codex alimentarius commission

FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD HEALTH
ORGANIZATION

JOINT OFFICE: Via delle Terme di Caracalla 00100 ROME Tel.: 52251 Telex: 625825-625853 FAO I Cables: Foodagri Rome Facsimile: (6)5225.4593

ALINORM 97/17

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION
Twenty-second Session
Geneva, 23-28 June 1997

REPORT OF THE FIFTEENTH SESSION OF THE
CODEX COMMITTEE ON FATS AND OILS
London, United Kingdom, 4-8 November 1996

Note: This document incorporates Codex Circular Letter 1997/2-FO

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CX 5/15.2

CL 1997/2-FO
January 1997

TO: - Codex Contact Points
- Interested International Organizations
- Participants at the 15th Session of the Codex Committee on Fats and Oils

FROM: - Secretary, Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme, FAO, 00100 Rome, Italy

SUBJECT: Distribution of the Report of the 15th Session of the Codex Committee on Fats and Oils (ALINORM 97/17)

MATTERS FOR ADOPTION BY THE 22nd SESSION OF THE CODEX ALIMENTARIUS COMMISSION

Draft Standards and Code at Step 8 of the Procedure

1. Draft Standard for Named Animal Fats (para.18, Appendix II)

2. Draft Standard for Edible Fats and Oils not Covered by Individual Standards (para. 30, Appendix III)

3. Proposed Draft Code of Practice for the Storage and Transport of Fats and Oils in Bulk (para. 84, Appendix IV)

Governments wishing to propose amendments or comments on the above documents should do so in writing in conformity with the Guide to the Consideration of Standards at Step 8 (see Procedural Manual of the Codex Alimentarius Commission) to the Secretary, Joint FAO/WHO Food Standards Programme, FAO, via delle Terme di Caracalla, 00100 Rome, Italy **before 30 April 1997**.

Draft Standards on which it is proposed to discontinue work

4. Draft Revised Standard for Specified Vegetable Fat Products and Draft Revised Standard for Specified Animal or Mixed Animal and Vegetable Fat Products (para.101)

Governments are invited to comment on the proposal of the Committee to discontinue work on the revision of the standards and to revoke the current standards.

B. REQUEST FOR COMMENTS AND INFORMATION

5. Draft Standard for Named Vegetable Oils at Step 6 (para. 57, Appendix V)

Governments are invited to provide comments on the amended draft standard. In addition, they are invited to provide information on vegetable oils obtained from new oilseed varieties with specific characteristics

or species not included in the scope covered by the standard, and the opportunity of initiating further standardization work on such oils.

6. Proposed Draft Standard for Fats Spreads and Blended Spreads (para. 100, Appendix VI)

Government are invited to comment on the amended text, in particular on the new list of additives proposed, especially as regards their technological need.

Governments wishing to submit comments and information should do so in writing to the Secretary, Joint FAO/WHO Food Standards Programme, FAO, via delle Terme di Caracalla, 00100 Rome, Italy, **before 15 July 1997**.

SUMMARY AND CONCLUSIONS

The summary and conclusions of the 15th Session of the Codex Committee on Fats and Oils are as follows:

Matters for consideration by the Commission:

The Committee:

- agreed to advance to Step 8 the Draft Standard for Named Animal Fats and the Draft Standard for Edible Fats and Oils not Covered by Individual Standards (paras. 18 and 30, Appendices II and III)

- agreed to advance to Step 8 the Draft Revised Code of Practice for the Storage and Transport of Fats and Oils in Bulk (para. 84, Appendix IV)

- agreed to propose to discontinue work on the revision of the Draft Revised Standard for Specified Vegetable Fat Products and Draft Revised Standard for Specified Animal or Mixed Animal and Vegetable Fat Products and to revoke the current standards (para.101)

- agreed to seek the advice of the Commission on the opportunity of pursuing work on the Draft Standard for Mayonnaise (para. 87)

Other Matters of Interest to the Commission

- agreed to return the Draft Standard for Named Vegetable Oils to Step 6 for further comments (para. 57, Appendix V)

- agreed to return the Draft Standard for Olive Oils and Olive-Pomace Oils to Step 6 for redrafting (para. 58)

- agreed to return the Proposed Draft Standard for Fats Spreads to Step 3 for further comments (para. 117, Appendix IX)

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LIST OF APPENDICES

OPENING OF THE SESSION (Agenda Item 1)

1. The Codex Committee on Fats and Oils held its 15th Session from 4 to 8 November 1996 in London, at the kind invitation of the Government of the United Kingdom. The meeting was attended by 99 delegates and observers representing 26 Members and one observer country and 9 international organizations. The meeting was chaired by Mr. Grant Meekings, Head of Food Labelling and Standards Division, Ministry of Agriculture, Fisheries and Food. The complete list of participants is included as Appendix I to this report.

2. The Session was opened by Mr. Meekings who welcomed participants to the Fifteenth Session on behalf of the Government of the United Kingdom and wished them all success in their work.

ADOPTION OF THE AGENDA[1] (Agenda Item 2)

3. The Committee adopted the Provisional Agenda (CX/FO 96/1) as the Agenda for the Session. In order to facilitate the discussion of Agenda Item 7 - Fat Spreads (section on additives) and Agenda Item 9 - Methods of Analysis, the Committee agreed to establish two informal Working Groups chaired respectively by Dr. A. Dunn (United Kingdom) and Dr. R. Wood (United Kingdom).

MATTERS OF INTEREST TO THE COMMITTEE [2] (Agenda Item 3)

4. The Committee was informed of the decisions of the Commission concerning its work and the Delegation of Malaysia recalled that it had objected to the adoption of the Draft Code of Practice at Step 5 in view of potential problems in trade. The Committee also noted the decisions of the Committee on Food Additives and Contaminants relevant to the current revision of the standards.

REVISION OF CURRENT STANDARDS (Agenda Item 4)

5. The Committee noted that the Draft Standards under consideration had been adopted at Step 5 by the 21st Session of the Commission (ALINORM 95/17, Appendices V, VII, VIII, X) and circulated for comments at Step 6 (CL 1995/25-FO). In reply to a question, the Committee noted that the introductory statement at the beginning of the standard resulted from a decision made by the Commission. The Committee considered the drafts section by section in the light of the written comments received and made the following amendments to the current texts.

DRAFT STANDARD FOR NAMED ANIMAL FATS[3]

2. Description

2.1 Lard

6. In section 2.1.1. the Committee agreed that the definition should refer to "pure rendered lard" instead of "lard" in order to clarify the nature of the product. In section 2.1.2 **Lard subject to processing**, the

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1 CX/FO 96/1

2 CX/FO 96/2

3 CX/FO 96/3 (comments from Spain), CRD 1 (Thailand), CRD 2 (annotated draft with comments)

Committee agreed to specify that the product might be subjected to processes of modification, while noting that confusion should be avoided between refining and processing, and that the description only covered lard which was fit for human consumption, in accordance with the Scope.

2.3 Premier Jus

7. The Committee agreed to specify that low heat rendering corresponded to a maximum temperature of 60° C. It was further agreed to delete the sentence prohibiting the use of cutting fats, as these were currently used as raw material, and to specify that they were allowed.

2.4 Edible Tallow (Dripping)

8. The Committee did not accept a proposal to exclude tissues obtained from sheep, as their use was an established practice.

3. Essential Composition and Quality Factors

9. The Committee noted a proposal from the Delegation of France for amended GLC ranges of fatty acid composition but agreed to retain the current section, as extensive changes to the values would require further detailed consideration.

4. Additives

Colours

10. The Committee noted that a section on colours allowed in animal fats was already included in the Standard for Fats and Oils not Covered by Individual Standards and agreed that the same provisions should be included in the present standard for consistency (see also para. 22).

Antioxidants

11. Some delegations and the Observer from the EC expressed the view that tertiary butyl hydroquinone (TBHQ) should not be allowed in any fats and oils, including named animal fats, and questioned the necessity of using this specific additive when other antioxidants were available, especially as the low ADI might be easily exceeded if this additive was used in a wide range of products. Other delegations stressed that there was no justification to prohibit TBHQ and that its technological need was clearly established; in this perspective, the standard should reflect current practice on an international basis. It was also recalled that JECFA had evaluated and allocated an ADI to TBHQ; the current level of use, as proposed by the last session, had been endorsed by the Committee on Food Additives and Contaminants.

12. The Committee agreed to retain the current provisions for TBHQ and noted that all antioxidants were currently under review in the framework of the General Standard for Food Additives; member countries therefore had the opportunity of presenting relevant comments for consideration by the CCFAC.

13. The Committee agreed to delete orthophosphoric acid from the list of additives as it was essentially used as a coadjuvant in the refining process, and should not be included as an additive, but as a processing aid. The Observer from the EC did not agree with the inclusion of isopropyl citrates and monoglyceride citrate, which were however retained with the current levels.

14. The Committee considered additional proposals put forward by the Observer from the EC but did not include them in the text. It was pointed out that JECFA had not allocated an ADI to dodecyl gallate and octyl gallate, which could not therefore be considered for inclusion as additives, in conformity with the Preamble to the General Standard for Food Additives. As regards the proposed inclusion of lecithins, calcium

and potassium citrates, mono- and diglycerides of fatty acids with specific levels, the Committee noted such additives with an ADI "not specified" or "not limited" should be used according to GMP, and that a justification should be given when specific levels were put forward.

15. It was agreed that the decisions taken on the current Additives section would apply consequentially to all relevant standards under consideration, where applicable.

5. Contaminants

16. In section 5.1 Heavy Metals, the Committee agreed to include a general statement to the effect that the products should comply with the provisions established by the Commission. The current specific limits for lead and arsenic, as endorsed by the CCFAC, were retained with the understanding that they would ultimately be incorporated into the General Standard for Contaminants and Toxins in Food. It was agreed that this decision would apply consequentially to all relevant standards when applicable.

Appendix

Peroxide value

17. Some Delegations expressed the view that the current value of 5 meq/kg was too restrictive and should be replaced with 10 meq/kg. Other Delegations pointed out that the peroxide value might reach 10 meq/kg when sold to final consumers and the products were at the end of their shelf life, while the provisions in the Appendix were intended for application in international trade. A higher value might be applied for distribution purposes at the national level. The Delegation of Malaysia expressed the view that 5 meq was too stringent and might be applied by governments to restrict imports despite the advisory nature of the appendix. The Committee agreed to retain the current value of 5 meq/kg.

Status of the Draft Standard for Named Animal Fats

18. The Committee agreed to forward the Draft Standard, as included in Appendix II, to the Commission for adoption at Step 8 of the Procedure.

DRAFT STANDARD FOR EDIBLE FATS AND OILS NOT COVERED BY INDIVIDUAL STANDARDS[4]

1. Scope

19. The Committee decided to insert the wording "(such as trans-esterification and hydrogenation) or fractionation" after the term "processes of modification" as examples of modification and processing for clarification.

2. Descriptions

20. The Committee considered a proposal to include a definition of refined vegetable fats and oils as specific criteria were defined for such products in the Appendix. It decided not to do so as definitions corresponded to labelling requirements, which were not applicable to refined products as such.

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[4] ALINORM 95/17, Appendix V; CX/FO 96/3 (comments from Spain); CRD 1 (comments from Thailand); and CRD 3 (annotated text).

2.3 Cold Pressed Fats and Oils

21. The Committee discussed the proposal of Spain to include a reference to the maximum temperature of 50°C for cold pressing. The Committee noted that while heat should not be applied for cold pressed fats, the temperature during cold pressing could reach 60°C or higher due to friction. Several delegations reported

their studies regarding the maximum temperature reached and the critical temperature above which chemical and/or organoleptic changes would occur. The Committee agreed that the reference to mechanical procedures without heat application was sufficient to characterize cold pressed fats and oils and there was no need to specify a maximum temperature.

3. Food Additives

3.2 Colours

22. Several delegations supported a proposal not to allow colours in vegetable oils covered by the Standard. It was noted that tocopherols prevented colour loss during refining while they did not add or restore colour. The Committee decided that no colours should be permitted in vegetable oils, while noting the comments of the Delegation of Malaysia and the Observer from IFMA that the use of colours should be allowed for fats and oils used as ingredients of other products, such as margarine. The Committee retained a list of colours for use in animal fats.

23. The Committee agreed to reduce the maximum level of annatto extracts from 20 mg/kg to 10 mg/kg calculated as bixin or norbixin. The Committee also agreed to delete from the list β-apo-8'-carotenal and methyl and ethyl esters of β-apo-8'-carotenoic acid as it was noted that there was no technological justification for their uses.

3.3 Flavours

24. The Committee agreed to use the Codex standard wording for flavours[5].

3.4 Antioxidants

25. The Committee decided to retain dilauryl thiodipropionate as this substance had already been endorsed by the CCFAC at the level of 200 mg/kg. The Committee decided not to replace mixed tocopherols concentrate with mixed tocopherols/tocotrienols as the latter was not included in the International Numbering System.

26. The Delegation of the Netherlands stated that as some additives were permitted in many foods, their total intake could exceed the ADIs, especially in the case of BHA and BHT which were allowed in fats and oils at relatively high levels, and expressed the wish that the CCFAC would consider the use of BHA and BHT in foods as to its technological justification and total intake. It was noted that BHA and BHT had been evaluated by JECFA and that the maximum levels of use had been endorsed by the CCFAC.

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[5] The decision was also applied to the Draft Standard for Named Vegetable Oils.

3.6 Anti-foaming Agents

27. The Committee noted that the use of anti-foaming agents was necessary only for fats and oils used for deep-frying where foaming caused problems and that silicon dioxide had no anti-foaming function. The Committee therefore decided to delete the term "singly or in combination with silicon dioxide" and to specify that polydimethylsiloxane was permitted for fats and oils used for deep-frying[6].

28. Some delegations pointed out that additives were mostly needed for fats and oils used as ingredients in other products and that a distinction might be made with oils intended for direct consumption in this respect.

Appendix

29. Some delegations expressed the view that the peroxide value for virgin oils and cold pressed oils should be increased to 15 meq/kg as it could exceed 10 meq/kg in practice for such oils, although their quality was not significantly affected. The Committee however retained the current value of 10 meq/kg, which was consistent with the decision made for the Draft Standard for Named Animal Fats.

Status of the Draft Standard for Edible Fats and Oils Not Covered by Individual Standards

30. The Committee decided to advance the Draft Standard to Step 8 of the Procedure for adoption by the Codex Alimentarius Commission at its 22nd Session. The amended text is attached to this report as Appendix III.

DRAFT STANDARD FOR NAMED VEGETABLE OILS [6]

1. Scope

31. The Delegation of France raised the issue of oils made from new oilseed varieties which might have a different fatty acid composition from those obtained from current oilseed varieties. If the specifications in Section 2 were strictly applied, it would cause problems of denomination; one such example was high oleic acid sunflowerseed oil (compared to traditional sunflowerseed oil high in linoleic acid). The Committee discussed whether oils from selected, hybridized or genetically modified varieties and with a different composition should be denominated as the reference oil from the same species; and whether their importance in trade justified their inclusion in the standard. The Committee noted that oils such as safflower oil, soya beans oil and flax oil with a different fatty acid composition would be increasingly present on the market, and that low erucic acid rapeseed oil had already been incorporated in the standard. Recognizing that this area was developing rapidly and needed thorough studies, the Committee decided to identify those oils which would require further work and possibly amendments to this Standard (see also para. 105) and agreed to keep the Scope as drafted.

2. Descriptions

32. The Committee decided not to include a definition of sunflowerseed oil with a high oleic acid content as it felt that a discussion on this matter would require a detailed study (see para. 32 above).

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[6] ALINORM 95/17, Appendix VIII; CX/FO 96/3 (comments from Malaysia, Spain and the United Kingdom); CRD 1 (comments from Thailand); CRD 4 (annotated text).

2.1.7 Mustardseed Oil

33. The Committee agreed to include yellow mustard to reflect current practice.

2.1.9-2.1.11 Palm Oil, Palm Olein, Palm Stearin

34. The Committee decided to delete the reference to different types of oils covered by each denomination to make these definitions consistent with others.

2.1.12-2.1.13 Rapeseed Oil, Rapeseed Oil-(Low Erucic Acid)

35. The Committee decided to include *Brassica juncea* L. in these provisions to reflect current practice.

36. The Committee had an extensive discussion on whether to include canola in synonyms of rapeseed oil - (low erucic acid). Several delegations stated that the term "canola" was widely used worldwide as a common name and supported the inclusion. However, several other delegations argued that it was a trade name and therefore should not be included. The Committee agreed not to include it at this stage and that further discussion would be needed in the future if new proposals were put forward.

37. The Delegation of Canada questioned the validity of the term "colza oil" in the English text as "colza" was a French word.

2.2 Other Definitions

38. The Committee decided to delete the word "fat" throughout this Section and to use a similar wording in 2.2.2 and 2.2.3 as in Sections 2.2 and 2.3 of the Draft Standard for Edible Fats and Oils Not Covered by Individual Standards. It was also decided not to include a new Section on refined vegetable oils.

4. Food Additives

4.2 Colours

39. The Committee confirmed its earlier decision not to allow colours in vegetable oils (see para. 22).

Appendix

40. The Delegation of Malaysia, supported by Indonesia, proposed that a sentence be added to the effect that the provisions in the Appendix were advisory and should not be used as a basis for rejection, and emphasized the adverse economic impact of this practice at the import stage. The Committee noted that the introductory statement approved by the Commission only specified that the appendix was not subject to acceptance and this could not be amended by the Committee (see para. 5). Moreover, the status of appendices and advisory texts would be specifically considered by the CCGP and the Commission. The Committee therefore decided not to include this sentence.

1.7 Acid Value

41. The Committee agreed to insert the term "cold pressed and" before "virgin oils".

1.8 Peroxide Value

42. The Delegation of Malaysia, supported by the Delegation of Indonesia, proposed to raise the peroxide value for palm olein and palm stearin from 5 to 10 meq/kg. The Committee however decided to maintain

the current value and agreed that it might be reconsidered later if any difficulty arose (see also para. 29). The Delegations of Malaysia, Indonesia and the United States expressed their objection to this decision.

2.6 Carotenoids

43. The Committee agreed to the proposal of the Delegation of Malaysia to introduce ranges of total carotenoids of 550-2500 and 300-1500 mg/kg for palm olein and palm stearin respectively.

Tables

44. The Committee decided to clarify in the titles that the values in the tables applied only to crude oils.

45. In order to address some questions on the definitions of the terms, "trace", "ND" and "NS", the Committee decided to make the following changes to the presentation of the tables:

(a) indicate that ND means "not detectable" and that it was defined as $\leq 0.05\%$;
(b) replace NS with ranges between ND and a certain level or ND alone; and
(c) replace 0.0 with ND.

Table 1

46. The Committee corrected the minimum value of C16 in palm oil to read 40.1 and increased the minimum value of C12 in palm kernel oil to 45 in order to avoid overlap with other fractionated palm kernel products.

47. The Committee agreed to the proposal of the Delegation of the United Kingdom for amended C18 and C20 contents in maize oils, on the basis of studies made on samples collected worldwide.

48. The Committee decided not to increase the minimum level of C20:1 in rapeseed oil (low erucic acid) from 0.1 to 1.0 as it was noted that analytical results usually showed a range of 0-0.5% and when C22:1 was low, it was likely that C20:1 was also low as they follow the same elongation pathway. The Committee agreed to reduce the minimum level of C22:1 from 5 to 2 in order to avoid overlap with the range for rapeseed oil-low erucic acid.

49. It was agreed that governments and international organizations should be invited to provide GLC data of authentic oils, specifying: (a) ranges of all fatty acids; (b) numbers of samples investigated; and (c) GLC method used, (d) the nature of the sample analyzed (oil or oilseeds).

Table 2

50. The Committee agreed to include a range of stable carbon isotope ratio of maize oil (-13.71 to -16.36). The Delegation of Spain, pointing out that no recognized method existed for such determination, proposed that the method should be sent to the CCMAS for endorsement before agreeing on the value itself. The Delegation of the United Kingdom indicated that a method using combustion and mass spectrometry had been published and that the C13/C12 ratio was method-independent. The Committee also agreed to raise the maximum iodine value of maize oil on the basis of research carried out in the United Kingdom.

51. The Committee agreed to amend the values for palm oil to include a range of apparent density, to widen the range of refractive index and to raise the temperature of refractive index measurement. The ranges for palm olein and palm stearin were amended to round down the minimum values and round up the maximum values of apparent density and refractive index ranges.

52. The Committee agreed to amend the range of refractive index of sunflowerseed oil to reflect the current situation.

53. The Delegation of France questioned the need for the values in the Table as it felt GLC analyses provided more accurate results for purity testing.

Table 3

54. The Committee decided to amend the range of cholesterol in sunflowerseed oil to ≤ 0.7 as it was felt that the original value of 1.3 was too high but a proposed value of 0.5 could often be exceeded in practice.

55. The Committee agreed to amend the ranges of stigmasterol, beta-sitosterol and delta-7-stigmasterol in sunflowerseed oil.

Table 4

56. The Committee agreed to amend the range of total tocopherols and tocotrienols in palm oil.

Status of the Draft Standard for Named Vegetable Oils

57. The Committee agreed to return the Draft Standard to Step 6 of the Procedure for further comments. The amended text is attached to this report as Appendix V.

DRAFT STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS[7]

58. The Committee noted that IOOC would meet from 18-22 November 1996 and would revise the definition of virgin olive oil on the basis of the examination of chemical and organoleptic criteria including organoleptic testing. As this revision was very likely to have a major impact on the current draft Standard, the Committee decided to postpone discussion of the draft at this stage and to return it to Step 6, with the understanding that relevant amendments to other draft standards should be incorporated in the revised text.

Status of the Draft Standard for Olive Oils and Olive Pomace Oils

59. The Committee agreed to return the Draft Standard to Step 6 of the Procedure for redrafting, taking into consideration the decisions made by the IOOC, and further comments.

DRAFT CODE OF PRACTICE FOR THE TRANSPORT AND STORAGE OF FATS IN BULK[8] (Agenda Item 5)

60. The Committee considered the Code section by section and made the following amendments.

Use of the Code

61. In reply to a question on the advisory nature of the Code, the Committee noted that, as indicated in the Introduction to similar texts, Codes of Practice were intended as advice to governments and it was for

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[7] ALINORM 95/17, Appendix X; CX/FO 96/3 (comments from Spain and IOOC); CRD 1 (comments from Thailand); CRD 5 (annotated text).

[8] CL 1995/42-FO, CX/FO 96/4 (comments from Malaysia, European Community, FOSFA), CRD 1 (Thailand, United States), CRD 12 (International Parcel Tankers Association), CRD 6 (annotated text)

them to decide what use they wished to make of such texts. It was noted that under the SPS Agreement, Codex recommendations were a reference in international trade and any country establishing more stringent measures had to justify them on the basis of scientific evidence.

62. The Committee did not accept the following proposals of the Delegation of Malaysia: to delete the last sentence on information from relevant associations; to reinsert section 6.4 of the current Code (recognizing that existing installations may not meet requirements) and section 6.5 (on widely varying practical situations).

63. The Committee agreed to delete "in the design of their facility" at the end of the second sentence as it was not necessary to clarify the text.

1. Scope

64. The Delegation of Malaysia, supported by some delegations, expressed the view that if the requirements of the Code were described as "minimum", higher requirements might be put forward in international trade and proposed to refer to "recommended requirements". The Committee had an exchange of views on this question and it was recalled that in the framework of Codex, minimum requirements were understood as ensuring an appropriate level of consumer protection. Several delegations supported the reference to minimum requirements and the Committee agreed to retain the current text.

65. The Committee also agreed that the title of the Code should be "Recommended Code of Practice", which would be consistent with current Codex practice for such texts.

2. Introduction

2.1.3 Contamination

66. The Delegation of Malaysia proposed to delete the reference to the Lists of Acceptable Previous Cargoes and recalled its earlier request for this matter to be considered by the CCFAC. The Secretariat indicated that the 26th Session of the CCFAC had decided that the actual lists of acceptable and banned previous cargoes should not be subject to endorsement as the elaboration of such lists was the responsibility of other international bodies.[9] In the meantime, it had also been decided that the Committee on Food Hygiene would undertake the elaboration of a Code of Practice for All Foodstuffs Transported in Bulk.

67. Several delegations supported the reference to a positive list as this was an effective measure to prevent contamination and it was currently used in trade, and the Committee agreed to retain the current text. The Delegation of Malaysia objected to this decision.

3. Storage and Transportation

68. The Committee agreed to consider this section as amended on the basis of the FOSFA proposals, as presented in document CX/FO 96/4 containing written comments. The Delegation of Malaysia objected to sections 3.1.1 to 3.1.3 as it felt not enough time had been available to consider the extensive rearrangement and amendments to the text proposed and therefore the earlier text should be retained.

3.1.3 Road and Rail Tankers

69. The Committee agreed to indicate that the tank could be made of "mild steed coated with epoxy resin", in addition to stainless steel.

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[9] ALINORM 95/12, paras. 16-19

3.1.4 Materials

70. The Committee agreed that the requirements for materials should also apply to heating facilities. It was further agreed to specify that materials should be suitable for contact with food and to delete the reference to "appropriate legislation". Section 3.1.4 (d) dealing with the same subject was consequently deleted.

71. The Committee discussed the opportunity of allowing zinc silicate coatings for mild steel tanks, as zinc could migrate into the oil and cause its oxidation when the acid value was higher than one. Some delegations felt that a value of 2 might still be appropriate and it was also noted that temperature should be taken into account when evaluating the risk of deterioration and contamination. The Committee agreed to allow such coatings, with a reference to the risk of deterioration for crude oils and fats with a high acid value.

3.1.5 Heating Facilities - Tanks

72. The Committee noted a proposal of the Delegation of Indonesia to allow heating coils of mild steel but reasserted the view that only stainless steel should be used.

73. The Committee agreed to delete the second paragraph referring to the International Association of Seed Crushers (ISC) Handbook as the code should be self contained.

(a) Bare Hot Water Pipes and (b) Bare Steam Pipes

74. The Committee agreed to allow mechanical or vacuum pump draining of coils, as an alternative to self draining.

(c) External Heat Exchangers

Thermal Heating Fluids (THFs)

75. The Committee had an extensive discussion on the use of thermal heating fluids other than hot water and steam. The Delegation of the United States indicated that a thorough risk analysis had been conducted to allow the use of such fluids, especially regarding the non-toxicity of the substances used, and that specific requirements were applied concerning equipment and operating procedures, which had effectively prevented contamination of the oils. The Delegation also pointed out that the least trade restrictive measures of prevention should be preferred.

76. Some delegations supported the use of THFs while others indicated that they did not allow it in their legislation due to possible contamination. The Observers from FEDIOL and IFMA expressed the view that while the new fluids might not be toxic, there were no studies of their stability or toxicity after long use, that it was difficult to detect old fluids, and it was not possible to control the risks of contamination during transport. For several delegations the use of THFs would mean a step backwards from the present practice of preventing contamination to continuous control at all stages of transport and storage.

77. The Committee agreed to include a paragraph at the end of section (c) to the effect that THFs should not be used except when agreed between contracting parties and national authorities on the basis of safety evaluation, risk assessment and inspection procedures. The Delegation of Malaysia objected to the insertion of this paragraph.

4. Operations

4.1.2 Temperatures during Storage and Transport

78. The Committee had an exchange of views on the possibility to allow one day heating at a rate of 15°C with an agitator, as an alternative to three days heating at a rate of 5°C over a 24 hours period (without agitator). Some delegations pointed out that oxidation increased with the use of an agitator and that the localized temperature could be higher than appropriate at a high rate of heating, while other delegations felt that agitation could be used if necessary precautions were taken, in accordance with the recommendations set out in sections 3.1.7 and 3.1.8. As no consensus was reached on this amendment, the current text was retained.

4.2.2 Cleaning

79. The Committee agreed to delete sections 4.2.1 Tanks and 4.2.2 Pipelines, as they were already covered in the provisions of the preceding sections.

4.4 Other

80. The Committee agreed to specify that the authorities might require evidence of previous cargo details.

Appendix 1

81. The Committee agreed to delete the opening sentence referring to the IASC as the code should be self contained.

Appendix 2

82. The Committee agreed to delete the name and addresses of national and international organizations as it was not possible to establish an exhaustive list, and reasserted its position that the Bibliography provided useful information and was needed in view of the provisions concerning the lists in section 2.1.3.

83. The Observer from the EC informed the Committee that a new EC List of acceptable previous cargoes had been approved by the Scientific Committee for Foods in September 1996. Although it was pointed out that this new list was not harmonized with the existing lists (FOSFA and NIOP), the Committee agreed to refer also to the EC list, and encouraged the three responsible organizations to coordinate and harmonize their work in this area.

Status of the Draft Recommended Code of Practice for the Storage and Transport of Edible Oils and Fats in Bulk

84. The Committee agreed to forward the Draft Code, as included in Appendix IV, to the 22nd Session of the Commission for adoption at Step 8. The Delegation of Malaysia objected to this decision as many amendments to the current code were not justified in its view and all issues had not been solved. The Delegation of Indonesia expressed the view that the text should be returned to Step 6 for further comments.

DRAFT STANDARD FOR MAYONNAISE[10] (Agenda Item 6)

85. The Committee recalled that it had been requested by the Commission to convert the existing Regional Standard for Mayonnaise into an international standard and noted that the 21st Session of the

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[10] ALINORM 95/17, Appendix XI; CX/FO 96/5 (comments from Czech Republic); CRD 1 (comments from USA); and CRD 7 (annotated text)

Commission had adopted the draft standard at Step 5 and asked the Committee to consider carefully fat and egg yolk content.

86. Several delegations were in favour of discontinuing work on conversion in view of limited international trade and the difficulty to reach consensus on the draft. Several other delegations were in favour of proceeding with this work as they stressed that the draft standard was already at Step 7, that mayonnaise was an important commodity for them, and international trade was growing.

87. The Committee decided to report to the Commission that no consensus could be reached on whether to continue the elaboration of the international standard for mayonnaise and to request its guidance. The Committee noted that the existing European Regional Standard for Mayonnaise would still be valid should the conversion into a worldwide standard be discontinued.

PROPOSED DRAFT STANDARD FOR FAT SPREADS[11] (Agenda Item 8)

88. The Committee recalled that the Proposed Draft Standard had been returned to Step 3 by the Commission as several issues concerning the scope and definitions remained to be settled. The Committee considered the sections identified below and made the following amendments.

89. The Committee agreed that the title should refer to "fat spreads and blended spreads" as blended spreads were proposed for inclusion in the definition. The Committee agreed that the French version should refer to "matières grasses tartinables", as proposed by the Delegation of France.

1. Scope

90. Several delegations and the Observer from the EC expressed the view that the current value of 95% should be amended to 90% as fats were not spreadable if the percentage was higher, while some delegations felt that a maximum was not needed. The Observer from IFMA pointed out that the spreadable quality of the product was conditional on the amount of liquid oils rather than the total percentage of fat. The Committee had an exchange of views on this question and agreed to leave the current figure of 95% in square brackets for further comments.

91. Notwithstanding a suggestion to extend the scope to include fat spreads for other purposes, such as baking or frying, the Committee reasserted its position that the standard covered products intended primarily as spreads, with the understanding that their actual use depended on consumer preference.

2. Description

92. In section 2.1 Fat Spreads, some delegations and the Observer from the EC supported a proposal to indicate that fat spreads were "solid at 20°C". Some delegations pointed out that the word "solid" could be interpreted in different ways and the Committee agreed to replace it with "firm and spreadable" for clarification purposes.

93. In section 2.2 Edible Fats and Oils, the Committee discussed a proposal of the Delegation of the United States to include fats and oils of synthetic origin, in order to allow the use of products such as salatrim and facilitate technological innovation. Some delegations expressed the view that the use of synthetic fats might be a problem for consumers and that they should not be included at this stage. The Committee agreed

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[11] CL 1996/10-FO, CX/FO 96/6 (comments from Indonesia, Malaysia, the Netherlands, New Zealand, Poland, Spain, South Africa, European Community, European Food Emulsifier Manufacturers' Associations), CRD 1 (United States, Australia, MARINALG International), CRD 8 (revised text), CRD 9 (annotated text), CRD 13 (IDF, IFMA).

to solicit additional information on the use of synthetic fats for further consideration and decided there was no need to specify the origin of the fats and oils used as raw materials as they were adequately described in the first sentence. The following additional provisions were added to clarify the text: the use of small amounts of other lipids; the safety of fats obtained from slaughtered animals; the use of fats subjected to modification processes.

3. Essential Composition and Quality Factors

94. The Committee agreed to specify that fat spreads and blended spreads should contain a minimum of 10% total fat.

3.1.1 Fat Spreads

95. The Committee noted a proposal from the Delegation of Japan to allow up to 50% milk fat in margarine but retained the current definition, whereby fat spreads should include a maximum of 3% milk fat. Due to time constraints this section was not discussed in detail.

3.1.2 Blended Spreads

96. The Committee agreed to use the same categories as for fat spreads, according to the percentage of fat: blend; three-quarter blend; half fat blend; blended spread.

97. The Delegation of Brazil indicated that names such as half fat did not correspond to current use in that country, and proposed to use as an alternative the name of the product in conjunction with the percentage of fat (such as "margarine 60"). It was noted that this should be discussed under the labelling requirements; however, the Committee did not discuss them at the current session.

4. Additives

98. The Committee noted that a list including the proposals from a number of countries had been proposed by the Working Group. The Committee agreed that octyl gallate, dodecyl gallate and starch sodium octenylsuccinate had not been allocated an ADI by JECFA and should not be included in the list.

99. It was agreed to circulate this section as part of the draft for further comments. In particular, specific information should be provided on the following proposals: the use of 100 (i) curcumin or (ii) turmeric according to GMP, although an ADI existed and a level of 5 mg/kg had been endorsed by CCFAC; the exact substances covered by pregelatinised starches, starch acetate (1420 or 1421). It was also suggested to identify the additives which were specific to margarine and it was proposed to identify the function of additives in order to avoid the use of a "miscellaneous" category.

Status of the Proposed Draft Standard for Fat Spreads and Blended Fat Spreads

100. The Committee agreed that a number of issues had not been discussed in detail at the present session and decided to return the Proposed Draft, as included in Appendix VI, to Step 3 for further comments and consideration by the next session.

PROPOSED DRAFT REVISED STANDARD FOR SPECIFIED VEGETABLE FAT PRODUCTS AND PROPOSED DRAFT REVISED STANDARD FOR SPECIFIED ANIMAL OR MIXED ANIMAL AND VEGETABLE FATS PRODUCTS[12] (Agenda Item 8)

101. The Committee recognized that there was no significant international trade of alternative products to ghee and therefore no need to establish standards in this area. The Committee agreed to recommend to the Commission to discontinue the work on these proposed draft revised standards and to revoke both current Standards.

REVISION OF METHODS OF ANALYSIS PROVISIONS IN STANDARDS FOR FATS AND OILS[13] (Agenda Item 9)

102. The report of the Working Group on Methods of Analysis was presented by the Chairman of the Group, Dr. R. Wood (UK).

103. The Committee noted that the use of diethyl ether (ISO 3596-1) and hexane (ISO 3596-2) for extraction in the determination of unsaponifiable matter would give different results and that in the case of defining methods[14], only one method must be selected for use. The Delegation of Malaysia pointed out that unsaponifiable matter in Table 2 of the Draft Standard for Named Vegetable Oils might need to be reconsidered if the data were based on the extraction using different solvent(s) from that used in the currently recommended method.

104. The Observer from IOOC indicated that, for olive oils, certain references should be corrected and expressed the view that the current methods for the determination of sterols, unsaponifiable and peroxide value should be retained.

105. The Committee agreed to include the methods of analysis recommended by the Working Group in the relevant standards with the understanding that they would be sent to the CCMAS for endorsement.

OTHER BUSINESS, FUTURE WORK AND DATE AND PLACE OF NEXT SESSION (Agenda Item 10)

106. The Committee noted that further consideration of the mayonnaise standard would be conditional on the decision of the Commission and that future work would include the following items:

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[12] CL 1996/9; CX/FO 96/7 (comments from Indonesia, Pakistan, Poland, Spain and EFEMA); CRD 1 (comments from Australia and USA).

[13] CL 1995/22-FO; CX/FO 96/8 (comments from Denmark, France, Malaysia, Spain, United Kingdom, AOAC and IOOC); CRD 1 (comments from Thailand); CRD 14 (report of the Working Group).

[14] A method which determines a value that can only be arrived at in terms of the method per se (Codex Alimentarius Commission Procedural Manual, Ninth Edition, page 79).

- Draft Standard for Named Vegetable Oils at Step 7
- Draft Standard for Olive Oils and Olive Pomace Oils at Step 7
- Proposed Draft Standard for Fat Spreads at Step 4

107. It was agreed that a Circular Letter would be sent to collect information concerning vegetable oils obtained from new oilseed varieties or species not already covered; if specific proposals were put forward, amendments to the current draft standard or proposals for new work would need to be considered (see also para. 31).

108. The Committee noted that the date and place of the next session would be determined in consultation between the host country and Codex Secretariats, subject to the approval of the Commission.

SUMMARY STATUS OF WORK

Subject Matter	Step	Action by	Document reference in ALINORM 97/17
Draft Standard for Named Animal Fats	8	Governments 22nd CAC	para. 18 Appendix II
Draft Standard for Edible Fats and Oils not Covered by Individual Standards	8	Governments 22nd CAC	para. 30 Appendix III
Draft Revised Code of Practice for the Storage and Transport of Fats and Oils in Bulk	8	Governments 22nd CAC	para. 84 Appendix IV
Draft Standard for Named Vegetable Oils	6	Governments CCFO	para. 57 Appendix V
Draft Standard for Olive Oils and Olive-Pomace Oils	6	Governments CCFO	para. 59
Proposed Draft Standard for Fat Spreads and Blended Fat Spreads	3	Governments CCFO	para. 100 Appendix VI
Proposed Draft Standards for Specified Vegetable Fat Products and for Specified Animal or Mixed Animal and Vegetable Fat Products	6	22nd CAC	para. 101
Proposed Draft Standard for Mayonnaise	6	22nd CAC	para. 87

APPENDIX I

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APPENDIX II

DRAFT STANDARD FOR NAMED ANIMAL FATS
(At Step 8 of the Procedure)

The Appendix to this standard contains provisions which are not intended to be applied within the meaning of the acceptance provisions of section 4.A (I)(b) of the General Principles of the Codex Alimentarius.

1. SCOPE

This standard applies to the fats listed in Section 2. It does not apply to products which must be subject to further processing to render them suitable for human consumption.

2. DESCRIPTION

2.1 Lard

2.1.1 Pure rendered lard is the fat rendered from fresh, clean, sound fatty tissues from swine (Sus scrofa) in good health, at the time of slaughter, and fit for human consumption. The tissues do not include bones, detached skin, head skin, ears, tails, organs, windpipes, large blood vessels, scrap fat, skimmings, settlings, pressings, and the like, and are reasonably free from muscle tissues and blood.

2.1.2 Lard subject to processing may contain refined lard, lard stearin and hydrogenated lard, or be subject to processess of modification provided that it is clearly labelled.

2.2 Rendered Pork Fat

2.2.1 Rendered Pork Fat is the fat rendered from the tissues and bones of swine (Sus scrofa) in good health, at the time of slaughter, and fit for human consumption. It may contain fat from bones (properly cleaned), from detached skin, from head skin, from ears, from tails and from other issues fit for human consumption.

2.2.2 Rendered Pork Fat subject to processing may also contain refined lard, refined rendered pork fat, hydrogenated lard, hydrogenated rendered pork fat, lard stearin and rendered pork fat stearin provided that it is clearly labelled.

2.3 Premier Jus (Oleo Stock) is the product obtained by rendering at low heat (at a temperature no greater than 60°C) the fresh fat (killing fat) of heart, caul, kidney and mesentery collected at the time of slaughter of bovine animals in good health at the time of slaughter and fit for human consumption, as well as cutting fats.

2.4 Edible Tallow

2.4.1 Edible Tallow (Dripping) is the product obtained by rendering the clean, sound, fatty tissues (including trimming and cutting fats), attendant muscles and bones of bovine animals and/or sheep (Ovis aries) in good health at the time of slaughter and fit for human consumption.

2.4.2 Edible Tallow subject to processing may contain refined edible tallow, provided that it is clearly labelled.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

GLC Ranges of Fatty Acid Composition (expressed as percentages)

	LARD RENDERED PORK FAT	PREMIER JUS TALLOW
C6:0	)	)
C8:0	)	)
C10:0	) < 0.5 in total	) < 2.5 in total
C12:0	)	)
C14:0	0.5-2.5	1.4-7.8
C14:ISO	not detected	< 0.3
C14:1	< 0.2	0.5-1.5
C15:0	< 0.1	0.5-1.0
C15:ISO	< 0.1	) < 1.5 in total
C15:ANTI ISO	not detected	)
C16:0	20-32	17-37
C16:1	1.0-5.0	0.7-8.8
C16:ISO	< 0.1	< 0.5
C16:2	not detected	< 1.0
C17:0	< 0.5	0.5-2.0
C17:1	< 0.5	< 1.0
C17:ISO	not detected	) < 1.5 in total
C17:ANTI ISO	not detected	)
C18:0	5.0-24	6.0-40
C18:1	35-62	26-50
C18:2	3.0-16	0.5-5.0
C18:3	< 1.5	< 2.5
C20:0	< 1.0	< 0.5
C20:1	< 1.0	< 0.5
C20:2	< 1.0	not detected
C20:4	< 1.0	< 0.5
C22:0	< 0.1	not detected

4. FOOD ADDITIVES

4.1 Colours

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

		Maximum Level
100	Curcumin or Turmeric	5 mg/kg (calculated as total curcumin)
160a	Beta-carotene	25 mg/kg
160b	Annatto extracts	10 mg/kg (calculated as total bixin or norbixin)

4.2 Antioxidants

304	Ascorbyl palmitate	)	500 mg/kg
305	Ascorbyl stearate	)	individually or in combination
306	Mixed tocopherols concentrate		GMP
307	Alpha-tocopherol		GMP
308	Synthetic gamma-tocopherol		GMP
309	Synthetic delta-tocopherol		GMP
310	Propyl gallate		100 mg/kg
319	Tertiary butyl hydroquinone (TBHQ)		120 mg/kg
320	Butylated hydroxyanisole (BHA)		175 mg/kg
321	Butylated hydroxytoluene (BHT)		75 mg/kg
	Any combination of gallates, BHA and BHT and/or TBHQ		200 mg/kg but limits above not to be exceeded

4.3 Antioxidant Synergists

330	Citric acid		GMP
331	Sodium citrates		GMP
384	Isopropyl citrates	)	100 mg/kg individually or
	Monoglyceride citrate	)	in combination

5. CONTAMINANTS

5.1 Heavy Metals

The products covered by the provisions of this standard shall comply with maximum limits being established by the Codex Alimentarius Commission, but in the meantime the following limits will apply:

	Maximum Permissible Concentration
Lead (Pb)	0.1 mg/kg
Arsenic (As)	0.1 mg/kg

5.2 Pesticide Residues

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission for these commodities.

6. HYGIENE

6.1 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (Ref. No. CAC/RCP 1-1969, Rev.2 1985) - and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to the products.

6.2 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

6.3 When tested by appropriate methods of sampling and examination, the product shall:

- be free from micro-organisms in amounts that may represent a hazard to human health;
- be free from parasites which may represent a hazard to human health; and
- not contain any substance originating from micro-organisms in amounts which may represent a hazard to human health.

7. LABELLING

7.1 Name of Food

The product shall be labelled in accordance with the Codex General Standard for the Labelling of Pre-packaged Foods (Ref. CODEX STAN 1-1985). The name of the fat shall conform to the descriptions given in section 2 of this standard.

7.2 Labelling on Non-Retail Containers

Information on the above labelling requirements shall be given either on the container or in accompanying documents, except that the name of the food, lot identification and the name and address of the manufacturer or packer shall appear on the container.

However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

8. METHODS OF ANALYSIS AND SAMPLING

8.1 Determination of GLC Ranges of Fatty Acid Composition

According to IUPAC 2.301, 2.302 and 2.304 or ISO 5508: 1990/ 5509: 1978.

8.2 Determination of Arsenic

According to AOAC 952.13, IUPAC 3.136, AOAC 942.17, or AOAC 985.16.

8.3 Determination of Lead

According to IUPAC 2.632, AOAC 994.02 or ISO 12193: 1994.

Appendix

OTHER QUALITY AND COMPOSITION FACTORS

1. Quality Characteristics

1.1 Colour

Lard & Rendered Pork Fat:	White when solid
Premier Jus:	Creamy white to pale yellow
Edible Tallow:	Off white to pale yellow

1.2 Odour and taste: Characteristic and free from foreign and rancid odour and taste.

		Maximum Level
1.3	Matter volatile at 105°C.	0.3 %
1.4	Insoluble impurities	0.05 %
1.5	Sodium Soap content:	
	lard	nil
	premier jus	nil
	rendered pork fat	0.005 %
	edible tallow	0.005 %
1.6	Iron (Fe)	1.5 mg/kg
1.7	Copper (Cu)	0.4 mg/kg
1.8	Acid value:	
	lard	1.3 mg KOH/g fat
	premier jus	2.5 mg KOH/g fat
	rendered pork fat	2.0 mg KOH/g fat
	edible tallow	2.5 mg KOH/g fat
1.9	Peroxide value:	5 milliequivalents active oxygen/kg fat.

2. Chemical and Physical Characteristics

		Lard	Rendered Pork Fat	Premier Jus	Tallow
2.1	**Relative Density** (40°C/water at 20°C)	0.896-0.904	0.894-0.906	0.893-0.898	0.894-0.904
2.2	**Refractive Index** (N_D 40°C)	1.448-1.460	1.448-1.461	1.448-1.460	1.448-1.460
2.3	**Titre** (°C)	32-45	32-45	42.5-47	40-49
2.4	**Saponification Value** (mg KOH/g fat)	192-203	192-203	190-200	190-202
2.5	**Iodine Value** (Wijs)	45-70	45-70	32-47	32-50

2.6	**Unsaponifiable Matter** (g/kg)	< = 10	< = 12	< = 10	< = 12

3. Methods of Analysis and sampling

3.1 Determination of Matter Volatile at 105°C.

According to IUPAC 2.601 or ISO 662: 1980.

3.2 Determination of Insoluble Impurities

According to IUPAC 2.604 or ISO 663: 1995.

3.3 Determination of Soap Content

According to BS 684 Section 2.5.

3.4 Determination of Copper and Iron

According to ISO 8294: 1994, IUPAC 2.631 or AOAC 990.05

3.5 Determination of Relative Density

According to IUPAC 2.101, with the appropriate conversion factor.

3.6 Determination of Refractive Index

According to IUPAC 2.102 or ISO 6320: 1995.

3.7 Determination of Saponification Value (S.V.)

According to IUPAC 2.202 or ISO 3657: 1988.

3.8 Determination of Iodine Value (I.V.)

(i) Wijs - according to IUPAC 2.205/1, ISO 3961: 1996, AOAC 993.20, or AOCS Cd 1d-1992.
(ii) Calculation - according to AOCS Cd 1b-1987.

3.9 Determination of Unsaponifiable Matter

According to IUPAC 2.401 (part 1-5) or ISO 3596-1: 1996.

3.10 Determination of Peroxide Value (P.V.)

According to IUPAC 2.501 (as amended) or AOCS Cd 8b - 90.

3.11 Determination of Acidity

According to IUPAC 2.201 or ISO 660: 1996.

3.12 Determination of Titre

According to ISO 935: 1988, or IUPAC 2.121.

APPENDIX III

DRAFT STANDARD FOR EDIBLE FATS AND OILS NOT COVERED BY INDIVIDUAL STANDARDS (At Step 8 of the Procedure)

The Appendix to this standard contains provisions which are not intended to be applied within the meaning of the acceptance provisions of Section 4.A (I)(b) of the General Principles of the Codex Alimentarius.

1. SCOPE

This standard applies to edible oils and fats and mixtures thereof which are used for direct consumption including for catering purposes or as ingredients in the manufacture of food products. It includes oils and fats that have been subjected to processes of modification, (such as trans-esterification or hydrogenation) or fractionation but does not include oils and fats which must be subjected to further processing in order to render them suitable for human consumption.

This standard does not apply to any oil or fat which is covered by one of the following:

the Codex Standard for Named Animal Fats;
the Codex Standard for Named Vegetable Oils;
the Codex Standard for Olive Oils and Olive-Pomace Oils.

2. DESCRIPTIONS

2.1 Edible Fats and Oils are foodstuffs defined in Section 1 which are composed of glycerides of fatty acids. They are of vegetable, animal or marine origin. They may contain small amounts of other lipids such as phosphatides, of unsaponifiable constituents and of free fatty acids naturally present in the fat or oil. Fats of animal origin must be produced from animals in good health at the time of slaughter and be fit for human consumption.

2.2 Virgin Fats and Oils are edible vegetable fats and oils obtained, without altering the oil, by mechanical procedures and the application of heat only. They may be purified by washing with water, settling, filtering and centrifuging only.

2.3 Cold Pressed Fats and Oils are edible vegetable fats and oils obtained, without altering the oil, by mechanical procedures without the application of heat. They may have been purified by washing with water, settling, filtering and centrifuging only.

3. FOOD ADDITIVES

3.1 No additives are permitted in virgin oils covered by this Standard.

3.2 Colours

No colours are permitted in vegetable oils covered by this standard.

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

		Maximum Level
100	Curcumin or Turmeric	5 mg/kg (calculated as total curcumin)
160a	Beta-carotene	25 mg/kg
160b	Annatto extracts	10 mg/kg (calculated as total bixin or norbixin)

3.3 Flavours

Natural flavours and their identical synthetic equivalents and other synthetic flavours, except those which are known to represent a toxic hazard.

3.4 Antioxidants

304	Ascorbyl palmitate	)	500 mg/kg
305	Ascorbyl stearate	)	individually or in combination
306	Mixed tocopherols concentrate		GMP
307	Alpha-tocopherol		GMP
308	Synthetic gamma-tocopherol		GMP
309	Synthetic delta-tocopherol		GMP
310	Propyl gallate		100 mg/kg
319	Tertiary butyl hydroquinone (TBHQ)		120 mg/kg
320	Butylated hydroxyanisole (BHA)		175 mg/kg
321	Butylated hydroxytoluene (BHT)		75 mg/kg
	Any combination of gallates, BHA and BHT and/or TBHQ		200 mg/kg but limits above not to be exceeded
389	Dilauryl thiodipropionate		200 mg/kg

3.5 Antioxidant Synergists

330	Citric acid		GMP
331	Sodium citrates		GMP
384	Isopropyl citrates	)	100 mg/kg individually or
	Monoglyceride citrate	)	in combination

3.6 Anti-foaming Agents (for oils and fats for deepfrying)

900a	Polydimethylsiloxane	10 mg/kg

4. CONTAMINANTS

4.1 Heavy Metals

The products covered by the provisions of this standard shall comply with maximum limits being established by the Codex Alimentarius Commission but in the meantime the following limits will apply:

	Maximum Permissible Concentration
Lead (Pb)	0.1 mg/kg
Arsenic (As)	0.1 mg/kg

4.2 Pesticide Residues

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission for these commodities.

5. HYGIENE

5.1 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (Ref. No. CAC/RCP 1-1969, Rev. 2 1985) - and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to the products.

5.2 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

5.3 When tested by appropriate methods of sampling and examination, the product shall:-

- be free from micro-organisms in amounts that may represent a hazard to human health;
- be free from parasites which may represent a hazard to human health; and
- not contain any substances originating from micro-organisms in amounts which may represent a hazard to human health.

6. LABELLING

The product shall be labelled in accordance with the Codex General Standard for the Labelling of Pre-packaged Foods (Ref. CODEX STAN 1-1985).

6.1 Name of Food

6.1.1 The designation "virgin fat" or "virgin oil" may only be used for individual fats or oils conforming to the definition in section 2.2 of this standard.

6.1.2 The designation "cold pressed fat" or "cold pressed oil" may only be used for individual fats or oils conforming to the definition in section 2.3 of this standard.

6.2 Labelling of Non-Retail Containers

Information on the above labelling requirements shall be given either on the container or in accompanying documents, except that the name of the food, lot identification and the name and address of the manufacturer or packer shall appear on the container.

However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

7. METHODS OF ANALYSIS AND SAMPLING

7.1 Determination of Lead

According to IUPAC 2.632, AOAC 994.02 or ISO 12193: 1994.

7.2 Determination of Arsenic

According to AOAC 952.13, IUPAC 3.136, AOAC 942.17, or AOAC 985.16.

OTHER QUALITY AND COMPOSITION FACTORS

1. Quality Characteristics

1.1 Colour

Characteristic of the designated product.

1.2 Odour and Taste

Characteristic of the designated product and free from foreign and rancid odour and taste.

		Maximum Level
1.3	Matter volatile at 105°C	0.2% m/m
1.4	Insoluble impurities	0.05 % m/m
1.5	Soap content	0.005 % m/m
1.6	Iron (Fe):	
	Refined Fats and Oils	1.5 mg/kg
	Virgin Fats and Oils	5.0 mg/kg
	Cold Pressed Fats and Oils	5.0 mg/kg
1.7	Copper (Cu):	
	Refined Fats and Oils	0.1 mg/kg
	Virgin Fats and Oils	0.4 mg/kg
	Cold Pressed Fats and Oils	0.4 mg/kg
1.8	Acid value:	
	Refined Fats and Oils	0.6 mg KOH/g fat & oil
	Virgin Fats and Oils	4.0 mg KOH/g fat & oil
	Cold Pressed Fats and Oils	4.0 mg KOH/g fat & oil
1.9	Peroxide Value:	
	Virgin Oils and Cold Pressed Fats and Oils	10 milliequivalents of active oxygen/kg oil
	Other Fats and Oils	5 milliequivalents of active oxygen/kg oil

2. Methods of Analysis and Sampling

2.1 Determination of Acid Value (A.V.)

According to IUPAC 2.201 or ISO 660: 1996.

2.2 Determination of Peroxide Value (P.V.)

According to IUPAC 2.501 (as amended) or AOCS Cd 8b - 90.

2.3 Determination of Matter Volatile at 105°C

According to IUPAC 2.601 or ISO 662: 1980.

2.4 Determination of Insoluble Impurities

According to IUPAC 2.604 or ISO 663: 1995.

2.5 Determination of Soap Content

According to BS 684 Section 2.5.

2.6 Determination of Iron

According to IUPAC 2.631, ISO 8294: 1994 or AOAC 990.05.

2.7 Determination of Copper

According to IUPAC 2.631, ISO 8294: 1994 or AOAC 990.05.

APPENDIX IV

DRAFT REVISED RECOMMENDED CODE OF PRACTICE FOR THE STORAGE AND TRANSPORT OF EDIBLE OILS AND FATS IN BULK
(At Step 8 of the Procedure)

Use of the Code

This Code is advisory in nature. Its value rests on the fact that in general all the practices proposed are in actual and successful use.

It is applicable to all crude or processed edible oils and fats.

It is recommended that newcomers to the field use the principles given in the Code.

More detailed information and advice may be obtained from relevant national and international associations.

1. Section I - SCOPE

This Code of Practice applies to the handling of edible oils and fats in bulk. It contains the minimum requirements for storage and transport of edible oils and fats in bulk to ensure a supply of wholesome product to consumers.

2. Section II - INTRODUCTION

2.1 General

Three types of deterioration can occur in oils and fats during the operations dealt with in this Code. The susceptibility of oils and fats to deterioration depends upon a number of factors including the type of oil or fat, whether it is crude, partially or fully refined and whether impurities are present. These should be considered when storing and transporting the oil.

2.1.1 Oxidation

Contact of oils and fats with oxygen, present in the atmosphere, causes chemical changes in the product which downgrade the quality. Some of the effects of oxidation may be rectified within an edible oil refinery with some extra processing and, therefore, extra cost. However, the effects may be so severe that rectification is not possible.

Much can be gained by reducing the amount of air contact and this principle is the basis of several of the recommendations. Oxidation proceeds more rapidly as temperature increases, so each operation should be carried out at the lowest practicable temperature. The rate of oxidation is greatly increased by the catalytic action of copper or copper alloys, even when trace amounts (ppm) are present. Because of this, copper and copper alloys must be rigorously excluded from the systems. Other metals, such as iron, also have catalytic effects although less than that of copper.

2.1.2 Hydrolysis

The breakdown of fats to fatty acids is promoted by the presence of water particularly at higher temperatures. Hydrolysis is also promoted by the action of certain micro-organisms. Tanks in which the oil is being stored or shipped should always be clean and dry before use.

2.1.3 Contamination

Undesirable contamination may be from residues of a previous material handled in the equipment, dirt, rain, sea water or through the accidental addition of a different product. In storage installations and ships, particular difficulty may be experienced ensuring cleanliness of valves and pipelines, particularly where they are common for different tanks. Contamination is avoided by good design of the systems, adequate cleaning routines and an effective inspection service, and the rejection of tanks which have carried as a last cargo products which are listed in the List of Banned Immediate Previous Cargoes in force on date of loading (See Appendix 2).

Contamination is also avoided on ships by the carriage of oils in segregated tank systems the previous cargoes in which have been on the Lists of Acceptable Previous Cargoes in force at the date of loading (See Appendix 2).

3 Section III - STORAGE AND TRANSPORTATION

3.1 Tanks

3.1.1 Land Storage Tanks

The most suitable shape is the vertical, circular cross-section tank with self-supporting fixed roof, preferably conical in shape. Where possible, tall, narrow tanks are preferred to minimise the surface areas of the contents and, therefore, to minimise contact of the oils or fats with air and the oxygen it contains. Tank bottoms should be conical or sloped (with a sump) to facilitate draining.

All openings such as manholes, inlets, outlets, draining out points, etc., should be made such that they can be locked and/or effectively sealed.

For each installation, the total storage capacity, size and number of tanks need to be related to the size and frequency of intakes, rates of turnover and the number of different products handled etc.

3.1.2 Ships' Tanks

The economics of bulk transport requires that a range of cargoes can be carried on one vessel and tank capacities generally vary between 200 to 2,500 tonnes.

Ships tanks differ from land tanks and complete segregation of tanks is achieved by using individual pumps and line systems, each tank having its own dedicated pump and line system.

Mild steel tanks should preferably be coated to prevent attack or corrosion of the mild steel by the cargo. The coating should be approved for contact with food. The trend towards the use of stainless steel for tank construction will remove the need for tank coatings.

Damage to coatings can be caused by abrasion or by using unsuitable cleaning methods leading to local corrosion. The tanks should always be inspected before a cargo of oil or fat is loaded and, if necessary, repairs to the coatings should be carried out.

Ships employed in the trade tend to be categorised as follows:

(a) Bulk tankers:

These range from 15,000 to 40,000 tonnes and have a varying number of different sized tanks, usually with inter-connected valves. They are best suited for the carriage of single oils, in large volumes, where they can be loaded with valves open for fast receipt of the cargo and easier trim of the vessel.

(b) Parcel tankers:

These are more sophisticated ships, mainly in the 15,000 to 40,000 tonne range, designed to carry a variety of different but fully segregated bulk liquids. Each tank may have one of a number of different coatings to suit a particular kind of cargo and each tank, or small group of tanks, will have its own dedicated pipelines and pumps.

(c) Coasters:

The classes of vessel referred to above are ocean going ships that service the major ports of loading and discharge. In addition, there are many small coasters, generally between 750 and 3,000 tonnes, that cover short sea voyages. They are also frequently used to handle transhipment from ocean-going vessels.

(d) Container vessels:

As the name implies, these ships are purpose built to carry containers of uniform dimensions for convenient stowage. They ply between container terminals, whilst the containers themselves can be filled and unloaded at whatever other, frequently inland, point/s may best suit the goods and parties concerned.

3.1.3 Road and Rail Tankers and Bulk Liquid Containers (ISO Tank Containers)

Road and rail tankers and bulk liquid containers (ISO tank containers) used to transport oils and fats overland. Where the oils and fats are fully refined and deodorised for direct human consumption, the tank is normally of stainless steel construction or mild steel coated with epoxy resin.

3.1.4 Materials

(a) All materials used in the construction of tanks and for ancillary equipment (including heating facilities) should be inert to oils and fats, and should be suitable for use in contact with food.

(b) Stainless steel is the most preferred metal for the construction of tanks. It is particularly recommended for the storage and transport of fully refined oils and fats. Tanks of mild steel should preferably be coated with an inert material on the inside, for example phenolic epoxy resins. Their suitability for contact with foodstuffs, particularly oils and fats, should be obtained from coating manufacturers.

Zinc silicate coatings for mild steel tanks are also suitable, but it should be noted that deterioration of the oil can take place if used with crude oils and fats with high acid values.

Prior to application of the coating, the metal surface must be sand-blasted to bright metal (ISO 8501-1: 1988) or equivalent. It should be noted that there are temperature limitations on many coatings which must be carefully observed particularly during the cleaning of the tank (for example, the temperature limitation may preclude the use of live steam in the cleaning operation).

(c) Copper and its alloys such as brass, bronze or gun metal should not be used in the construction of the storage installation or in a ship or road/rail tanker used for transport that has contact with the oils or fats such as piping, pipe connections, seals, valves, heating coils, strainers, pumps, temperature gauges or in sampling apparatus. Temperature gauges containing mercury should not be used.

Glass equipment and glass sample bottles should be avoided in situations where breakage might lead to contamination.

3.1.5 Heating Facilities - Tanks

All tanks for solid, semi-solid and high viscosity oils and fats should be installed with heating facilities (see also Section 3.1.7) so that the product is liquid and homogenous when transferred or unloaded. Heating coils should be of stainless steel construction. Heating coils constructed from alloys containing copper are not suitable.

The following means of heating are suitable:

(a) Bare Hot Water Pipes

Heating by hot water (about 80°C) circulated through coils is the best procedure because it is least likely to cause local overheating. Coils should be self draining or mechanical or vacuum pump draining.

(b) Bare Steam Pipes

Heating by steam with pressure up to 150kPa (1.5 bars) gauge (temperature of 127°C) can also be used. Coils should be self draining or mechanical or vacuum pump draining.

The heating coils should rest on supporting legs about 7.5 cm (3") above the base of the tank. Some operators prefer supporting legs 15 cm (6") or 30 cm (12") high (to facilitate cleaning and to improve heat transfer to the oil). Vertical hairpin coils or side heating coils installed on the tank walls should also be provided. As a guide a coil area of about 0.1 m^2/tonne of tank capacity is required if the fat has to be melted, but 0.05m^2/tonne suffices for heating-up purposes. The total coil length is normally divided into two or more separate coils, of a length suitable to avoid excessive accumulation of steam condensate.

(c) External Heat Exchangers

These provide uniform heating and may be used as an alternative to other heating systems in cases where the product is required to remain liquid and pumpable in the tank.

Thermal heating fluids should not be used except where agreed between contracting parties and national authorities on the basis of safety evaluation, risk assessment and inspection procedures.

3.1.6 Heating facilities - road and rail tankers and ISO tank containers

For solid or semi-solid fats and high viscosity oils, road and rail tankers and ISO tank containers where fitted with internal heating coils, these should be of stainless steel which can be coupled to a source of hot water or low pressure steam (pressure up to 150 kPa (1.5 bars) gauge).

3.1.7 Storage tank and road/rail tanker insulation

Storage tanks, tankers and containers should preferably be insulated, particularly in temperate and cold climates. Insulation is usually fitted externally and must be designed to avoid the absorption of oil or water. Insulation material should be impervious to oils and fats.

3.1.8 Control of temperature

All ships and storage tanks with heating facilities should be equipped with temperature sensors and automatic control devices to prevent overheating of oil in the tank and associated lines. Thermometers must be carefully sited and away from heating coils. It is useful to have automatic recording type thermometers to provide records of temperature control. The recorder should be installed in a conspicuous location such as the supervisor's office or the ship's operations room.

3.1.9 Protection from Aeration

Pipelines and their connections should be designed so that admixture with air is avoided. Filling can be done from the bottom or over the top of the tank with the pipe leading to near the bottom to avoid cascading to prevent aeration. It is preferable to clear the pipe line leading to the tank by a "pigging" system and/or by the use of inert gas. However, if air is used a suitable means must be provided to prevent it being blown into the oil in the tanks.

3.1.10 Inert Gas Protection

Ships and storage tanks used for high quality products or for long storage periods should preferably have facilities for sparging and blanketing with inert gas of appropriate purity. Further details can be obtained from inert gas manufacturers.

3.2 Pipelines

3.2.1 Materials

Mild steel is acceptable for all crude and semi-refined oils and fats though stainless steel is preferable. Stainless steel should be used for fully refined products. (see also 3.1.4 c)

3.2.2 Flexible Hoses

All flexible hoses used to connect pipelines during loading and unloading must be of inert material, be suitably reinforced and be of such a length to make cleaning easy. Exposed ends should be capped when not in use. Couplings should be of stainless steel or other inert materials.

3.2.3 Insulation and Heating

In temperate and cold climates, pipelines used for oils and fats which may solidify at ambient temperatures should preferably be lagged and also provided with heating, for example by steam tracing lines or electrical heating tape.

4. Section IV - OPERATIONS

4.1 Loading and Unloading

4.1.1 Heating Up

Before transfer, solid, semi-solid and high viscosity oils and fats in storage tanks, shore tanks, ship tanks and road and rail tank cars should be heated slowly so that they are liquid and completely homogeneous. Heating should start at a time calculated to give the required pumping temperature without ever exceeding the maximum rate of 5°C over a 24 hour period. If steam is used, the steam pressure should not exceed 150 kPa (1.5 bars) gauge to prevent localised over-heating. The coils should be covered completely before heating of the tank begins.

4.1.2 Temperatures during Storage and Transport

To prevent excessive crystallisation and solidification during short-term storage and shipping, oil in bulk tanks should be maintained within the temperature ranges given in Table 1.

The temperatures apply to both crude and refined oils in each grade.

The temperatures are chosen to minimise damage to the oil or fat. Some crystallisation will occur, but not so much as to require excessively long heating before delivery. Thus palm oil stored at 32°C - 40°C will require about three days heating at 5°C over a 24 hour period to bring it to transfer temperature. Long term storage of all soft oils should be at ambient temperature and heating should be completely turned off. If the oil then becomes solid, extreme care should be taken during the initial heating to ensure that localised overheating does not occur.

4.1.3 Temperature during Loading and Discharge

The various oil products should be heated up to the temperature shown in Table 1 before transfer.

The lower temperatures apply to soft grades, while the higher temperatures are necessary for hard grades. The temperatures apply to both crude and refined oils in each grade.

Temperature at loading or unloading should refer to the average of top, middle and bottom temperature readings. Readings should be taken not less than 30cm away from the heating coils.

Under cold weather conditions discharge temperatures should be at the maximum of those shown in Table 1, to prevent blocking of unheated pipelines.

4.1.4 Loading and Unloading Sequence

Different oils and grades should be kept separate and pumping "fresh" oil into "old" oil in particular should be avoided for oxidative quality reasons. It is preferable to transfer different oils and grades through segregated lines.

Where a number of products are transferred through a common pipeline system, the system must be cleared completely between different products or grades. The order of loading and discharge should be carefully chosen to minimise adulteration.

The following principles should be observed :

* Fully refined oils before partly refined.
* Partly refined oils before crude oils.
* Edible oils before technical grades.
* Fatty acids or acid oils should be pumped last.
* Special care should be taken to prevent adulteration between lauric oils and non-lauric oils.

4.1.5 The first pumpings of each grade should be collected in separate tanks for quality checks.

4.2 Cleaning

In addition to what has been said above, where tanks have been used for non-edible materials, the greatest care must be taken by cleaning and inspection that all residues have been totally removed.

If steam or water are used for cleaning, the system must be drained and completely dried before oil is handled. A pipeline "pigging" system should be provided at each storage installation. If detergents or alkali are used, all surfaces with which they have been in contact should be rinsed thoroughly with fresh water.

4.3 Maintenance

Regular maintenance checks should be made, preferably as part of a properly planned maintenance programme. They should include functioning of steam pressure regulation valves; all steam supply valves and steam traps for leakage; thermometers, thermostats, recording thermometers, weighing equipment and any gauge meters for function and accuracy; all thermostat pumps for leakage; integrity of tank coatings; hoses (internal and external) and condition of tanks and ancillary equipment.

4.4 Others

4.4.1 There must be clear marking or identification systems for the pipelines and storage tanks.

4.4.2 The condition such as cleanliness of storage tanks, road tankers, ship's tanks and pipelines should be inspected by a suitably qualified superintendent for every loading or unloading of oil and written reports provided.

4.4.3 The receiver may wish to keep tank sediments separate from the bulk.

4.4.4 Records of the ship's heating log should be provided.

4.4.5 Ship loading samples, properly marked and sealed, should be delivered as required by the contract.

4.4.6 The three previous cargoes carried in a ship's tank should be declared to the charterer and the records made available to all parties involved. The provision should be part of all shipping contracts. In addition, authorities may wish to see evidence of previous cargo details.

Appendix 1

TABLE 1

TEMPERATURES DURING STORAGE, TRANSPORT, LOADING AND DISCHARGE

	Storage and Bulk Shipments		Loading and Discharge	
Oil or Fat	**Min°C**	**Max °C**	**Min°C**	**Max°C**
Castor Oil	20	25	30	35
Coconut Oil	27	32	40	45
Cottonseed Oil	Ambient	Ambient	20	25 (3)
Fish Oil	20	25	25	30
Grapeseed Oil	Ambient	Ambient	15	20 (3)
Groundnut Oil	Ambient	Ambient	20	25 (3)
Hydrogenated Oils	Various	-	Various	- (1)
Illipe Butter	38	41	50	55
Lard	38	41	51	54
Linseed Oil	Ambient	Ambient	15	20 (3)
Maize (Corn) Oil	Ambient	Ambient	15	20 (3)
Olive Oil	Ambient	Ambient	15	20 (3)
Palm Oil	32	40	50	55
Palm Olein	25	30	32	35
Palm Stearin	40	45	60	70 (2)
Palm Kernel Oil	27	32	40	45
Palm Kernel Olein	25	30	30	35
Palm Kernel Stearin	32	38	40	45
Rapeseed/low erucic acid rapeseed oil	Ambient	Ambient	15	20 (3)
Safflower Oil	Ambient	Ambient	15	20 (3)
Sesame Oil	Ambient	Ambient	15	20 (3)
Sheanut Butter	38	41	50	55
Soyabean Oil	Ambient	Ambient	20	25 (3)
Sunflower Oil	Ambient	Ambient	15	20 (3)
Tallow	44	49	55	60

Notes

(1) Hydrogenated oils can vary considerably in their slip melting points, which should always be declared. It is recommended that during the voyage, the temperature should be maintained at around the declared melting point and that this should be increased prior to discharge to give a temperature of between 10°C and 15°C above that point to effect a clean discharge.

(2) Different grades of palm stearin may have wide variations in their slip melting points and the temperature quoted may need to be adjusted to suit specific circumstances.

(3) It is recognised that in some cases the ambient temperatures may exceed the recommended maximum figures shown in the Table.

Appendix 2

BIBLIOGRAPHY

European Commission Scientific Committee for Food (SCF) Opinion on the Potential Risk to Human Health Arising from the Transport in Ships' Tanks of Oils and Fats from Substances Proposed as Acceptable Previous Cargoes. Opinion expressed on 20 September 1996: Minutes of 103rd SCF Plenary Meeting (European Commission), Annex VII (Doc.III/5693/96).

Federation of Oils, Seeds and Fats Associations (FOSFA International) International List of Acceptable Previous Cargoes (giving synonyms and alternative chemical names)

FOSFA International List of Banned Immediate Previous Cargoes

FOSFA International Qualifications for All Ships Engaged in the Ocean Carriage and Transhipment of Oils and Fats for Edible and Oleo-Chemical Use

FOSFA International Operational Procedures for All Ships Engaged in Ocean Carriage of Oils and Fats for Edible and Oleo-Chemical Use

FOSFA International Code of Practice for Superintendents

International Organisation for Standardisation (ISO) Sampling Standard ISO 5555 (1991)

National Institute of Oilseed Products (NIOP) Acceptable Prior Cargo - List No 1

NIOP Acceptable Prior Cargo - List No 2

NIOP Unacceptable Prior Cargo List

NIOP Rules

PORAM (Palm Oil Refiners Association of Malaysia) Processed Palm Oil Storage, Transportation, Sampling and Survey Guide

ISO 1496-3 (1991) on Tank Containers (ISO 20ft IMO2)

Tank Cleaning Guide (1996) - published by Chemical Laboratory 'Dr A Verwey' Rotterdam

APPENDIX V

DRAFT STANDARD FOR NAMED VEGETABLE OILS
(At Step 6 of the Procedure)

The Appendix to this standard contains provisions which are not intended to be applied within the meaning of the acceptance provisions of section 4.A (I)(b) of the General Principles of the Codex Alimentarius.

1. SCOPE

This standard applies to the edible vegetable oils described in Section 2.1. It does not apply to oils which must be subject to further processing to make them suitable for human consumption.

2. DESCRIPTION

2.1 Product Definition
(Note: synonyms are in brackets immediately following the name of the oil)

2.1.1 **Arachis Oil** (Peanut Oil; Groundnut Oil) is derived from groundnuts (seeds of Arachis hypogaea L.).

2.1.2 **Babassu Oil** is derived from the kernel of the fruit of several varieties of the palm Orbignya.

2.1.3 **Coconut Oil** is derived from the kernel of the coconut (Cocos nucifera).

2.1.4 **Cottonseed Oil** is derived from the seeds of various cultivated species of Gossypium.

2.1.5 **Grapeseed Oil** is derived from the seeds of the grape (Vitis vinifera L.).

2.1.6 **Maize Oil** (Corn Oil) is derived from maize germ (the embryos of Zea mays L.).

2.1.7 **Mustardseed Oil** is derived from the seeds of white mustard (Sinapis alba L. or Brassica hirta Moench), brown and yellow mustard (Brassica juncea (L.) Czern., and Coss) and of black mustard (Brassica nigra (L.) Koch).

2.1.8 **Palm Kernel Oil** is derived from the kernel of the fruit of the oil palm (Elaeis guineensis).

2.1.9 **Palm Oil** is derived from the fleshy mesocarp of the fruit of the oil palm (Elaeis guineensis).

2.1.10 **Palm Olein** is the liquid fraction derived from the fractionation of palm oil (described above).

2.1.11 **Palm Stearin** is the high-melting fraction derived from the fractionation of palm oil (described above).

2.1.12 **Rapeseed Oil** (Turnip rape oil; Colza oil; Ravison oil; Sarson Oil: Toria Oil) is produced from seeds of Brassica napus L., Brassica campestris L. Brassica juncea L. and Brassica tournefortii Gouan species.

2.1.13 **Rapeseed Oil - (Low Erucic Acid)** (low erucic acid turnip rape oil; low erucic acid colza oil) is produced from low erucic acid oil-bearing seeds of varieties derived from the Brassica napus L., Brassica campestris L. and Brassica juncea L., species.

2.1.14 **Safflowerseed Oil** (Safflower Oil; Carthamus Oil; Kurdee Oil) is derived from safflower seeds (seeds of Carthamus tinctorious L.).

2.1.15 **Sesameseed Oil** (Sesame Oil; Gingelly Oil; Benne Oil; Ben Oil; Till Oil; Tillie Oil) is derived from Sesame seeds (seeds of Sesamum indicum L.).

2.1.16 **Soya Bean Oil** (Soybean Oil) is derived from soya beans (seeds of Glycine max (L.) Merr.).

2.1.17 **Sunflowerseed Oil** (Sunflower Oil) is derived from Sunflower seeds (seeds of Helianthus annuus L.).

2.2 Other Definitions

2.2.1 Edible vegetable oils are foodstuffs which are composed primarily of glycerides of fatty acids being obtained only from vegetable sources. They may contain small amounts of other lipids such as phosphatides, of unsaponifiable constituents and of free fatty acids naturally present in the fat or oil.

2.2.2 Virgin oils are obtained, without altering the oil, by mechanical procedures and the application of heat only. They may have been purified by washing with water, settling, filtering and centrifuging only.

2.2.3 Cold pressed oils are obtained, without altering the oil, by mechanical procedures only without the application of heat. They may have been purified by washing with water, settling, filtering and centrifuging only.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 GLC Ranges of Fatty Acid Composition

Samples falling outside the appropriate ranges specified in Table 1 are not in compliance with this standard. Supplementary, non-mandatory criteria may be employed if it is considered necessary to confirm that a sample is in compliance with the standard.

3.2 Low-erucic acid rapeseed oil must not contain more than 2% erucic acid (as % of total fatty acids);

3.3 Slip point

Palm olein	not more than 24°C
Palm stearin	not less than 44°C

4. FOOD ADDITIVES

4.1 No food additives are permitted in virgin oils.

4.2 Flavours

Natural flavours and their identical synthetic equivalents, and other synthetic flavours, except those which are known to represent a toxic hazard.

4.3 Antioxidants

		Maximum Level
304	Ascorbyl palmitate)	500 mg/kg
305	Ascorbyl stearate)	individually or in combination
306	Mixed tocopherols concentrate	GMP
307	Alpha-tocopherol	GMP
308	Synthetic gamma-tocopherol	GMP
309	Synthetic delta-tocopherol	GMP
310	Propyl gallate	100 mg/kg
319	Tertiary butyl hydroquinone (TBHQ)	120 mg/kg
320	Butylated hydroxyanisole (BHA)	175 mg/kg
321	Butylated hydroxytoluene (BHT)	75 mg/kg
	Any combination of gallates, BHA and BHT and/or TBHQ	200 mg/kg but limits above not to be exceeded
389	Dilauryl thiodipropionate	200 mg/kg

4.4 Antioxidant Synergists

330	Citric acid	GMP
331	Sodium citrates	GMP
384	Isopropyl citrates)	100mg/kg individually or
	Monoglyceride citrate)	in combination

4.5 Anti-foaming Agents (oils for deepfrying)

900a	Polydimethylsiloxane	10 mg/kg

5. CONTAMINANTS

5. Heavy Metals

The products covered by the provisions of this standard shall comply with maximum limits being established by the Codex Alimentarius Commission but in the meantime the following limits will apply:

	Maximum Permissible Concentration
Lead (Pb)	0.1 mg/kg
Arsenic (As)	0.1 mg/kg

5.2 Pesticide Residues

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission for these commodities.

6. HYGIENE

6.1 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (Ref. No. CAC/RCP 1-1969, Rev.2 1985) - and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to the products.

6.2 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

6.3 When tested by appropriate methods of sampling and examination, the product shall:

- be free from micro-organisms in amounts that may represent a hazard to human health;
- be free from parasites which may represent a hazard to human health; and
- not contain any substance originating from micro-organisms in amounts which may represent a hazard to health.

7. LABELLING

7.1 Name of the Food

The product shall be labelled in accordance with the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985). The name of the oil shall conform to the descriptions given in Section 2 of this standard.

7.2 Labelling of Non-Retail Containers

Information on the above labelling requirements shall be given either on the container or in accompanying documents, except that the name of the food, lot identification and the name and address of the manufacturer or packer shall appear on the container.

However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

8. METHODS OF ANALYSIS AND SAMPLING

8.1 Determination of GLC Ranges of Fatty Acid Composition

According to IUPAC 2.301, 2.302 and 2.304 or ISO 5508: 1990/5509: 1978.

8.2 Determination of Slip Point

According to ISO 6321: 1991 for all oils, or AOCS Cc 3-25 (1992) for Palm Oils only.

8.3 Determination of Arsenic

According to AOAC 952.13, IUPAC 3.136, AOAC 942.17, or AOAC 985.16.

8.4 Determination of Lead

According to IUPAC 2.632, AOAC 994.02 or ISO 12193: 1994.

Appendix

OTHER QUALITY AND COMPOSITION FACTORS

1. Quality Characteristics

1.1 The colour, odour and taste of each product shall be characteristic of the designated product. It shall be free from foreign and rancid odour and taste.

		Maximum Level
1.2	Matter volatile at 105°C	0.2 % m/m
1.3	Insoluble impurities	0.05 % m/m
1.4	Soap content	0.005 % m/m
1.5	Iron (Fe):	
	Refined Oils	1.5 mg/kg
	Virgin Oils	5.0 mg/kg
1.6	Copper (Cu)	
	Refined Oils	0.1 mg/kg
	Virgin Oils	0.4 mg/kg
1.7	Acid value	
	Refined Oils	0.6 mg KOH/g Oil
	Cold pressed and Virgin Oils	4.0 mg KOH/g Oil
	Virgin Palm Oils	10.0 mg KOH/g Oil
1.8	Peroxide Value:	
	Refined Oils	5 milliequivalents of active oxygen/kg oil
	Cold Pressed and Virgin Oils	10 milliequivalents of active oxygen/kg oil

2. Composition Characteristics

2.1 The arachidic and higher fatty acid content of arachis oil should exceed 48g/kg.

2.2 The Reichert values for coconut, palm kernel and babassu oils should be in the ranges 6-8.5, 4-7 and 4.5-6.5, respectively.

2.3 The Polenske values for coconut, palm kernel and babassu oils should be in the ranges 13-18, 8-12 and 8-10, respectively.

2.4 The Halphen test for cottonseed oil should be positive.

2.5 The erythrodiol content of grapeseed oil should be more than 2% of the total sterols.

2.6 The total carotenoids (as beta-carotene) for unbleached palm oil, unbleached palm olein and unbleached palm stearin should be in the range 500-2000, 550-2500 and 300-1500 mg/kg, respectively.

2.7 The Crismer value for low erucic acid rapeseed oil should be in the range 67-70.

2.8 The concentration of brassicasterol in low erucic acid rapeseed oil should be greater than 5% of total sterols.

2.9 The Baudouin test should be positive for sesameseed oil.

3. Chemical and Physical Characteristics

Chemical and Physical Characteristics are given in Table 2.

4. Identity Characteristics

4.1 Levels of desmethylsterols in vegetable oils as a percentage of total sterols are given in Table 3.

4.2 Levels of tocopherols and tocotrienols in vegetable oils are given in Table 4.

5. Methods of Analysis and Sampling

5.1 Determination of Matter Volatile at 105°C
According to IUPAC 2.601 or ISO 662: 1980.

5.2 Determination of Insoluble Impurities
According to IUPAC 2.604 or ISO 663: 1995.

5.3 Determination of Soap Content
According to BS 684 Section 2.5.

5.4 Determination of Copper and Iron
According to ISO 8294: 1994, IUPAC 2.631 or AOAC 990.05.

5.5 Determination of Relative Density
According to IUPAC 2.101, with the appropriate conversion factor.

5.6 Determination of Apparent Density
According to ISO 6883: 1995, with the appropriate conversion factor.

5.7 Determination of Refractive Index
According to IUPAC 2.102 or ISO 6320: 1995.

5.8 Determination of Saponification Value (S.V.)
According to IUPAC 2.202 or ISO 3657: 1988.

5.9 Determination of Iodine Value (I.V.)

(i) Wijs - according to IUPAC 2.205/1, ISO 3961: 1996, AOAC 993.20, or AOCS Cd 1d-1992.
(ii) Calculation - according to AOCS Cd 1b-1987.

5.10 Determination of Unsaponifiable Matter
According to IUPAC 2.401 (part 1-5) or ISO 3596-1: 1996.

5.11 Determination of Peroxide Value (P.V.)
According to IUPAC 2.501 (as amended) or AOCS Cd 8b - 90.

5.12 Determination of Total Carotenoids
According to BS 684 Section 2.20.

5.13 Determination of Acidity
According to IUPAC 2.201 or ISO 660: 1996.

5.14 Determination of Sterol Content
According to ISO 6799: 1991, or IUPAC 2.403.

5.15 Determination of Tocopherol Content
According to IUPAC 2.432.

5.16 Halphen Test
According to AOCS Cb 1-25.

5.17 Crismer Value
According to AOCS Cb 4-35 and AOCS Ca 5a-40.

5.18 Baudouin Test (Modified Villavecchia Test or Sesameseed Oil Test)
According to AOCS Cb 2-40.

5.19 Reichert Value and Polenske Value
According to IUPAC 2.204.

Table 1: Fatty acid composition of crude vegetable oils as determined by gas liquid chromatography (expressed as percentage of total fatty acids) (see Section 3.1 of the standard)

Fatty Acid	Arachis Oil	Babassu Oil	Coconut Oil	Cottonseed Oil	Grapeseed Oil	Maize Oil	Mustardseed Oil	Palm Oil	Palm Kernel Oil
C6:0	ND	ND	ND-0.6	ND	ND	ND	-	-	ND-0.8
C8:0	ND	2.6-7.3	4.6-9.4	ND	ND	ND	-	-	2.4-6.2
C10:0	ND	1.2-7.6	5.5-7.8	ND	ND	ND	-	-	2.6-5.0
C12:0	ND-0.1	40.0-55.0	45.1-50.3	ND-0.2	ND-0.5	ND-0.3	-	ND-0.4	45.0-55.0
C14:0	ND-0.1	11.0-27.0	16.8-20.6	0.6-1.0	ND-0.3	ND-0.3	ND-1.0	0.5-2.0	14.0-18.0
C16:0	8.3-14.0	5.2-11.0	7.7-10.2	21.4-26.4	5.5-11	8.6-16.5	0.5-4.5	40.1-47.5	6.5-10.0
C16:1	ND-0.2	ND	ND	ND-1.2	ND-1.2	ND-0.4	ND-0.5	ND-0.6	-
C17:0	ND	ND	ND	ND	ND	ND	ND	-	-
C17:1	ND	ND	ND	ND	ND	ND	ND	-	-
C18:0	1.9-4.4	1.8-7.4	2.3-3.5	2.1-3.3	3.0-6.0	ND-3.3	0.5-2.0	3.5-6.0	1.3-3.0
C18:1	36.4-67.1	9.0-20.0	5.4-8.1	14.7-21.7	12-28	20.0-42.2	8.0-23	36.0-44.0	12.0-19.0
C18:2	14.0-43.0	1.4-6.6	1.0-2.1	46.7-58.2	58-78	39.4-65.6	10-24	6.5-12.0	1.0-3.5
C18:3	ND-0.1	ND	ND-0.2	ND-0.4	ND-1.0	0.5-1.5	6.0-18	ND-0.5	-
C20:0	1.1-1.7	ND	ND-0.2	0.2-0.5	ND-1.0	0.3-0.7	ND-1.5	ND-1.0	-
C20:1	0.7-1.7	ND	ND-0.2	ND-0.1	ND	0.2-0.4	5.0-13	-	-
C20:2	ND	ND	ND	ND-0.1	ND	ND-0.1	ND-1.0	-	-
C22:0	2.1-4.4	ND	ND	ND-0.6	ND-0.3	ND-0.5	0.2-2.5	-	-
C22:1	ND-0.3	ND	ND	ND-0.3	ND	ND-0.1	22-50	-	-
C22:2	ND	ND	ND	ND-0.1	ND	ND	ND-1.0	-	-
C24:0	1.1-2.2	ND	ND	ND-0.1	ND-0.1	ND-0.4	ND-0.5	-	-
C24:1	ND-0.3	ND	ND	ND	ND	ND	0.5-2.5	-	-

ND - non detectable, defined as ≤0.05%
- Data to be supplied

Table 1: Faty acid composition of crude vegetable oils as determined by gas chromatography (expressed in percentage of total faty acids) (continued)

Fatty Acid	Palm Olein	Palm Stearin	Rapeseed Oil	Rapeseed Oil (low erucic acid)	Safflower - seed Oil	Sesameseed Oil	Soya Bean Oil	Sunflower - seed Oil
C6:0	ND	ND	-	ND	ND	ND	ND	ND
C8:0	ND	ND	-	ND	ND	ND	ND	ND
C10:0	ND	ND	-	ND	ND	ND	ND	ND
C12:0	0.1-0.5	0.1-0.4	-	ND	ND	ND	ND-0.1	ND-0.1
C14:0	0.9-1.4	1.1-1.8	0.2	ND-0.2	ND-0.2	ND-0.1	ND-0.2	ND-0.2
C16:0	38.2-42.9	48.4-73.8	1.5-6.0	3.3-6.0	5.3-8.0	7.9-10.2	8.0-13.3	5.6-7.6
C16:1	0.1-0.3	ND-0.2	ND-3.0	0.1-0.6	ND-0.2	0.1-0.2	ND-0.2	ND-0.3
C17:0	ND	ND	ND	ND-0.3	ND	ND-0.2	ND	ND
C17:1	ND	ND	ND	ND-0.3	ND	ND-0.1	ND	ND
C18:0	3.7-4.8	3.9-5.6	0.5-3.1	1.1-2.5	1.9-2.9	4.8-6.1	2.4-5.4	2.7-6.5
C18:1	39.8-43.9	15.6-36.0	8-60	52.0-66.9	8.4-21.3	35.9-42.3	17.7-26.1	14.0-39.4
C18:2	10.4-13.4	3.2-9.8	11-23	16.1-24.8	67.8-83.2	41.5-47.9	49.8-57.1	48.3-74.0
C18:3	0.1-0.6	0.1-0.6	5-13	6.4-14.1	ND-0.1	0.3-0.4	5.5-9.5	ND-0.2
C20:0	0.2-0.6	0.3-0.6	ND-3.0	0.2-0.8	0.2-0.4	0.3-0.6	0.1-0.6	0.2-0.4
C20:1	ND	ND	3-15	0.1-3.4	0.1-0.3	ND-0.3	ND-0.3	ND-0.2
C20:2	ND	ND	ND-1.0	ND-0.1	ND	ND	ND-0.1	ND
C22:0	ND	ND	ND-2.0	ND-0.5	0.2-0.8	ND-0.3	0.3-0.7	0.5-1.3
C22:1	ND	ND	2-60	ND-2.0	ND-1.8	ND	ND-0.3	ND-0.2
C22:2	ND	ND	ND-2.0	ND-0.1	ND	ND	ND	ND-0.3
C24:0	ND	ND	ND-2.0	ND-0.2	ND-0.2	ND-0.3	ND-0.4	0.2-0.3
C24:1	ND	ND	ND-3.0	ND-0.4	ND-0.2	ND	ND	ND

ND - non detectable, defined as ≤0.05%
- Data to be supplied

Table 2: Chemical and Physical Characteristics of crude vegetable oils (see Appendix of the standard)

	Arachis Oil	Babassu Oil	Coconut Oil	Cotton-seed Oil	Grapeseed Oil	Maize Oil	Mustard - seed Oil	Palm Oil	Palm Kernel
RELATIVE DENSITY (x° C/water at 20°C)	0.914-0.917 x=20°C	0.914-0.917 x=25°C	0.908-0.921 x=40°C	0.918-0.926 x=20°C	0.923-0.926 x=20°C	0.917-0.925 x=20°C	0.910-0.921 x=20°C	0.891-0.899 x=50°C	0.899-0.914 x=40°C
APPARENT DENSITY (g/ml))								0.889-0.895 (50°C)	
REFRACTIVE INDEX (N_D 40°C)	1.460-1.465	1.448-1.451	1.448-1.450	1.458-1.466	1.473-1.477	1.465-1.468	1.461-1.469	1.454-1.456 at 50°C	1.448-1.452
SAPONIFICATION VALUE (mg KOH/g oil)	187-196	245-256	248-265	189-198	188-194	187-195	170-184	190-209	230-254
IODINE VALUE* (WIJS)	86-107	10-18	6.3-10.6	100-115	130-138	107-135	92-125	50.0-55.0	14.1-21.0
UNSAPONIFIABLE MATTER (g/kg)	< = 10	< = 12	< = 15	< = 15	< = 20	< = 28	< = 15	< = 12	< = 10
STABLE CARBON ISOTOPE RATIO						-13.71 to -16.36			

	Palm Olein	Palm Stearin	Rapeseed Oil	Rapeseed Oil (low erucic acid)	Safflower-seed Oil	Sesame-seed Oil	Soya Bean Oil	Sunflower Seed Oil
RELATIVE DENSITY (x° C/water at 20°C)	0.899-0.920 x=40°C	0.881-0.891 x=60°C	0.910-0.920 x=20°C	0.914-0.920 x=20°C	0.922-0.927 x-20°C	0.915-0.923 x=20°C	0.919-0.925 x=20°C	0.918-0.923 x=20°C
APPARENT DENSITY (g/ml)	0896-0.898 at 40°C	0.881-0.885 at 60°C						
REFRACTIVE INDEX (N_D40°C)	1.458-1.460	1.447-1.452 at 60°C	1.465-1.469	1.65-1.467	1.467-1.470	1.465-1.469	1.466-1.470	1.461-1.468
SAPONIFICATION VALUE (mg KOH/g oil)	194-202	193-205	168-181	182-193	186-198	187-195	189-195	188-194
IODINE VALUE* (WIJS)	> = 56	< = 48	94-120	110-126	136-148	104-120	124-139	118-141
UNSAPONIFIABLE MATTER (g/kg)	< = 13	< = 9	< = 20	< = 20	< = 15	< = 20	< = 15	< = 15

Iodine values (N_D50°C) shown in the Table were calculated from the fatty acid composition with the exception of those for Mustardseed Oil, Palm Olein, Palm Stearin, Rapeseed Oil and Sesameseed Oil

Table 3: Levels of desmethylsterols in crude vegetable oils as a percentage of total sterols. (see Appendix 1 of the standard)

	Arachis Oil	Babassu Oil	Coconut Oil	Cotton-seed Oil	Grape-seed Oil *	Maize Oil	Palm Oil	Palm Kernel Oil	Rapeseed Oil (low erucic acid)	Safflower - seed Oil	Sesame-seed Oil *	Soya Bean Oil	Sunflower seed Oil
CHOLESTEROL	ND-3.8	1.2-1.7	0.6-3.0	0.7-2.3	0.4	0.2-0.6	2.6-6.7	0.6-3.7	0.5-1.3	ND-0.5	0.1-0.2	0.6-1.4	≤0.7
BRASSICASTEROL	ND-0.2	ND-0.3	ND-0.9	0.1-0.9	0.2	ND-0.2	ND	ND-0.8	5.0-13.0	ND	0.1-0.2	ND-0.3	ND-0.2
CAMPESTEROL	12.0-19.8	17.7-18.7	7.5-11.2	6.4-14.5	10.2	18.6-24.1	18.7-27.5	8.4-12.7	24.7-38.6	9.2-13.0	10.1-20.0	15.8-24.2	7.4-12.9
STIGMASTEROL	5.4-13.2	8.7-9.2	11.4-15.6	2.1-6.8	10.9	4.3-7.7	8.5-13.9	12.0-16.6	ND-0.7	6.5-9.6	3.4-6.4	14.9-19.1	8.0-11.5
BETA-SITOSTEROL	47.4-64.7	48.2-53.9	32.6-50.7	76.0-87.1	67.4	54.8-66.6	50.2-62.1	62.6-73.1	45.1-57.9	40.2-49.8	57.7-61.9	51.7-57.6	56.2-65.0
DELTA-5-AVENASTEROL	8.3-18.8	16.9-20.4	20.0-40.7	1.8-7.3	3.0	4.2-8.2	ND-2.8	1.4-9.0	3.1-6.6	2.1-4.0	6.2-7.8	1.9-3.7	ND-6.9
DELTA-7-STIGMASTENOL	ND-5.1	ND	ND-3.0	ND-1.4	1.2	1.0-4.2	0.2-2.4	ND-2.1	ND-1.3	15.7-22.4	1.8-7.6	1.4-5.2	7.0-24.0
DELTA-7-AVENASTEROL	ND-5.5	0.4-1.0	ND-3.0	0.8-3.3	0.7	0.7-2.7	ND-5.1	ND-1.4	ND-0.8	2.9-5.3	1.2-5.6	1.0-4.6	3.1-6.5
OTHERS	ND-1.4	ND	ND-3.6	ND-1.5	5.1	ND-2.4	ND	ND-2.7	ND-4.2	0.5-2.8	0.7-9.2	ND-1.8	ND-5.3
TOTAL STEROLS (mg/kg)	901-2854	570-766	470-1139	2690-6425	5826	7950-22150	376-617	792-1406	4824-11276	2095-2647	4501-18957	1837-4089	2437-4545

ND - Non-detectable, defined as ≤0.05%

*provisional data

Table 4: Levels of tocopherols and tocotrienols in crude vegetable oils (mg/kg) (see Appendix 1 of the standard)

	Arachis Oil	Babassu Oil	Coconut Oil	Cotton-seed Oil	Grape-seed Oil *	Maize Oil	Palm Oil	Palm Kernel Oil	Rapeseed Oil (low erucic acid)	Safflower seed Oil	Sesame-seed Oil *	Soya Bean Oil	Sunflower seed Oil
ALPHA-TOCOPHEROL	49-373	ND	ND-17	136-674	16-38	23-573	4-193	ND-44	100-386	234-660	ND-3.3	9-352	403-935
BETA-TOCOPHEROL	ND-41	ND	ND-11	ND-29	ND-89	ND-356	ND-234	ND-248	ND-140	ND-17	ND	ND-36	ND-45
GAMMA-TOCOPHEROL	88-389	ND	ND-14	138-746	ND-73	268-2468	ND-526	ND-257	189-753	ND-12	521-983	89-2307	ND-34
DELTA-TOCOPHEROL	ND-22	ND	ND	ND-21	ND-4	23-75	ND-123	ND	ND-22	ND	4-21	154-932	ND-7.0
ALPHA-TOCOTRIENOL	ND	25-46	ND-44	ND	18-107	ND-239	4-336	ND	ND	ND	ND	ND-69	ND
GAMMA-TOCOTRIENOL	ND	32-80	ND-1	ND	115-205	ND-450	14-710	ND-60	ND	ND-12	ND-20	ND-103	ND
DELTA-TOCOTRIENOL	ND	9-10	ND	ND	ND-3.2	ND-20	ND-377	ND	ND	ND	ND	ND	ND
TOTAL (mg/kg)	176-1291	67-128	ND-44	389-1185	240-405	331-3716	150-1500	ND-257	438-2680	246-664	331-1003	601-3363	447-1514

ND - Non-detectable, defined as ≤0.05%
* provisional data
Note: Maize oil also contains ND-52 mg/kg beta tocotrienol

APPENDIX VI

PROPOSED DRAFT STANDARD FOR FAT SPREADS AND BLENDED SPREADS
(At Step 3 of the Procedure)

The Appendix to this Standard contains provisions which are not intended to be applied within the meaning of the acceptance provisions of Section 4.A (I)(b) of the General Principles of the Codex Alimentarius.

1. SCOPE

This Standard applies to fat products, [containing no more than 95% fat], intended primarily for use as spreads. However this Standard does not apply to fat spreads derived exclusively from milk and/or milk products to which only other substances necessary for their manufacture have been added. It only includes margarine and products used for similar purposes and excludes mayonnaise and cheese spreads. Butter and dairy spreads are covered by other Standards.

2. DESCRIPTION

2.1 Fat spreads and Blended Spreads

The products covered by this Standard are foods in the form of an emulsion, principally of water and edible fats and oils, and that is firm and spreadable at 20°C .

2.2 Edible Fats and Oils

"Edible fats and oils" means foodstuffs composed mainly of glycerides of fatty acids. They may contain small amounts of other lipids such as phosphatides, of unsaponifiable constituents and of free fatty acids naturally present in fat or oil. Fats of animal origin must, if originating from slaughtered animals, be obtained from animals in good health at the time of slaughter and fit for human consumption as determined by a competent authority recognised in national legislation. Fats and oils that have been subjected to processes of modification including hydrogenation are included.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Composition

3.1.1 Fat Spreads

3.1.1.1 For these products, any milk fat content must be no more than 3% of the total fat content.

3.1.1.2 The fat content shall be as follows:

(a)	Margarine	80%[- 95%]
(b)	Three-quarter fat margarine	59% - 61%.
(c)	Half fat margarine, Minarine or Halverine	39% - 41%.
(d)	Fat spreads	any other product which meets the specifications in 3.1.1.1, subject to a minimum fat content of 10%.

3.1.2 Blended Spreads

3.1.2.1 The milk fat content of a blended spread must be more than 3% of the total fat content.

3.1.2.2 The fat content shall be as follows:

(a)	Blend	80 [-95%]
(b)	Three-quarter fat blend	59-61%
(c)	Half fat blend	39-41%
(d)	Blended spread	any other product which meets the specifications in 3.1.2.1., subject to a minimum fat content of 10%.

3.2. Permitted Ingredients

The following substances and products derived from them are permitted in the products covered by this standard, in addition to the basic constituents.

- Starter cultures of harmless lactic acid and/or flavour producing bacteria
- Vitamins (Maximum and minimum levels for vitamins A, D and other vitamins, where appropriate, should be laid down by national legislation in accordance with the needs of each individual country including, where appropriate, the prohibition of the use of particular vitamins.)
- Sodium chloride
- Egg yolk
- Edible proteins
- Sugars (i.e. any carbohydrate sweetening material)
- Gelatine
- Natural starches
- Milk and its constituents
- Mono-, di and oligosaccharides (including inulin) and malto-dextrins

4. FOOD ADDITIVES

4.1 COLOURS

		Maximum Level
100	(i) Curcumin or (ii) Turmeric	GMP
160a	(i) Beta-carotene	GMP
160b	Annatto extracts	10 mg/kg (calculated as total bixin or norbixin)
160e	Beta-apo-carotenal	25 mg/kg
160f	beta-apo-8'-carotenoic acid, methyl or ethyl ester	25 mg/kg

4.2 FLAVOURS

Natural flavours and their identical synthetic equivalents and other synthetic flavours, except those which are known to present a toxic hazard.

4.3 EMULSIFIERS

		Maximum Level
322	Lecithins	GMP
	Polyoxyethylene (20) sorbitan	}
432	monolaurate	}
433	mono-oleate	}
434	monopalmitate	} 10 g/kg singly or in combination
435	monostearate	}
436	tristearate	}
471	Mono- and di-glycerides of fatty acids	GMP

472(a)	Acetic and fatty acid esters of glycerol	}
472(b)	Lactic and fatty acid esters of glycerol	}
472(c)	Citric and fatty acid esters of glycerol	}
472(d)	Tartaric acid esters of mono- and di-glycerides of fatty acids	} GMP
472(e)	Diacetyltartaric and fatty acid esters of glycerol	}
472(f)	Mixed tartaric, acetic and fatty acid esters of glycerol	}
473	Sucrose esters of fatty acids	10 g/kg
474	Sucroglycerides	10 g/kg
475	Polyglycerol esters of fatty acids	5 g/kg
476	Polyglycerol polyricinoleate	4 g/kg (for products containing < 41% fat only)
477	Propylene glycol esters of fatty acids	20 g/kg
479a	Thermally oxidised soya bean oil	4 g/kg
479b	Thermally oxidised soya bean oil interacted with mono and diglycerides of fatty acids	10 g/kg
481	Sodium lactylates	}
	(i) sodium stearoyl lactylate	}
	(ii) sodium oleyl lactylate	} 10 g/kg singly or in combination
482	Calcium lactylates	}
	(i) calcium stearoyl lactylate	}
	(ii) calcium oleyl lactylate	}
491	Sorbitan monostearate	
492	Sorbitan tristearate	
493	Sorbitan monolaurate	10 g/kg
494	Sorbitan monooleate	
495	Sorbitan monopalmitate	

4.4 PRESERVATIVES

200	Sorbic acid	} 2000 mg/kg singly or in combination
202	Potassium sorbate	} (as sorbic acid) for fat contents <60%
203	Calcium sorbate	} 1000 mg/kg singly or in combination } (as sorbic acid) for fat contents >60%
210	Benzoic acid	}
211	Sodium benzoate	} 1000 mg/kg singly or in combination
212	Potassium benzoate	} (as benzoic acid)
213	Calcium benzoate	}

4.5 THICKENING AND STABILISING AGENTS

339	Na orthophosphate	}
400	Alginic acid	}
401	Sodium alginate	}
402	Potassium alginate	}
403	Ammonium alginate	}
404	Calcium alginate	}
405	Propylene glycol alginate	}

406	Agar	}
407	Carrageenan and its Na, K, NH_4 salts	}
	(including furcellaran)	}
410	Carob bean gum	}
412	Guar Gum	}
413	Tragacanth gum	}
414	Gum arabic	}
415	Xanthan gum	}
418	Gellan gum	}
422	Glycerol	}
440	Pectins	}
450a	Disodium diphosphate	}
461	Methyl cellulose	}
463	Hydroxypropyl cellulose	}
464	Hydroxypropyl methyl cellulose	}
465	Methyl ethyl cellulose	}
466	Sodium carboxymethyl cellulose	}
500	Sodium carbonates	}
500 (iii)	Sodium sesquicarbonate	}
1400	Dextrine roasted starch	}GMP
1401	Acid treated starch	}
1402	Alkaline treated starch	}
1403	Bleached starch	}
1404	Oxidised starch	}
1405	Enzyme treated starch	}
1410	Monostarch phosphate	}
1411	Distarch phosphate	}
	(Na Trimetaphosphate)	}
1412	Distarch phosphate	}
1413	Phosphated distarch phosphate	}
1414	Acetylated distarch phosphate	}
1420	Starch acetate ester. Acetic anhydride	}
1421	Starch acetate ester. Vinyl acetate	}
1422	Acetylated distarch adipate	}
1440	Hydroxypropyl starch	}
1442	Hydroxypropyl distarch phosphate	}
	Pregelatinised starches	}
	Starch acetate	}GMP
	Cellulose and microcrystalline cellulose	}

4.6 ACIDITY REGULATORS

260	Acetic acid	}
261	Potassium acetate	}
262	Sodium acetate	}
263	Calcium acetate	}
270	Lactic acid (L-, D- and DL-)	}
325	Sodium lactate	}
326	Potassium lactate	}
327	Calcium lactate	} GMP
330	Citric acid	}
331	Sodium citrates	}
	(i) Sodium dihydrogen citrate	}
	(ii) Disodium monohydrogen citrate	}
	(iii) Trisodium citrate	}
332	Potassium citrate	}
333	Calcium citrate	}

334	Tartaric acid	}
335	Sodium tartrates	}
	(i) Monosodium tartrate	}
	(ii) Disodium tartrate	}
336	Potassium tartrate	}
337	Sodium tartrate	}
339	Sodium phosphates	}
340	Potassium phosphates	} GMP
341	Calcium orthophosphate	}
500(i)	Sodium carbonate	}
500(ii)	Sodium hydrogen carbonate	}
524	Sodium hydroxide	}
526	Calcium hydroxide	}
	Phosphoric acid	}
575	Glucono delta lactone	}

4.7 ANTIOXIDANTS

300	Ascorbic acid (L-)	}
301	Sodium ascorbate	}
302	Calcium ascorbate	}GMP
304	Ascorbyl palmitate	}
305	Ascorbyl stearate	}
306	Mixed tocopherols concentrate	}
307	Alpha-tocopherol	}GMP
308	Synthetic gamma-tocopherol	}
309	Synthetic delta-tocopherol	}
310	Propyl gallate	}
319	Tertiary butyl hydroquinone (TBHQ)	}
320	Butylated hydroxyanisole (BHA)	} 200 mg/kg singly or in combination
		}
321	Butylated hydroxytoluene (BHT)	75 mg/kg.
389	Dilauryl thiodipropionate	
	Any combination of gallates, BHA and BHT providing limits for individual compounds are not exceeded	

4.8 ANTIOXIDANT SYNERGISTS

384	Isopropyl citrates	} 100 mg/kg singly or in combination
	Monoglyceride citrate	}
385	Calcium disodium EDTA	} 75 mg/kg

4.9 ANTI-FOAMING AGENTS

900a	Polydimethylsiloxane	10 mg/kg

4.9 FLAVOUR ENHANCERS

508	Potassium chloride	}
509	Calcium chloride	}GMP
510	Ammonium chloride	}
511	Magnesium chloride	}

620	Glutamic acid	}
621	Monosodium glutamate	}
622	Monopotassium glutamate	} 10 g/kg singly or in combination
623	Calcium diglutamate	} (as glutamic acid)
624	Monoammonium glutamate	}
625	Magnesium diglutamate	}
626	Guanylic acid	}
627	Sodium guanylate	}
628	Potassium guanylate	}
629	Calcium guanylate	}
630	Inosinic acid	} 500 mg/kg singly or in combination
631	Disodium inosinate	} (expressed as guanylic acid)
632	Dipotassium inosinate	}
633	Calcium inosinate	}
634	Calcium 5'-ribonucleotides	}
635	Disodium 5'-ribonucleotides	}
959	Neohesperidine dihydrochalcone	5 mg/kg

4.10 MISCELLANEOUS

		Maximum Level
290	Carbon dioxide	GMP
338	Orthophosphoric acid	GMP
405	Propylene glycol	GMP
420	Sorbitol and sorbitol syrup	GMP
421	Mannitol	GMP
551	Silicon dioxide amorphous	500 mg/kg
920	L-cysteine and its hydrochlorides-sodium and potassium salts	
938	Argon	GMP
941	Nitrogen	GMP
942	Nitrous oxide	GMP
953	Isomalt	GMP
965	Maltitol	GMP
966	Lactitol	GMP
967	Xylitol	GMP

5. CONTAMINANTS

5.1 Heavy Metals

The products covered by the provisions of this Standard shall comply with maximum limits being established by the Codex Alimentarius Commission but in the meantime the following limits will apply:

	Maximum Permissible Concentration
Lead (Pb)	0.1 mg/kg
Arsenic (As)	0.1 mg/kg

5.2 Pesticide Residues

The products covered by the provisions of this Standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission for these commodities.

6. HYGIENE

6.1 It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 2 - 1985), and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to the products.

6.2 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

6.3 When tested by appropriate methods of sampling and examination, the product:

-shall be free from micro-organisms in amounts which may represent a hazard to health;
-shall be free from parasites which *may* represent a hazard to health; and
-shall not contain any substance originating from micro-organisms in amounts which may represent a hazard to health.

7. LABELLING

The product shall be labelled in accordance with the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985). The product designations should be translated into other languages in a meaningful way and not strictly word by word.

7.1 Name of the Food

The name of the food to be declared on the label shall be as specified in Sections 3.1.1 and 3.1.2. Where Codex Guidelines for the use of nutrition claims permit claims concerning the fat content of products covered by this Standard, these may be used, where appropriate, as alternatives to the terms, "three quarter" and "half".

7.2 Labelling of Non-Retail Containers

Information on the above labelling requirements shall be given either on the container or in accompanying documents, except that the name of the food, lot identification and the name and address of the manufacturer or packer shall appear on the container.

However, lot identification, and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

7.3 Declaration of Fat Content

7.3.1 The product shall be labelled to indicate typical fat content in a manner found acceptable in the country of sale.

7.3.2 The milk fat content of blended spreads (3.1.2) shall be indicated in a manner that is clear and not misleading to the consumer.

8. METHODS OF ANALYSIS AND SAMPLING

8.1 Determination of lead

According to IUPAC 2.632, AOAC 994.02 or ISO 12193: 1994.

8.2 Determination of arsenic

According to AOAC 952.13, IUPAC 3.136, AOAC 942.17, or AOAC 985.16.

8.3 Determination of Water, Solids-non-fat and Fat Content

According to ISO 3727: 1977, AOAC 920.116 or IDF 80: 1977.

8.4 Determination of Milk Fat Content

According to IUPAC 2.310, AOAC 990.27 or AOCS Ca 5c-87.

8.5 Determination of Salt Content

According to IDF 12B : 1988, ISO CD 1738 or AOAC 960.29.

8.6 Determination of Vitamin A Content

According to AOAC 974.29.

8.7 Determination of Vitamin D Content

According to AOAC 936.14.

8.8 Determination of Vitamin E Content

According to IUPAC 2.432 or ISO 9936: 1997.