codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

JOINT OFFICE: Via delle Terme di Caracalla 00100 ROME Tel.: 57971 Telex: 625825-625853 FAO I Cables: Foodagri Rome Facsimile: (6)5797.4593

ALINORM 95/17

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION
Twenty-first Session
Rome, 29 June - 12 July 1995

REPORT OF THE FOURTEENTH SESSION OF THE CODEX COMMITTEE ON FATS AND OILS
London, United Kingdom
27 September - 1 October 1993

W4/ T 1470/E

Note: This document incorporates Codex Circular Letter 1993/35-FO

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CX 5/15.2

CL 1993/35-FO
November 1993

TO: - Codex Contact Points
- Interested International Organizations
- Participants at the 14th 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 14th Session of the Codex Committee on Fats and Oils (ALINORM 95/15)

MATTERS FOR ADOPTION BY THE 21th SESSION OF THE CODEX ALIMENTARIUS COMMISSION

Draft Standards at Step 8 of the Procedure

1. Draft Standard for Palm Olein (para. 24, Appendix II)

2. Draft Standard for Palm Stearin (para. 24, Appendix III)

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 October 1994**.

Proposed Draft Standards and Code at Step 5 of the Procedure

3. Proposed Draft Code of Practice for the Storage and Transport of Fats and Oils in Bulk (para. 48, Appendix IV)

4. Proposed Draft Standard for Edible Fats and Oils not Covered by Individual Standards (para.58, Appendix V)

5. Proposed Draft Standard for Products Sold as an Alternative to Ghee (para. 62, Appendix VI)

6. Proposed Draft Standard for Named Animal Fats (para. 71, Appendix VII)

7. Proposed Draft Standard for Named Vegetable Oils (para. 79, Appendix VIII)

8. Proposed Draft Standard for Fat Spreads (para. 117, Appendix IX)

Government are also invited to comment on the additional list of additives proposed in para. 116, especially as regards their technological need.

9. Proposed Draft Standard for Olive Oils and Olive-Pomace Oils (para. 135, Appendix X)

10. Proposed Draft Standard for Mayonnaise (para. 158, Appendix XI)

Governments wishing to submit comments on the implications which the above documents may have for their economic interests should do so in writing in conformity with the Procedure for the elaboration of Worldwide Standards at Step 5 to the Secretary, Joint FAO/WHO Food Standards Programme, FAO, via delle Terme di Caracalla, 00100 Rome, Italy, **before 30 October 1994**.

SUMMARY AND CONCLUSIONS

The summary and conclusions of the 14th 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 Palm Olein and the Draft Standard for Palm Stearin** (para. 24, Appendix II and III)
- agreed to advance to Step 5 the **Proposed Draft Revised Code of Practice for the Storage and Transport of Fats and Oils in Bulk** (para. 48, Appendix IV)
- agreed to advance to Step 5 the **Proposed Draft Standard for Edible Fats and Oils not Covered by Individual Standards** (para. 58, Appendix V)
- agreed to advance to Step 5 the **Proposed Draft Standard for Products Sold as an Alternative to Ghee** (para. 62, Appendix VI)
- agreed to advance to Step 5 the **Proposed Draft Standard for Named Animal Fats** (para. 71, Appendix VII)
- agreed to advance to Step 5 the **Proposed Draft Standard for Named Vegetable Oils** (para. 79, Appendix VIII)
- agreed to advance to Step 5 the **Proposed Draft Standard for Fats Spreads** (para. 117, Appendix IX)
- agreed to advance to Step 5 the **Proposed Draft Standard for Olive Oils and Olive-Pomace Oils** (para. 135, Appendix X)
- agreed to advance to Step 5 the **Proposed Draft Standard for Mayonnaise** (para. 158, Appendix XI)

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LIST OF APPENDICES

OPENING OF THE SESSION (Agenda Item 1)

1. The Codex Committee on Fats and Oils held its 14th Session from 27 September to 1 October 1993 in London, under the Chairmanship of Dr. J.R. Bell, by courtesy of the Government of the United Kingdom. The Session was attended by 64 delegates and observers from 17 countries and 8 international organizations. A complete list of participants is included as Appendix I to this report.

2. The Permanent Secretary for the Ministry of Agriculture, Food and Fisheries of the United Kingdom, Mr. Richard Packer, welcomed all participants to London on behalf of the government of the United Kingdom. He stressed that the change in emphasis agreed at the Codex Alimentarius Commission from vertical standards to an horizontal approach involving common rules across a whole range of foodstuffs was leading to a welcome revision and simplification of Codex standards and related texts. Mr. Packer wished the Committee success in its consideration of the various items before it.

ADOPTION OF THE AGENDA (Agenda Item 2)

3. The Committee adopted the Provisional Agenda (CX/FO 93/1) as proposed.

MATTERS OF INTEREST ARISING FROM THE CODEX ALIMENTARIUS COMMISSION AND OTHER CODEX COMMITTEES (Agenda Item 3A)

4. The Committee had before it document CX/FO 93/2 when discussing this agenda item. This summarized matters of interest arising from the 20th Session of the Codex Alimentarius Commission and other Codex Committees and included a presentation of the Committee's Medium-Term Programme of Work, as included in Appendix I of the working paper.

5. The Committee was also informed of the forthcoming FAO/WHO Expert Consultation on Fats and Oils in Human Nutrition, which is scheduled to be held in Rome, Italy, from 19-26 October 1993.

6. As the Committee noted that the items in the working paper were for information only or were scheduled for consideration elsewhere, these subjects were not discussed in detail.

MATTERS OF INTEREST ARISING FROM OTHER INTERNATIONAL ORGANIZATIONS (Agenda Item 3B)

7. The Committee was not provided with general statements concerning this subject, as specific international organization interventions were made under the relevant agenda items.

DRAFT STANDARD FOR PALM OLEIN AND DRAFT STANDARD FOR PALM STEARIN (Agenda item 4)

8. The Committee had for its consideration CL 1993/17-FO presenting the aforesaid draft standards and CX/FO 93/3 containing the comments of Denmark, Malaysia, Norway, Thailand, IFMA, IDF. The Chairman recalled that the drafts had been prepared in consultation with the Palm Oil Research Institute of Malaysia, circulated for comments at Step 4 and adopted at Step 5 by the 19th Session of the Commission. It was then agreed that the draft standards should be amended to take into account the extensive government comments received, and in the light of the recommendations of the Commission regarding the format of Codex standards. It was pointed out that non-essential composition factors were contained in Appendix 1 and Additives in Appendix 2, as this section would be replaced with the General Standard on Food Additives when adopted. The provisions for food additives would be forwarded to the Committee on Food Additives and Contaminants for endorsement.

DRAFT STANDARD FOR PALM OLEIN

9. The Committee agreed to delete the first sentence of the foreword, as it was a general statement repeating the recommendations of the Commission and should not be part of the standard itself. Since this statement appeared in all standards, the Committee suggested that the Commission should consider this matter generally. It was further agreed to add at the end of the second sentence that the provisions were intended "to facilitate trade". The Delegation of Malaysia objected to the retention of the wording "..and which are strongly recommended to traders to form, where appropriate, the basis of sales and purchase contracts".

1. Scope

10. The Committee sought to clarify the types of palm olein which were actually covered by the Scope. The Delegation of Malaysia confirmed that the neutralised palm olein and the neutralised bleached palm olein were edible without further processing and were marketed as such.

2. Description

11. The Committee considered the provisions which should be included into the main body of the standard. In reply to a question on previous discussions regarding the mandatory status of the GLC ranges of fatty acid composition, the Chairman recalled that the Committee on General Principles and the Commission had recommended to retain, among other criteria, essential provisions with respect to trade; the Committee agreed that as such were the GLC ranges, they should be included. The Committee agreed to include the GLC ranges as currently drafted under a new **Section 3. Essential Composition and Quality Factors.** It was consequently agreed to refer to "other" factors in Appendix 1 instead of "essential" factors. Some countries regarded the ranges themselves as too narrow to encompass all products actually traded and proposed to amend them accordingly. The Committee was however of the view that the present values were acceptable and did not restrict trade and adopted the values proposed in the draft.

12. After an extensive exchange of views on the other essential factors to be defined in this section, the Committee agreed that the slip point should be included. Some countries proposed to include the iodine value but the Committee felt that the GLC ranges and slip point adequately defined the essential characteristics of palm olein.

7. Labelling

13. The Committee agreed to delete the term "edible" in the Name of the Food, so as to be consistent with other fats and oils standards, as all products covered by the standards were edible.

Appendix 1 - Other Composition and Quality Factors

1. Physical and Chemical Characteristics

1.1 Density

14. The Committee agreed to the proposal of the Delegation of Malaysia to include the Apparent Density of 0.8969 - 0.8977 g/ml at 40 °C as an alternative to the Relative Density as Point 1.1.1.

2. Quality Characteristics

2.4 Peroxide value

15. Some delegations were of the opinion that the peroxide value was too high and should be 1 instead of 10. Other delegations pointed out that it was not realistic to set such a low value, which could not be found in practice after transport and/or storage. It was suggested to establish different values for fats and

oils intended for direct consumption and other products; the Committee was however of the view that only one value should be adopted. After an extensive exchange of views on the matter, the Committee adopted a peroxide value of 5 meq. active oxygen/kg oil. The Delegation of Malaysia objected to this decision and indicated that the value of 10 meq. should be retained, in view of current evidence on actual values during transport and storage.

2.3 Total carotenoids

16. The Delegation of Switzerland pointed out that in conjunction with this provision, the method of analysis for carotenoids should be updated, as the current method (as indicated in 3.9) applied only to total carotenoids (see also para. 61). The Committee agreed to refer this matter to the Committee on Methods of Analysis and Sampling.

2.5 Acidity

17. The Committee noted that the acidity value in other standards for fats and oils was 0.6 mg KOH/g and agreed to adopt the same value for palm olein, without specifying the type of olein, as it was understood that only edible products were covered by the standard and that the same value should apply to all of them.

2.9 Iron - 2.10 Copper

18. Some delegations were of the view that the levels should be reduced so as to protect the consumer and to reduce oxidation. The Delegation of Malaysia indicated that they could accept the present value for neutralised bleached and deodorised olein but that the levels of 5 mg for iron and 0.4 mg for copper should be applied to neutralised unbleached olein. The Committee agreed to differentiate the levels as proposed.

3. Methods of Analysis and Sampling

3.6 Determination of Slip Point

19. The Committee agreed to substitute the BS 684 method with the AOCS cc 3-25 method for slip point, with the understanding that this method would be submitted for endorsement to CCMAS.

Appendix 2 - Additives

20. Some delegations were of the view that the use of additives should be restricted, especially colours, flavours and anti-oxidants, and pointed out that technological need should be justified in any case. The Delegation of Malaysia proposed to replace the level of 500 mg for tocopherols and tocotrienols by a reference to GMP and the Committee adopted this proposal. The corresponding footnote was subsequently deleted. The Committee agreed to retain the current section on food additives.

DRAFT STANDARD FOR PALM STEARIN

21. The Chairman indicated that the conclusions reached for palm olein also applied to palm stearin, and additional specific provisions were amended as follows.

3.1 Slip Point

22. The Committee agreed to a value of not less than 44°C for slip point (instead of 45°C).

Appendix 1 - 1.1 Density

23. The Committee agreed to the proposal of the Delegation of Malaysia to include the Apparent Density of 0.8813 - 0.8844 g/ml at 60°C as an alternative to the Relative Density.

Status of the Draft Standard for Palm Olein and the Draft Standard for Palm Stearin

24. The Committee agreed to advance the Draft Standards to Step 8 of the Codex Procedure for adoption by the 21th Session of the Commission. The revised texts are attached to the present report as Appendices II and III.

PROPOSED DRAFT REVISED CODE OF PRACTICE FOR THE STORAGE AND TRANSPORT OF EDIBLE FATS AND OILS IN BULK (Agenda Item 5)

25. The Committee had for its consideration document CL 1993/18-FO, which included the Proposed Draft Revised Code of Practice for the Storage and Transport of Fats and Oils in Bulk. Comments from Malaysia, Norway and the Federation of Oils, Seeds and Fats Associations Ltd (FOSFA) were summarized in document CX/FO 93/4.

26. In introducing the subject Code, the Committee was informed that the 17th Session of the Codex Alimentarius Commission had adopted the previous Code of Practice for the Transport of Edible Oils and Fats in Bulk at Step 8 of the Codex procedure (paras. 339-340, ALINORM 87/39), which was subsequently published in Volume 8 of the Revised Codex Alimentarius (CAC/RCP 36-1987). However, as the Commission attached considerable importance to the further extension of the Code, especially in regard to the contamination of oil by previous and co-transported cargoes, the FOSFA agreed to coordinate future work on this aspect.

27. In order to facilitate its discussions, the Committee discussed the Code section-by-section and agreed to the following amendments.

Use of the Code

28. The Committee agreed to delete the phrase "..as far as possible.." from the third paragraph of this Section, as it was felt that the principles of the Code should be closely followed in the design of oil storage facilities.

29. The Committee agreed to delete the last paragraph of this Section (i.e., para. 4), as it appeared evident that existing oil storage facilities would need to be upgraded to comply with the Code over a period of time.

1. **Scope**

30. Some delegations were of the opinion that the last sentence of this Section should be completely removed, as national and international organizations often did not have access to information on minimum requirements for the storage and transport of oils to ensure product wholesomeness and because this requirement was already covered in Section 2. It was felt that this sentence might create, as opposed to lessen, barriers to trade. The listing of "Contract Issuing Bodies" (Appendix II) as related to this sentence was also questioned as being incomplete and irrelevant to the Code.

31. Other delegations were of the opinion that both the sentence and/or its corresponding Appendix should be maintained, as the Associations listed were a valuable source of information. These delegations were of the view that the Code should retain at least the sentence in the last part of the provisions concerning the "Use of the Code". It was also suggested that the List of Acceptable Previous Cargoes proposed in written comments by FOSFA would be an alternative assurance of product wholesomeness if included as an appendix to the Code.

32. After taking account of the above discussions, the Committee agreed to move the last sentence of the Scope section to the end of the provisions concerning "Use of the Code", while maintaining the corresponding list of national and international associations in Appendix II (also see para. 45-47 below). The Delegation of Malaysia expressed its reservation and maintained its view that these organizations should not appear on the list as they had not been consulted; the Malaysian associations were consequently removed from the list.

2.1.3 Contamination

33. In reference to the second paragraph of this Section, the Delegation of Malaysia was of the opinion that the reference to the FOSFA or NIOP Lists of Acceptable Previous Cargoes should be removed, as these requirements would create barriers to trade and were normally handled through trade associations or buyers/sellers under contract. In this regard, it was suggested that the second paragraph of this section be replaced by a reference to contractual collaboration at the end of paragraph one. It was also proposed by FOSFA that a List of Banned Immediate Previous Cargoes might be more relevant to this section.

34. Other delegations, while recognizing the importance of facilitating international trade, were of the opinion that protection of consumer health should take precedence as buyer/seller arrangements were often lacking in this regard. It was suggested that both lists concerning Acceptable and Banned Previous Cargoes should be included in the Code.

35. After considering the above interventions, the Committee agreed to leave the text of this Section as currently drafted, with the understanding that a reference to international association Lists of Banned Immediate Previous Cargoes would be added to the end of paragraph one. The Delegation of Malaysia however expressed its strong objection to this inclusion in view of current trade practices and maintained its view that present conditions were workable and operational. The Committee also agreed that the actual Lists of Banned and Acceptable Previous Cargoes would not be included in the Code.

36. Furthermore, the Committee agreed that this Section should be forwarded to the Codex Committee on Food Additives and Contaminants for information and comments, with the understanding that details concerning the Lists of Acceptable and Banned Previous Cargoes would also be provided if requested. The Delegation of the Netherlands, supported by the Delegation of Canada and the Observer from IFMA, proposed the inclusion of a paragraph containing a recommendation on how to handle contaminated cargoes.

3.1.3 Ship's Tanks

37. The Committee agreed to delete this Section, as it was felt that provisions concerning tank coatings were already adequately covered in Section 3.1.6(b).

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

38. The Committee agreed that a full reference to the International Organization for Standardization requirements for "ISO Tank Containers" would be included in this Section for completeness.

3.1.5 Heating Facilities - Tanks

39. The Committee agreed with a proposal to modify the last sentence to reflect that heating facility materials should also meet any appropriate legislation concerning materials in contact with food.

3.1.6 Materials

40. The Committee agreed to a modification of provision (a) in this Section to reflect that all materials used in the construction of tanks and ancillary equipment coming in contact with oils and fats should also meet any appropriate legislation concerning materials in contact with food.

41. In addition, the Committee agreed that a full reference to "Swedish Standard SS 055999" (Grades of Rust) would be included in provision (b) of this Section.

3.2.3 Flexible Hoses

42. The Committee agreed to add the phrase "or other inert materials" to the end of the last sentence in this Section.

Appendix 1 - Table 1

43. The Committee agreed to amend Table 1 of the Code as proposed by FOSFA in their written comments with the following modifications:

- Acid Oils, Fish Acid Oil, Mixed Soft Rape Acid Oil, Oiticica Oil, PFAD and/or Palm Acid Oil and Soya/Sun/Maize Acid Oils were removed, as these products were not considered to be edible, and;

- the Temperatures at Discharge for Fish Oil and for Palm Kernel Stearin would remain as previously drafted (i.e., between 25 and 30 and 40 to 45 degrees C, respectively), as evidence supporting the proposed changes was not available;

44. The Committee also noted that France would provide additional information on their proposal to change the Voyage and Discharge Temperatures for Lard and for Tallow in their future written comments.

Appendix 2

Contract Issuing Bodies

45. In view of the Committee's previous decision to retain the sentence concerning the availability of information from national and international associations within the provisions regarding Use of the Code (see para. 32 above), the Committee decided to change the title of this portion of the Appendix to "National and International Associations" for consistency.

Bibliography

46. The Committee agreed to replace the 4th and 5th entries of the Bibliography with the following:

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

47. The Committee also agreed to delete the 11th entry of the Bibliography, which referenced the "NIOP Research List".

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

48. The Committee agreed to advance the Proposed Draft Code as modified to Step 5 for adoption by the 21th Session of the Commission. The revised text is attached to this report as Appendix IV.

REVISION OF CURRENT CODEX STANDARDS (Agenda item 6)

49. The Committee had before it CL 1993/16-FO and its Addendum presenting the Proposed Draft Standards, and document CX/FO 93/5, containing the comments received from Canada, Malaysia, Sweden and the United Kingdom. The Chairman recalled that the texts had been redrafted in the light of the

recommendations of the 19th Commission Session and the Committee on General Principles regarding the format of Codex standards. As many provisions were common to several standards, it had appeared appropriate to combine them into group standards.

50. The Committee agreed that, following its decision to include the GLC ranges of fatty acid composition in the Essential Composition and Quality Factors for Palm Olein and Palm Stearin (see para. 11), they would be included in the other standards as well. Other amendments of a general nature agreed upon under Agenda item 4 would also be included in the texts.

PROPOSED DRAFT STANDARD FOR EDIBLE FATS AND OILS NOT COVERED BY INDIVIDUAL STANDARDS

2. Descriptions

51. In point 2.2 Virgin Fats and Oils, the Committee agreed to specify that the process should not alter the oil. It was further agreed to remove the last part of the sentence (in square brackets) referring to competent authorities.

52. The Committee agreed to add a definition of Cold Pressed Fats and Oils (point 2.3) and had an exchange of views on the definition thereof and the necessity to set a limit as to temperature. It was however agreed that as no heat should be applied to cold pressed oils, the definition should not refer to temperature. Reference to Cold Pressed Fats and Oils would consequently be included in the relevant sections of the Proposed Draft.

6. Labelling

53. The Committee agreed to delete Section 6.1 as it was of a general nature and did not appear necessary. The delegations of Norway and Sweden objected to the removal of this paragraph, feeling that its provisions would still be useful. It was further agreed to add a paragraph referring to Cold Pressed Fats and Oils.

Appendix 1

1.9 Peroxide Value

54. Some delegations expressed the view that a value of 5 should be adopted for all products; however several other delegations regarded this figure as too low for virgin oils. The Committee consequently agreed to a value of 10 for virgin oils and cold pressed oils, and 5 for all other products. The Delegation of Malaysia expressed its reservation as it was of the view that a value of 10 should apply to all fats and oils, and that no adequate justification existed for its reduction.

Appendix 2 - Additives

55. The Secretariat informed the Committee of the recommendations of JECFA, as considered by the 25th Session of the Committee on Food Additives and Contaminants (ALINORM 93/12A, Appendix IV) regarding the revision of the ADI for propyl gallate and of the PTWI for lead. It was pointed out that a general review of levels for food additives was currently being undertaken in the framework of the Draft General Standard for Food Additives.

56. The Committee had an exchange of view on the use of flavours and agreed to retain the wording used in the Standards for Palm Olein and Palm Stearin.

57. The Delegation of Switzerland expressed its reservation on the use of BHT and BHA, which were not allowed by its national regulations. The Delegation of France expressed its reservation on the inclusion of TBHQ, pointing out that its use was not allowed in the EEC.

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

58. The Committee agreed to advance the Proposed Draft Standard to Step 5 of the Codex Procedure for adoption by the 21th Session of the Commission. The revised text is attached to the present report as Appendix V.

PROPOSED DRAFT STANDARD FOR PRODUCTS SOLD AS AN ALTERNATIVE TO GHEE

59. The Chairman recalled that this standard covered the provisions of the current Standard for Specified Vegetable Products and the Standard for Specified Animal or Mixed Animal and Vegetable Products. The Delegation of Norway drew the attention of the Committee to the discussions previously held by the Committee on the title of the standard, pointing out that the Milk Committee would need to be consulted on this matter. The Delegation of Malaysia expressed the view that it might not be appropriate to combine the two previous standards at this stage as they covered different products commonly found on the market under different names in some countries.

60. The Committee agreed to delete "approximately" on the equivalence between beta-carotene and retinol, as this factor had been adopted by the Commission as part of the revised Table of Nutrient Reference Values in the Guidelines on Nutrition Labelling.

61. The Committee noted that, as previously indicated in the discussion on Palm Olein with respect to the determination of Total Carotenoids, it would be necessary to update the current method, especially as to the determination of α carotene and that this matter would be brought to the attention of the Committee on Methods of Analysis and Sampling with respect to all relevant commodities.

Status of the Proposed Draft Standard for Products Sold as an Alternative to Ghee

62. The Committee agreed to advance the Proposed Draft Standard to Step 5 of the Codex Procedure. The revised text is attached to the present report as Appendix VI.

PROPOSED DRAFT STANDARD FOR NAMED ANIMAL FATS

63. The Chairman recalled that the Proposed Draft covered the provisions of the standards for Lard, Rendered Pork Fat, Premier Jus and Edible Tallow.The Committee agreed to amend the texts as follows.

2. DESCRIPTION

2.1. Lard

64. The Committee discussed the possibility to include lard containing refined lard, lard stearin and hydrogenated lard under the description of "lard" and agreed to retain the provisions of the current Standard for Lard providing for a clear distinction between these products.

2.2 Edible Tallow

65. The Committee also agreed to retain the provisions of the current standard for Edible Tallow, and not to include products containing refined edible tallow under the description of "edible tallow". The Committee agreed to delete the reference to Bos taurus as other bovine species might be concerned.

3. Essential Composition and Quality Factors

66. The Committee agreed to modify the range for C 16:1 to read 1.0 to 5.0 for lard.

Appendix 1

67. The Committee agreed to add that the products should be free "from rancid odour and taste" (1.2).

68. The Committee agreed to refer to sodium soap content, as calcium soap might be present naturally in animal fats (1.5).

69. The Committee agreed to set a peroxide value of 5 meq. for all animal fats (1.9).

3. Chemical and Physical Properties

70. The Committee noted that 2.1 Relative Density should be measured at 40°C/water at 20°C and Refractive Index at 40°C. The Committee agreed that the levels of sterols would be included at a later date when the information became available through circular letter.

Status of the Proposed Draft Standard for Named Animal Fats

71. The Committee agreed to advance the Proposed Draft Standard to Step 5 of the Codex Procedure for adoption by the 21th Session of the Commission. The revised text is attached to the present report as Appendix VII.

PROPOSED DRAFT STANDARD FOR NAMED VEGETABLE OILS

72. The Chairman pointed out that amendments of a general nature which had been previously agreed upon for other draft standards would apply to vegetable oils as well. The Committee considered the possibility of including the provisions for palm olein and palm stearin in the standard. Some delegations indicated that in view of the necessity of establishing international standards for palm olein and palm stearin, the Committee should not rescind its decision to advance the drafts to Step 8. At the suggestion of the Chairman, the Committee agreed that the draft standards for palm olein and palm stearin would be proposed for adoption by the Commission with a recommendation that they should be integrated into the Standard for Named Vegetable Oils. The Committee agreed to the following amendments to the Proposed Draft.

3. Essential Composition and Quality Factors

73. The Committee had an exchange of views on the contents of erucic acid in Low Erucic Acid Rapeseed Oil and agreed to a proposal to reduce the current level to 2%, with the understanding that additional comments would be requested at Step 6 on this matter. The Delegation of Canada pointed out that the change in the acid erucic level would affect the ranges of other fatty acids, and that it would supply the Committee with a proposal for new ranges.

Appendix 1

74. The Committee adopted an acid value of 10 for virgin palm oil, so as to take into account the specificity of fruit flesh oil (1.7).

Table 2

75. The Committee agreed to a proposal by the Delegation of Malaysia to retain the present values for palm oil and palm kernel oil with the amendment to C 16:0 of palm oil to 40.1 - 47%. The Committee discussed the GLC ranges and agreed to a number of amendments proposed by some delegations. The Committee discussed the possibility and necessity for broadening the ranges of fatty acid composition in view of the introduction of new oil seed species and hybrids, and noted that this question should be considered in detail at its next session.

Table 3

76. The Delegation of Germany, supported by the Delegation of France, was of the view that the percentage of cholesterol in arachis oil should be 0.8 instead of 3.8. The Delegation of France drew the attention of the Committee to the risk of establishing ranges which might be too wide, especially for sterols which were indicators of adulteration. The Observer from FOSFA indicated that these values were adequate for crude oils, but could be lower for refined oils. The Committee agreed to retain the levels as currently drafted for the moment until further information was available.

Table 4

77. The Committee had an exchange of views on the levels of tocopherols and tocotrienols proposed and the methods used for their determination. In reply to a question, the Chairman indicated that they had been determined by a HPLC method and that they could also be expressed in percentages of total tocopherols and tocotrienols. The Committee agreed on the values proposed in the Table, with the understanding that further comments would be requested for detailed consideration by the next session of the Committee.

Appendix 2 - Additives

78. The Committee agreed to specify that no additives should be permitted in virgin oils. The Delegation of Sweden proposed that this should also apply to cold-pressed oils.

Status of the Proposed Draft Standard for Named Vegetable Oils

79. The Committee agreed to advance the Proposed Draft Standard to Step 5 of the Codex Procedure for adoption by the 21th Session of the Commission. The revised text is attached as Appendix VIII.

PROPOSED DRAFT STANDARD FOR FAT SPREADS (Agenda Item 7)

80. In discussing this agenda item, the Committee had for its consideration document CL 1993/19-FO, which contained the proposed draft Codex Standard for Fat Spreads. Comments submitted in response to the Circular Letter from New Zealand, Norway, Sweden, the International Dairy Federation (IDF) and the International Federation of Margarine Associations (IFMA) were summarized in paper CX/FO 93/6.

81. The Committee was informed that the 19th Session of the Commission had agreed that the Codex Committee on Fats and Oils should develop a standard for all fat spreads in consultation with the Steering Committee of the Joint FAO/WHO Committee of Government Experts on the Code of Principles concerning Milk and Milk Products (i.e., the new Codex Committee on Milk and Milk Products), the IDF and the IFMA (para. 361, ALINORM 91/40).

82. As the Commission requested the Codex Committee on Fats and Oils to review all existing Codex standards, provisions for Margarine and Minarine had been incorporated in the Proposed Draft Standard, while recommending that the current draft should replace the existing Codex Standards for these products (CODEX STAN 32-1981 and 135-1981, respectively). It also seemed logical that for completeness, the Proposed Draft Standard should include butter.

83. The Committee was informed that the Guidelines for Fat Spreads agreed to by the IDF and IFMA in September 1992 had been taken into account. In addition, the Committee noted that use of terms such as "low" and "reduced" had not been addressed in the Standard as they were the responsibility of the Codex Committee on Food Labelling.

84. In discussing the Proposed Draft Standard (CL 1993/19-FO) point-by-point, the Committee agreed to the following changes:

1. Scope

85. Some delegations were of the opinion that butter should not be included in the proposed draft Standard, as this was a product with special characteristics which should logically be considered by the Codex Committee on Milk and Milk Products as it was felt to be outside the CCFO terms of reference. It was also suggested that margarine should not be included in the standard, as the inclusion of either margarine or butter went beyond the instructions of the Commission.

86. Other delegations, while agreeing that butter was a special case, indicated that as the Proposed Draft Standard was intended to cover all fat spreads, this would include products from all sources in order to ensure a general standard applicable to all similar products. It was also stressed that the current standard for butter (A-1) had simply been incorporated into the draft, and that the Commission or its Executive Committee had the ultimate authority in determining which Committee should develop the standard. Some delegations were of the opinion that if butter was to be included in the standard, it should include specific provisions for the product in question.

87. The Chairman clarified that in order to prevent confusion by the existence of two butter standards, the current Codex Standard for Butter (A-1) would remain applicable until such time as the Codex Standard for Fat Spreads was adopted by the Commission. In view of this explanation, the Committee agreed that a footnote referencing the current Codex Standard for Butter (A-1) was not required.

88. After considering written and oral comments concerning the Scope of the Standard, the Committee agreed that butter should remain in the Standard as currently drafted. The Committee also agreed to modify the first sentence of the Scope section to indicate that the Standard was intended for products primarily used as spreads in order to take account of other product uses. In addition, the Committee agreed to modify the second sentence to indicate that the Standard only included butter, margarine and products used for similar purposes.

2.1 Fat Spreads

89. While recognizing that these products had a variety of uses, the Committee agreed to remove the term "spreadable" from this section. The Delegation of France indicated that in view of this change and of the discussion on the use of the product the term used in the French text and title of the standard should be "graisses tartinables" rather than "graisses à tartiner", and the Committee accepted this amendment.

3.1 Composition

Sections 3.1.1.1 and 3.1.1.3

90. The Delegations of France and Spain, while noting the difficulties in translating the terms "half fat" and "three-quarter fat", suggested the alternate product name descriptors of "low" and "light", respectively.

91. The Committee agreed, however, that such terms should be discussed by the Codex Committee on Food Labelling (also see para. 104 below).

92. As indicated in their written comments, the Delegation of Sweden reiterated that they did not support the proposed classification into three product groups and the restricted fat contents as contained in Section 3.1.1.3, especially since the standard required an indication of fat content on the label.

93. However, the Committee did not agree to the Swedish proposal as it was felt that the fat ranges and their corresponding names were an integral part necessary for the interpretation of the Standard. The Delegation of Sweden objected to this decision.

3.1.3 Mixed Fat Spreads

94. As several delegations were of the opinion that the differentiation between Fat Spreads (Section 3.1.2) and Mixed Fat Spreads was unnecessary, the Committee agreed to delete Section 3.1.3 in its entirety (i.e., including 3.1.3.1).

95. The Committee also agreed that Sections 3.1.1 and 3.1.2 would remain unchanged.

Section 3.2 - Optional Ingredients

3.2.1 Vitamins

96. As several delegations were of the opinion that vitamin concentrations in foods were measured by different means, it was suggested that maximum and minimum levels should not be specified. Section 3.4 of the current Codex Standard for Specified Vegetable Fat Products (CODEX STAN 157-1987) was suggested as alternative wording (Volume 8 of the Revised Codex Alimentarius), as it left the control of vitamin levels to national governments according to their individual needs.

97. In view of this discussion, the Committee agreed to maintain the previous text of the Standard, with the understanding that specific levels of vitamins would not be indicated.

3.2.2 Miscellaneous Ingredients

98. Several delegations were of the opinion that egg yolk should not be included in the Standard, especially in view of its allergenic properties to significant segments of the population and its potential to be carried over into the final product. It was also noted that consumers did not expect to find egg yolks in fat spreads.

99. However, other delegations stressed that these were optional ingredients and if egg yolks were used, they would be listed in the ingredients list on the label. It was also indicated that egg yolks were food in and of themselves which were often required as emulsifiers for the products in question, which satisfied requirements for technological need. The Delegation of Sweden, supported by the Delegations of Norway, Switzerland and the United States, expressed the view that the restrictions on these substances should apply not only to butter itself, but to three-quarter fat butter and half fat butter (as defined in 3.1.1.3) as well.

100. In view of the above discussions, the Committee agreed to leave this Section as currently drafted, with the understanding that the beginning of the first sentence would be modified to clarify that milk would remain as a basic constituent of butter (i.e., Except for their main constituents, ...).

3.3 Processing Aids

101. The Committee agreed to modify this sentence to read as "Cultures of harmless lactic acid and flavour producing bacteria may be used", as it was noted that harmless lactic acid and other types of bacteria were often used for flavouring purposes.

102. The Delegation of Germany objected to this decision, as they felt that a specific listing of the bacteria cultures concerned should be included in this provision.

7.1 Name of the Food

103. The Committee agreed to delete the term "blended" in part (a) of this Section (lines 1 and 3), in view of its previous decision to delete the provisions concerning Mixed Fat Spreads (Section 3.1.3). The Delegation of Germany proposed that specific labelling should apply to recombined butter.

104. While noting the Committee's previous discussions concerning the difficulty in using the product name qualifiers "half" and "three-quarter" in reference to spreads (see paras. 90-91 above), some delegations expressed the view that there was a great difference between labelling claims and actual product name descriptors in regard to reduced fat products. The Observer from IFMA expressed concern that the Committee could not reach a decision on labelling matters in this instance in view of their importance. While the Committee agreed to maintain its previous position that this issue should be addressed by the Codex Committee on Food Labelling (see paras. 90-91 above), the importance of discussing these differences was stressed.

7.2 Declaration of Fat Content

105. The Committee agreed to modify the sentence in Section 7.2.1 of this provision to indicate that "The total fat content of products must be declared in close proximity to the name of the food", for the correct information of the consumer as nutrition labelling for these products in regard to fat content was not always required. The Delegation of the Netherlands proposed that where appropriate milk fat contents should also be declared.

8 Methods of Analysis and Sampling

106. The Committee agreed to modifications in this Section as requested in written comments submitted by IDF/IFMA, with the understanding that the actual specific method references needed to be provided.

Appendix 2 - Food Additives

Section 1 - Colours

107. The Committee, while agreeing that curcumin [100(i)] and turmeric [100(ii)] in Section 1.1 should not be allowed in butter, agreed to move these substances to Section 1.2.

108. The Committee also agreed that the maximum level for beta-carotene [(160(a)] in Section 1.1 should be changed to GMP.

Section 2 - Flavours

109. The Committee, while noting that some countries did not allow the use of flavours in any spreads, agreed to leave this section as currently drafted in view of technological need.

Section 3 - Emulsifiers

110. The Committee agreed that dimethylpolysiloxane (i.e., polydimethylsiloxane - 900a) should be removed, as it was already included in Section 9 - Anti-Foaming Agents.

Section 6 - pH Correcting Agents

111. The Committee agreed to move lactic acid and its calcium, sodium and potassium salts (270) from Section 6.2 to Section 6.1 as it should be permitted in all products.

Section 10 - Flavour Enhancers

112. The Committee agreed that a sentence indicating that these additives were not allowed in butter would be added to the beginning of this section.

113. The Committee noted that neolusperidine (i.e., neohesperidine dihydrochalcone - 959) was classified as a sweetener; however the Observer from IFMA indicated that when used at low levels it was a flavour enhancer; it was therefore retained under section 10 as well as xylitol (967).

Section 11 - Sweeteners

114. The Committee agreed to delete this section in its entirety, as it was felt that non-nutritive sweeteners should not be allowed in fat spreads.

Section 12 - Miscellaneous

115. The Committee agreed to remove oxygen and hydrogen from this Section as they were not considered to be direct food additives. It was also agreed to indicate that the remaining gases could be used in butter as well as in other products. The Delegation of Malaysia expressed its reservation on the use of argon and nitrous oxide, as they felt that nitrogen should be the only packing gas allowed in this section.

Other Proposed Additions

116. In view of the extensive number, variety and lack of information concerning various suggested additions to the Food Additives Section, the Committee agreed comments would be requested by circular letter on the following proposals, especially in regard to technological need, use levels and current industry practice:

Section 3: Emulsifiers

400	Alginic acid	
476	Polyglycerolesters of interesterified ricinoleic acid	4g/kg
479	Thermally oxidised soya oil	4 g/kg
479	Thermally oxidised soya oil with mono-and di-glycerides	10 g/kg

Section 5: Thickeners and Stabilisers

414	Gum arabic	GMP
422	Glycerol	GMP
450(i)	Disodium disphosphate	GMP
1400	Dextrins, roasted starch white & yellow	GMP
1401	Acid-treated starch	GMP
1402	Alkaline treated starch	GMP
1403	Bleached starch	GMP
1404	Oxidized starch	GMP
1410	Monostarch phosphate	GMP
1412	Distarch phosphate esterified with sodium trimetaphosphate	GMP
1413	Phosphated distarch phosphate	GMP
339	Sodium phosphates	GMP
418	Gellan gum	10 g/kg
1414	Acetylated distarch phosphate	GMP
1420	Acetylated starch	GMP
1421	Starch acetate esterified with vinyl acetate	GMP
1422	Acetylated distarch adipate	GMP
1440	Hydroxypropyl starch	GMP
1442	Hydroxypropyl distarch phosphate	GMP

Section 6.1: Ph Correcting Agents

270	Lactic acid (L-, D-, and DL-)	GMP
340	Potassium phosphates	
260	Acetic acid glacial	

Section 6.2: pH Correcting Agents

334	Tartaric acid	GMP
335	Sodium tartrates	GMP
341	Calcium phosphates	GMP

Section 10: Flavour Enhancers

627	Disodium 5'-Guanylate	500 mg/kg

Section 11: Sweeteners

952	Cyclamic acid (and Na, K, Ca salts)	1 g/kg

Status of the Proposed Draft Codex Standard for Fat Spreads

117. The Committee agreed to forward the Proposed Draft Standard for Fat Spreads to the Commission for adoption at Step 5, with the understanding that it would also be forwarded to the Codex Committee on Milk and Milk Products for consideration. The revised text is attached to the present report as Appendix IX.

PROPOSED DRAFT STANDARD FOR OLIVE OILS (Agenda item 8)

118. The Committee had before it CL 1993/15-FO, presenting the Proposed Draft Standard for Olive Oils and document CX/FO 93/7 containing the comments of the International Olive Oil Council. In reply to a question, the Chairman indicated that it had appeared a priority to update the standard itself as a first stage, but that its provisions could eventually be incorporated into the Standard for Named Vegetable Oils. The Observer from the IOOC informed the Committee that the text presented in the Circular Letter was based on a IOOC standard of 1991 and therefore proposed a number of changes included in the latest revision, adopted in June 1993. The Committee agreed to the following amendments.

1. Scope

119. Some delegations pointed out that the scope should be consistent with the scopes of other standards and that oils which were not fit for human consumption should not be included. The Committee agreed to exclude olive oils "which must be subject to further processing to render them suitable for human consumption". Lampante Virgin Olive Oil and Crude Olive-Residue were therefore excluded from the proposed draft and the corresponding provisions were deleted from the text. Several delegations and the Observer from the EC expressed the view that olive-pomace oil should be included in the standard and differentiated from olive oil, and the Committee agreed to this proposal. The title was consequently modified to read "Proposed Draft Standard for Olive Oils and Olive-Pomace Oils".

2. Description

120. The Committee agreed to include in this section the definitions of Virgin Olive Oil and Olive Pomace Oil (Olive Residue Oil).

3. Essential Composition and Quality Factors

121. The remaining definitions of types of olive oil were retained as currently drafted in Section 3. Following the previous decision of the Committee regarding the inclusion of the GLC ranges, these were included in this section and amended to take into account the revision of the IOOC standard. At the suggestion of the Observer of the IOOC, the Committee also agreed to include the waxes and the provisions for the Detection of Oil Seed Oils.

122. The Committee noted the proposal of IOCC to include the ranges for sterols, as they gave a precise characterisation of the oil composition, especially with regard to the addition of refined vegetable oil. Some delegations indicated that they had obtained positive results with this parameter. The Committee felt, however, that its inclusion in the Essential Factors was premature at this stage, as additional information would be necessary.

7. Labelling

123. The Chairman indicated that the reference to the use of the term "natural" should be deleted as this matter was of the competence of the Committee on Food Labelling.

8. Methods of Analysis and Sampling

124. The methods for the Determination of Fatty Acid Composition (5.9), Determination of Wax Content (in 5.10) and Detection of Oil Seed Oils (5.11) were included in this section as applying to essential composition and quality factors.

125. The Delegation of France pointed out that the references for the IUPAC methods for Free Acidity and Alpha-tocopherol had been updated. The Observer from FOSFA informed the Committee that an IUPAC method was currently being considered for the Traces of Halogenated Solvents (8.6 - becomes 8.9 in revised text), as the present one was not adequate for low levels. It was therefore agreed to retain the present method in the text at this stage.

Appendix 1

1.3 Trace metals

126. On the suggestion of the Observer from IOOC, the Committee agreed to amend the levels of Iron to 3 mg/kg and Copper to 0.1 mg/kg.

1.4 Peroxide value

127. The Committee discussed the values set for the different types of oils and agreed to reduce the value applied to olive oil to 15 meq.

128. The Delegation of Malaysia proposed that the peroxide value for refined olive oil should be brought in line with the values adopted for other oils so as to achieve consistency throughout the standards and suggested that a value of 5 be adopted, as no clear technical justification appeared for a higher level. The Delegations of Spain, Italy and the Observer from the EC were of the view that this value was too low and difficult to obtain in practice, due to the specific characteristics of olive oil. The Delegations of Switzerland, Australia and Canada expressed the opinion that through the refining process, olive oil should normally meet this requirement as the other oils did. The Committee agreed to propose a value of 5 for Refined Olive Oil in square brackets, with the understanding that further comments (at Step 6) justifying a higher level would need to be presented and this matter could be discussed by the next session of the Committee.

(1.5) Soap Test and 3.6 Bellier Index

129. The Committee agreed to delete these parameters as they were not used in practice and the corresponding references to methods of analysis (5.4 and 5.9) were consequently removed.

4.2.1 Percentage of Total Sterols

130. The Committee agreed to delete the reference to Beta-sitosterol (true) as it was felt that this provision was not essential and other parameters were currently applicable.

(4.3.2) Aliphatic alcohols

131. The Committee agreed to delete this provision as the determination of waxes and erythrodiol and uvaol content served the required purpose adequately.

(4.3.3) Waxes

132. The Committee adopted the proposal from the Observer from IOOC to set a maximum level of 250 mg/kg for waxes in virgin olive oils (3.9 in revised text).

5. Methods of Analysis and Sampling

133. The following methods were deleted following previous decisions regarding the Scope and the Chemical characteristics: 5.4 Flash Point, as applying to crude pomace-oil (non edible) and in 5.10 the Determination of Aliphatic Alcohols (deletion of the corresponding section)

5.7 Sterol Content

134. The Observer of FOSFA informed the Committee that a method was currently being tested by IUPAC for this determination.

Status of the Proposed Revised Standard for Olive Oils and Olive Pomace Oils

135. The Committee agreed to advance the Proposed Draft Standard to Step 5 of the Codex Procedure for adoption by the 21th Session of the Commission. The revised text is attached to the present report as Appendix X.

PROPOSED DRAFT STANDARD FOR MAYONNAISE (Agenda Item 9)

136. The Committee had for its consideration documents CL 1993/1-FO and CX/FO 93/8-Add. 2 when discussing this agenda item, which contained the current Codex Regional European Standard for Mayonnaise (CODEX STAN 168-1989) and the Proposed Draft Worldwide Codex Standard for Mayonnaise, respectively. Comments submitted in response to the Circular Letter from Brazil, Canada, France, Israel, Ivory Coast, Norway, Poland, Sweden, Switzerland, Thailand, the United Kingdom, the United States, the European Mayonnaise Association (CIMSCEE), and the World Association of Seaweed Processors (MARINALG) were summarized in documents CX/FO 93/8 and Add. 1.

137. The Committee recalled that the Regional European Standard for Mayonnaise was adopted by the 18th Session of the Commission at Step 8 (para. 154, ALINORM 89/40). Subsequent to this decision, the 19th Session of the Commission recommended that the Regional Standard be resubmitted to

governments for comments at Step 3 with a view to its elaboration as a worldwide Codex standard. Furthermore, it was agreed that the Codex Committee on Fats and Oils should be entrusted with the development of the Standard (para. 94, ALINORM 91/40).

138. The Committee focused its discussions on Addendum 2 of CX/FO 93/8, which it noted was a revised and simplified version of the Standard in the sections concerning contaminants, hygiene and labelling, as instructed by the Commission. Other minor revisions had also been included in the Standard as outlined in the background to the paper.

139. The Committee discussed the Standard point-by-point and agreed to the following revisions:

Section 2 - Description

140. The Committee, while recognizing that mayonnaise was traditionally prepared with vegetable oils, agreed to delete the term "vegetable" in reference to oils in order to allow for the preparation of mayonnaise with other oil types (e.g., refined fish oils).

Section 3.1 - Ingredients

141. Several delegations supported the mandatory inclusion of minimum levels for total fat content and egg yolk in the standard, as the omission of such figures could possibly result in a variety of non-traditional and lower quality products being marketed as "mayonnaise". In this regard, it was noted that the inclusion of such a requirement in the standard would not prevent the marketing of lower fat products, as long as they were not labelled as "mayonnaise".

142. Other delegations did not support the inclusion of minimum levels for total fat content, as it was felt that the opportunity to market lower fat products labelled as mayonnaise should be allowed to meet the needs of certain segments of the population, as this was already happening. It was suggested that product name descriptors such as "low fat" and "light" could be used to identify these lower fat products to the consumer.

143. After a careful consideration of the above discussions, the Committee agreed that a minimum total fat content should be included in a new Section 3.2 (Composition Requirements) under sub-section 3.2.1. However, as several delegations felt that the previous level of 78.5% did not reflect current national regulations and marketing practices, the Committee agreed that a total fat content level of 65% was a suitable compromise. It was also agreed that any product produced with a total fat content below this level could not be labelled as "mayonnaise" (also see para. 147 below).

144. After considerable discussions concerning the inclusion of a minimum egg yolk content, the Committee agreed to the inclusion of a provision stating that "technically pure egg yolk in amounts sufficient enough to emulsify the product" in a new sub-section 3.2.2, as the use of egg yolk was self-limiting for emulsification purposes. The Delegation of the Netherlands objected to this decision, as they felt that a minimum egg yolk content was required for control purposes. The Delegation of Germany was of the view that if no minimum egg yolk was specified, the use of other emulsifiers should not be allowed.

8. Labelling

8.1 Name of the Food

145. Several delegations were of the opinion that mayonnaise made with oils other than vegetable (e.g., refined fish oil) should require a qualified product name in order to differentiate such products from traditionally based mayonnaise prepared with vegetable oil. The Codex Standard for Butter (A-1) was highlighted as a precedent in this regard, in that the product name was required to be qualified when butter was manufactured with other than cows' milk.

146. Other delegations were of the opinion that in view of the Committee's previous decision to allow any edible oil to be used in the manufacture of Mayonnaise as defined in Section 2, the requirement of a product name qualifier was felt to be irrelevant and unjustified. In a comparable situation, it was also

noted that in accordance with the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985), the class name "oil" with either the term "vegetable" or "animal" was an appropriate description in the list of ingredients for refined oils other than olive oils.

147. The Committee, while noting its previous decision that products containing less than 65% fat could not be labelled as "mayonnaise" (see para. 143 above), decided that section 8.1.1 should be changed to read as "Only products complying with the provisions of this Standard may be designated as "mayonnaise" without further qualification.".

8.2 Declaration of Constituents

148. As a point of clarification, the Committee was informed that both total fat and egg yolk contents must be declared as a percentage of the total weight of the product in proximity to the name of the food. The reference to technically pure egg yolk and its measurement was deleted.

8.3 Labelling on Non-Retail Containers

149. The Committee was informed that this provision was added to the standard in accordance with the Codex Alimentarius Commission Procedural Manual (pages 130-131) as the Standard was not intended to be limited to prepackaged foods.

150. In view of the usefulness of this provision for products traded at the non-retail level, the Committee agreed to add similar requirements to all other relevant Standards under its consideration.

Appendix 2 - Food Additives

1. Colours

151. The Committee agreed to delete tartrazine (102) and sunset yellow FCF (110) from this section, as several countries did not allow for their inclusion in mayonnaise. As the use of these colours was not allowed in the United Kingdom, this Delegation expressed caution with this decision, especially in consideration of the likely conclusion of similar European Community legislation in this respect.

152. The Committee agreed to delete the word (synthetic) from the beta-carotene (160a) listing, in order to allow for the use of natural carotene extracts.

153. The Committee also noted that additional information would be forwarded from France to support its proposal to add lutein (161b) to the Standard.

4. Stabilizers

154. The Committee agreed to the suggestion of the United States to add oxystearin (387) and polyglycerol esters of fatty acids (475) to this section in view of their function as crystallisation inhibitors.

155. The Committee also agreed to correct the additive numbers and names of the modified starches.

5. Acidifying Agents

156. The Committee agreed to separate and revise the listing for 260 - acetic acid and its sodium and potassium salts to read as "261 - potassium acetates" and "262 - sodium acetates".

6. Antioxidants

157. Notwithstanding the opinion of several countries that butylated hydroxyanisole (320), butylated hydroxytoluene (321) and calcium disodium EDTA (385) should not be allowed, the Committee agreed to leave this section unchanged, in view of their antioxidative properties.

Status of the Proposed Draft Standard for Mayonnaise

158. The Committee agreed to forward the Proposed Draft Standard for Mayonnaise to the Commission for adoption at Step 5.

OTHER BUSINESS AND FUTURE WORK (Agenda item 10)

159. The Committee noted that the following matters would be considered at its next session:

- Draft Revised Code of Practice for the Storage and Transport of Fats and Oils in Bulk at Step 7
- Draft Standard for Named Animal Fats at Step 7
- Draft Standard for Named Vegetable Oils at Step 7
- Draft Standard for Products Sold as an Alternative to Ghee at Step 7
- Draft Standard for Fats and Oils not covered by Individual Standards at Step 7
- Draft Standard for Fat Spreads at Step 7
- Draft Standard for Olive Oils and Olive-Pomace Oils at Step 7
- Draft Standard for Mayonnaise at Step 7
- Alternative Methods of Analysis in Codex Standards for Fats and Oils to replace those which were out of date.

Consideration of the required methods would be undertaken by correspondence prior to the next session of the Committee.

DATE AND PLACE OF NEXT SESSION (Agenda item 11)

160. The Committee agreed that another meeting would be required to complete its work. The Chairman informed the Committee that, subject to confirmation by the Commission, the 15th Session would be held in London in late 1995 or early 1996.

SUMMARY STATUS OF WORK

Subject Matter	Step	Action by	Document reference in ALINORM 95/17
Draft Standards for Palm Olein and Palm Stearin	8	Governments 21th CAC	para. 24 Appendix II Appendix III
Proposed Draft Revised Code of Practice for the Storage and Transport of Fats and Oils in Bulk	5	Governments 21th CAC	para. 48 Appendix IV
Proposed Draft Standard for Edible Fats and Oils not Covered by Individual Standards	5	Governments 21th CAC	para. 58 Appendix V
Proposed Draft Standard for Named Animal Fats	5	Governments 21th CAC	para. 71 Appendix VII
Proposed Draft Standard for Named Vegetable Oils	5	Governments 21th CAC	para. 79 Appendix VIII
Proposed Draft Standard for Products Sold as an Alternative to Ghee	5	Governments 21th CAC	para. 62 Appendix VI
Proposed Draft Standard for Fat Spreads	5	Governments 21th CAC	para. 117 Appendix IX
Proposed Draft Standard for Olive Oils and Olive-Pomace Oils	5	Governments 21th CAC	para. 135 Appendix X
Proposed Draft Standard for Mayonnaise	5	Governments 21th CAC	para. 158 Appendix XI

APPENDIX I

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APPENDIX II

DRAFT STANDARD FOR EDIBLE PALM OLEIN
(At Step 8 of the Procedure)

Appendix 1 to this Standard contains quality and compositional provisions which have been agreed internationally to facilitate trade and which are strongly recommended to traders to form, where appropriate, the basis of sales or purchase contracts. This Appendix does not however form part of the Standard and acceptance of the Standard by Governments does not imply acceptance of Appendix 1.

Appendix 2 to the Standard contains provisions relating to additives which will ultimately be replaced by the Codex Standard for Food Additives, once adopted.

1. SCOPE

This standard applies to edible palm olein, but does not apply to palm olein which must be subject to further processing in order to render it suitable for human consumption.

2. DESCRIPTION

Palm olein is the liquid fraction derived from the fractionation of palm oil, and includes neutralised palm olein; neutralised bleached palm olein; and refined, bleached and deodorised (including neutralised, bleached and deodorised) palm olein.

The starting material is palm oil, derived from the fleshy mesocarp of the fruit of the oil palm (Elaeis Guineensis), and includes edible red palm oil, edible bleached palm oil, and refined/neutralised bleached and deodorised palm oil.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Slip Point not more than 24°C

3.2 GLC Ranges of Fatty Acid Composition (%)

C12:0	0.1 - 0.5
C14:0	0.9 - 1.4
C16:0	38.2 - 42.9
C16:1	0.1 - 0.3
C18:0	3.7 - 4.8
C18.1	39.8 - 43.9
C18.2	10.4 - 13.4
C18.3	0.1 - 0.6
C20.0	0.2 - 0.6

4. ADDITIVES

Only those food additives listed in Appendix 2 may be used and only within any limits specified therein.

5. CONTAMINANTS

5.1 Heavy Metals

The products covered by the provisions of this Standard shall be free from heavy metals in amounts which may represent a hazard to human health. In particular, the products shall not contain greater than 0.1 mg/kg of either lead or arsenic.

5.2 Pesticide Residues

The products covered by the provisions of this Standard shall comply with those maximum residue limits established by the Codex Committee on Pesticide Residues.

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. N° CAC/RCP 1-1969, Rev. 2 1985), and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to these products.

6.2 To the extent possible in good manufacturing practice, the products 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 represent a hazard to health;
- 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 (Ref. N° CODEX STAN 1-1985).

7.1 The Name of the Food

The name of the food to be declared on the label shall be "Palm Olein".

7.2 Labelling of Non-Retail Containers

Information, as appropriate needed for labelling of retail containers is given either on the non-retail containers or in accompanying documents except that the name of the food, date marking and storage instructions, lot identification and the name and address of the manufacturer or packer shall appear on the non-retail 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 identified with the accompanying documents.

8. METHODS OF ANALYSIS AND SAMPLING

8.1 Determination of Slip Point

According to AOCS method (AOCS Official Method cc 3 - 25)(1992).
Results are expressed in °C.

8.2 Determination of GLC Ranges of Fatty Acid Composition

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.302 Gas-Liquid Chromatography of Fatty Acid Methyl Esters).

ISO 5509/ISO 5508 is technically equivalent.

Results are expressed as % of total fatty acids.

8.3 Determination of Lead

According to IUPAC (1988) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1st Supplement, 2.632 Determination of Lead).

Results are expressed as mg lead/kg.

8.4 Determination of Arsenic

According to the colorimetric silver diethyldithiocarbamate method of the AOAC (Official Methods of Analysis of the AOAC, 1990, 15th Edition, 963.21, 952.13).

Results are expressed as mg arsenic/kg.

Appendix 1

OTHER COMPOSITION AND QUALITY FACTORS

1 Physical and chemical characteristics

1.1	Density	
1.1.1	Relative Density (40°C/water at 20°C)	0.899-0.902
	or	
	Apparent Density (at 40°C)	0.8969 - 0.8977 g/ml
1.2	Refractive Index (n 40°C)	1.4586-1.4592
1.3	Saponification Value (mg KOH/g oil)	194-202
1.4	Iodine Value (Wijs)	not less than 56
1.5	Unsaponifiable Matter	not more than 13g/kg

2. Quality characteristics

2.1 Colour: Colour at 40-45°C. The colour of neutralised palm olein shall be bright, clear and deep red. The colour of neutralised, bleached palm olein shall be bright, clear and reddish yellow while that for refined/neutralised, bleached and deodorised palm olein shall be bright, clear and light yellow.

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

2.3 Total carotenoids (mg/kg): 500-1200
(as beta-carotene) in neutralised palm olein.

2.4 Peroxide value: Not more than 5 milliequivalents active oxygen/kg oil.

2.5	Acidity:	0.6 mg KOH/g
2.6	Matter Volatile at 105°C	0.2% m/m
2.7	Insoluble Impurities	0.05% m/m
2.8	Soap Content	0.005% m/m
2.9	Iron (Fe):	
	Neutralised	5.0 mg/kg
	Neutralised bleached	1.5 mg/kg
	Refined, bleached and deodorised/	1.5 mg/kg
	neutralised, bleached and deodorised	1.5 mg/kg
2.10	Copper (Cu)	
	Neutralised	0.4 mg/kg
	Neutralised bleached	0.1 mg/kg
	Refined, bleached and deodorised/	0.1 mg/kg
	Neutralised, bleached and deodorised/	0.1 mg/kg

3. Methods of Analysis and Sampling

3.1 Determination of Relative Density

According to the FAO/WHO Codex Alimentarius Method (FAO/WHO Methods of Analysis for Edible Fats and Oils, CAC/RM 9-1969, Determination of Relative Density at t/20°C). ISO 6883 is a suitable alternative.
Results are expressed as relative density at 40°C/water at 20°C.

3.2 Determination of Refractive Index

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.102, Determination of the Refractive Index).
ISO 6320 is technically equivalent.
Results are expressed as the refractive index relative to the sodium D-line at 40°C (n 40°C).

3.3 Determination of Saponification Value (S.V.)

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.202 Determination of the Saponification Value (S.V.)).
ISO 3657 is technically equivalent.
Results are expressed as the number of mg KOH/g oil.

3.4 Determination of Iodine Value (IV)

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.205 Determination of the Iodine Value (IV) using Wijs method). ISO 3961 is technically equivalent.
Results are expressed as % m/m absorbed iodine.

3.5 Determination of Unsaponifiable Matter

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.401 Determination of the Unsaponifiable Matter).
ISO 3596-1 is technically equivalent.
Results are expressed as g unsaponifiable matter/kg oil.

3.6 Determination of Peroxide Value (P.V.)

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.501 Determination of the Peroxide Value (P.V.)).
ISO 3960 is technically equivalent.
Results are expressed as milliequivalents active oxygen/kg oil.

3.7 Determination of Total Carotenoids

BSI 684, British Standards Institution, Methods of Analysis of Fats and Fatty Oils, Section 2.20:1977: Determination of Carotene in Vegetable Oils. Results to be expressed as mg beta-carotene/kg oil.

3.8 Determination of Acidity

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.201 Determination of the Acid Value (A.V.) and Acidity).
ISO 660 is technically equivalent.
AV results are expressed as the number of mg KOH required to neutralise 1g oil.
Acidity results are expressed as % free fatty acids (as palmitic acid).

3.9 Determination of Matter Volatile at 105°C

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.601 Determination of the Moisture and Volatile Matter).
ISO 662 is technically equivalent.
Results are expressed as % m/m.

3.10 Determination of Insoluble Impurities

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.604 Determination of the Insoluble Impurities). ISO 663 is technically equivalent.

Results are expressed as % m/m.

3.11 Determination of the Soap Content

According to the FAO/WHO Codex Alimentarius Method (FAO/WHO Methods of Analysis for Edible Fats and Oils/CAC/RM 13-1969), Determination of Soap Content).

Results are expressed as % m/m sodium oleate.

3.12 Determination of Iron and Copper

According to IUPAC (1988) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1st Supplement, 2.631 Determination of Copper and Iron).

Results are expressed as mg iron/kg and/or mg copper/kg.

Appendix 2

FOOD ADDITIVES

Only those food additives listed below may be used and only within the limits specified.

1.1 Colours

The following colours are permitted for the purpose of restoring natural colour lost in processing or for the purpose of standardising 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	(i) Curcumin or (ii) Turmeric	5mg/kg (calculated as total curcumin)
160a	(i) Beta-carotene	25mg/kg
160b	Annatto extracts	20mg/kg (calculated as total bixin or norbixin)
160e	Beta-apo-carotenal	25mg/kg
160f	Beta-apo-8'-carotenoic acid, methyl or ethyl ester	25mg/kg

1.2 Flavours

Natural flavours and their identical synthetic equivalents, except those which are known to represent a toxic hazard, and other synthetic flavours approved by the Codex Alimentarius Commission are permitted for the purpose of restoring natural flavour lost in processing or for the purpose of standardising flavour, as long as the added flavour does not deceive or mislead the consumer by concealing damage or inferiority or by making the product appear to be of greater than actual value.

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

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

1.5 Anti-foaming agent

900a	Polydimethylsiloxane singly or in combination with silicon dioxide	10mg/kg

APPENDIX III

DRAFT STANDARD FOR EDIBLE PALM STEARIN
(At Step 8 of the Procedure)

Appendix 1 to this Standard contains quality and compositional provisions which have been agreed internationally to faciliate trade, and which are strongly recommended to traders to form, where appropriate, the basis of sales or purchase contracts. The Appendix does not however form part of the Standard and acceptance of the Standard by Governments does not imply acceptance of Appendix 1.

Appendix 2 to the Standard contains provisions relating to additives which will ultimately be replaced by the Codex Standard for Food Additives, once adopted.

1. SCOPE

This standard applies to edible palm stearin, but does not apply to palm stearin which must be subject to further processing in order to render it suitable for human consumption.

2. DESCRIPTION

Palm stearin is the high-melting fraction derived from the fractionation of palm oil, and includes neutralised palm stearin; neutralised bleached palm stearin; and refined, bleached and deodorised (including neutralised, bleached and deodorised) palm stearin.

The starting material is palm oil, derived from the fleshy mesocarp of the fruit of the oil palm (Elaeis Guineensis), and includes edible red palm oil, edible bleached palm oil, and refined/neutralised bleached and deodorised palm oil.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Slip Point not less than 44°C

3.2 GLC Ranges of Fatty Acid Composition (%)

C12:0	0.1	-	0.4
C14:0	1.1	-	1.8
C16:0	48.4	-	73.8
C16:1	<0.05	-	0.2
C18:0	3.9	-	5.6
C18:1	15.6	-	36.0
C18:2	3.2	-	9.8
C18:3	0.1	-	0.6
C20:0	0.3	-	0.6

4. ADDITIVES

Only those food additives listed in Appendix 2 may be used and only within any limits specified therein.

5. CONTAMINANTS

5.1 Heavy Metals

The products covered by the provisions of this Standard shall be free from heavy metals in amounts which may represent a hazard to human health. In particular, the products shall not contain greater than 0.1 mg/kg of either lead or arsenic.

5.2 Pesticide Residues

The products covered by the provisions of this Standard shall comply with those maximum residue limits established by the Codex Committee on Pesticide Residues.

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. N° CAC/RCP 1-1969, Rev. 2 1985), and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to these products.

6.2 To the extent possible in good manufacturing practice, the products 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 represent a hazard to health;
- 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 (Ref. N° CODEX STAN 1-1985).

7.1 The Name of the Food

The name of the food to be declared on the label shall be "Palm Stearin".

7.2 Labelling of Non-Retail Containers

Information, as appropriate needed for labelling of retail containers is given either on the non-retail containers or in accompanying documents except that the name of the food, date marking and storage instructions, lot identification and the name and address of the manufacturer or packer shall appear on the non-retail 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 identified with the accompanying documents.

8. METHODS OF ANALYSIS AND SAMPLING

8.1 Determination of Slip Point

According to AOCS method (AOCS official method cc 3-25) (1983).

Results are expressed as degrees C.

8.2 Determination of GLC Ranges of Fatty Acid Composition

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.302 Gas-Liquid Chromatography of Fatty Acid Methyl Esters). ISO 5509/ISO 5508 is technically equivalent.

Results are expressed as % of total fatty acids.

8.3 Determination of Lead

According to IUPAC (1988) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1st Supplement, 2.632 Determination of Lead).

Results are expressed as mg lead/kg.

8.4 Determination of Arsenic

According to the colorimetric silver diethyldithiocarbamate method of the AOAC (Official Methods of Analysis of the AOAC, 1990, 15th Edition, 963.21, 952.13).

Results are expressed as mg arsenic/kg.

Appendix 1

OTHER COMPOSITION AND QUALITY FACTORS

1 Physical and chemical characteristics

1.1	Density:	
1.1.1	Relative Density (60°C/water at 20°C)	0.881 - 0.891
	or	
	Apparent density (at 60°C)	0.8813 - 0.8844 g/ml
1.2	Refractive Index (n 60°C)	1.4472 - 1.4511
1.3	Saponification Value (mg KOH/g oil)	193 - 205
1.4	Iodine Value (Wijs)	not more than 48
1.5	Unsaponifiable matter	not more than 9 g/kg

2. Quality characteristics

2.1 Colour: Colour at 55-70°C. The colour of neutralised palm stearin shall be bright, clear and reddish yellow. The colour of neutralised, bleached palm stearin shall be bright, clear and orange yellow while that for refined/neutralised, bleached and deodorise palm stearin shall be bright, clear and light yellow.

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

2.3 Total carotenoids in neutralised palm stearin (as beta-carotene): 500-1200 (mg/kg)

2.4 Peroxide value: Not more than 5 milliequivalents active oxygen/kg oil.

		Maximum permissible levels
2.5	Acidity	0.6 mg KOH/g
2.6	Matter Volatile at 105°C	0.2% m/m
2.7	Insoluble Impurities	0.05% m/m
2.8	Soap Content	0.005% m/m
2.9	Iron (Fe):	
	Neutralised	5.0 mg/kg
	Neutralised bleached	1.5 mg/kg
	Refined, bleached and deodorised/	1.5 mg/kg
	neutralised, bleached and deodorised	1.5 mg/kg
2.10	Copper (Cu):	
	Neutralised	0.4 mg/kg
	Neutralised bleached	0.1 mg/kg
	Refined, bleached and deodorised/	0.1 mg/kg
	neutralised, bleached and deodorised	0.1 mg/kg

3. Methods of Analysis and Sampling

3.1 Determination of Relative Density

According to the FAO/WHO Codex Alimentarius Method (FAO/WHO Methods of Analysis for Edible Fats and Oils, CAC/RM 9-1969, Determination of Relative Density at t/20°C).

ISO 6883 is a suitable alternative.

Results are expressed as relative density at 60°C/water at 20°C.

3.2 Determination of Refractive Index

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.102, Determination of the Refractive Index).

ISO 6320 is technically equivalent.

Results are expressed as the refractive index relative to the sodium D-line at 60°C (n 60°C).

3.3 Determination of Saponification Value (S.V.)

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.202 Determination of the Saponification Value (S.V.)).

ISO 3657 is technically equivalent.

Results are expressed as the number of mg KOH/g oil.

3.4 Determination of Iodine Value (IV)

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.205 Determination of the Iodine Value (IV) using Wijs method). ISO 3961 is technically equivalent.

Results are expressed as % m/m absorbed iodine.

3.5 Determination of Unsaponifiable Matter

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.401 Determination of the Unsaponifiable Matter).

ISO 3596-1 is technically equivalent.

Results are expressed as g unsaponifiable matter/kg oil.

3.6 Determination of Peroxide Value (P.V.)

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.501 Determination of the Peroxide Value (P.V.).

ISO 3960 is technically equivalent.

Results are expressed as milliequivalents active oxygen/kg oil.

3.7 Determination of Total Carotenoids

BSI 684, British Standards Institution, Methods of Analysis of Fats and Fatty Oils, Section 2.20:1977: Determination of Carotene in Vegetable Oils. Results to be expressed as mg/kg betacarotene/kg oil.

3.8 Determination of Acidity

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.201 Determination of the Acid Value (A.V.) and Acidity).

ISO 660 is technically equivalent.

AV results are expressed as the number of mg KOH required to neutralises 1g oil.

Acidity results are expressed as % free fatty acids (as palmitic acid).

3.9 Determination of Matter Volatile at 105°C

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.601 Determination of the Moisture and Volatile Matter).

ISO 662 is technically equivalent.

Results are expressed as % m/m.

3.10 Determination of Insoluble Impurities

According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.604 Determination of the Insoluble Impurities).
ISO 663 is technically equivalent.
Results are expressed as % m/m.

3.11 Determination of the Soap Content

According to the FAO/WHO Codex Alimentarius Method (FAO/WHO Methods of Analysis for Edible Fats and Oils/CAC/RM 13-1969), Determination of Soap Content).

Results are expressed as % m/m sodium oleate.

3.12 Determination of Iron and Copper

According to IUPAC (1988) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1st Supplement, 2.631 Determination of Copper and Iron).

Results are expressed as mg iron/kg and/or mg copper/kg.

Appendix 2

FOOD ADDITIVES

Only those food additives listed below may be used and only within the limits specified.

1.1 Colours

The following colours are permitted for the purpose of restoring natural colour lost in processing or for the purpose of standardising 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
160a	(i) Beta-carotene	25mg/kg
160b	Annatto extracts	20mg/kg (calculated as total bixin or norbixin)
100	(i) Curcumin or (ii) Turmeric	5mg/kg (calculated as total curcumin)
160e	Beta-apo-carotenal	25mg/kg
160f	Beta-apo-8'-carotenoic acid, methyl or ethyl ester	25mg/kg

1.2 Flavours

Natural flavours and their identical synthetic equivalents, except those which are known to represent a toxic hazard, and other synthetic flavours approved by the Codex Alimentarius Commission are permitted for the purpose of restoring natural flavour lost in processing or for the purpose of standardising flavour, as long as the added flavour does not deceive or mislead the consumer by concealing damage or inferiority or by making the product appear to be of greater than actual value.

1.3	Antioxidants	Maximum Level
310	Propyl gallate	100mg/kg
321	Butylated hydroxytoluene (BHT)	75mg/kg
320	Butylated hydroxyanisole (BHA)	175mg/kg
319	Tertiary butylhydroquinone (TBHQ)	120mg/kg
	Any combination of propyl gallate, BHA, BHT and/or TBHQ	200mg/kg but limits above not to be exceeded
306	Mixed tocopherols concentrate	GMP
307	Alpha-tocopherol	GMP
308	Synthetic gamma-tocopherol	GMP
309	Synthetic delta-tocopherol	GMP
304	Ascorbyl palmitate)	500mg/kg individually
305	Ascorbyl stearate)	or in combination
389	Dilauryl thiodipropionate	200mg/kg
1.4	Antioxidant synergists	
330	Citric acid	GMP
331	Sodium citrates	GMP
384	Isopropyl citrates)	100mg/kg
338	Orthophosphoric acid)	individually or
	Monoglyceride citrate)	in combination
1.5	Anti-foaming agent	
900a	Polydimethylsiloxane singly or in combination with silicon dioxide	10mg/kg

APPENDIX IV

PROPOSED DRAFT REVISED CODE OF PRACTICE FOR THE STORAGE AND TRANSPORT OF EDIBLE OILS AND FATS IN BULK
(At Step 5 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 in the design of their facility.

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 Bibliography in Appendix).

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 Bibliography in Appendix).

3 Section III - STORAGE AND TRANSPORTATION

3.1 Tanks

3.1.1 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 of tankers, storage tanks, etc, such as manholes, inlets, outlets, draining out points, etc, should be made such that they can be locked and/or effectively sealed.

3.1.2 Capacity

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.

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

For solid or semi-solid fats, tankers and ISO tank containers should be fitted with stainless steel steam coils which can be coupled to a source or hot water or low pressure steam (steam pressure up to 150 kPa (1.5 Bar) gauge). For such fats, tankers and ISO tanks should preferably be insulated in temperate and cold climates.

3.1.4 Heating Facilities - Tanks

All tanks for solid or semi-solid products should be installed with heating facilities (see also Section 3.1.7) so that products are liquid and homogenous when they are transferred or unloaded. Heating coils should be of stainless steel.

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. The coil should be self draining.

(b) Bare Steam Pipes

Heating by steam with pressure up to 150kPa (1.5 Bar) gauge (temperature of 127°C) can also be used. Again, the coil should be self 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 Exchanges

These provide uniform heating and may be used as an alternative to other heating systems in cases where the product is not required to solidify in the storage tank.

Thermal heating oils should not be used in order to avoid possible contamination. Heating facilities materials should also meet any appropriate legislation concerning materials in contact with food.

3.1.5 Materials

(a) All materials used in the construction of tanks and for ancillary equipment should be inert to oils and fats, and should meet any appropriate legislation concerning materials 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 refined oils and fats. Tanks of mild steel should preferably be coated with an inert material on the inside. A number of products, for example phenolic epoxy resins, are available and specific assurance as to their suitability for contact with foodstuffs, particularly oils and fats, should be obtained from the manufacturers of the coating. The coating should also meet any appropriate legislation concerning "Materials in Contact with Food".

Prior to application of the coating, the metal surface must be sand-blasted to bright metal (Swedish Standard SS 0555900 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 for any part of the storage installation and means of transport that has contact with the oils, such as piping, pipe connections, seals, valves, heating coils, temperature gauges for oil, strainers, pumps, etc or in sampling apparatus. Gauges containing mercury should not be used. Glass equipment should be avoided in situations where breakage might lead to product contamination.

3.1.6 Tank and Tanker Insulation

Storage tanks for solid and semi-solid fats 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.

3.1.7 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.

3.1.8 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.

3.1.9 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.

3.2.2 Cleaning

An efficient pipeline "pigging" system should be provided at each storage facility especially for common user lines.

3.2.3 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.

3.2.4 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 and semi-solid products 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/24 hours. 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. 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/24 hours 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 to the buyer.

4.4.5 Ship loading samples, properly marked and sealed, should be delivered as per contract.

4.4.6 The three previous cargoes carried in a ship's tank should be declared to the charterer of the tank and the records made available to all parties involved. The provision should be part of all shipping contracts.

Appendix 1

TABLE 1

TEMPERATURES DURING STORAGE, TRANSPORT, LOADING AND DISCHARGE

(Generally in accordance and within the temperature ranges recommended by the International Association of Seed Crushers and mainly abridged from its tables).

	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
Peanut Butter	38	41	50	55
Rapeseed Oil	Ambient	Ambient	15	20 (3)
Safflower Oil	Ambient	Ambient	15	20 (3)
Sesame Oil	Ambient	Ambient	15	20 (3)
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

NATIONAL AND INTERNATIONAL ASSOCIATIONS

Federation of Oils, Seeds and Fats Associations Limited (FOSFA)
20 St Dunstan's Hill
London EC3R 8HL
UNITED KINGDOM

National Institute of Oilseed Products (NIOP)
2600 Garden Road
Suite 208
Monterey
CA 93940
USA

BIBLIOGRAPHY

FOSFA 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

ISO Sampling Standard

NIOP Acceptable Prior Cargo - List No 1

NIOP Acceptable Prior Cargo - List No 2

NIOP Unacceptable Prior Cargo List

NIOP Rules

PORAM Processed Palm Oil Storage, Transportation, Sampling and Survey Guide

Swedish Standard SS 055900 (Grades of Rust) (Equivalent to ISO 8501-1 (1988))

ISO 1496-3 (1991) on Tank Containers

APPENDIX V

PROPOSED DRAFT STANDARD FOR EDIBLE FATS AND OILS NOT COVERED BY INDIVIDUAL STANDARDS
(At Step 5 of the Procedure)

Appendix 1 to this standard contains quality and compositional provisions which have been agreed internationally to facilitate trade and which are strongly recommended to traders to form, where appropriate, the basis of sales and purchase contracts. This Appendix does not however form part of the standard and thus acceptance of the standard by Governments does not imply acceptance of Appendix 1.

Appendix 2 to the Standard contains provisions relating to additives which will ultimately be replaced by the Codex General Standard for Food Additives once adopted.

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 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; or
the Codex Standard for Products Sold as an Alternative to Ghee.

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 obtained by mechanical procedures only. 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 Only those additives listed in Appendix 2 may be used in refined products covered by this Standard and only within the limits specified therein.

4. CONTAMINANTS

4.1 Heavy Metals

The fats covered by the provisions of this standard shall be free from heavy metals in amounts that may represent a hazard to human health. In particular, the following limits apply:

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

4.2 Pesticides

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Committee on Pesticides Residues 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 ANALYSING AND SAMPLING

7.1 Determination of Lead

According to the AOAC (1965) method after complete digestion by the colorimetric dithizone determination procedure (Official Methods of Analysis of the AOAC, 1965), 24.053 (and 24.008, 24.009, 24.043j, 24.046, 24.047 and 24.048). Results to be expressed as mg lead/kg.

7.2 Determination of Arsenic

According to the colorimetric silver diethyldithiocarbamate method of the AOAC (Official Method of Analysis of the AOAC, 1965, 24.011-24.014, 24.016-24.017, 24.006-24.008). Results to be expressed as mg arsenic/kg.

Appendix 1

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 (I_A)

IUPAC Standard Methods for the Analysis of Oils, Fats and Soaps, 5th Edition, 1966, II.D. 1.2: Acid Value. Results to be expressed as the number of mg KOH required to neutralize 1 g oil or fat.

2.2 Determination of Peroxide Value (I_P)IUPAC Standard Methods for the Analysis of Oils, Fats and Soaps, 5th Edition, 1966, II.D.13: Peroxide Value. Results to be expressed as milliequivalents active oxygen/kg fat or oil.

2.3 Determination of Matter Volatile at 105°C

IUPAC Standard Methods for the Analysis of Oils, Fats and Soaps, 5th Edition, 1966, II.C.1.1. Moisture and Volatile Matter. Results to be expressed as %.

2.4 Determination of Insoluble Impurities

IUPAC Standard Methods for the Analysis of Oils, Fats and Soaps, 5th Edition, 1966, II.C.2: Impurities. Results to be expressed as %.

2.5 Determination of Soap Content

FAO/WHO Codex Alimentarius Methods of Analysis for Edible Fats and Oils,
CAC/RM 13-1969: Determination of Soap Content. Results to be expressed as % m/m sodium oleate.

2.6 Determination of Iron

FAO/WHO Codex Alimentarius Methods of Analysis for Edible Fats and Oils, CAC/RM 14-1969: Determination of Iron Content. Results to be expressed as mg iron/kg.

2.7 Determination of Copper

Official Methods of Analysis of the AOAC: International Union of Pure and Applied Chemistry Carbamate Method - 24.023 - 24.028. Results to be expressed as mg copper/kg.

Appendix 2

FOOD ADDITIVES

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	20 mg/kg (calculated as total bixin or norbixin)
160e	Beta-apo-8'-carotenal	25 mg/kg
160f	Methyl and ethyl esters of beta-apo-8' - carotenoic acid	25 mg/kg

2. Flavours

Natural flavours and their identical synthetic equivalents, except those which are known to represent a toxic hazard, and other synthetic flavours approved by the Codex Alimentarius Commission are permitted for the purpose of restoring natural flavour lost in processing or for the purpose of standardising flavour, as long as the added flavour does not deceive or mislead the consumer by concealing damage or inferiority or by making the product appear to be of greater than actual value.

3. 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. Antioxidants Synergists

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

5. Anti-foaming Agents

		Maximum Level
900a	Polydimethylsiloxane singly or in combination with silicon dioxide	10 mg/kg

APPENDIX VI

PROPOSED DRAFT STANDARD FOR PRODUCTS SOLD AS AN ALTERNATIVE TO GHEE
(At Step 5 of the Procedure)

Appendix 1 to this Standard contains quality and compositional provisions which have been agreed internationally to faciliate trade, and which are strongly recommended to traders to form, where appropriate, the basis of sales or purchase contracts. The Appendix does not however form part of the Standard and acceptance of the Standard by Governments does not imply acceptance of Appendix 1.

Appendix 2 to the Standard contains provisions relating to additives which will ultimately be replaced by the Codex General Standard for Food Additives once adopted.

1. SCOPE

This standard applies to any animal, vegetable or mixed animal and vegetable fat product sold as an alternative to ghee. These products are intended for culinary use and not for use as spreads which are covered by a separate standard.

2. DESCRIPTION

2.1 Definition of Product

A semi-solid product, complying with the provisions of this standard, which consists of one or more of the following:

edible animal (including marine) fats
edible vegetable fats and oils
blends of vegetable oils and animal fats

2.2 Edible fats and Oils means foodstuffs composed of glycerides of fatty acids. They are of vegetable or animal (including marine) origin. They may contain small amounts of other lipids such as phosphatides, or unsaponifiable constituents and of free fatty acids naturally present in fat or oil. Fats of animal origin must be obtained from animals in good health, and if originating from slaughtered animals, such animals should have been in good health at the time of slaughter and fit for human consumption. Fats and oils that have been subjected to processes of modification including hydrogenation are included.

3. ESSSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Optional Ingredients

The following substances may be added to products covered by this Standard:

Vitamin A and its esters added as retinol and/or beta-carotene (1)
Vitamin D
Vitamin E and its esters
Other vitamins

(1) 6 μg of dietary beta-carotene is equivalent to 1 μg of retinol.

Maximum and minimum levels for vitamins A, D and E and other vitamins 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.

4. FOOD ADDITIVES

Only those additives listed in Appendix 2 may be used in the products covered by the provisions of this Standard and only within the limits specified therein.

5. CONTAMINANTS

5.1 Heavy Metals

The fats covered by the provisions of this Standard shall be free from heavy metals in amounts that may represent a hazard to human health. In particular, the following limits apply:

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

5.2 Pesticides

The products covered by the provisions of this Standard shall comply with those maximum residue limits established by the Codex Committee on Pesticides Residues 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 substances originating from micro-organisms in amounts which may represent a hazard to human 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 Pre-packaged Foods (Ref. CODEX STAN 1-1985). The product should be designated in accordance with the laws and customs of the country in which the product is sold and in a manner so as not to mislead the consumer, eg Vanaspati.

7.2 Labelling of Non-Retail Containers

7.2.1 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.

7.2.2 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 Vitamin A Content (Type II)
Official Methods of Analysis of the AOAC, 1980, 13th Edition, 43.001-007.
Results to be expressed as μg retinol (Vitamin A-alcohol) per kg product.

8.2 Determination of Vitamin D Content (Type II)
Official Methods of Analysis of the AOAC, 1980, 13th Edition, 43.195-280.
Results to be expressed as μg Vitamin D per kg product.

8.3 Determination of Vitamin E Content (Type II)
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 6th Edition, 1st Supplement, Part 4, 1981, 2.404.
Results to be expressed as mg of each tocopherol per kg of product.

8.4 Determination of Arsenic
Official Methods of the AOAC, 1990, 15th Edition, 963.21, 952.13:
Colorimetric silver diethyldithiocarbamate method of the AOAC.

8.5 Determination of Lead
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1st Supplement, 2.632: Determination of Lead

8.6 Determination of Total Carotenoids
BSI 684, British Standards Institution, Methods of Analysis of Fats and Fatty Oils, Section 2.20, 1977: Determination of Carotene in Vegetable Oils.
Results to be expressed as mg beta-carotene/kg oil.

Appendix 1

OTHER QUALITY AND COMPOSITION FACTORS

1. Composition characteristics

1.1 Raw Materials

Edible fats and/or oils as defined in Section 2.2.1, whether or not they have been subjected to a process of modification. Those of animal origin may include Ghee prepared from milk of bovine origin and/or Butteroil, Anhydrous Butteroil, Anhydrous Milk Fat complying with Standard No. A2 in the code of Principles concerning Milk and Milk Products (CAC/M 1 - 1973). The laws and customs of the country in which the product is sold may require the presence or absence of specific oils or fats.

1.2 Fat Content

1.2.1 Total Fat Content: Not less than 99.5%.

1.2.2 Fat derived from milk: If present, shall be not less than 10%.

2. Quality Characteristics

2.1 Colour: Creamy white to pale yellow.

2.2 Odour and Taste: Characteristic and free from foreign and rancid odour and taste.

2.3 Texture: Ranges from granular solid fat crystals dispersed in an oil phase to a smooth finely crystalline texture.

2.4 Slip Point: Between 31-44°C.

		Maximum Level
2.5	Matter volatile at 105°C.	0.3%
2.6	Insoluble impurities	0.05%
2.7	Soap content	0.005%
2.8	Iron (Fe)	1.5 mg/kg
2.9	Copper (Cu)	0.4 mg/kg
2.10	Acid Value:	
	Products containing animal fat	0.8 mg KOH/g
	Products containing vegetable fat only	0.6 mg KOH/g
2.11	Peroxide Value:	10 milliequivalents of active oxygen/kg

3. Methods of analysis and sampling

3.1 Determination of Acid Value (Type I)
IUPAC Standard Method for the Analysis of Oils, Fats and Derivatives, 6th Edition, 1979, 2.201, Parts 1-4.
Results to be expressed as number of mg KOH required to neutralise 1 g of product.

3.2 Determination of Peroxide Value (Type I)
IUPAC Standard Method for the Analysis of Oils, Fats and Derivatives, 6th Edition, 1979, 2.501 and ISO 3960-1977 (confirmed 1985) (equivalent methods).
Results to be expressed as milliequivalents active oxygen/kg product.

3.3 Determination of Slip Point
AOCS Official Method cc 3-25 (1983).
Results to be expressed as degrees C.

3.4 Determination of Matter Volatile at 105°C (Type I)
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 6th Edition, 1979, 2.6010 and ISO 662-1980 (equivalent methods).
Results to be expressed as %.

3.5 Determination of Insoluble Impurities (Type I)
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 6th Edition, 1979, 2.0604 and ISO 663-1981 (equivalent methods).
Results to be expressed as %.

3.6 Determination of Soap Content (Type I)
FAO/WHO Methods of Analysis for Edible Oils and Fats, CAC/RM 13-1969, Determination of Soap Content.
The results to be expressed as % sodium oleate.

3.7 Determination of Iron (Type II/III)
According to AOCS Method (AOCS Official Method Ca 18-79, 1983).
Results to be expressed as mg of iron per kg of product.

3.8 Determination of Copper (Type II/III)
AOCS Official Method Ca 18-79, 1983.
Results to be expressed as mg of copper per kg of product.

3.9 Determination of Milk Fat Content (Type I)
According to IUPAC Method (Ref: Pure & Appl. Chem. 1986, 58(10), 1419) for determination of butyric acid in oils and fats using a given factor to convert percentage butyric acid to percentage milk fat.

Appendix 2

FOOD ADDITIVES

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	20 mg/kg (calculated as total bixin or norbixin)
160e	Beta-apo-8'-carotenal	25 mg/kg
160f	Methyl and ethyl esters of beta-apo-8' - carotenoic acid	25 mg/kg

2. Flavours

Natural flavours and their identical synthetic equivalents, except those which are known to represent a toxic hazard, and other synthetic flavours approved by the Codex Alimentarius Commission are permitted for the purpose of restoring natural flavour lost in processing or for the purpose of standardising flavour, as long as the added flavour does not deceive or mislead the consumer by concealing damage or inferiority or by making the product appear to be of greater than actual value.

3. 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. Antioxidants Synergists

		Maximum Level
330	Citric acid	GMP
331	Sodium citrates	GMP
338	Orthophosphoric acid)	100 mg
384	Isopropyl citrates)	individually or
	Monoglyceride citrate)	in combination

5. Anti-foaming Agents

		Maximum Level
900a	Polydimethylsiloxane singly or in combination with silicon dioxide	10 mg/kg

APPENDIX VII

PROPOSED DRAFT STANDARD FOR NAMED ANIMAL FATS
(At Step 5 of the Procedure)

Appendix 1 to this standard contains quality and compositional provisions which have been agreed internationally to facilitate trade and which are strongly recommended to traders to form, where appropriate, the basis of sales and purchase contracts. This Appendix does not however form part of the standard and thus acceptance of the standard by Governments does not imply acceptance of Appendix 1.

Appendix 2 to the Standard contains provisions relating to additives which will ultimately be replaced by the Codex General Standard for Food Additives once adopted.

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 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 subjected to processing may contain refined lard, lard stearin and hydrogenated lard, 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 tissues 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 the fresh fat (killing fat) of heart, caul, kidney and mesentary collected at the time of slaughter of bovine animals in good health at the time of slaughter and fit for human consumption. The raw material does not include 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 subjected 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

	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

Only those additives listed in Appendix 2 may be used in the products covered by the provisions of this Standard and only within the limits specified therein.

5. CONTAMINANTS

5.1 Heavy Metals

The fats covered by the provisions of this standard shall be free from heavy metals in amounts that may represent a hazard to human health. In particular, the following limits apply:

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

5.2 Pesticides

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Committee on Pesticide Residues 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

IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.302: Gas-Liquid Chromatography of Fatty Acid Methyl Esters. Results to be expressed as % of total fatty acids.

8.2 Determination of Arsenic

Colorimetric silver diethyldithiocarbamate method of the AOAC (Official Methods of the AOAC, 1990, 15th. Edition, 963.21, 952.13).

8.3 Determination of Lead

IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.632: Determination of Lead.

Appendix 1

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** (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.
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1987, 2.601: Determination of the Moisture and Volatile Matter.

3.2 Determination of Insoluble Impurities
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1987, 2.604: Determination of the Insoluble Impurities.

3.3 Determination of Soap Content
FAO/WHO Methods of Analysis for Edible Fats and Oils CAC/RM 13 - 1969: Determination of Soap Content.

3.4 Determination of Copper and Iron
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.631: Determination of Copper and Iron.

3.5 Determination of Relative Density
FAO/WHO Methods of Analysis for Edible Fats and Oils, CAC/RM 9-1969: Determination of Relative Density at t/20°C. Results to be expressed as relative density at 40°C/water at 20°C.

3.6 Determination of Refractive Index
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.102: Determination of the Refractive Index. Results to be expressed as the refractive index relative to the sodium D-line at 40°C (n_D 40°C).

3.7 Determination of Saponification Value (S.V.)
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.202: Determination of the Saponification Value (S.V.). Results to be expressed as the number of mg KOH/g oil.

3.8 Determination of Iodine Value (IV)
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.205: Determination of the Iodine Value (IV) using Wijs method. Results to be expressed as % absorbed iodine.

3.9 Determination of Unsaponifiable Matter
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.401: Determination of the Unsaponifiable Matter. Results to be expressed as g unsaponifiable matter/kg oil.

3.11 Determination of Peroxide Value (P.V.)
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.501 Determination of the Peroxide Value (P.V.). Results to be expressed as milliequivalents active oxygen/kg oil.

3.12 Determination of Acidity
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.201: Determination of the Acid Value (A.V.) and Acidity.
Acid Value Results are expressed as the number of mg KOH required to neutralises 1g oil. Acidity results to be expressed as % free fatty acids.

3.13 Determination of Titre
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 5th Edition, 1966, II.B.3.1, II.B.3.2 and II.A.2. Determination of Titre. Results are expressed in degrees centigrade.

Appendix 2

FOOD ADDITIVES

1. 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

2. Antioxidants Synergists

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

APPENDIX VIII

PROPOSED DRAFT STANDARD FOR NAMED VEGETABLE OILS
(At Step 5 of the Procedure)

Appendix 1 to this standard contains quality and compositional provisions which have been agreed internationally to facilitate trade and which are strongly recommended to traders to form, where appropriate, the basis of sales and purchase contracts. This Appendix does not however form part of the standard and thus acceptance of the standard by Governments does not imply acceptance of Appendix 1.

Appendix 2 to the Standard contains provisions relating to additives which will ultimately be replaced by the Codex General Standard for Food Additives once adopted.

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 **Mustard Seed Oil** is derived from the seeds of white mustard (Sinapis alba L. or Brassica hirta Moench), brown 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), and includes edible red palm oil and edible bleached palm oil.

2.1.10 **Palm Olein** is the liquid fraction derived from the fractionation of palm oil (described above); and includes neutralised palm olein; neutralised bleached palm olein; and refined, bleached and deodorised palm olein.

2.1.11 **Palm Stearin** is the high-melting fraction derived from the fractionation of palm oil (described above); and includes neutralised palm stearin; neutralised, bleached palm stearin; and refined, bleached and deodorised palm stearin.

2.1.12 **Rapeseed Oil** (Turnip rape oil; Colza oil; Ravison oil; Sarson Oil: Toria Oil) is produced seeds of Brassica napus L., Brassica campestris 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. 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 fats and 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 and fats are obtained by mechanical procedures only. 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

No food additives are permitted in virgin oils. Only those additives listed in Appendix 2 may be used in non-virgin oils and only within the limits specified therein.

5. CONTAMINANTS

5. Heavy Metals

The oils covered by the provisions of this standard shall be free from heavy metals in amounts that may represent a hazard to human health. In particular, the following limits apply:

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

5.2 Pesticides

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Committee on Pesticide Residues 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

IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.302: Gas-Liquid Chromatography of Fatty Acid Methyl Esters. Results to be expressed as % of total fatty acids.

8.2 Determination of Slip Point

According to AOCS methods (AOCS Official Method cc 3-25) (1992). Results expressed in °C.

8.3 Determination of Arsenic

Methods of the AOAC, 1990, 15th. Edition, 963.21, 952.13): Colorimetric silver diethyldithiocarbamate method

8.4 Determination of Lead

IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.632: Determination of Lead.

Table 1: Fatty acid composition as determined by gas liquid chromatography (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	0.0-0.6	ND	ND	ND	)	NS	0.0-0.8
C8:0	ND	2.6-7.3	4.6-9.4	ND	ND	ND	)	NS	2.4-6.2
C10:0	ND	1.2-7.6	5.5-7.8	ND	ND	ND	)0.0-0.5*	NS	2.6-5.0
C12:0	0.0-0.1	40.0-55.0	45.1-50.3	0.0-0.2	0.0-0.5	0.0-0.3	)	0.0-0.4	41.0-55.0
C14:0	0.0-0.1	11.0-27.0	16.8-20.6	0.6-1.0	0.0-0.3	0.0-0.3	0.0-1.0	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	41.0-47.5	6.5-10.0
C16:1	0.0-0.2	ND	ND	0.0-1.2	0.0-1.2	0.0-0.4	0.0-0.5	0.0-0.6	NS
C17:0	ND	ND	ND	ND	ND	ND	ND	NS	NS
C17:1	ND	ND	ND	ND	ND	ND	ND	NS	NS
C18:0	1.9-4.4	1.8-7.4	2.3-3.5	2.1-3.3	3.0-6.0	1.0-3.3	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	39.4-62.5	10-24	6.5-12.0	1.0-3.5
C18:3	0.0-0.1	ND	0.0-0.2	0.0-0.4	0.0-1.0	0.5-1.5	6.0-18	0.0-0.5	)
C20:0	1.1-1.7	ND	0.0-0.2	0.2-0.5	0.0-1.0	0.3-0.6	0.0-1.5	0.0-1.0	)
C20:1	0.7-1.7	ND	0.0-0.2	0.0-0.1	ND	0.2-0.4	5.0-13	NS	)
C20:2	ND	ND	ND	0.0-0.1	ND	0.0-0.1	0.0-1.0	NS	)
C22:0	2.1-4.4	ND	ND	0.0-0.6	0.0-0.3	0.0-0.5	0.2-2.5	NS	) 0.0-0.1*
C22:1	0.0-0.3	ND	ND	0.0-0.3	ND	0.0-0.1	22-50	NS	)
C22:2	ND	ND	ND	0.0-0.1	ND	ND	0.0-1.0	NS	)
C24:0	1.1-2.2	ND	ND	0.0-0.1	0.0-0.1	0.0-0.4	0.0-0.5	NS	)
C24:1	0.0-0.3	ND	ND	ND	ND	ND	0.5-2.5	NS	)

ND - not detected: NS - not specified

* total value for the fatty acids indicated

Table 1: Fatty acid composition as determined by gas liquid chromatography (continued)

Fatty Acid	Palm Olein	Palm Stearin	Rapeseed Oil	Rapeseed Oil (low erucic acid)	Safflower-seed Oil	Sesame-seed 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	)0.1*	ND	ND	ND	ND	ND
C12:0	0.1-0.5	0.1-0.4	)	ND	ND	ND	0.0-0.1	0.0-0.1
C14:0	0.9-1.4	1.1-1.8	0.2	0.0-0.2	0.0-0.2	0.0-0.1	0.0-0.2	0.0-0.2
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	0.05-0.2	0.0-3.0	0.1-0.6	0.0-0.2	0.1-0.2	0.0-0.2	0.0-0.3
C17:0	ND	ND	ND	0.0-0.3	ND	0.0-0.2	ND	ND
C17:1	ND	ND	ND	0.0-0.3	ND	0.0-0.1	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	0.0-0.1	0.3-0.4	5.5-9.5	0.0-0.2
C20:0	0.2-0.6	0.3-0.6	0.0-3.0	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	0.0-0.3	0.0-0.3	0.0-0.2
C20:2	ND	ND	0.0-1.0	0.0-0.1	ND	ND	0.0-0.1	ND
C22:0	ND	ND	0.0-2.0	0.0-0.5	0.2-0.8	0.0-0.3	0.3-0.7	0.5-1.3
C22:1	ND	ND	5-60	0.0-2.0	0.0-1.8	ND	0.0-0.3	0.0-0.2
C22:2	ND	ND	0.0-2.0	0.0-0.1	ND	ND	ND	0.0-0.3
C24:0	ND	ND	0.0-2.0	0.0-0.2	0.0-0.2	0.0-0.3	0.0-0.4	0.2-0.3
C24:1	ND	ND	0.0-3.0	0.0-0.4	0.0-0.2	ND	ND	ND

ND - not detected

* total value for the fatty acids indicated

Appendix 1

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
	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
	Virgin Oils and Cold Pressed 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 palm oil and palm stearin should be in the range 500-2000 and 300-600 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
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 2.601: Determination of the Moisture and Volatile Matter.

5.2 Determination of Insoluble Impurities
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1987, 2.604: Determination of the Insoluble Impurities.

5.3 Determination of Soap Content
FAO/WHO Methods of Analysis for Edible Fats and Oils CAC/RM 13-1969): Determination of Soap Content.

5.4 Determination of Copper and Iron
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.631 Determination of Copper and Iron.

5.5 Determination of Relative Density
FAO/WHO Methods of Analysis for Edible Fats and Oils, CAC/RM 9-1969: Determination of Relative Density at t/20°C). Results to be expressed as relative density at x°C/water at 20°C.

5.6 Determination of Refractive Index
IUPAC Standard Methods for the Analysis of Oils, Fats, and Derivatives, 7th Edition, 1987, 2.102: Determination of the Refractive Index. Results to be expressed as the refractive index relative to the sodium D-line at 60°C (n_D 60°C).

5.7 Determination of Saponification Value (S.V.)
According to IUPAC (1987) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.202 Determination of the Saponification Value (S.V.). Results to be expressed as the number of mg KOH/g oil.

5.8 Determination of Iodine Value (IV)

IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.205 Determination of the Iodine Value (I.V.) using Wijs method). Results to be expressed as % m/m absorbed iodine.

5.9 Determination of Unsaponifiable Matter

IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.401: Determination of the Unsaponifiable Matter.

Results to be expressed as g unsaponifiable matter/kg oil.

5.10 Determination of Peroxide Value (P.V.)

IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.501: Determination of the Peroxide Value (P.V.). Results to be expressed as milliequivalents active oxygen/kg oil.

5.11 Determination of Total Carotenoids

BSI 684, British Standards Institution, Methods of Analysis of Fats and Fatty Oils, Section 2.20:1977: Determination of Carotene in Vegetable Oils. Results to be expressed as mg beta-carotene/kg oil.

5.12 Determination of Acidity

IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th Edition, 1987, 2.201: Determination of the Acid Value (A.V.) and Acidity). AV results to be expressed as the number of mg KOH required to neutralise 1 g oil. Acidity results to be expressed as % free fatty acids (the acid chosen being dependent on the particular oil).

5.13 Determination of Sterol Content

ISO:6799: Determination of the proportions of individual sterols in the sterol fraction. Results to be expressed as a percentage.

5.14 Determination of Tocopherol Content

IUPAC method 6th edition, 1st supplement: Part 4, 1981 no. 2.404: Identification and Determination of tocopherols.

5.15 Halphen Test

Official and Tentative Methods of the American Oil Chemists' Society, AOCS Official Method Cb 1-25: Halphen Test. The result to be expressed as positive or negative.

5.16 Crismer Value

Official and Tentative Methods of the American Oil Chemists' Society, AOCS Official Method Cb 4-35, Crismer Test, Fryer and Weston Modification, and Ca 5a-40, Free Fatty Acids, calculating the acidity as oleic acid. Results to be expressed by a conventional value (I_C) as described in the method.

5.17 Baudouin Test (Modified Villavecchia Test or Sesameseed Oil Test)

Official and Tentative Methods of the American Oil Chemists' Society, AOCS Official Method Cb 2-40: Modified Villavecchia Test). Results to be expressed as positive or negative.

5.18 Reichert Value and Polenske Value

IUPAC Standard Methods for the Analysis of Oils, Fats and Soaps, 5th Edition, 1966, I.D.9: Soluble and Insoluble Volatile Acids.

Table 2: Chemical and Physical Characteristics (see Appendix 1 of the standard)

	Arachis Oil	Babassu Oil	Coconut Oil	Cottonseed Oil	Grapeseed Oil	Maize Oil	Mustardseed 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
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	1.449-1.455	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	107-128	92-125	50.0-55.0	14.1-21.0
UNSAPONIFIABLE MATTER (g/kg)	<= 10	<= 12	<= 15	<= 15	<= 20	<= 28	<= 15	<= 12	<= 10

	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)	0.8969-0.8977 at 40°C	0.8813-0.8844 at 60°C						
REFRACTIVE INDEX (N_D40°C)	1.4586-1.4592	1.4472-1.4511	1.465-1.469	1.65-1.467	1.467-1.470	1.465-1.469	1.466-1.470	1.467-1.469
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 are calculated from fatty acid composition, with the exception of those for Mustardseed Oil, Palm Olein, Palm Stearin, Rapeseed Oil and Sesameseed Oil.
n_D 50°C

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

	Arachis Oil	Babassu Oil	Coconut Oil	Cottonseed Oil	Grapeseed Oil *	Maize Oil	Palm Oil	Palm Kernel Oil	Rapeseed Oil (low erucic acid)	Safflower-seed Oil	Sesameseed Oil *	Soya Bean Oil	Sunflower-seed Oil
CHOLESTEROL	0.0-3.8	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	0.0-0.5	0.1-0.2	0.6-1.4	0.2-1.3
BRASSICASTEROL	0.0-0.2	0.0-0.3	0.0-0.9	0.1-0.9	0.2	0.0-0.2	0	0.0-0.8	5.0-13.0	0	0.1-0.2	0.0-0.3	0.0-0.2
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	0.0-0.7	6.5-9.6	3.4-6.4	15.9-19.1	8.6-10.8
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	56.2-62.8
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	0.0-2.8	1.4-9.0	3.1-6.6	2.1-4.0	6.2-7.8	1.9-3.7	0.0-6.9
DELTA-7-STIGMASTENOL	0.0-5.1	0	0.0-3.0	0.0-1.4	1.2	1.0-4.2	0.2-2.4	0.0-2.1	0.0-1.3	15.7-22.4	1.8-7.6	1.4-5.2	7.0-13.4
DELTA-7-AVENASTEROL	0.0-5.5	0.4-1.0	0.0-3.0	0.8-3.3	0.7	0.7-2.7	0.0-5.1	0.0-1.4	0.0-0.8	2.9-5.3	1.2-5.6	1.0-4.6	3.1-6.5
OTHERS	0.0-1.4	0	0.0-3.6	0.0-1.5	5.1	0.0-2.4	0	0.0-2.7	0.0-4.2	0.5-2.8	0.7-9.2	0.0-1.8	0.0-5.3
TOTAL STEROLS (mg/kg)	901-2854	570-766	470-1139	2690-6425	5826	7950-22150	376-627	792-1406	4824-11276	2095-2647	4501-18957	1837-4089	2437-4545

* provisional data

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

	Arachis Oil	Babassu Oil	Coconut Oil	Cottonseed Oil	Grapeseed Oil *	Maize Oil	Palm Oil	Palm Kernel Oil	Rapeseed Oil (low erucic acid)	Safflower-seed Oil	Sesameseed Oil *	Soya Bean Oil	Sunflower-seed Oil
ALPHA-TOCOPHEROL	49-373	0	0-17	136-674	16-38	23-573	4-193	0-44	100-386	234-660	0-3.3	9-352	403-935
BETA-TOCOPHEROL	0-41	0	0-11	0-29	0-89	0-356	0-234	0-248	0-140	0-17	0	0-36	0-45
GAMMA-TOCOPHEROL	88-389	0	0-14	138-746	0-73	268-2468	0-526	0-257	189-753	0-12	521-983	89-2307	0-34
DELTA-TOCOPHEROL	0-22	0	0	0-21	0-4	23-75	0-123	0	0-22	0	4-21	154-932	0-7.0
ALPHA-TOCOTRIENOL	0	25-46	0-44	0	18-107	0-239	4-336	0	0	0	0	0-69	0
GAMMA-TOCOTRIENOL	0	32-80	0-1	0	115-205	0-450	14-710	0-60	0	0-12	0-20	0-103	0
DELTA-TOCOTRIENOL	0	9-10	0	0	0-3.2	0-20	0-377	0	0	0	0	0	0
TOTAL (mg/kg)	447-1291	176-	67-128	0-44 1185	389-	240-405 3716	331-1465	141-	0-257 2680	438-	246-664 1003	531-3363	601-1514

* provisional data

Note: Maize oil also contains 0-52 mg/kg beta tocotrienol

Appendix 2

FOOD ADDITIVES

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	20 mg/kg (calculated as total bixin or norbixin)
160e	Beta-apo-8'-carotenal	25 mg/kg
160f	Methyl and ethyl esters of beta-apo-8' - carotenoic acid	25 mg/kg

2. Flavours

Natural flavours and their identical synthetic equivalents, except those which are known to represent a toxic hazard, and other synthetic flavours approved by the Codex Alimentarius Commission are permitted for the purpose of restoring natural flavour lost in processing or for the purpose of standardising flavour, as long as the added flavour does not deceive or mislead the consumer by concealing damage or inferiority or by making the product appear to be of greater than actual value.

3. 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. Antioxidants Synergists

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

5. Anti-foaming Agents

		Maximum Level
900a	Polydimethylsiloxane singly or in combination with silicon dioxide	10 mg/kg

APPENDIX IX

PROPOSED DRAFT STANDARD FOR FAT SPREADS
(At Step 5 of the Procedure)

Appendix 1 to this Standard contains quality and compositional provisions which have been agreed internationally to facilitate trade and which are strongly recommended to traders to form, where appropriate, the basis of sales or purchase contracts. This Appendix does not however form part of the Standard and acceptance of the Standard by Governments does not imply acceptance of Appendix 1.

Appendix 2 to the Standard contains provisions relating to additives which will ultimately be replaced by the Codex General Standard for Food Additives once adopted.

1. SCOPE

This Standard applies to all fat products, containing no more than 95% fat, intended primarily for use as spreads. It only includes butter, margarine and products used for similar purposes.

2. DESCRIPTION

2.1 Fat Spread

A "fat spread" is a food in the form of an emulsion, principally of water and edible fats and oils.

2.2 Edible Fats and Oils

"Edible fats and oils" are foodstuffs mainly composed of triglycerides of fatty acids. They can be of vegetable, animal (including milk) or marine origin.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Composition

3.1.1 Milk Fat Spreads

3.1.1.1 Butter, three-quarter butter, half butter and dairy spreads are derived from milk and/or milk products. However, other substances necessary for their manufacture may be added, provided those substances are not used for the purpose of replacing, either in whole or in part, any milk constituents.

3.1.1.2 Unless otherwise indicated in the labelling, the milk fat must be derived from cow's milk.

3.1.1.3 The composition of butter, three-quarter fat butter, half fat butter shall be as follows:

(a)	Butter	
	milk fat content	80 - 95%,
	maximum water content	16%
	maximum dry non-fat milk content	2%.
(b)	Three-quarter fat butter	
	milk fat content	59% - 61%.
(c)	Half fat butter	
	milk fat content	39% - 41%.

Other products which meet the specifications in 3.1.1.1 shall be known as dairy spreads.

3.1.2 Fat Spreads (margarine type)

3.1.2.1 Margarine, three-quarter fat margarine and half fat margarine are derived from fats and oils of vegetable, animal or marine origin. Any milk fat content must be no more than 3% of the total fat content.

3.1.2.2 The fat content shall be as follows:

(a)	Margarine	80% - 95%
(b)	Three-quarter fat margarine	59% - 61%.
(c)	Half fat margarine or Minarine	39% - 41%.

3.2. Optional Ingredients

The following ingredients are permitted in the products indicated but their presence should be declared in the ingredients list.

3.2.1 Vitamins

The following vitamins may be added to all products except butter:

Vitamin A and its esters added as retinol or beta-carotene (1)
Vitamin D
Vitamin E and its esters
Other vitamins.

(1) 6 μg of dietary beta-carotene is equivalent to 1 μg of retinol

Maximum and minimum levels for vitamins A, D and E and other vitamins 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.

3.2.2 Miscellaneous Ingredients

3.2.2.1.The following ingredient is permitted in all products:
Sodium chloride.

3.2.2.2 The following substances and products derived from them are permitted in addition to the basic constituents of all fat spreads except butter, provided the products are generally accepted as safe for human consumption:

Egg yolk
Sugars (i.e. any carbohydrate sweetening material)
Gelatine
Natural starches
Milk solids non-fat
Mono-,di- and oligosaccharides and malto-dextrins.

3.3 Processing Aids

Cultures of harmless lactic acid and flavour producing bacteria may be used.

4. FOOD ADDITIVES

Only those food additives listed in the Appendix 2 may be used and only within any limits specified in that Appendix.

5. CONTAMINANTS

5.1 Heavy Metals

The products covered by the provisions of this standard shall be free from heavy metals in amounts which may represent a hazard to human health. In particular, the following limits apply:

Metal	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 Committee on Pesticide Residues.

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 these 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 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).

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 as appropriate. Products which do not comply with these specifications shall be known as "fat spreads". In addition:

a) the term "three-quarter" may be used to describe fat spreads with a fat content of 59%-61% and the term "half" may be used to describe blended fat spreads with a fat content of 39%-41% provided the accompanying description relates the term to the minimum fat content of butter and margarine.

b) The term "whey" should be included in the name of milk fat products meeting the compositional requirements in Section 3.1.1 which are derived from whey.

7.2 Labelling of Non-Retail Containers

Information, as appropriate needed for labelling of retail containers is given either on the non-retail containers or in accompanying documents except that the name of the food, date marking and storage instructions, lot identification and the name and address of the manufacturer or packer shall appear on the non-retail 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 identified with the accompanying documents.

7.3 Declaration of Fat Content

7.3.1 The total fat content of products must be declared in close proximity to the name of the food.

7.3.2 The milk fat content of appropriate products should be declared as a percentage of the total product.

8. METHODS OF ANALYSIS AND SAMPLING

8.1 Determination of Lead

IUPAC (1988) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.632, Determination of Lead).
Results to be expressed as mg lead/kg.

8.2 Determination of Arsenic

Colorimetric silver diethyldithiocarbamate method of the AOAC (Official Methods of Analysis of the AOAC,1990, 15th. Edition, 963.21, 952.13).
Results to be expressed as mg arsenic/kg.

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

FAO/WHO Standard B-9, Butter: Determination of water, solids-non-fat and fat content on the same test portion.

8.4 Determination of Milk Fat Content

IUPAC Method (Ref: Pure & Applied Chemistry, 1986, 58(10), 1419) for determination of butyric acid in oils and fats using a given factor to convert percentage butyric acid to percentage milk fat.

8.5 Determination of Salt Content

FAO/WHO Standard B.8, Determination of Salt (Sodium Chloride) Content of Butter.

8.6 Determination of Vitamin A Content (Type II) Official Methods of Analysis of the AOAC, 1980, 13th Edition, 43.001-007. Results to be expressed as ug retinol (Vitamin A-alcohol) per kg product.

8.7 Determination of Vitamin D Content (Type II) Official Methods of Analysis of the AOAC, 1980, 13th Edition, 43.195-280. Results to be expressed as ug Vitamin D per kg product.

8.8 Determination of Vitamin E Content (Type II) IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 6th Edition, 1st Supplement, Party 4, 1981, 2.404. Results to be expressed as mg of each tocopherol per kg of product.

Appendix 1

OTHER QUALITY AND COMPOSITION FACTORS

1. The following limits should apply to prevent lipid oxidation of fats:

Metal	Maximum Permissible Concentration
Iron (Fe)	1.5 mg/kg
Copper (Cu)	0.1 mg/kg

2. **Methods of Analysis and Sampling**

Determination of Iron and Copper

IUPAC (1988) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.631, Determination of Copper and Iron).
Results to be expressed as mg iron/kg and mg copper/kg.

Appendix 2

FOOD ADDITIVES

1 Colours

1.1 The following are permitted in all products:

		Maximum Level
160a	(i) Beta-carotene	GMP
160b	Annatto extracts	20 mg/kg (calculated as total bixin or norbixin)

1.2 The following are permitted in all products except butter:

		Maximum Level
100	(i) Curcumin or (ii) Turmeric	5 mg/kg (calculated as curcumin)
160e	Beta-apo-carotenal	25 mg/kg
160f	beta-apo-8'-carotenoic acid, methyl or ethyl ester	25 mg/kg

2 Flavours

Permitted flavours are permitted in all products except butter but their use is according to Good Manufacturing Practice (GMP).

3 Emulsifiers

NOTE: Some of the following also have a stabilising and thickening function.

The following are permitted in all products except butter:

		Maximum level	
322	Lecithins	GMP	
	Polyoxyethylene (20) sorbitan:		
432	monolaurate	)	
433	mono-oleate	10 g/kg)	10g/kg singly or
434	monopalmitate	10 g/kg)	in combination
435	monostearate	5 g/kg)	
436	tristearate	5 g/kg)	
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-glycerids of fatty acids	10g/kg	
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 mg/kg	
477	Propylene glycol esters of fatty acids	20 mg/kg	
481	Sodium lactylates (i) sodium stearoyl lactylate (ii) sodium oleyl lactylate	10 g/kg	

482	Calcium lactylates (i) calcium stearoyl lactylate (ii) calcium oleyl lactylate		10g/kg
491	Sorbitan monostearate	)	10 g/kg
492	Sorbitan tristearate	)	singly or
493	Sorbitan monolaurate	)	in combination
494	Sorbitan monooleate	)	
495	Sorbitan monopalmitate	)	

4 Preservatives

The following are permitted in all products except butter:

			Maximum level
200	Sorbic acid	)	2 000 mg/kg
201	Sodium sorbate	)	singly or in
202	Potassium sorbate	)	combination
203	Calcium sorbate	)	
210	Benzoic acid	)	1 000 mg/kg
211	Sodium benzoate	)	singly or in
212	Potassium benzoate	)	combination
213	Calcium benzoate	)	

Note: If used in combination, the combined use of sorbic acid and benzoic acid shall not exceed 2,000 mg/kg of which the benzoic acid portion shall not exceed 1,000 mg/kg.

5 Thickening and Stabilising Agents

The following are permitted in all products except butter:

			Maximum level
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)	)	10 g/kg
410	Carob bean gum	)	singly or
412	Guar Gum	)	in combination
413	Tragacanth gum	)	
440	Pectins	)	
461	Methyl cellulose	)	
463	Hydroxypropyl cellulose	)	
464	Hydroxypropyl methyl cellulose	)	
465	Methyl ethyl cellulose	)	
466	Sodium carboxymethyl cellulose	)	
415	Xanthan gum		5 g/kg

6 pH Correcting Agents

6.1 The following are permitted in all products:

		Maximum Level
270	Lactic acid (L-, D- and DL-)	GMP
339	Sodium phosphates	GMP
340	Potassium phosphates	GMP

500(i)	Sodium carbonate	GMP
500(ii)	Sodium hydrogen carbonate	GMP
524	Sodium hydroxide	GMP
526	Calcium hydroxide	GMP

6.2 The following are permitted in all products except butter:

330	Citric acid	GMP
331	Sodium citrates	GMP
	(i) Sodium dihydrogen citrate	
	(ii) Disodium monohydrogen citrate	
	(iii) Trisodium citrate	
335	Sodium tartrates	GMP
	(i) Monosodium tartrate	
	(ii) Disodium tartrate	

7 Antioxidants

The following are permitted in all products except butter:

		Maximum Level
300	Ascorbic acid (L-)	
301	Sodium ascorbate)	GMP
302	Calcium ascorbate)	
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
389	Dilauryl thiodipropionate	200 mg/kg
310	Propyl gallate	100 mg/kg
311	Octyl gallate	200 mg/kg
312	Dodecyl gallate	200 mg/kg
320	Butylated hydroxyanisole (BHA)	175 mg/kg
321	Butylated hydroxytoluene (BHT)	75 mg/kg
	Any combination of gallates, BHA and BHT providing limits above are not exceeded	200 mg/kg

8 Antioxidant Synergists

The following are permitted in all products except butter:

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

9 Anti-foaming Agents

The following are permitted in all products except butter:

		Maximum Level
551	Silicon dioxide amorphous	500mg/kg
900a	Polydimethylsiloxane singly or in combination with silicon dioxide	10 mg/kg

10 Flavour Enhancers

The following are permitted in all products except butter:

508	Potassium chloride)	
509	Calcium chloride)	
510	Ammonium chloride)	
511	Magnesium chloride)	GMP
620	Glutamic acid)	
621	Monosodium glutamate)	
622	Monopotassium glutamate)	
623	Monoammonium glutamate)	
625	Magnesium glutamate)	
626	Guanylic acid	500mg/kg
959	Neohesperidine dihydrochalcone	5mg/kg

11 Miscellaneous

The following are permitted in all products:

290	Carbon dioxide	GMP
938	Argon	GMP
941	Nitrogen	GMP
942	Nitrous oxide	GMP

The following are permitted in all products except butter:

405	Propylene glycol	GMP
420	Sorbitol and sorbitol syrup	
421	Mannitol	GMP
920	L-cysteine and its hydrochlorides-	GMP
	sodium and potassium salts	GMP
967	Xylitol	GMP

APPENDIX X

PROPOSED DRAFT STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS
(At Step 5 of the Procedure)

The Appendix to this standard contains quality and compositional provisions which have been agreed internationally to facilitate trade and which are strongly recommended to traders to form, where appropriate, the basis of sales the basis of sales and purchase contracts. This Appendix does not however form part of the standard and thus acceptance of the standard by Governments does not imply acceptance of the Appendix.

1. SCOPE

This standard applies to olive oils, and olive-pomace oils but does not include olive oils and olive-pomace oils which must be subject to further processing to render them fit for human consumption.

2. DESCRIPTION

2.1 Olive oil is the oil obtained solely from the fruit of the olive tree (Olea europaea sativa Hoffm. & Link), to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds.

2.2 Virgin Olive oil is the oil obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions, particularly thermal conditions, that do not lead to alterations in the oil, and which has not undergone any treatment other than washing, decanting, centrifuging and filtration.

2.3 Olive-pomace oil (Olive-residue oil) is the oil obtained by treating olive pomace with solvents, to the exclusion of oils obtained by re-esterification processes and of any mixture with oils of other kinds.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Extra Virgin olive oil: Virgin olive oil with an organoleptic rating of 6.5 or more and a free acidity, expressed as oleic acid, of not more than 1 gram per 100 grams.

3.2 Fine virgin olive oil : Virgin olive oil which does not meet the specifications for extra virgin olive oil but has an organoleptic rating of 5.5 or more and a free acidity, expressed as oleic acid, of not more than 1.5 grams per 100 grams.

3.3 Semi-fine virgin olive oil (or ordinary virgin olive oil): Virgin olive oil which does not meet the specifications for fine virgin olive oil but has with an organoleptic rating of 3.5 or more and a free acidity, expressed as oleic acid, of not more than 3.3 grams per 100 grams.

3.4 Refined olive oil is the olive oil obtained from virgin olive oils by refining methods which do not lead to alterations in the initial glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.3 grams per 100 grams.

3.5 Olive oil, marketed as such, is the oil consisting of a blend of refined olive oil and virgin olive oil fit for human consumption. It has a free acidity, expressed as oleic acid, of not more than 1.5 grams per 100 grams.

3.6 Refined olive-pomace oil (refined olive-residue oil) : obtained from crude olive-pomace oil by refining methods which do not lead to alterations in the initial glyceridic structure. It is intended for human consumption either as it is or else in blends with virgin olive oil. It has a free acidity, expressed as oleic acid, of not more than 0.3 grams per 100 grams.

3.7 Olive-pomace oil (olive-residue oil): blend of refined olive-pomace oil and virgin olive oil, fit for human consumption. It has a free acidity, expressed as oleic acid, of not more than 1.5 grams per 100 grams.

3.8 Fatty Acid Composition as determined by gas liquid chromatography

C14:0	0.0 - 0.05
C16:0	7.5 - 20.0
C16:1	0.3 - 3.5
C17:0	0.0 - 0.3
C17:1	0.0 - 0.3
C18:0	0.5 - 5.0
C18:1	55.0 - 83.0
C18:2	3.5 - 21.0
C18:3	0.0 - 0.9
C20:0	0.0 - 0.6
C20:1	0.0 - 0.4
C22:0	0.0 - 0.2
C24:0	0.0 - 0.2

3.9 Waxes:

	Maximum Level
Virgin olive oils	250 mg/kg
Refined Olive Oil	350 mg/kg
Olive Oil	350 mg/kg

3.10 Detection of oil seed oils

Maximum difference between the real and theoretical ECN 42 triglyceride content: 0.4

4. FOOD ADDITIVES

4.1 Virgin olive oils

No additives are permitted in these products.

4.2 Refined olive oil, olive oil, refined olive-residue oil and olive-residue oil

The addition of alpha-tocopherol to the above products is permitted to restore natural tocopherol lost in the refining process. The concentration of alpha-tocopherol in the final product should not exceed 200 mg/kg.

5. CONTAMINANTS

5.1 Heavy Metals The products covered by the provisions of this standard shall be free from heavy metals in amounts that may represent a hazard to human health. In particular, the following limits 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 Committee on Pesticide Residues.

5.3 Halogenated Solvents

Maximum concentration of individual halogenated solvents	0.1 mg/kg
Maximum sum of concentration of all halogenated solvents	0.2 mg/kg

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 these products.

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

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

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

7. LABELLING

The products shall be labelled in accordance with the Codex General Standard for Labelling of Prepackaged Foods (CODEX STAN 1 - 1985).

7.1 The Name of the Product shall be consistent with the descriptions as shown in Section 3 of this standard. In no case shall the designation "olive oil" be used to refer to olive-residue oils.

7.2 The Free Acidity of the Oil shall be declared on the label and expressed in terms of oleic acid.

7.3 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 the Organoleptic Characteristics
Method COI/T.20/Doc. no. 3/Rev.1 of 30 May 1991: Organoleptic Assessment of Virgin Olive Oil.

8.2 Determination of Free Acidity
IUPAC method (1992, 7th. Edition) no.2.201: Determination of Acid Value (AV) and Acidity, 1-4.6.

8.3 Determination of the Fatty Acid Composition
IUPAC method (1979, 6th Edition) no.2.302: Gas - Liquid Chromatography of Fatty Acid Methyl Esters or ISO 5508/5509.

8.4 Determination of Wax Content
NGD C 80-1989; Determination of Wax Content by Capillary Column Gas-Liquid Chromatography.

8.5 Calculation of the Difference between the Real and Theoretical ECN 42 Triglyceride Content:
IUPAC no. 2.324 "Determination of Compostion of Triglycerides in Liquid Vegetable Oils in Terms of their Partition Number by High-Performance Liquid Chromatography".

COI/T.20/Doc. no. 9-1991 "Theoretical ECN 42 and ECN 44 Triglyceride Composition".

8.6 Determination of Alpha-Tocopherol
IUPAC method (7th. Edition, 1992) no. 2.411:
Identification and Determination of Tocopherols.

8.7 Determination of Arsenic
Colorimetric silver diethyldithiocarbamate method of the AOAC (Official Methods of the AOAC, 1990, 15th. Edition, 963.21, 952.13).

8.8 Determination of Lead
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.632: Determination of Lead.

8.9 Detection of Traces of Halogenated Solvents
Method COI/T.20/Doc. no. 8/Corr. 1, of December 1990: Determination of Tetrachloroethylene in Olive Oils by Gas-Liquid Chromatography.

Appendix I

OTHER QUALITY AND COMPOSITION FACTORS

1. Quality Characteristics

1.1 Moisture and volatile matter:

	Maximum Level
Virgin olive oils	0.2 %
Refined Olive Oil	0.1 %
Olive Oil	0.1 %
Refined Olive-pomace Oil	0.1 %
Olive-pomace Oil	0.1 %

1.2 Insoluble impurities:

Virgin olive oils	0.1 %
Refined Olive Oil	0.05 %
Olive Oil	0.05 %
Refined Olive-pomace Oil	0.05 %
Olive-pomace Oil	0.05 %

1.3 Trace metals:

Iron (Fe)	3 mg/kg
Copper (Cu)	0.1 mg/kg

1.4 Peroxide Value:

Virgin Olive Oils	20 milliequivalents of active oxygen/kg oil
Refined Olive Oil	[5] milliequivalents of active oxygen/kg oil
Olive Oil	15 milliequivalents of active oxygen/kg oil
Refined Olive-pomace Oil	[5] milliequivalents of active oxygen/kg oil
Olive-pomace Oil	20 milliequivalents of active oxygen/kg oil

1.5 Organoleptic Characteristics

Virgin olive oils: see Section 3 of Standard

1.5.1	ODOUR	TASTE	COLOUR
Refined Olive Oil:	acceptable	acceptable	light yellow
Olive Oil:	good	good	light, yellow to green
Refined Olive-pomace Oil:	acceptable	acceptable	light, yellow to brownish yellow
Olive-pomace Oil:	acceptable	acceptable	light, yellow to green

1.5.2 Appearance at 20°C for 24 hours: limpid

2. Composition Characteristics

2.1 Saturated fatty acids at the 2-position in the triglyceride (sum of palmitic & stearic acids):

	Maximum Level
Virgin olive oils	1.5 %
Refined Olive Oil	1.8 %
Olive Oil	1.8 %
Refined Olive-pomace Oil	2.2 %
Olive-pomace Oil	not specified

3. Chemical and Physical Characteristics

3.1 Relative Density 0.910-O.916 (20°C/water at 20°C)

3.2 Refractive Index

Virgin olive oils	)
Refined Olive Oil	) 1.4677-1.4705 (n_D 20°C)
Olive Oil	)
Olive-pomace oils	1.4680-1.4707 (n_D 20°C)

3.3 Saponification Value:

Virgin olive oils	)
Refined Olive Oil	) 184-196 mg KOH/kg
Olive Oil	)
Olive-pomace oils	182-193 mg KOH/kg

3.4 Iodine Value (WIJS)

Virgin olive oils	)
Refined Olive Oil	) 75-94
Olive Oil	)
Olive-pomace oils	75-92

3.5 Unsaponifiable matter:

	Maximum Level
Virgin olive oils	)
Refined Olive Oil	) 15 g/kg
Olive Oil	)
Olive-pomace oils	30 g/kg

3.6 Absorbency in ultra-violet

	Absorbency in Ultra-violet at 270 nm.	**Delta E**
Extra virgin olive oil	<=0.25	<=0.01
Fine virgin olive oil	<=0.25	<=0.01
Ordinary virgin olive oil	<=0.30 (*)	<=0.01
Refined olive oil	<=1.10	<=0.16
Olive oil	<=0.90	<=0.15
Refined olive-residue oil	<=2.00	<=0.20
Olive-residue oil	<=1.70	<=0.18

* After passage of the sample through activated alumina, absorbency at 20 nm. shall be equal to or less than 0.11.

4. Identity Characteristics

4.1 Sterol Composition

4.1.1 Percentage of total sterols

Cholesterol	<= 0.5
Brassicasterol	<= 0.1
Campesterol	<= 4.0
Stigmasterol	less than campesterol in edible olive oils
Delta-7-stigmastenol	<= 0.5
Beta-sitosterol + delta-5-avenasterol + delta-5,23-stigmast-adienol + clerosterol + sitostanol + delta-5,24-stigmast-adienol	>= 93.0

4.1.2 Minimum Value of Total Sterols

Virgin olive oils Refined Olive Oil Olive Oil	1000 mg/kg
Refined Olive-pomace Oil	1800 mg/kg
Olive-pomace Oil	1800 mg/kg

4.2 Erythrodiol and Uvaol Content

	Maximum percentage of total sterols
Virgin olive oils Refined Olive Oil Olive Oil	4.5

5. Methods of Analysis and Sampling

5.1 Determination of Moisture and Volatile Matter

IUPAC method (1979, 6th. edition) no. 2.601: Determination of the Moisture and Volatile Matter or ISO 662 (1980).

5.2 Determination of the Insoluble Impurities in Light Petroleum

IUPAC method (1979, 6th. edition) no. 2.604: Determination of the Insoluble Impurities or ISO 663 (1981).

5.3 Determination of Trace Metals

IUPAC method no. 2.631: Determination of Copper, Iron and Nickel in Oils and Fats by Direct Graphite Furnace Atomic Absorption Spectrophotometry.

5.4 Determination of Saponification Value

IUPAC method (1979, 6th. edition) no. 2.202: Determination of the Saponification Value (SV) or ISO 3657 (1977).

5.5 Determination of Unsaponifiable Matter

IUPAC method (1966, 5th. edition) II.D.5 (II.D.5.1 and II.D.5.2)
Determination of the Unsaponifiable Matter - Light Petroleum Method.

5.6 Determination of Erythrodiol Content
IUPAC no.2.431: Determination of Erythrodiol Content.

5.7 Determination of the Sterol Composition and Total Sterols Content
COI/T.20/Doc. no. 10 "Determination of the composition and content of sterols by capillary-column gas chromatography".

5.8 Determination of the Fatty Acids in the 2-Position of the Triglycerides
IUPAC method (1979, 6th. edition) no. 2.210: Determination of the Fatty Acids in the 2-Position in the Triglycerides of Oils and Fats.

5.9 Determination of the Peroxide Value
IUPAC method (1979, 6th. edition) no. 2.501: Determination of the Peroxide Value (PV)', or ISO 3960-1977.

5.10 Determination of Relative Density
FAO/WHO Methods of Analysis for Edible Oils and Fats, CAC/RM 1-1969.

5.11 Determination of Refractive Index
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. edition, 1987, 2.102.

5.12 Determination of Iodine Value
IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th edition, 1987, 2.205.

5.13 Determination of the Organoleptic Characteristics
Method COI/T.20/Doc. no. 3/Rev.1 of 30 May 1991, Organoleptic Assessment of Virgin Olive Oil.

5.14 Determination of the Absorbency in Ultra-Violet

Principle of Method

The degree of oxidation of olive oil is reflected by its specific extinction at 232nm and 270nm. In fact, virgin olive oils, of good quality and correctly stored, contain very few products of oxidation; these mainly peroxidic in nature, have a maximum absorption at approximately 232nm. The values of E λ, at 232 and 270 nm in such olive oils are below the maximum provided for in the standard. On the other hand, when the oil is treated with a decolorising agent (ie. an absorbent earth) during the refining process, conjugated trienoic compounds are formed. These compounds have a maximum absorption situated at approximately 270 nm; this means that refined oils have higher values of E at 270 nm.

NOTE: Measurement of specific extinction in ultra-violet is essentially a measurement of the state of alteration of the oil. It is not specifically a measurement of the refining. In some particular cases, abnormally altered virgin oils can show spectral characteristics close to those of refined oils.

Reagents

1. Spectrophotometrically pure cyclohexane: Minimum transmittance at 220 nm: 40% and minimum transmittance at 250 nm: 95% by comparison with distilled water.

2. Basic alumina of known grade: basic alumina of Brockmann grade 1 (0% water) is obtained by heating for 3 hours at 380-400 C. basic alumina (chromatographic quality) of particle size 30 to 130 micrometers (mean 80 micrometers). To 100g of this product add 5 ml of distilled water to produce basic alumina of Brockmann grade close to IV.

NOTE: Method used to check the activity index of the alumina.

Place 30g of the basic alumina (as obtained above) in a chromatographic column, 450 mm long with a diameter of 35mm; through this column pass, under the conditions laid down in the method, a mixture of 95% virgin olive oil, having a specific extinction coefficient below 0.18 at 270 nm, and of 5% arachis oil previously treated, during the refining process, with decolorising agent (absorbent earth) and having a specific extinction coefficient equal to or above 4 at 270 nm. If this mixture shows a specific extinction coefficient greater than 0.11, the activity of the alumina is acceptable. Should the elution of conjugated trienes not have taken place using this alumina, an alumina at a higher hydration should be used after verifying that it agrees with the preceding test.

Apparatus

1. Ultra-violet spectrophotometer for measurements between 210 and 300 nm.

2. Quartz cells of 1cm thickness.

3. 50-ml and 500-ml volumetric flasks.

4. Chromatographic column, 450 mm long with a diameter of 35 mm.

5. Adjustment of Spectrophotometer: dissolve 0.2 g of dry potassium chromate in exactly 1 litre of a 0.05 N solution of potassium hydroxide.

Place exactly 25 ml of this solution in a 500-ml flask and bring up to the 500-ml mark with the 0.05 N solution of potassium hydroxide.

Determine the optical density of this latter solution by comparison with the 0.05 N solution of potassium hydroxide as a reference solution, in a 1 cm cell. This, at 275 nm should be 0.200 $\pm$ 0.005.

Procedure

If the oil is not completely clear at ambient temperature, filter before attempting measurements. Place approximately 0.5 g, weighed accurately, of the oil in the 50-ml flask. Add the cyclohexane up to the mark and shake. Fill a cell with this solution and measure the optical density using the cyclohexane as a reference solution. Determine at 270 nm.

Determine in the region of 270 nm, the wavelength of the maximum absorption λ m and determine the optical density at λ m nm, λ m-4 nm and λ m +4 nm.

Calculation and Expression of Results

(i) Calculation of Specific Extinction at 270 nm.

$$E\lambda = \frac{A\lambda}{cl}$$

where:

$E\lambda$ = specific extinction at wavelength λ nm

$A\lambda$ = optical density at wavelength λ nm

c = concentration of the test solution in g/100 ml

l = thickness of the cell in cm

NOTE: If the optical density is less than 0.2, re-measure with a more concentrated solution. If it is more than 0.8, re-measure with a weaker solution.

(ii) Calculation of the variation of the specific extinction at the wavelength of maximum absorption near 270nm

$$\Delta E = E\lambda_m - \frac{(E\lambda_{m-4}) + (E\lambda_{m+4})}{2}$$

Where:-

ΔE = variation of specific extinction at λ_m

$E\lambda_m$ = specific extinction at the wavelength of maximum adsorption near 270 nm.

$E\lambda_{m-4}$ and $E\lambda_{m+4}$ = specific extinctions at wavelengths plus λ_m plus or minus 4 nm.

Additional procedure for determination of the specific extinction after passage through alumina
Place 30 g of basic alumina (as in the reagents section earlier) in a chromatography column approximately 450 mm long and 35 mm in diameter, furnished with a draining tube of about 10 mm diameter. Pack the alumina mechanically by repeatadly tapping the column, held vertically, on a wooden surface. Place in the column thus prepared 100 ml of a solution of 10 % oil in hexane. Collect the drainings and evaporate the solvent in a vaccum at less than 25°C. Using the oil so obtained, immediately determine the specific extinction at 270 nm, as previously described.

APPENDIX XI

PROPOSED DRAFT STANDARD FOR MAYONNAISE
(At Step 5 of the Procedure)

Appendix 1 to this standard contains quality and compositional provisions which have been agreed internationally to facilitate trade and which are strongly recommended to traders to form, where appropriate, the basis of sales and purchase contracts. This Appendix does not however form part of the standard and thus acceptance of the standard by Governments does not imply acceptance of Appendix 1.

Appendix 2 to the Standard contains provisions relating to additives which will ultimately be replaced by the Codex General Standard for Food Additives once adopted.

1. SCOPE

This standard applies to mayonnaise, as defined in Section 2 below.

2. DESCRIPTION

Mayonnaise is a condiment sauce obtained by emulsifying edible oil(s) in an aqueous phase consisting of vinegar, the oil-in-water emulsion being produced by egg yolk. Mayonnaise may contain optional ingredients in accordance with Section 3.2 and Section 8.1.2.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Ingredients

3.1.1 All ingredients shall be of sound quality and fit for human consumption. Water shall be of potable quality.

3.1.2 Ingredients shall comply with the requirements of the relevant Codex Standards and in particular the Codex Standards for Vinegar and Edible Vegetable Oils.

3.1.3 Eggs and egg products shall be hens' eggs or hens' egg products unless specified in the labelling.

3.2 Composition Requirements

3.2.1 Total fat content: not less than 65%.

3.2.2 Egg yolk (technically pure) in amounts sufficient to emulsify the product.

3.3 Optional Ingredients

The following food ingredients intended to influence significantly and in the desired fashion the physical and organoleptic characteristics of the product may be used subject to Section 8.1.2

(a) egg products including white
(b) sugars
(c) food grade salt
(d) condiments, spices, herbs (including mustard)
(e) lemon juice
(f) water
(g) skimmed milk powder

4. FOOD ADDITIVES

Only those food additives listed in Appendix 2 may be used and only within any limits specified in that Appendix.

5. CONTAMINANTS

5.1 Heavy Metals

The products covered by the provisions of this standard shall be free from heavy metals in amounts which may represent a hazard to human health. In particular, the following limits apply:

Metal	Maximum Permissible Concentration
Arsenic (As)	0.1 mg/kg
Lead (Pb)	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 Committee on Pesticide Residues.

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 these products in particular the Code of Hygienic Practice for Egg Products (Ref.CAC/RCP 15- 1976). Raw materials shall be stored, treated and handled under suitable conditions so as to maintain their chemical and microbiological characteristics.

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 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. PACKAGING

The product shall be packed in containers which ensure the safety and quality of the food.

8. LABELLING

In addition to the provisions of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985), the following specific provisions apply:

8.1 Name of the Food

8.1.1 Only products complying with the provisions of this Standard may be designated as "mayonnaise" without further qualification.

8.1.2 Where an ingredient has been added which imparts a special or characteristic flavour to the product, this shall be indicated by an appropriate term in conjunction with or in close proximity to the name of the food.

8.2 Declaration of Constituents

The content of the following constituents must be declared as a percentage of the total weight of the product in proximity to the name of the food:

Total fat content
Egg yolk

8.3 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.

9. METHODS OF ANALYSIS AND SAMPLING

9.1 Determination of Total Fat

Method 1/20 of the Bundesverband der Deutschen Feinkostindustrie. Annex 1 of the report from CIMSCEE to the Codex Coordinating Committee for Europe on the Technological Justification for Additives in Mayonnaise - Doc CX/EURO 86/6, FAO, Rome 1986.

9.2 Determination of Egg Yolk

Quinoline Molybdate Method of the Benelux organisation. Annex III of the report from CIMSCEE to the Codex Coordinating Committee for Europe on the Technological Justification for Additives in Mayonnaise - Doc. CX/EURO 86/6, FAO, Rome 1986.

9.3 Determination of Lead

IUPAC (1988) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.632, Determination of Lead).
Results to be expressed as mg lead/kg.

9.4 Determination of Arsenic

Colorimetric silver diethyldithiocarbamate method of the AOAC (Official Methods of Analysis of the AOAC,1990, 15th. Edition, 963.21, 952.13).
Results to be expressed as mg arsenic/kg.

Appendix 1

OTHER QUALITY AND COMPOSITION FACTORS

The following provisions are of an advisory nature reflecting quality factors and criteria typically used by commerce to define or describe the quality of product purchased. These provisions are intended to assist users of the Codex standards when making international purchases and are, therefore, not subject to formal acceptance by users of the standard.

1. Additional Ingredients

Ingredients other than those listed in Section 3.2 of the Standard may be used provided their presence is indicated in the name of the food. For example, the following may be used:

- fruits
- vegetables
- fruit juice
- vegetable juice
- dairy products other than skimmed milk

2. Quality Characteristics

The following limits should apply to prevent lipid oxidation of fats:

Metal	Maximum Permissible Concentration
Copper (Cu)	2 mg/kg

3. Methods of Analysis and Sampling

Determination of Copper

IUPAC (1988) method (IUPAC Standard Methods for the Analysis of Oils, Fats and Derivatives, 7th. Edition, 1st. Supplement, 2.631, Determination of Copper and Iron). Results to be expressed as mg copper/kg.

Appendix 2

FOOD ADDITIVES

			Maximum Level
1.	Colours		
100(i)	Curcumin	)	100 mg/kg
160a(i)	Beta-carotene	)	singly or in combination
160e	Beta-Apo-carotenal	)	in all types of mayonnaise
160f	Beta-Apo-8'-carotenoic acid, methyl or ethyl ester	)	
160b	Annatto extracts		10 mg/kg calculated as bixin
140	Chlorophyll		500 mg/kg in mayonnaise with herbs
150c	Caramel III - ammonia process		500 mg/kg in mayonnaise with mustard
162	Beet red		500 mg/kg in mayonnaise with tomato
2.	Flavours Natural or nature identical flavouring substances as defined for the purpose of the Codex Alimentarius Commission		GMP
3.	Preservatives		
200	Sorbic acid	)	
201	Sodium sorbate	)	
202	Potassium sorbate	)	
203	Calcium sorbate	)	1 g/kg singly or
210	Benzoic acid	)	in combination
211	Sodium benzoate	)	
212	Potassium benzoate	)	
213	Calcium benzoate	)	
4.	Stabilizers		
401	Sodium alginate	)	
402	Potassium alginate	)	
405	Propylene glycol alginate	)	
407	Carrageenan and its Na, K, NH_4 salts (including furcellaran)	)	
410	Carob gum	)	
412	Guar gum	)	1 g/kg, singly or
415	Xanthan gum	)	in combination
413	Tragacanth gum	)	
387	Oxystearin	)	
475	Polyglycerol esters of fatty acids	)	
440	Pectins	)	
466	Sodium carboxymethyl cellulose	)	1 g/kg singly or
460(i)	Microcrystalline cellulose	)	in combination
414	Gum arabic (acacia Gum)	)	

	Modified Starches:		
1412	Distarch phosphate esterified with sodium trimetaphosphate; esterified with phosphorus-oxychloride	)	5 g/kg singly or in combination
1414	acetylated distarch phosphate	)	
1422	Acetylated distarch adipate	)	
1442	Hydroxypropyl distarch phosphate	)	
5.	Acidifying Agents		
270	Lactic acid (L-, D-, and DL-)	)	
330	Citric acid	)	
331	Sodium citrates	)	
332	Potassium citrates	)	
261	Potassium acetates	)	GMP
262	Sodium acetates	)	
296	Malic acid (DL-)	)	
334	Tartaric acid		5 g/kg
335	Sodium tartrates		5 g/kg
336	Potassium tartrates		5 g/kg
6.	Antioxidants		
300	Ascorbic acid (L-)		500 mg/kg
304	Ascorbyl palmitate		500 mg/kg
306	Mixed tocopherols concentrate	)	
307	Alpha-tocopherol	)	240 mg/kg singly
308	Synthetic gamma-tocopherol	)	or in combination
309	Synthetic delta-tocopherol	)	
320	Butylated hydroxyanisole (BHA)		140 mg/kg
321	Butylated hydroxytoluene (BHT)		60 mg/kg
385	Calcium disodium ethylene-diamine-tetra-acetate (EDTA)		75 mg/kg
7.	Enzyme Preparation		
1102	Glucose oxidase (Aspergillus niger var.)		GMP
8.	Flavour Enhancers		
621	Monosodium glutamate		5 g/kg in mayonnaise with herbs