solid fraction derived from fractionation of rice bran oil.

12. Safflowerseed oil (safflower oil, carthamus oil or kurdee oil) is derived from safflower seeds scientific name as *Carthamus tinctorious* L.

13. Safflowerseed oil-high oleic acid (high oleic acid safflower oil, high oleic acid carthamus oil or high oleic acid kurdee oil) is derived from high oleic oil-bearing seeds of safflower varieties scientific name as *Carthamus tinctorious* L.

14. Sesameseed oil (sesame oil, gingelly oil, benne oil, ben oil, till oil or tillie oil) is derived from sesame seeds scientific name as *Sesamum indicum* L.

15. Soya bean oil (soybean oil) is derived from soya beans scientific name as *Glycine max* (L.) Merr.

16 Oils derived from seeds of sunflower scientific name as *Helianthus annuus* L. can be classified as follows:

(1) Sunflowerseed oil (sunflower oil) is derived from sunflower seeds.

(2) Sunflowerseed oil- high oleic acid (high oleic acid sunflower oil) is derived from high oleic acid oil-bearing sunflower seeds.

(3) Sunflowerseed oil- mid oleic acid (mid-oleic acid sunflower oil) is derived from mid-oleic acid oil-bearing sunflower seeds.

17. Olive oils is obtained from the olive fruit scientific name as *Olea europaea* L. can be classified as follows:

(1) Extra virgin olive oil is obtained from olive fruit by mechanical or other physical means under condition that do not lead to alteration in the oil with a free acidity, expressed as oleic acid, of not more than 0.8 grams per 100 grams of oil whose other characteristics correspond to those laid down for this category.

(2) Virgin olive oil is obtained from olive fruit by mechanical or other physical means under condition that do not lead to alteration in the oil with a free acidity, expressed as oleic acid, of not more than 2.0 grams per 100 grams of oil whose other characteristics correspond to those laid down for this category.

(3) Ordinary virgin olive oil is obtained from olive fruit by mechanical or other physical means under condition that do not lead to alteration in the oil with a free acidity, expressed as oleic acid, of not more than 3.3 grams per 100 grams of oil whose other characteristics correspond to those laid down for this category.

(4) Refined olive oil is obtained from refining methods of virgin olive oils which do not lead to alterations in the initial glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.3 grams per 100 grams of oil and its other characteristics correspond to those laid down for this category.

(5) Olive oil is obtained from a blend of refined olive oil and virgin olive oils suitable for human consumption. It has a free acidity, expressed as oleic acid, of not more than 1.0 grams per 100 grams of oil and its other characteristics correspond to those laid down for this category.

18. Olive-pomace oils obtained from olive pomace treated by solvent or other physical treatments and to the exclusion of oils obtained by re-esterification process and of any mixture with oils of other kinds can be classified as follows:

(1) Refined olive-pomace oil is obtained from refining method of crude olive-pomace oil which do not lead to alterations in the initial glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.3 grams per 100 grams of oil and its other characteristics correspond to those laid down for this category.

(2) Olive-pomace oil is obtained from a blend of refined olive-pomace oil and virgin olive oils. It has a free acidity, expressed as oleic acid, of not more than 1 gram per 100 grams of oils and its other characteristics correspond to those laid down for this category.

19. Sachainchi oil is derived from seeds of Sacha inchi or Inca peanut scientific name as *Plukenetia volubilis* L.

20. Almond oil is derived from the kernel of almond fruit scientific name as *Amygdalus communis* L.

21. Flaxseed (linseed oil) is derived from the seeds of flaxseed varieties scientific name as *Linum usitatissimum*

22. Hazelnut oil is derived from the kernel of hazelnut fruit scientific name as *Corylus avellana* L.

23. Pistachio oil is derived from the kernel of pistachio fruit scientific name as *Pistacia vera* L.

24. Walnut oil is derived from the kernel of walnut fruit scientific name as *Juglans regia* L.

25. Perilla seed oil (perilla oil) is obtained from the seeds of perilla scientific name as *Perilla frutescens* L.

26. MCT oil (Medium-Chain Triglyceride oil) is derived from fractionation of fatty acids and glycerol from coconut oil, or palm oil or other oils from plants listed in the Annex 1. Then, the oil is proceeded by any method to form the structure of triglyceride with saturated fatty acids consisting of 8-10 carbons as main component. Amount of lauric acid (C12:0) shall not more than 3 percent of total fatty acid composition in oils and fats, and amount of caproic acid (C6:0) shall not be more than 2 percent of total fatty acid composition in oils and fats.

Annex 2

Attachment to the Notification of the Ministry of Public Health (No.421) B.E 2564 (2021)

Issued by virtue of the Food Act B.E. 2522

Re: Edible oils and fats

List of kinds of oils and fats from animal origin

1. Lard can be classified as follows:

(1) Pure rendered lard is the fat rendered from fatty tissues of swine scientific name as *Sus scrofa*. The tissues shall be fit for human consumption and do not contain any organ such as blood, bones, detached skin, ears, tails, etc.

(2) Lard subject to processing is obtained from lard that may contain refined lard, lard stearin, fully hydrogenated lard, or be subject to processes of modification or other processes that permitted by Thai FDA.

2. Rendered pork fat can be classified as follows:

(1) Rendered pork fat is the fat rendered from tissues and bones of swine scientific name as *Sus scrofa*. The tissues and bones shall be fit for human consumption and may contain fat from other organs such as fat from bones, fat from detached skin, fat from ears, fat from tails, etc.

(2) Rendered pork fat subject to processing is obtained from rendered pork fat that may contain refined lard, refined rendered pork fat, fully hydrogenated lard, fully hydrogenated rendered pork fat, lard stearin, and rendered pork fat stearin.

3. Premiere jus (oleo stock) is the fat rendered at low heat from fresh fat (killing fat) of heart, caul, kidney, and mesentery of bovine animals.

4. Edible tallow can be classified as follows:

(1) Dripping is the fat rendered from fatty tissues including trimming and cutting fats of bovine animals and/or sheep scientific name as *Ovis aries*. The fatty tissues shall be fit for human consumption.

(2) Edible tallow subject to processing is derived from refined edible tallow.

5. Rendered chicken fat is the fat rendered from tissues and bones of chicken scientific name as *Gallus gallus domesticus*. The tissues and bones shall be fit for human consumption and may contain fat from other organs such as fat from bones, fat from detached skin, fat from abdomen, etc.

Annex 3

Attachment to the Notification of the Ministry of Public Health (No.421) B.E 2564 (2021)

Issued by virtue of the Food Act B.E. 2522

Re: Edible oils and fats

List of kinds of oils and fats from marine origin

1. Algal oil obtained from marine micro-algae scientific name as *Schizochytrium* sp. The algal oil is historically used as food for human consumption or approved from safety evaluation under requirements of Thai FDA.

2. Algal oil obtained from marine micro-algae scientific name as *Cryptocodium cohnii*. The algal oil is historically used as food for human consumption or approved from safety evaluation under requirements of Thai FDA.

Annex 4

Attachment to the Notification of the Ministry of Public Health (No.421) B.E 2564 (2021) Issued by virtue of the Food Act B.E. 2522

Re: Edible oils and fats

Chemical and physical characteristics of some oils and fats

Types of oils and fats	Chemical and physical characteristics			
	Titre (°C)	Saponification value (mg KOH/ g oil or fat)	Iodine Value (wijs)	Unsaponifiable Matter (g/kg)
Arachis oil	-	187-196	77-107	≤ 10
Babassu oil	-	245-256	10-18	≤ 12
Coconut oil	-	248-265	6-11	≤ 15
Cottonseed oil	-	189-198	100-123	≤ 15
Grapeseed oil	-	188-194	128-150	≤ 20
Maize oil	-	187-195	103-135	≤ 28
Mastardseed oil	-	168-184	92-125	≤ 15
Palm oil	-	190-209	50-56	≤ 12
Palm kernel oil	-	230-254	13-23	≤ 10
Palm kernel olein	-	231-244	20-28	< 15
Palm kernel stearin	-	244-255	4-8.5	< 15
Palm olein	-	194-202	≥ 55	≤ 13

Types of oils and fats	Chemical and physical characteristics			
	Titre (°C)	Saponification value (mg KOH/ g oil or fat)	Iodine Value (wijs)	Unsaponifiable Matter (g/kg)
Palm stearin	-	193-205	≤ 48	≤ 12
Palm superolein	-	180-205	≥ 60	≤ 13
(a) Palm superolein derived from fractionation of palm oil	-	180-205	≥ 60	≤ 13
(b) Palm superolein derived from fleshy mesocarp of hybrid palm fruit (OxG)	-	189-199	58-75	≤ 12
Rapeseed oil	-	168-181	94-120	≤ 20
Rapeseed oil – low erucic acid	-	182-193	105-126	≤ 20
Rice bran oil	-	180 – 199	90-115	≤ 65
Rice bran stearin	-	180-199	70-90	≤ 65
Safflowerseed oil	-	186-198	136-148	≤ 15
Safflower oil-high oleic acid	-	186-194	80-100	≤ 10
Sesameseed oil	-	186-195	104-120	≤ 20
Soya bean oil	-	189-195	124-139	≤ 15
Sunflowerseed oil	-	188-194	118-141	≤ 15
Sunflowerseed oil- high oleic acid	-	182-194	78-90	≤ 15
Sunflowerseed oil- mid oleic acid	-	190-191	94-122	≤ 15

Types of oils and fats	Chemical and physical characteristics			
	Titre (°C)	Saponification value (mg KOH/ g oil or fat)	Iodine Value (wigs)	Unsaponifiable Matter (g/kg)
Extra virgin olive oil Virgin olive oil Ordinary virgin olive oil	-	184-196	75-94	15
Refined olive oil	-	184-196	75-94	≤15
Olive oil	-	184-196	75-94	≤15
Refined olive-pomace oil Olive-pomace oil	-	182-193	75-92	≤30
Sachainchi oil	-	185.2	193	-
Almond oil	-	183-207	85-109	≤ 20
Flaxseed oil	-	185-197	170-211	≤ 20
Hazelnut oil	-	188-198	81-95	≤ 15
Pistachio oil	-	187-196	84-98	≤ 30
Walnut oil	-	189-198	132-162	≤ 20
Perilla seed oil	-	185-197	170-211	≤ 20
Lard	32-45	192-203	55-65	≤ 10
Rendered pork fat	32-45	192-203	60-72	≤ 12
Premiere jus	42.5-47	190-200	36-47	≤ 10

Types of oils and fats	Chemical and physical characteristics			
	Titre (°C)	Saponification value (mg KOH/ g oil or fat)	Iodine Value (wjs)	Unsaponifiable Matter (g/kg)
Edible tallow	40-49	190-202	40-53	≤ 12
Rendered chicken fat	28-36	190-218	76-85	≤ 10
Algal oil derived from <i>Schizochytrium sp.</i>	-	-	-	≤ 45
Algal oil derived from <i>Crypthecodinium cohnii</i>	-	-	-	≤ 35

Annex 5

Attachment to the Notification of the Ministry of Public Health (No.421) B.E 2564 (2021) Issued by virtue of the Food Act B.E. 2522

Re: Edible oils and fats

Fatty acid composition expressed as percentage of total fatty acids in oils and fats as determined by gas liquid chromatography (GLC)

Oils and fats	Fatty acid (percentage of total fatty acids)																					
	Caproic acid	Caprylic acid	Capric acid	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Heptadecanoic acid	Heptadecenoic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Arachidic acid	Gadoleic acid	Eicosadienoic acid	Arachidonic acid	Behenic acid	Erucic acid	Docosadienoic acid	Lignoceric acid	Nervonic acid
	C6:0	C8:0	C10:0	C12:0	C14:0	C16:0	C16:1	C17:0	C17:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2	C20:4	C22:0	C22:1	C22:2	C24:0	C24:1
Arachis oil	-	-	-	Not exceed 0.1	Not exceed 0.1	5.0- 14.0	Not exceed 0.2	Not exceed 0.1	Not exceed 0.1	1.0- 4.5	35.0- 80	4.0- 43.0	Not exceed 0.5	0.7- 2.0	0.7- 3.2	-	-	1.5- 4.5	Not exceed 0.6	-	0.5- 2.5	Not exceed 0.3
Babassu oil	-	2.6- 7.3	1.2-7.6	40.0- 55.0	11.0- 27.0	5.2- 11.0	-	-	-	1.8- 7.4	9.0- 20.0	1.4-6.6	-	-	-	-	-	-	-	-	-	-
Coconut oil	Not exceed 0.8	4.6- 10.0	5.0-8.0	45.1- 53.2	16.8- 21.0	7.5- 10.2	-	-	-	2.0- 4.0	5.0- 10.0	1.0-2.5	Not exceed 0.2	Not exceed 0.2	Not exceed 0.2	-	-	-	-	-	-	-
Cottonseed oil	-	-	-	Not exceed 0.2	0.6- 1.0	21.4- 26.4	Not exceed 1.2	Not exceed 0.1	Not exceed 0.1	2.1- 3.3	14.7- 21.7	46.7- 58.2	Not exceed 0.4	0.2- 0.5	Not exceed 0.1	Not exceed 0.1	-	Not exceed 0.6	Not exceed 0.3	Not exceed 0.1	Not exceed 0.1	-

Oils and fats	Fatty acid (percentage of total fatty acids)																					
	Caproic acid	Caprylic acid	Capric acid	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Heptadecanoic acid	Heptadecenoic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Arachidic acid	Gadoleic acid	Etcosadienoic acid	Arachidonic acid	Behenic acid	Erucic acid	Docosadienoic acid	Lignoceric acid	Nervonic acid
	C6:0	C8:0	C10:0	C12:0	C14:0	C16:0	C16:1	C17:0	C17:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2	C20:4	C22:0	C22:1	C22:2	C24:0	C24:1
Grapeseed oil	-	-	-	-	Not exceed 0.3	5.5-11.0	Not exceed 1.2	Not exceed 0.2	Not exceed 0.1	3.0-6.5	12.0-28.0	58.0-78.0	Not exceed 1.0	Not exceed 1.0	Not exceed 0.3	-	-	Not exceed 0.5	Not exceed 0.3	-	Not exceed 0.4	-
Maize oil	-	-	-	Not exceed 0.3	Not exceed 0.3	8.6-16.5	Not exceed 0.5	Not exceed 0.1	Not exceed 0.1	Not exceed 3.3	20.0-42.2	34.0-65.6	Not exceed 2.0	0.3-1.0	0.2-0.6	Not exceed 0.1	-	Not exceed 0.5	Not exceed 0.3	-	Not exceed 0.5	-
Mastardseed oil	-	-	-	-	Not exceed 1.0	0.5-4.5	Not exceed 0.5	-	-	0.5-2.0	8.0-23.0	10.0-24.0	6.0-18.0	Not exceed 1.5	5.0-13.0	Not exceed 1.0	-	0.2-2.5	22.0-50.0	Not exceed 1.0	Not exceed 0.5	0.5-2.5
Palm oil	-	-	-	Not exceed 0.5	0.5-2.0	39.3-47.5	Not exceed 0.6	Not exceed 0.2	-	3.5-6.0	36.0-44.0	9.0-12.0	Not exceed 0.5	Not exceed 1.0	Not exceed 0.4	-	-	Not exceed 0.2	-	-	-	-
Palm kernel oil	Not exceed 0.8	2.4-6.2	2.6-5.0	41.0-55.0	14.0-18.0	6.5-10.0	Not exceed 0.2	-	-	1.0-3.0	12.0-19.0	1.0-3.5	Not exceed 0.2	Not exceed 0.2	Not exceed 0.2	-	-	Not exceed 0.2	-	-	-	-
Palm kernel olein	Not exceed 0.7	2.9-6.3	2.7-4.5	39.7-47.0	11.5-15.5	6.2-10.6	Not exceed 0.1	-	-	1.7-3.0	14.4-24.6	2.4-4.3	Not exceed 0.3	Not exceed 0.5	Not exceed 0.2	-	-	-	-	-	-	-

Oils and fats	Fatty acid (percentage of total fatty acids)																						
	Caproic acid	Caprylic acid	Capric acid	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Heptadecanoic acid	Heptadecenoic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Arachidic acid	Gadoleic acid	Eicosadienoic acid	Arachidonic acid	Behenic acid	Erucic acid	Docosadienoic acid	Lignoceric acid	Nervonic acid	
	C6:0	C8:0	C10:0	C12:0	C14:0	C16:0	C16:1	C17:0	C17:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2	C20:4	C22:0	C22:1	C22:2	C24:0	C24:1	
Palm kernel stearin	Not exceed 0.2	1.3-3.0	2.4-3.3	52.0-59.7	20.0-25.0	6.7-10.0	-	-	-	1.0-3.0	4.1-8.0	0.5-1.5	Not exceed 0.1	Not exceed 0.5	Not exceed 0.1	-	-	-	-	-	-	-	-
Palm olein	-	-	-	0.1-0.5	0.5-1.5	38.0-43.5	Not exceed 0.6	Not exceed 0.2	Not exceed 0.1	3.5-5.0	36.3-46.0	10.0-13.5	Not exceed 0.6	Not exceed 0.6	Not exceed 0.4	-	-	Not exceed 0.2	-	-	-	-	-
Palm stearin	-	-	-	0.1-0.5	1.0-2.0	48.0-74.0	Not exceed 0.2	Not exceed 0.2	Not exceed 0.1	3.9-6.0	15.5-36.0	3.0-10.0	Not exceed 0.5	Not exceed 1.0	Not exceed 0.4	-	-	Not exceed 0.2	-	-	-	-	-
Palm superolein (type a)	-	-	-	0.1-0.5	0.5-1.5	30.0-39.0	Not exceed 0.5	Not exceed 0.1	-	2.8-4.5	43.0-49.5	10.5-15.0	0.2-1.0	Not exceed 0.4	Not exceed 0.2	-	-	Not exceed 0.2	-	-	-	-	-
Palm superolein (type b)	-	-	-	Not exceed 0.6	Not exceed 0.8	23.0-38.0	Not exceed 0.8	Not exceed 0.2	-	1.5-4.5	48.0-60.0	9.0-17.0	Not exceed 0.6	Not exceed 0.4	Not exceed 0.2	Not exceed 0.5	-	Not exceed 0.3	-	-	Not exceed 0.2	-	
Rapeseed oil	-	-	-	-	Not exceed 0.2	1.5-6.0	Not exceed 3.0	Not exceed 0.1	Not exceed 0.1	0.5-3.1	8.0-60.0	11.0-23.0	5.0-13.0	Not exceed 3.0	3.0-15.0	Not exceed 1.0	-	Not exceed 2.0	2.0-60.0	Not exceed 2.0	Not exceed 2.0	Not exceed 2.0	Not exceed 3.0

Oils and fats	Fatty acid (percentage of total fatty acids)																					
	Caproic acid	Caprylic acid	Capric acid	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Heptadecanoic acid	Heptadecenoic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Arachidic acid	Gadoleic acid	Eicosadienoic acid	Arachidonic acid	Behenic acid	Erucic acid	Docosadienoic acid	Lignoceric acid	Nervonic acid
	C6:0	C8:0	C10:0	C12:0	C14:0	C16:0	C16:1	C17:0	C17:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2	C20:4	C22:0	C22:1	C22:2	C24:0	C24:1
Rapeseed oil – low erucic acid	-	-	-	-	Not exceed 0.2	2.5-7.0	Not exceed 0.6	Not exceed 0.3	Not exceed 0.3	0.8-3.0	51.0-70.0	15.0-30.0	5.0-14.0	0.2-1.2	0.1-4.3	Not exceed 0.1	-	Not exceed 0.6	Not exceed 2.0	Not exceed 0.1	Not exceed 0.3	Not exceed 0.4
Rice bran oil	-	-	-	Not exceed 0.2	Not exceed 1.0	14.0-23.0	Not exceed 0.5	-	-	0.9-4.0	38.0-48.0	21.0-42.0	Not exceed 2.9	Not exceed 0.9	Not exceed 0.8	-	-	Not exceed 1.0	-	-	Not exceed 0.9	-
Rice bran stearin	-	-	-	Not exceed 0.2	Not exceed 1.0	27.0-35.0	Not exceed 0.5	Not exceed 0.2	-	0.9-4.0	30.0-48.0	21.0-42.0	Not exceed 2.9	1.0-1.4	Not exceed 0.8	-	-	Not exceed 1.0	-	-	Not exceed 0.9	-
Safflowerseed oil	-	-	-	-	Not exceed 0.2	5.3-8.0	Not exceed 0.2	Not exceed 0.1	Not exceed 0.1	1.9-2.9	8.4-21.3	67.8-83.2	Not exceed 0.1	0.2-0.4	0.1-0.3	-	-	Not exceed 1.0	Not exceed 1.8	-	Not exceed 0.2	Not exceed 0.2
Safflower oil-high oleic acid	-	-	-	Not exceed 0.2	Not exceed 0.2	3.6-6.0	Not exceed 0.2	Not exceed 0.1	Not exceed 0.1	1.5-2.4	70.0-83.7	9.0-19.9	Not exceed 1.2	0.3-0.6	0.1-0.5	-	-	Not exceed 0.4	Not exceed 0.3	-	Not exceed 0.3	Not exceed 0.3
Sesameseed oil	-	-	-	-	Not exceed 0.1	7.9-12.0	Not exceed 0.2	Not exceed 0.2	Not exceed 0.1	4.5-6.7	34.4-45.5	36.9-47.9	0.2-1.0	0.3-0.7	Not exceed 0.3	-	-	Not exceed 1.1	-	-	Not exceed 0.3	-

Oils and fats	Fatty acid (percentage of total fatty acids)																					
	Caproic acid	Caprylic acid	Capric acid	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Heptadecanoic acid	Heptadecenoic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Arachidic acid	Gadoleic acid	Eicosadienoic acid	Arachidonic acid	Behenic acid	Erucic acid	Docosadienoic acid	Lignoceric acid	Nervonic acid
	C6:0	C8:0	C10:0	C12:0	C14:0	C16:0	C16:1	C17:0	C17:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2	C20:4	C22:0	C22:1	C22:2	C24:0	C24:1
Soya bean oil	-	-	-	Not exceed 0.1	Not exceed 0.2	8.0-13.5	Not exceed 0.2	Not exceed 0.1	Not exceed 0.1	2.0-5.4	17.0-30.0	48.0-59.0	4.5-11.0	0.1-0.6	Not exceed 0.5	Not exceed 0.1	-	Not exceed 0.7	Not exceed 0.3	-	Not exceed 0.5	-
Sunflowerseed oil	-	-	-	Not exceed 0.1	Not exceed 0.2	5.0-7.6	Not exceed 0.3	Not exceed 0.2	Not exceed 0.1	2.7-6.5	14.0-39.4	48.3-74.0	Not exceed 0.3	Not exceed 0.5	Not exceed 0.3	-	-	0.3-1.5	Not exceed 0.3	Not exceed 0.3	Not exceed 0.5	-
Sunflowerseed oil-high oleic acid	-	-	-	-	Not exceed 0.1	2.6-5.0	Not exceed 0.1	Not exceed 0.1	Not exceed 0.1	2.9-6.2	75.0-90.7	2.1-17.0	Not exceed 0.3	0.2-0.5	0.1-0.5	-	-	0.5-1.6	Not exceed 0.3	-	Not exceed 0.5	-
Sunflowerseed oil-mid oleic acid	-	-	-	-	Not exceed 1.0	4.0-5.5	Not exceed 0.05	Not exceed 0.05	Not exceed 0.06	2.1-5.0	43.1-71.8	18.7-45.3	Not exceed 0.5	0.2-0.3	0.2-0.3	-	-	0.6-1.1	-	Not exceed 0.09	0.3-0.4	-
Extra virgin olive oil, Virgin olive oil, and Ordinary virgin olive oil	-	-	-	-	Not exceed 0.05	7.5-20.0	0.3-3.5	Not exceed 0.3	Not exceed 0.3	0.5-5.0	55.0-83.0	3.5-21.0	-	Not exceed 0.6	Not exceed 0.4	-	-	Not exceed 0.2	-	-	Not exceed 0.2	-
Refined olive oil and olive oil	-	-	-	-	Not exceed 0.05	7.5-20.0	0.3-3.5	Not exceed 0.3	Not exceed 0.3	0.5-5.0	55.0-83.0	3.5-21.0	-	Not exceed 0.6	Not exceed 0.4	-	-	Not exceed 0.2	-	-	Not exceed 0.2	-

Oils and fats	Fatty acid (percentage of total fatty acids)																					
	Caproic acid	Caprylic acid	Capric acid	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Heptadecanoic acid	Heptadecenoic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Arachidic acid	Gadoleic acid	Eticosadienoic acid	Arachidonic acid	Behenic acid	Erucic acid	Docosadienoic acid	Lignoceric acid	Nervonic acid
	C6:0	C8:0	C10:0	C12:0	C14:0	C16:0	C16:1	C17:0	C17:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2	C20:4	C22:0	C22:1	C22:2	C24:0	C24:1
Refined olive-pomace oil and Olive-pomace oil	-	-	-	-	Not exceed 0.05	7.5-20.0	0.3-3.5	Not exceed 0.3	Not exceed 0.3	0.5-5.0	55.0-83.0	3.5-21.0	-	Not exceed 0.6	Not exceed 0.4	-	-	Not exceed 0.3	-	-	Not exceed 0.2	-
Sachainchi oil	-	-	-	-	-	3.7-4.8	-	Not exceed 0.1	-	2.8-3.6	8.4-11.7	37.3-43.2	36.2-46.7	Not exceed 0.1	-	-	-	-	-	-	-	-
Almond oil	-	-	-	-	Not exceed 0.1	4.0-9.0	0.2-0.8	Not exceed 0.2	Not exceed 0.2	Not exceed 3.0	62.0-76.0	20.0-30.0	Not exceed 0.5	Not exceed 0.5	Not exceed 0.3	-	-	Not exceed 0.2	Not exceed 0.1	-	Not exceed 0.2	-
Flaxseed oil	-	-	-	Not exceed 0.3	Not exceed 0.2	4.0-11.3	Not exceed 0.5	Not exceed 0.1	Not exceed 0.1	2.0-8.0	9.8-36.0	8.3-30.0	43.8-70.0	Not exceed 1.0	Not exceed 1.2	-	-	Not exceed 0.5	Not exceed 1.2	-	Not exceed 0.3	-
Hazelnut oil	-	-	-	-	Not exceed 0.1	4.2-8.9	Not exceed 0.5	Not exceed 0.1	Not exceed 0.1	0.8-3.2	74.2-86.7	5.2-18.7	Not exceed 0.6	Not exceed 0.3	Not exceed 0.3	-	-	Not exceed 0.2	Not exceed 0.1	-	-	Not exceed 0.3
Pistachio oil	-	-	-	-	Not exceed 0.6	8.0-13.0	Not exceed 2.0	Not exceed 0.1	Not exceed 0.1	0.5-3.5	50.0-70.0	8.0-34.0	0.1-1.0	Not exceed 0.3	Not exceed 0.6	-	-	-	-	-	-	-

Oils and fats	Fatty acid (percentage of total fatty acids)																					
	Caproic acid	Caprylic acid	Capric acid	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Heptadecanoic acid	Heptadecenoic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Arachidic acid	Gadoleic acid	Eticosadienoic acid	Arachidonic acid	Behenic acid	Erucic acid	Docosadienoic acid	Lignoceric acid	Nervonic acid
	C6:0	C8:0	C10:0	C12:0	C14:0	C16:0	C16:1	C17:0	C17:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2	C20:4	C22:0	C22:1	C22:2	C24:0	C24:1
Walnut oil	-	-	-	-	-	6.0-8.0	Not exceed 0.4	Not exceed 0.1	Not exceed 0.1	1.0-3.0	14.0-23.0	54.0-65.0	9.0-15.4	Not exceed 0.3	Not exceed 0.3	-	-	Not exceed 0.2	-	-	-	-
Perilla seed oil	-	-	-	-	Not exceed 0.4	4.5-13.0	-	-	-	0.3-4.0	0.1-21.0	10.5-24.5	40.8-70.5	Not exceed 0.3	Not exceed 0.3	Not exceed 0.1	-	-	-	-	-	-
Lard and Rendered pork fat	Total not exceed 0.5				1.0-2.5	20.0-30.0	2.0-4.0	Less than 1.0	Less than 1.0	8.0-22.0	35.0-55.0	4.0-12.0	Less than 1.5	Less than 1.0	Less than 1.5	Less than 1.0	Less than 1.0	Less than 0.1	Less than 0.5	-	-	-
Premier jus and Edible tallow	Total not exceed 0.5				2.0-6.0	20.0-30.0	1.0-5.0	0.5-2.0	Less than 1.0	15.0-30.0	30.0-45.0	1.0-6.0	Less than 1.5	Less than 0.5	Less than 0.5	Less than 0.1	Less than 0.5	Less than 0.1	-	-	-	-
Rendered chicken fat	Total not exceed 0.5				0.5-1.3	20.7-27.8	3.6-7.8	Not exceed 0.3	Not exceed 1.6	5.5-10.5	33.5-43.5	10.3-28.6	0.7-3.0	0.1-1.5	0.4-3.1	Not exceed 0.4	Not exceed 0.5	Not exceed 0.3	0.4-1.9	-	-	-

Remark - means not detect, limit of detection, LOD ≤ 0.05%

Oils and fats	Fatty acid (percentage of total fatty acids)																							
	Caproic acid	Caprylic acid	Capric acid	Lauric acid	Myristic acid	Palmitic acid	Palmitoleic acid	Heptadecanoic acid	Heptadecenoic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Arachidic acid	Gadoleic acid	Eicosadienoic acid	Arachidonic acid	Eicosapentaenoic acid (epa)	Behenic acid	Docosadienoic acid	Osbond acid	Docosahaenoic acid (dha)	Lignoceric acid	Nervonic acid
	C6:0	C8:0	C10:0	C12:0	C14:0	C16:0	C16:1	C17:0	C17:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2	C20:4	C20:5	C22:0	C22:2	C22:5	C22:6	C24:0	C24:1
Algal oil derived from <i>Schizochytrium</i> sp.	-	-	-	1.0-1.3	13.0-14.0	Not exceed 0.1	Not exceed 0.1	Not exceed 0.1	1.5-1.7	21.0-28.0	1.8-2.2	Not exceed 0.1	Not exceed 0.4	Not exceed 0.2	Not exceed 0.2	0.6-0.8	0.5-0.6	6.0-7.0	Not exceed 0.1	0.5-0.6	2.0-3.0	41.0-46.0	Not exceed 0.2	Not exceed 0.1
Algal oil derived from <i>Cryptocodinium cohnii</i>	-	Not exceed 0.3	Not exceed 2.0	Not exceed 6.0	5.0-20.0	5.0-20.0	Not exceed 3.0	-	-	Not exceed 2.0	10.0-40.0	Not exceed 5.0	-	Not exceed 1.0	-	-	-	Not exceed 0.2	Not exceed 1.0	-	Not exceed 1.0	40.0-45.0	-	Not exceed 2.0

Remark - means not detect, limit of detection, LOD ≤ 0.05%