

**codex alimentarius commission**

FOOD AND AGRICULTURE  
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WORLD HEALTH  
ORGANIZATION

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REPORT OF THE  
FOURTH SESSION OF THE  
CODEX COMMITTEE ON CEREALS, PULSES AND LEGUMES

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## INTRODUCTION

1. The Committee on Cereals, Pulses and Legumes held its Fourth Session from 24 to 28 September 1984 in Washington, D.C., by courtesy of the Government of the United States of America. The session was chaired by Mr. David R. Galliard, Deputy Administrator, Federal Grain Inspection Service, USDA.

2. Dr. Kenneth A. Gilles, Administrator, Federal Grain Inspection Service of USDA in opening the session stated that the Committee was one of the most important subsidiary bodies of the Codex Alimentarius Commission. It was working on standards for cereals and cereal products, which constituted the most significant foods of the world population. He urged the Committee to aim at providing minimum standards for wholesome, nutritious products and to overcome problems with requirements which were barriers to trade. Dr. Gilles recognized that the elaboration of Codex standards for cereal products and pulses was still at its beginning and required continuing efforts and cooperation by all member countries,

3. The Chairman of the Committee indicated some concern that the Commission had not been able to approve the work carried out so far by this Committee and had returned the two very important standards for wheat flour and maize grains to Step 6. He expressed the hope that Governments had taken good note of the Commission's request to submit to this Committee the necessary data and comments and that it would be possible at this session to complete these two standards in such a way that they were acceptable to the Commission.

4. The Chairman introduced Mr. E.F. Kimbrell, the present Chairman of the Codex Alimentarius Commission. Mr. Kimbrell reminded the Committee of the aim of the Joint FAO/WHO Food Standards Programme of which the Commission was the Executive Body. He pointed to the spirit of cooperation which enabled members of Codex to arrive at internationally agreed standards despite the many differences which existed in national food legislation throughout the world. Mr. Kimbrell anticipated that the work achieved by this Committee would make good progress at the next Session of the Commission,

5. The session was attended by delegates from the following countries: Argentina, Australia, Brazil, Canada, Denmark, Egypt, Finland, France, Gabon, Federal Republic of Germany, Greece, Ireland, Japan, Madagascar, Malaysia, Netherlands, Poland, Spain, Switzerland, Thailand, Trinidad and Tobago, United Kingdom and United States of America,

6. Observers were present from the following countries and International Organizations:

- People's Republic of China;
- South Africa;
- American Association of Cereal Chemists (AACC);
- Association of Official Analytical Chemists (AOAC);
- Council of the European Communities (EEC);
- International Association for Cereal Science and Technology (ICC);
- International Federation of Glucose Industries (IFG);
- International Pulse Trade and Industry Confederation (IPTIC);
- International Organization for Standardization (ISO),

A list of participants, including officers from FAO and WHO, is included in Appendix I to this report.

## ADOPTION OF THE AGENDA (Agenda Item 2)

7. The Committee was informed that an Ad-hoc Working Group on Food Additives would meet during the session and report back to the Committee. The terms of reference of the Working Group were: to examine the food additives proposed for inclusion in the standards concerned with regard to their need, toxicological evaluation, nature (food additives or processing aids) usage levels and appropriate technological justification taking into account the report of the 16th Session of CCFA on the endorsement of several of these additives (ALINORM 83/12A).

8. The Committee noted that an AOAC/ICC/ISO Working Group on Methods of Analysis, Sampling, and related matters had met on 21 September 1984 and that their report would be considered in connection with the relevant agenda items. The terms of reference of the above Working Group were contained in paras 89, 109, 137 of ALINORM 83/29.

9. The Committee noted that no specific item for future work had been included in the agenda. It further noted that the 15th Session of the Commission as well as the Coordinating Committees had referred several items concerning future work to this Committee for further consideration. The Committee agreed therefore to discuss its future work, programme after Item 8.

10. The Committee unanimously adopted the Provisional Agenda (CX/CPL 84/1).

## MATTERS ARISING FROM THE FIFTEENTH SESSION OF THE CODEX ALIMENTARIUS COMMISSION AND FROM OTHER CODEX COMMITTEES (Agenda Item 3(a))

11. The Committee had before it CX/CPL 84/2 containing information arising from sessions of the Commission and other Codex Committees.

### Codex Alimentarius Commission, 15th Session

#### Length and Content of Codex Reports (Paras 13 and 14 of ALINORM 83/43)

12. The Committee was informed that the 30th Session of the Executive Committee as well as the 15th Session of the Commission had given consideration to content and format of reports of Codex Committees. The Commission had agreed that these reports should be as brief and as concise as possible without sacrificing essential details on important issues. It was, however, recognized that each Committee was best suited to decide on the nature and the format of its reports. There had been general agreement in the Commission that key words indicating decisions to be taken or action planned should be underlined in reports of the Commission and its subsidiary bodies.

13. The Committee was of the opinion that the reports should reflect the discussions of the Committee to facilitate further comments on matters under discussion and assist those countries which had not participated at the meeting itself. The Committee agreed with a proposal by the Secretariat to include in the report a Table of Contents and a Tabulated Status of Work.

General Principles on the Establishment or Selection of Codex Sampling Procedures  
(Paras 205 and 207 of ALINORM 83/43)

14. The Committee noted that the Commission had adopted the above General Principles as contained in CX/CPL 84/2, Appendix I. The Committee further noted that the AOAC/ICC/ISO Working Group had considered matters related to sampling and agreed that they should be discussed in connection with the standards under elaboration.

Meaning of Acceptance of Codex Methods of Analysis (Paras 208 and 209 of ALINORM 83/43)

15. The Committee noted that the Commission had agreed with a decision by CCMAS that Type I Methods should be accepted by Governments together with the provision they define and that Type. IV Methods (Tentative Methods) should not be adopted as Codex Methods until CCMAS had recognized their reliability on the basis of the appropriate Codex criteria. These decisions had been brought to the attention of the AOAC/ICC/ISO Working Group. (See para. 8).

Need to Elaborate a Codex Standard for Milled Rice in Relation to the Programmes of Work of the Codex Alimentarius Commission and ISO (Paras 438-440 of ALINORM 83/43)

16. The Committee decided to take this matter up under future work, having regard also to the views expressed at the 4th Session of the Coordinating Committee for Asia (see Part A, II of CX/CPL 84/2) and the 3rd Session of the Coordinating Committee for Latin America (Part A, III of CX/CPL 84/2). (See paras 214-215).

Coordinating Committee for Asia, 4th Session (ALINORM 85/15)

17. Concerning the comments of the above Committee on Milled Rice, see para. 215 and on Wheat Flour, see paras 38-39.

Coordinating Committee for Latin America, 3rd Session (ALINORM 85/36)

18. For comments on Milled Rice see para, 215. The views of the above Committee on other products were considered under "Future Work". See paras 214-227.

Coordinating Committee for Africa, 6th Session (ALINORM 85/28)

19. The Committee was informed that the Coordinating Committee for Africa was elaborating Regional Standards for Pearl Millet, Sorghum, Millet Flour and Sorghum Flour. (See also paras 219-221).

Codex Committee on Food Additives, 16th Session (ALINORM 83/12A)

20. The Committee noted that CCFA had reviewed and extended its documents providing guidance to the establishment of Provisions for Food Additives. The texts had subsequently been approved by the 15th Session of the Commission for publication in Volume XIV of the Codex Alimentarius. The paper contained three annexes entitled: I - Definition of Good Manufacturing Practice in Relation to the Use of Food Additives; II - General Principles for the Use of Food Additives; and III - Food Additives. Codex Contact Points have been informed of the above texts by CL 1984/12.

Codex Committee on Methods of Analysis and Sampling, 13th Session (ALINORM 83/23)

21. The Committee was informed that CCMAS had elaborated General Principles for the Establishment or Selection of Codex Sampling Procedures which had been approved by the 15th Session of the Commission. The full text had been given in Appendix I to CX/CPL 84/2. The Committee also noted that CCMAS had agreed that the physical procedures of sampling should not be elaborated by Codex but were adequately dealt with by other International Organizations. The Committee was informed that the AOAC/ICC/ISO Working Group had also discussed sampling procedures for the standards under consideration by the Committee and agreed to discuss the report of the Working Group on Sampling under Item 5. (See also paras 225-226).

Matters related to the Draft Standard for Wheat Flour (Appendix II to ALINORM 83/29)

22. The Committee noted that Part B of CX/CPL 84/2 contained matters related to the above standard arising from other Codex Committees and decided that these should be dealt with under the relevant agenda item. Part B also contained an extract from the report on the 15th Session of the Commission covering the discussion of the Commission of the above draft standard at Step 8.

23. The Committee noted that most of the Step 8 comments and amendments presented at the Commission were of a technical nature and had already been extensively discussed at the 3rd Session of this Committee. Several delegations had objected to adopting the standard which they considered incomplete since the section on methods of analysis and sampling had been separated from the standard pending the meeting of the AOAC/ICC/ISO Working Group. They had also felt that certain sections on quality factors had to be completed. A proposal had also been made to include provisions for the intended use of the flour. The delegation of India had reiterated its request to include durum wheat flour in the standard.

24. The Commission had returned the standard to Step 6 of the Procedure and urged all countries to submit comprehensive comments to enable this Committee to finalize the pending sections of the standard. This request had been emphasized by issuing a Circular Letter (CL 1983/41).

25. The Committee agreed to reconsider the draft standard for wheat flour under Item 4, having regard to all the comments received from Governments and other Codex Committees and to overcome, where possible, the obstacles which had prevented adoption of the standard.

Matters Related to the Draft Standard for Maize (Corn) (Appendix III to ALINORM 83/29)

26. The Committee was informed that the 15th Session of the Commission had considered adopting the above standard at Step 8. It recalled that it had made great efforts to finalize the above standard at the request of the Commission. The Committee noted that Several delegations had held the view that the standard was not yet ready for adoption, especially in view of the not yet finalized section of Methods of Analysis and Sampling.

27. The Committee noted that also this standard had been returned to Step 6 and agreed to continue its work as outlined for the standard for wheat flour. (See para. 25).

PROGRESS REPORTS ON WORK PROGRAMMES OF ISO AND ICC (Agenda Item 3(b))

Report on Work of ISO/TC 34/SC4 "Cereals and Pulses"

28. The observer of ISO presented a "Statement of ISO policy in the field of agricultural food products" which indicated that the principal task of the above Subcommittee (Secretariat: Hungary) was the development of standards for sampling, analytical methodology, guide to storage and specifications for grains. So far 28 international standards have been issued, another 16 items were at the stage of "draft international standard", and further eleven items were registered draft proposals. The last meeting

of ISO/TC 34/SC4 had been held in The Hague, 13-15 April 1983.

29. Among the items included in the technical program of the Subcommittee, the most significant were the specifications for wheat and rice, respectively. The Subcommittee elaborated the 7th draft proposal of rice specification this year. The proposal will be discussed at the next meeting in January 1985 in Bangkok. The observer of ISO stated that it was expected that good progress was expected to be made towards the finalization of the standard.

(i) International Standards Issued Since October 1982

- ISO 5530/4, Wheat Flour - Physical Characteristics of Doughs - Part 4: Determination of Rheological Properties Using an Alveograph.
- ISO 7302, Cereals and Cereal Products - Determination of Total Fat Content
- ISO 1100/1) Cereals - Check of the Calibration of Moisture Meters.

(ii) Subjects at the Stage of Draft International Standard Since October 1982 (Some of them have not yet been published)

- ISO/DIS 6647, Rice - Determination of Amylose Content - Spectrometric.
- ISO/DIS 6648, Rice - Evaluation of Cooking Behaviour Using a Viscoelastograph
- ISO/DIS 6820, Wheat Flour and Rye Flour - General Guidance on the Drafting of Breadmaking Tests.
- ISO/DIS 7305, Wheat Flour - Determination of Fat Acidity.
- ISO/DIS 7971, Cereals - Determination of Mass Per Hectolitre - Reference Method.

(iii) There Are No Draft Proposals Registered Since October 1982

(iv) New Item Put on the Programme of Work and Awaiting the Approval of Priority

- 34 N. 434, Identification of Wheat Varieties by Electrophoresis of the Gliadines in Starch Gels.

## Report on Work Programme of ICC

30. The observer of ICC stated that at its recent Conference the name of his Association had been changed to the "International Association of Cereal Science and Technology" to reflect the broadening of its activities.

31. The observer of ICC reported the following achievements of ICC Working Group since 1982:

### New Definitive Standards

- No. 121 - Method for using the Chopin Alveograph
- No. 126 - Method for using the Brabender Amylograph
- No. 136 - Determination of total lipids in cereals and cereal products
- No. 140 - Enzymic determination of the bran content of cereals
- No. 141 - Determination of mercury in cereals.

### New Draft Standards

- No. 142 - Wheat cultivar identification by starch gel electrophoresis of the gliadin proteins
- No. 143 - Wheat cultivar identification by polyacrylamid gel electrophoresis of the gliadin proteins.

32. In addition the Study Group "Storage" will shortly issue a Grain Storage Newsletter which is to contain references to recent publications, information about congresses and other events in the field of grain storage. The observer of ICC invited delegations to request copies of the newsletter or to contribute to its publication.

## CONSIDERATION OF DRAFT STANDARD FOR WHEAT FLOUR AT STEP 7 OF THE PROCEDURE (Agenda Item 4)

33. The Committee had before it the above standard as contained in Appendix II to ALINORM 83/29 and noted that the relevant section on methods of analysis was contained in Annex I to Appendix VII.

34. The Committee noted that for the reasons stated in para, 23 above the standard had not been adopted as Step 8 by the 15th Session of the Commission but had been returned to Step 6.

35. In reply to CL 1983/41 comments had been received from Australia, Ireland, Thailand, Poland, France, Philippines, Portugal, Norway, Denmark, Sweden, Canada, Japan, and IPTIC (International Pulse Trade and Industry Confederation) (CX/CPL 84/3). Additional comments had been received from the EEC (CRD No.2) and IPTIC (CRD No.1) and from other Codex Committees (CX/CPL 84/2).

36. For this and other standards under examination, the Chairman proposed that delegates present should present their written comments and undertook to introduce the written comments from those countries who were not present at the session.

### Section I - Scope

37. The delegation of France pointed out that in the French text "blé ordinaire" as not an acceptable term for triticum aestivum (common wheat). It was agreed that the Secretariat would obtain advice from specialized divisions in FAO and would correct the French text accordingly in the final report. <sup>1</sup>

<sup>1</sup> Note: Plant Production and Protection Division of FAO advised to use the term "blé" not further qualified in connection with the botanical denomination of the species concerned, e.g., "blé (triticum aestivum)".

38. The Committee noted that at the 4th Session of the Coordinating Committee for Asia the delegation of India had reiterated its request to include durum wheat flour in this standard. The request was now supported by the delegation of Greece. Other delegations were of the opinion that there was no evidence which had not been considered at the previous session of the Committee which would influence its previous decision to exclude durum wheat flour.

39. In view of the importance of durum wheat in certain countries, it was suggested that a separate standard for durum wheat flour or semolina might be considered under future work either on a regional or worldwide basis. In this context, it was pointed out that proposals for new work had to be examined in the light of the Codex work priority criteria. The Committee agreed to include further discussion of this matter under "future work". (See paras 222-224).

40. The delegation of Australia drew attention to the fact that this standard had now been rejected twice at Step 8. This indicated problems within the standard which should be identified and corrected. This would then allow the finalization of a standard which set the basic parameters required to ensure worldwide acceptability as a minimum standard for wheat flour. Portugal, in its written comments, had proposed to reconsider the feasibility of including in the standard provisions for specific flour categories. The Committee, however, agreed that this standard should be developed as a minimum standard with the aim to assure a safe, sound and wholesome product and maintained its previous position on this fundamental point.

41. The delegation of Thailand proposed to amend the second indent of Section 1.2 to provide for "semolina or farina". The Committee noted that this had been discussed previously and decided not to make any change.

## Section 2 - Description

42. The delegation of the United Kingdom proposed to replace the terms "degree of fineness" by the term "particle size" since the quality criteria in Section 3 related to the latter. It was agreed to decide this matter after discussing Section 3.5. (See paras 60-65).

43. The delegation of Brazil expressed the opinion that reference to "grinding" should be deleted since, in its opinion, the word "milling" was specific for the production of wheat flour; "grinding" was only an applicable process for whole wheat flour which was in fact excluded from the standard. No action was taken.

## Section 3 - Special Composition and Quality Section

### Section 3.3 - Quality Factors - Specific

44. The Group considered the provisions of this section in the light of the proposals made by the AOAC/ICC/ISO Working Group on Methods of Analysis and Sampling and approved the Working Group's report. The report was introduced by the Chairman of the Working Group, Dr. W. Horwitz, USA.

#### 3.3.2 - Ash

45. The Committee noted that some delegations favoured the introduction of a maximum ash content to guarantee a minimum quality of the flour. A figure of 0.65 percent was proposed by Argentina and supported by Australia. The delegation of Spain could not agree to the method which determined ash content at 550 C, since Spanish

legislation required a method at 900 C. The delegation indicated a mistake in the Spanish version of the report of the AOAC/ICC/ISO Working Group which referred to "harina de maíz" instead of "harina de trigo".

46. The observer of the EEC expressed concern that the officially recognized method for the determination of ash content at 900 C had not been selected. This method was officially used in the EEC countries. The Chairman of the AOAC/ICC/ISO Working Group informed the Committee that the uniformity of temperature in the muffle furnace required for the 900 C determination could not be guaranteed by the manufacturer and that there was a considerable temperature gradient in the furnace. Furthermore, the method required the use of platinum crucibles and this was an important financial obstacle in many countries.

47. The observer of the ICC acknowledged the difficulties pointed out by the Chairman of the AOAC/ICC/ISO Working Group and proposed that the 900 C method stipulated by EEC regulations could be included as a Type III method.

48. The Chairman concluded that the AOAC/ICC/ISO Working Group had considered both methods and that the 550 C method was in more general commercial use.

49. The Committee agreed not to make any changes to Section 3.3.2 and to accept the proposals of the AOAC/ICC/ISO Working Group for the methods in Section 9.4 without change.

#### 3.3.3 - Fat Acidity

50. The Committee noted that the AOAC/ICC/ISO Working Group had been able to establish a maximum level for fat acidity of "not more than 30 mg of potassium hydroxide required to neutralize the free fatty acids in 100 g of flour" and appropriate methodology.

51. The Committee agreed to amend the provisions to refer to "dry matter basis" using the method for the determination of moisture included in Section 9.2.

#### 3.3.4 - Protein

52. No change was made to the provision.

#### 3.3.5 - Moisture Content

53. The Committee noted the written comments of Australia (max. 14.0 percent) Philippines (14.0 percent for tropical climates; 15.5 percent for temperate climates) Poland (max. 15.0 percent) and Thailand (max. 14.0 percent). The delegation of Australia pointed out that under conditions of lengthy storage and high temperature and humidity the moisture content should not exceed 14.0 percent.

54. The Committee recalled the discussion at its previous session (see paras 55, 56 of ALINORM 83/29) when it had arrived at a compromise of a maximum of 15.5 percent; specific contracts could stipulate a lower figure. No change was made.

#### Section 3.4 - Optional Ingredients

55. The Committee noted the written comments from Norway and Portugal. The delegation of Argentina was of the opinion that the inclusion of some optional ingredients mentioned in this section changed the nature of the products and that flours which contained such ingredients could be considered as subcategories of flour.

56. Other delegations proposed to introduce maximum limits for optional ingredients. The Committee was informed that soybean flour and pulse flours were used to increase

enzymatic activity of the flour and not for the purpose of increasing the protein content; in practice only small amounts were added. The written comment of Norway indicated that the addition of some of the optional ingredients caused changes in dough-making characteristics, moisture retention and keeping properties and had therefore requested the introduction of a provision for an appropriate declaration on the label.

57. The Committee noted that its 3rd Session had agreed to definitions for pulses, legumes and leguminous oil seeds (para. 178 of ALINORM 83/29).

58. The Committee decided that all the optional ingredients should be used in amounts necessary for technological purposes and made the appropriate amendment. It also decided to amend the 3rd indent to refer to pulse flour instead of bean flour. It agreed to consider, if necessary, possible labelling implications under Section 8.

#### Alpha-Amylase and Falling Numbers Test

59. The Australian delegation referred to the discussion of this matter at the 3rd Session of the Committee (see para. 54 of ALINORM 83/29) and stated that high alpha-amylase values were considered detrimental to the majority of products made from wheat flour and the use of the falling number test was recognized internationally. The Committee noted the comments from Australia but made no changes to the decision taken at its previous session.

#### Section 3.5 - Particle Size

60. The Committee noted that the AOAC/ICC/ISO Working Group had considered proposed methods for the determination of particle size, granularity data and sieve size, and proposed proportions of particle size as instructed by the 3rd Session of this Committee.

61. The observer of the EEC pointed out that the method stipulated in the EEC regulations did not correspond with that proposed by the AOAC/ICC/ISO Working Group in Section 9.3.1. He was therefore of the opinion that the member countries of the EEC could not accept the values proposed. He further requested that all the methods be reconsidered taking into account methods used in EEC regulations. The observer from the EEC expressed his reservations in general on the selection of methods of analysis. Referring to para. 5 of the Report of the AOAC/ICC/ISO Working Group in Appendix VII, he felt that as it would not be in accordance with the rules and criteria defined by the Procedural Manual of the Codex to place the methods of not truly international organizations at the same level as methods from international organizations, the former should not be selected.

62. The Chairman of the AOAC/ICC/ISO Working Group indicated that the purpose of the Working Group meeting had been to select methods of analysis from those which had been developed by international organizations specialized in the field of methods of analysis. The Secretariat had provided information on the comments of countries and observers as well as on Codex procedures and relevant texts elaborated by other Codex Committees.

63. The AOAC/ICC/ISO Working Group had recognized that different countries had their own requirements for methodology but that criteria for the selection of methods of analysis for Codex purposes could not take into account the laws and requirements of individual countries or groups of countries. The Working Group had come to its decisions in the light of the current scientific and technological knowledge, tempered by practicality.

64. The delegation of Denmark, referring to its earlier comments, mentioned the need for a sieving aid. It was told that this had not been agreed to by the AOAC/ICC/ISO Working Group.

65. The Committee agreed to the figures given for particle size, as proposed by the AOAC/ICC/ISO Working Group which read as follows:

"3.5 Particle Size - not less than 98% of the flour shall pass through a 212 millimicron (No. 70) sieve using the method given in Section 9.3.1."

#### Section 4 - Food Additives

66. The Chairman of the Working Group on Food Additives, Dr. R. Harding (UK), introduced the report of the Working Group (see Appendix VIII) which had been adopted by the group.

67. He indicated that the expertise available had enabled the Group to present a better case for the need for flour treatment agents.

68. The report of the Working Group contained recommendations to the plenary session on the individual additives included in Section 4; on whether they should be considered as processing aids and on suitable maximum limits. The Chairman of the Working Group recommended that, following consideration of the recommendations of the Working Group and the decisions of the Committee on Section 4, the paper on technological justification (Appendix VIII of ALINORM 83/29) be revised accordingly.

69. The Chairman of the Committee expressed his appreciation to the Working Group and decided to consider each additive individually. He also noted that the Working Group had proposed to reconsider the inclusion of lecithin as a flour improver.

70. The Committee was informed by several delegations of the legal position in their countries with regard to additives in wheat flour. The delegation of the Federal Republic of Germany expressed its reservation to the extensive number of additives and stated that only the addition of L-ascorbic acid, phosphates and amylase was permitted in its country. The delegations of Switzerland and Greece supported the German position. France and Finland reserved their position to the list of food additives as they permitted only the use of L-ascorbic acid and enzymes. Also the delegation of Spain was opposed to most of the food additives.

#### Section 4.1 - Bleaching Agents

71. The Chairman of the Working Group informed the Committee that it had considered benzoyl peroxide, chlorine dioxide and chlorine to be processing aids according to the Codex definition since their action with the flour was immediate and complete and no residues remained in the flour after the baking process.

72. He also informed the Committee that the Working Group had recommended to reduce the maximum treatment level for benzoyl peroxide to 60 mg/kg of flour.

73. The Committee decided, in view of the Working Group's recommendation, to classify bleaching agents as processing aids and to remove them from the food additives section. The Committee noted that CCFA was in the process of establishing an inventory of processing aids which was an open list. CCFA had not yet made a definitive decision on the status of processing aids in Codex standards.

74. The Committee instructed the Secretariat to transmit the bleaching agents to CCFA for inclusion in the list of processing aids.

75. The delegation of Brazil expressed concern that, as a result of their classification as processing aids, their use would not be declared on the label and, therefore, they could be used without the knowledge of the importing country. This was supported by the delegation of Australia.

76. It was agreed to give further consideration to this matter when discussing the labelling section.

#### Section 4.2 - Enzymes

77. The Committee noted that the Working Group had identified micro-organisms producing fungal amylases and proteolytic enzymes. The Committee agreed that Section 4.2 should read as follows:

"4.2 Enzymes

4.2.1 Fungal Amylase  
from *Aspergillus oryzae*  
*Aspergillus niger*

4.2.2 Proteolytic Enzymes  
from *Aspergillus oryzae*  
*Bacillus subtilis* "

#### Section 4.3 - Flour Improvers

78. L-ascorbic acid - The Committee noted that CCFA had endorsed the use of L-ascorbic acid at a maximum level of 200 mg/kg. The delegation of France proposed to increase the level to 300 mg/kg. It explained that this higher amount was needed in France, since no other flour improvers were permitted and this level (300 mg/kg) had been set for more than 20 years and had been fully approved by national and scientific authorities. The delegation of Australia proposed to permit 300 mg/kg only where no other improvers were used and that this should be so stated. The delegation of Spain pointed out that Spain permitted L-ascorbic acid and its sodium and potassium salts expressed as L-ascorbic acid.

79. The Committee noted the support for the above proposal and decided to raise the level of L-ascorbic acid to 300 mg/kg and to provide for the use of the sodium and potassium salts but did not think it necessary to introduce the Australian proposal.

#### Section 4.3.2 - Azodicarbonamide

80. The Committee noted that the Working Group had confirmed a treatment level of 45 mg/kg and its decision that this was not a processing aid. In this context the Committee also noted that the Joint Expert Committee on Food Additives had evaluated the following flour treatment agents: benzoyl peroxide, chlorine dioxide, azodicarbonamide and potassium bromate. For these substances JECFA had not established ADIs but treatment levels. The Secretariat explained that CCFA had introduced some years ago the term "maximum level" for food additives included in Codex standards, CCFA required numerical levels for additives for which numerical ADIs had been set; for additives with an ADI "not specified" G.M.P. limited their use. The Committee agreed that in the case of treatment levels it would only be possible to stipulate in the standard "maximum levels of use". The Committee therefore decided to list the additives under maximum level or maximum level of use as appropriate, depending on the nature of the food additive concerned.

81. The Committee also noted that the Working Group had indicated that certain additives might be needed only in flour for a specific use such as baking, bread-making, biscuit making. After extensive discussion it was recognized that the meaning of the above terms varied widely from country to country. The Committee decided not to include any classification according to the intended end-product use but to take different end-product use into account when revising the paper on technological justification.

#### Section 4.3.3 - Potassium Bromate

82. The Committee noted that the Working Group had taken into account the report of the 27th Session of JECFA as well as information from user countries on the need for a level of 50 mg/kg for potassium bromate as already stipulated in, ALINORM 83/29,

#### Section 4.3.5 - Sulphur Dioxide

83. The Committee noted that this additive had been endorsed by CCFA at 200 mg/kg for biscuits and pastry manufacture. The Committee did not approve the use of metabisulphite salts since these were added at the baking stage.

#### Section 4.3.6 - Mono-Calcium Phosphate

84. The Committee noted the remark by CCFA that the proposed maximum level of 2500 mg/kg was rather high but it was not in a position to reduce the proposed level which was currently in use in many countries as a yeast stimulant and pH modifier. The Committee decided to maintain the present level.

#### Lecithin

85. The Committee noted that the Netherlands and the Federal Republic of Germany had reiterated their request to include a provision for lecithin in the list of food additives. A maximum level of 2000 mg/kg was proposed for the preparation of flour with a rheological optimum. The Committee noted that the JECFA evaluation of the additive was "not specified". The Committee decided to include lecithin at the proposed level.

86. The Committee decided that the following additives should be listed with a "maximum level for use" azodicarbonamide, potassium bromate; the others came under the heading of "maximum level".

87. The delegation of the United States pointed out that in the revised version of the General Standards for the Labelling of Prepackaged Foods the class name "flour treatment agents" had been included, whereas the standard referred to "flour improvers". The Committee was informed that the term "flour treatment agents" covered also bleaching agents which had now been classified as processing aids and excluded from the list of food additives. The Committee agreed that the term "flour improver" as a class name should replace the term "flour treatment agents" and instructed the Secretariat to submit this request Committee's for amendment of the class name to CCFA as well as CCFL.

88. The attention the Committee was drawn to the fact that Section 1.2 had to be amended consequential to the classification of bleaching agents as processing aids. The Committee agreed that the 5th indent should read as follows:

" - flours whose protein content has been reduced or which have been submitted after the milling process to a special treatment other than drying, bleaching and/or to which have been added other products than those mentioned in Sections 3.4, 4.1 and 4.2. "

The delegations of France and Spain reserved their position to this decision since they were opposed to bleaching of flour.

89. The Committee noted the request contained in the written comment from Sweden and France that methods of analysis should be developed for the additives in the standard. The Committee was informed that the establishment of methods of analysis for food additives fell in the terms of reference of CCFA and that CCFA was now starting to obtain governments' views on this matter. (See also para. 70 of ALINORM 83/29).

90. The Committee appointed a small Working Group from the delegations of Brazil, United Kingdom and United States to revise the paper on technological justification in accordance with its decisions and the data considered in the Working Group Report.

#### Section 5 - Contaminants

91. The Committee was informed that the 16th Session of the CCFA had temporarily endorsed the section on contaminants. CCFA had noted that this Committee had not been able to detail contaminants in the standards it was elaborating stating that "although maximum levels for contaminants in cereal were desirable, there was no information at present available by which it could identify such contaminants". (Para. 73 of ALINORM 83/29).

92. CCFA urged this Committee to collect more information on the type of heavy metal involved and the actual levels of heavy metals found in cereals for review by CCFA at a later date. Attention was drawn to the Joint FAO/WHO Food Contamination Monitoring Programme (levels of Cd and Pb).

93. The Committee noted that Poland had proposed data on arsenic, lead, copper and zinc. The delegation of Poland pointed out that limits for these four contaminants, as established in its legislation, were applicable to all foods but of special importance to cereal products.

94. The delegation of Switzerland proposed that the Committee should consider under future work a survey of contaminants as had been done by other Committees, e.g., CCPFV. (See para. 225).

#### Section 6 - Hygiene

95. The Committee noted that at its 19th Session CCFH had endorsed the provisions on food hygiene. A small editorial change in punctuation was made to clarify the meaning of Section 6.2.2.

96. The delegation of Argentina stated that in Section 6.2.2 the microorganism levels of contamination should be quantified, to eliminate any ambiguity. No change was made since safety was the primary consideration and it was not possible to include numerical values at the present time.

#### Section 8 - Labelling

97. The Committee noted that the CCFL at its 17th Session had agreed to endorse the labelling provisions in the standard pending further consideration of Section 8.3 - Declaration of Nutritive Value and Section 8.8.7 - Date Marking. Details of the CCFL comments appeared in paras 307-370 of ALINORM 85/22.

### Section 8.2 - List of Ingredients

98. See para. 87 for details on the Committee's consideration of a class name for flour improvers.

### Section 8.3 - Declaration of Nutritive Value

99. The delegation of Canada had submitted detailed comments on the declaration of nutrients when vitamins or minerals were added to the flour. Canada disagreed with the present text which exempted products with vitamins and minerals added for the purpose of replacing nutrients lost in processing from the requirement of a quantitative declaration of the nutrients present in the final product. Canada was of the opinion that when vitamins and minerals were added to foods for any nutritive purposes the total quantity present in the food should be declared, the reasons for the proposal being that there was considerable variation in restoring nutrients lost depending on the type of wheat, area of cultivation and extraction rate of the flour. It was also more practical to determine the quantity of nutrients to be added; and the consumer wished to be informed of the total quantity of nutrients.

100. The Committee agreed to delete the words "for a purpose other than to replace nutrients lost in processing".

### Section 8.8 - Date Marking and Storage Instructions

101. The Committee noted the concern of the delegation of the United Kingdom on the ambiguity of declaring the month without indicating whether it was the beginning or the end of the month. The Committee noted that the provision on date marking was identical to the text adopted in the Codex guidelines on date marking and referred the comment of the United Kingdom to CCFL.

### Section 8.9 - Non-Retail Containers

102. The Committee recalled that the Standard for Wheat Flour covered products which were prepackaged ready for sale to the consumer as well as those destined for use in other food products. Several delegations indicated that a large proportion of flour moving in international trade was in non-retail containers. The Committee agreed therefore that provisions for these containers were needed and decided to elaborate suitable provisions similar to those of the Standards for Fruit Juices.

The text was as follows:

#### "(Non-Retail Containers)

In the case of wheat flour in non-retail containers the information given on the container required by Section 8.1 to 8.8 shall either be given on the container or in accompanying documents except that the name of the product and the name and address of the manufacturer or packer should appear on the container.

However, 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."

103. The Committee noted that the CCFL was reconsidering the need to develop Guidelines for the Labelling of Non-Retail Containers.

### Comments from the EEC on Section 8 Labelling

104. The Committee noted the EEC rules on Sections 8.4, 8.5, 8.7, 8.8, 8.9 and other provisions which had been submitted in writing.

## Section 9 - Methods of Analysis and Sampling

105. The Committee noted that the AOAC/ICC/ISO Working Group had, as instructed, selected methods of analysis and classified them according to the criteria established by the CCMAS.

106. Certain details of the methods were already discussed in connection with Sections 3.3 and 3.5 (see paras 45-54 and 60-65).

107. With regard to sampling the Committee was informed that the AOAC/ICC/ISO Working Group recommended methods of sampling procedures and further recommended against including the Cu-Sum sampling plans (CX/CPL 81/5) since these applied only to the control of bulk products and not to quality evaluation of packaged products.

108. The AOAC/ICC/ISO Working Group had also stated that the selected sampling methods applied only to sampling for quality criteria and moisture content.

109. The Committee agreed with the recommendations of the AOAC/ICC/ISO Working Group and amended Section 9 on Methods of Sampling and Analysis accordingly. (See Appendix II).

### Status of the Standard

110. Several delegations were of the opinion that fundamental changes had been made and new values introduced in important provisions of the standard, e.g., fat acidity, particle size and food additives. They therefore recommended that Governments should have an opportunity to comment on the changes before the standard was adopted by the Commission.

111. Other delegations held the view that the Commission's request to complete the required provisions had been complied with and the standard could thus be re-submitted to the Commission for adoption at Step 8.

112. It was noted that under the procedure for the elaboration of Codex standards, the Committee could decide to limit further discussion to specified sections of the standard.

113. The Committee decided to advance the standard to Step 8 recognizing that the provisions for food additives and methods of analysis and sampling required endorsement by the respective Committees. The standard is contained in Appendix II to this Report.

### CONSIDERATION OF DRAFT STANDARD FOR MAIZE (CORN) GRAINS AT STEP 7 OF THE PROCEDURE (Agenda Item 5)

114. The Committee had before it the above draft standard as contained in Appendix III to ALINORM 83/29 and comments thereon from Denmark, Holland, Ireland, Philippines, Poland, Thailand (CX/CPL 84/4) and from the EEC (CRD No.2), France (CRD No.4) and the Federal Republic of Germany (CRD No. 6, comments to the 15th Session of CAC). The Committee also considered comments from other Codex Committees (CX/CPL 84/2) and the report of the AOAC/ICC/ISO Working Group on Methods of Analysis (CRD No.5).

115. The Committee recalled that the 15th Session had returned the standard to Step 6. For details see paras 26-27. The Committee considered those sections for which comments had been submitted.

### Section 2.2.2

116. The Committee agreed to align this section with the Scope Section by referring also to the hybrids of flint and dent maize.

### Section 3.1.2 - Quality Factors-General

117. The delegation of Poland, referring to its written comments, applicable to all the standards for maize and maize products, proposed that this provision require freedom from impurities, moulds, living or dead insects and mites. The Committee recognized that the defects provisions in Section 3.3 covered many of the points of concern and maintained the present text unchanged.

### Section 3.2.1 - Moisture Content

118. The Committee noted that the following maximum levels for moisture content had been proposed in writing: Philippines 14% (tropical conditions), 15.5% (temperate conditions); Poland 15%. At the session the delegation of Greece proposed a maximum level of 13.5%. The Committee confirmed that, since this was a minimum standard for worldwide application, to keep the value unchanged.

### Section 3.3 - Definition of Defects

119. The delegation of the Federal Republic of Germany referred to its written comments to the 15th Session of the Commission and requested a detailed reconsideration of Section 3.3. The delegation of France drew attention to its extensive comments on this section and proposed that Section 3.3 be revised. The delegation of Spain stated that it had changed its national requirements and supported the above delegations.

120. The delegation of the United States pointed out the present text reflected the decisions at the previous session of the Committee. Several delegations supported this point of view. The Committee noted the major objections related to provisions for broken grains, extraneous vegetable matter, filth and their tolerances.

121. After some discussion on how these provisions should be interpreted, the Committee decided to form a Working Group to consider the available comments and redraft the provisions concerned. At a later stage the Chairman of the Working Group, Mr. P. Alric of France introduced the revised text. He pointed out that one of the main points had been to reduce the tolerance for filth to 0.1% m/m in view of the fact that the product was intended for human consumption. This had been possible by redefining the definition of filth to refer only to impurities of animal origin.

122. It was pointed out that, as redefined, the tolerance for foreign matter at 2% could permit an excessive quantity of stones. The Committee agreed to introduce a subsection on inorganic matter at a maximum level of 0.5% m/m.

123. The Committee also agreed with the revised text which simplified reference to sieving. It was agreed by the Committee that the revised text proposed by the Working Group, as amended by the Committee, should replace Sections 3.3.2, 3.3.3 and 3.4 as follows:

- 3.3.2 - Broken kernels, other grains, foreign matter and filth.
- 3.3.2.1 - Broken Kernels: Maize and pieces of maize which will pass through a 4.50 mm metal sieve according to ISO 5223-1983 "Test sieves for cereals".
- 3.3.2.2 - Other Grains: Other grains are edible grains, whole or identifiable broken, other than maize (i.e., cereals, pulses and other edible legumes)
- 3.3.2.3 - Foreign Matter are all organic and inorganic materials other than maize, broken kernels, other grains and filth.
- 3.3.2.4 - Filth are impurities of animal origin.
- 3.4 - Tolerance for Defects: Unchanged
- 3.4.1 - Unchanged.
- 3.4.1.1 - Unchanged.
- 3.4.2 - Broken Kernels 6.0%
- 3.4.3 - Other Grains 2.0%
- 3.4.4 - Foreign matter of 2.0%  
which:
- 3.4.4.1 - Inorganic matter 0.5%
- 3.4.5 - Filth 0.1%
- 3.4.6 - Toxic or noxious seeds: Unchanged.

#### Section 4 - Contaminants

124. The Committee noted that CCFA had temporarily endorsed this section in the same way as for wheat flour. (See paras 91-94). The delegation of Poland reiterated its comments with regard to contaminants. (See para. 93).

#### Section 5 - Hygiene

125. The Committee noted that the 19th Session of CCFH had endorsed this section and agreed to the same minor editorial amendments as for wheat flour. (See para. 95).

#### Section 6 - Packaging:

126. The Committee decided not to make any change to the section on packaging.

#### Section 7 - Labelling

127. The Committee noted that CCFL at its 17th Session had endorsed the labelling provisions in this standard. The Committee agreed to include the same provisions for non-retail containers as in the standard for wheat flour. (See para. 102).

#### Section 8 - Methods of Analysis and Sampling

128. The Committee was informed by the Chairman of the AOAC/ICC/ISO Working Group on Methods of Analysis and Sampling of the recommendations made by the Group as contained in CRD No, 5. The Committee agreed with the above recommendations and included the methods in Section 8 of the standard.

#### Status of the Standard

129. The Committee agreed to advance the standard to Step 8, since it had complied with the instructions of the Commission to examine the substantial comments and to complete the section on methods of analysis and sampling. The standard is contained in Appendix III to this Report.

CONSIDERATION OF DRAFT STANDARD FOR WHOLE MAIZE (CORN) MEAL AT STEP 7 OF THE PROCEDURE (Agenda Item 6)

130. The Committee noted that the above standard had been advanced by the 15th Session of the Commission to Step 6 of the Procedure and that comments on the standard were available in document CX/CPL 84/5 from the following countries: Denmark, Ireland, Thailand, Poland, Portugal, Philippines and Norway. Additional comments were received from the EEC (CRD No. 4), other Codex Committees (CX/CPL 84/2) and the AOAC/ICC/ISO Working Group on Methods of Analysis and Sampling (CRD No. 5).

Section 1 - Scope

131. No change was made to this section.

Section 2 - Description

132. The Committee corrected the reference to Section 3.4.1.

Section 3.1 - Essential Composition

Section 3.1.1.1 - Ash Content

133. The Committee noted the concern expressed by the observer of the EEC on the methods for the determination of ash content (see also para. 46).

134. The delegation of the Federal Republic of Germany proposed to accept the minimum ash content of 1.2% and to change the maximum to 2.5%. The observer of ICC held the view that a maximum of 3.9% was adequate.

135. The Committee decided to establish a maximum only at 3.9%.

Section 3.1.1.2 - Crude (Dietary) Fibre

136. The Chairman of AOAC/ICC/ISO Working Group drew the attention of the Committee to the discussions in the Working Group on this matter. The Working Group had concluded that at present there were no standardized methods available for the determination of dietary fibre. The Working Group had also recommended that no quality factor limits for food fibre be established in this standard and in that for degermed maize meal and maize grits. (See also Appendix VII).

137. The observer of ICC held the view that the value for crude fibre did not have much meaning with regard to the nutritional quality of the product.

138. The Committee decided to delete Section 3.1.1.2.

Section 3.1.1.3 - Acidity

139. The Chairman of the AOAC/ICC/ISO Working Group stated that the meaning of this provision had not been clear to the Group; however, it was assumed that acidity related to fat acidity. The Committee noted that there existed different AOAC methods for the determination of fat acidity in maize meal. However, it had not been possible to obtain any reliable data on quantitative limits related to or defined by those methods.

140. The Committee decided to delete the section.

141. Several delegations pointed out that it would be desirable to introduce limits for fat acidity for health reasons. (See also para. 146).

#### Section 3.1.1.4 - Protein

142. Several delegations questioned whether there was a need for a maximum value for protein content.

143. The Committee agreed to set only a minimum level and received detailed information on the protein content of maize from U.S.D.A. Handbook No. 8 and ISO. The observer of the EEC indicated that values in European maize tended to be somewhat lower and that a figure of 7.0% was more realistic.

144. The Committee decided to retain a minimum level of 8.0% on a dry weight basis. It noted that the conversion factor of 5.7 applied to wheat and rye products only; a factor of 6.25 was used for all other grains.

#### Section 3.1.1.5 - Fat Content

145. The Chairman of the AOAC/ICC/ISO Working Group indicated that the Group had recommended to define whether the provision applied to crude fat or to total lipids. The Committee confirmed that this provision applied to crude fat and amended the text accordingly. The Spanish translation of the term crude fat should read "grasa bruta" (not grasa cruda).

146. Several delegations referred again to the need for a maximum limit for fat acidity since in view of the high fat content, a limit for fat acidity was an important quality factor. The Committee noted a proposal to introduce a figure of 45 mg KOH/100 g of meal but recognized that not enough data was available to justify the proposal.

147. With regard to the fat content several delegations proposed to retain a minimum only and to delete the proposed maximum included in the present text. The Committee agreed to a minimum of 3.1% which represented a safeguard that the G.M.P. had been respected.

#### Section 3.2 - Optional Ingredients

148. The Committee noted that no optional ingredients had been proposed for inclusion in the standard and deleted the section.

#### Section 3.3 - Quality Factors

##### Section 3.3.1

149. The Committee agreed to make the necessary consequential changes by deleting reference to "any added ingredients" from this section and to include a reference to the absence of abnormal flavours and odours. The provision now reads: "Whole maize (corn) meal shall be clean, safe, of food quality and free from abnormal flavours and odours".

##### Section 3.3.3 - Moisture Content

150. The Committee noted the written comments from the Philippines (max. 13.5%) and Poland (max. 15%). The delegation of the Federal Republic of Germany stated that it could support a maximum level of 13.5%. The observer of the EEC stated that he preferred 15.5% as proposed in CRD No. 2, which would not affect the quality of the product during transport and storage. The delegation of Thailand proposed a maximum level of 15%, which was also the maximum included in the U.S. identity standard. The delegation of Brazil emphasized that a product such as whole maize meal having a high oil content would deteriorate rapidly in tropical countries if it had a high moisture content and proposed therefore a maximum level of 13.5%. The delegation of France pointed

out that the levels of moisture could not be related to those in the whole grain since the product had a tendency to rehumidify and therefore it was more appropriate to maintain a higher figure in line with the principle of establishing minimum standards. The Committee agreed with this point of view and removed the brackets from the figure. The delegation of Brazil expressed a reservation to this decision.

#### Section 3.4 - Granularity

151. The Committee noted that the AOAC/ICC/ISO Working Group had modified the aperture sizes to read 0.212 mm and 1.70 mm and had deleted also reference to a standard sieving test from this section since it included a specific reference to the determination of granularity in Section 9.3.

#### Section 4 - Food Additives

152. The Committee noted that there were no proposals to include food additives in this section and deleted Section 4.

#### Section 5 - Contaminants

153. The Committee noted that CCFA had temporarily endorsed the provision for contaminants (see paras 91-94). The Committee also noted the comments from Poland on this matter (see para. 93).

#### Section 6 - Hygiene

154. The Committee noted that this section was identical to that in the wheat flour standard and required endorsement by the CCFH (see paras 95-96).

#### Section 7 - Packaging

155. No changes were made to this section. Section 8 - Labelling

156. The Committee noted that CCFL at its 17th Session had endorsed the provisions on labelling as for wheat flour. The Committee recalled that no food additives and optional ingredients were permitted and decided as a consequence to delete Section 8.2 - List of Ingredients. The Committee decided to introduce the provision for non-retail containers which was already included in the previous standards (see paras 102-103).

157. The observer of the EEC stated that the Community's comments on labelling also applied to this standard (see para. 104).

#### Section 9 - Methods of Analysis and Sampling

158. The Committee agreed with the recommendations of the AOAC/ICC/ISO Working Group on Methods of Analysis and Sampling to be included in this section, taking into account the decisions of the Committee on Section 3 above.

159. The observer of ISO stated that there was an ISO method for the determination of fat which was extensively used in animal feed. Details on this method had not been available to the Working Group. These details were now available. The Chairman of the AOAC/ICC/ISO Working Group stated that the details had been examined and that the two methods (AOAC and ISO) were equivalent but not identical.

160. The Committee decided to add reference to ISO method No. 5986-1983 in Section 9.6 as a Type III method so that CCMAS would have an opportunity to endorse both methods. The observer of ISO objected to this decision.

### Status of the Standard

161. The Committee decided to advance the draft standard to Section 8 of the Procedure. The standard is attached as Appendix IV to this Report.

### CONSIDERATION OF DRAFT STANDARD FOR DEGERMED MAIZE (CORN) MEAL AND MAIZE (CORN) GRITS AT STEP 7 OF THE PROCEDURE (Agenda Item 7)

162. The Committee noted that at its 15th Session the Codex Alimentarius Commission had advanced the above standard to Step 6.

163. Government comments were available in document CX/CPL 84/6 from: Cuba, Denmark, Ireland, Thailand, Poland, Norway and Sweden. In addition the Committee had received comments from EEC (CRD No. 2) from Codex Committees (CX/CPL 84/2) and the AOAC/ICC/ISO Working Group (CRD No. 5).

### General

164. The observer of the EEC reiterated his reservation on the selection of methods (see para. 61).

### Section 1 - Scope

165. No change was made to this section. The Committee noted, however, a proposal from Cuba to state in the scope the types of maize covered by the standard.

### Section 2 - Description

166. The Committee made some minor editorial changes to this section.

### Section 3 - Essential Composition and Quality Factors

#### Section 3.1.1.1 - Ash

167. The delegation of the Federal Republic of Germany proposed to delete the minimum level of ash content and to raise the maximum to 1.0 percent. This was agreed to by the Committee.

#### Section 3.1.1.2 - Crude Fibre

168. For reasons given in paras 136-138 the Committee agreed to delete this section.

#### Section 3.1.1.3 - Acidity

169. The Committee agreed that its decision on fat acidity as contained in paras 139-141 applied also to this standard.

#### Section 3.1.1.4 - Protein Content

170. Several delegations expressed the opinion that the protein content in this standard should be identical to that in the standard for whole maize meal (i.e., 8.0%). The Committee, however, noted that as the germ which was high in protein had been removed, these products had a lower protein content.

171. The Committee agreed to a minimum limit of 7.0 percent and to delete the proposed maximum level of 9 percent.

#### Section 3.1.1.5 - Fat

172. For the same reason, as indicated in paras 145-146, the Committee agreed that this provision referred to crude fat.

173. The delegation of Brazil was of the opinion that the present level of 2.25 percent was too high and proposed 1.70 percent. The Committee noted that data supplied by the delegation of the United States indicated that 2.25 percent was an appropriate maximum and agreed to retain the figure.

#### Section 3.2 - Optional Ingredients

174. The Committee noted that no proposals had been made for optional ingredients and deleted the section.

#### Section 3.3.1

175. This section was amended as for whole maize meal (see para. 149).

#### Section 3.3.3 - Moisture Content

176. The Committee noted the written comments from Cuba (15.0%), Sweden (13.5%) and Thailand (14.0%) for maximum moisture content.

177. The delegation of Brazil expressed its satisfaction with the minimum of 13.5% presently included in the standard. The delegation of the United States proposed to introduce a maximum level of 15% identical to that in whole maize meal in line with the view that the standard was a minimum standard. The delegation of France supported the proposal of the delegation of the United States.

178. The delegation of Brazil expressed its strong concern that 15% moisture was deleterious for these products under tropical and semi-tropical storage conditions.

179. The Committee agreed to include a maximum moisture content of 15%.

#### Section 3.4 - Granularity

180. The Committee decided to amend Sections 3.4.1 and 3.4.2 in the same way as the relevant section in the whole maize meal standard. (See para. 151).

181. The observer of EEC expressed his concern that the AOAC/ICC/ISO Working Group had not made allowance for specifications on types of sieves (0.5 mm) which were commonly used in Europe. This also applied to the standard for whole maize meal.

#### Section 4 - Food Additives

182. The Committee decided not to include any food additives and deleted Section 4.

183. The Committee agreed that the decisions made on Sections 5, 6, 7, 8 and 9 of the standard for whole maize meal applied also to this standard.

#### Status of the Standard

184. The Committee decided to advance the above standard to Step 8 of the Procedure. The standard is attached as Appendix V to this Report.

#### CONSIDERATION OF THE PROPOSED DRAFT STANDARD FOR CERTAIN PULSES AT STEP 4 OF THE PROCEDURE (Agenda Item 8)

185. The Committee had before it the above standard as contained in Appendix VI to ALINORM 83/29 and comments thereon from Egypt, Federal Republic of Germany, Ireland, Netherlands, Poland, Thailand, United States and IPTIC (CX/CPL 84/7).

186. The delegation of Japan made the general remark that the standard under elaboration should be restricted to general criteria and that details should be left to

individual countries. The Chairman confirmed that it was the intention of the Committee to develop a minimum standard.

187. The Committee noted the written comments from Thailand and IPTIC; the latter had stated that the draft represented a good basis for further discussions.

### Section 1 - Scope

188. The delegation of Argentina stated that the development of only one standard for all products presently included in the scope was inappropriate since the species covered had widely different composition and quality factors. The Committee recalled that at its 3rd session there had been extensive discussion on the format of the standard and decided to retain that format.

189. The delegation of the Federal Republic of Germany had suggested the following wording in the second sentence: "industrial processing and to broken pulses when sold as such". The delegation of the Netherlands agreed in principle with the above remarks and proposed, that to avoid confusion with split pulses, the term "broken" should be replaced by "fragmented". The Committee agreed to amend the scope section accordingly and also to amend Section 3.4.3 as appropriate.

### Section 2 - Description

#### Section 2.1 - Product Definition

190. It was pointed out that although all products covered by the standard were dry seeds, they have not necessarily been subjected to a drying process. The Committee replaced the word "dried" by "dry". This was also in agreement with the definition of pulses approved by the 3rd Session of this Committee.

191. The delegation of Thailand pointed out that *Phaseolus mungo* and *Vigna radiata* were two different species. The Committee agreed to apply the nomenclature approved by ISTA (International Seed Trade Association) and to amend the phrase as follows "(except *Phaseolus mungo* (*Vigna mungo*) and *Phaseolus radiatus* (*Vigna radiata*))".

192. The delegations of Spain and the United States proposed the inclusion of cow peas (black eyed peas) and their botanical names "*Vigna unguiculata* Syn. *Vigna sinensis*". This was agreed by the Committee.

#### Section 3.1 - General Requirements

193. The Committee agreed to amend Section 3.1.1 to read "pulses shall be free of any abnormal smell or taste" and noted a proposal by the Netherlands to refer to "product specific taste". It also agreed that the requirements for pulses in the second and third indents of the second sentence were already covered in Section 3.4 and restricted the description to "sound" (2nd indent) and to "clean" (3rd indent).

### Section 3.2 - Analytical Characteristics

#### Section 3.2.1 - Moisture Content

194. The delegation of Brazil expressed great concern that the permitted moisture content of 18% for beans was very high and could lead to the development of mycotoxins under tropical conditions. The Committee noted that the written comments contained many divergent proposals for moisture content and decided, therefore, to place the values in square brackets and to request comments from governments and from regional Coordinating Committees. Cow peas were added to the list with a maximum of 18% moisture content in square brackets.

### Section 3.3 - Sizing

195. The delegation of Japan pointed out that sizes in the same species were different from variety to variety and that sizing would therefore be very difficult to apply. It was agreed to delete the section.

### Section 3.4 - Definition of Defects

196. The Committee discussed the proposal made by the delegation of Thailand to remove reference to dead insects or insect fragments. The Committee noted the general opinion of delegates that this criterion was essential to a standard for products for human consumption and made no change to Section 3.4.2.

### Foreign Matter

197. The delegation of Spain proposed to delete reference in Section 3.4.2 to "seeds of other varieties" which it considered was not necessarily a defect. Several delegations pointed out that consumers were interested to obtain a uniform product. The Committee decided to leave the provision unchanged,

198. As indicated in para, 189 the Committee agreed to amend Section 3.4.3 to refer to "more or less than half the cotyledon" to avoid confusion with split pulses.

199. The Committee agreed with the written proposal by IPTIC to delete the wording "caused by scald".

200. The delegation of the United States proposed to replace "albumen" by "cotyledon". It was pointed out that albumen referred to endospermatic plants. The Committee placed the term in square brackets in order to invite comments.

### Section 3.5 - Tolerances for Defects

#### Section 3.5.1 - Quality Tolerances

201. The Committee took note of the written comments of the Federal Republic of Germany, in particular, to add 0.20% for dead insects and fragments under "foreign matter". The Committee noted that the proposal had general support and agreed to add the following: "0.20% of dead insects, fragments or remains of insects".

202. The Committee noted that there were many different opinions on the actual numerical values for quality tolerances and agreed to place Section 3.5.1 in square brackets.

#### Section 3.5.2 - Size Tolerances

203. Consequential to its decision to remove provisions for sizing, the Committee deleted this section. (See para. 195).

### Section 4 - Contaminants

204. The Committee noted that the comments from Poland also applied to this standard. (See para. 93).

### Section 5 - Hygiene

205. The Committee decided that this section should be brought into line with the hygiene provisions for maize grains which had already been endorsed by CCFH.

## Section 6 - Packaging

206. The Committee agreed with the opinion of the delegation of the Netherlands that the Codex version of the two texts proposed was more appropriate since it did not prohibit the use of suitable used packaging material and therefore deleted reference to the UN/ECE text.

## Section 7 - Labelling

### Section 7.2 - The Name of the Food

207. The delegation of the United Kingdom expressed the view that the part of the provisions included in-square brackets "if the contents are not visible from the outside" was not compatible with the principles of labelling applied by Codex and the EEC. The Committee decided to delete the phrase.

### Section 7.6 - Lot Identification

208. The delegation of the United States pointed out that the lot identification was not commonly used for pulses. The delegation inquired whether lot identification had also to appear on non-retail containers.

209. The Committee agreed that more comments were needed on this matter and placed the section in square brackets.

### Non-Retail Containers

210. The Committee agreed to include also in this standard a provision for non-retail containers. (See paras 102-103).

## Section 8 - Methods of Analysis and Sampling

211. The Committee recognized the good progress made by the AOAC/ICC/ISO Working Group on Methods of Analysis and Sampling and proposed that the Group should also examine methods of analysis and sampling for this standard.

212. The Chairman of the AOAC/ICC/ISO Working Group agreed that the Group would continue its work and that the preparatory stages would be carried out by correspondence. The Committee expressed its appreciation to the AOAC/ICC/ISO Working Group for accepting the further task.

## Status of the Standard

213. The Committee decided to advance the Proposed Draft Standard for Certain Pulses to Step 5 of the Procedure. The standard is contained in Appendix VI to this Report.

## FUTURE WORK

### Milled Rice

214. The Committee noted that the Executive Committee at its 30th Session examined the conclusions of this Committee with regard to the need for a Codex standard for milled rice and recommended to the 15th Session of the Commission that, in view of the different format and scope of ISO specifications and Codex standards, the Commission should advise that the ISO Specification for Rice when finalized: (i) be sent to all Member Countries of the Commission for comments; (ii) be discussed in the light of these comments by the Regional Coordinating Committees; and (iii) together with the views of the Coordinating Committees be referred to CC/CPL for further consideration of

the need to elaborate a standard for milled rice in the Codex format. The Committee further noted that the Commission had agreed to the above recommendation.

215. The Committee was informed that the Codex Coordinating Committees for Latin America and Asia also agreed with the above approach and expressed its satisfaction with the decision of the Commission.

#### Guidelines on the Restoration of Nutrients in Wheat Flour

216. The delegation of Canada referred to previous discussions of the Committee (see ALINORM 83/29, para. 61) and inquired whether work would be undertaken on such guidelines.

217. The Secretariat informed the Committee that CCFSDU under its extended terms of reference would consider at its next session, in January 1985, general guidelines for the fortification of food.

218. The Committee decided to await further progress on these guidelines and the advice from the CCFSDU on whether specific guidelines for the fortification of wheat flour were needed.

#### Sorghum Grains and Sorghum Flour

219. The Committee noted that work was now in progress in the Codex Coordinating Committee for Africa on regional standards for the above products as well as for millet grains and millet flour.

220. The Committee noted the comments made by Mexico and Argentina at the 3rd Session of the Coordinating Committee for Latin America that the standard for sorghum grain should be developed as a world-wide standard. The delegation of Brazil agreed with this point of view and was of the opinion that the Committee should also elaborate a standard for sorghum flour which was increasingly produced on an industrial scale.

221. The Committee agreed that world-wide standards for sorghum and sorghum flour should be elaborated and decided to bring this matter to the attention of the Commission.

#### Durum Wheat Flour and Semolina

222. The Committee recalled its earlier discussion on the need to develop a standard for durum wheat flour. (See paras 38-39). Several delegations pointed out that most of the milled product from durum wheat was semolina.

223. The delegation of Greece confirmed that durum wheat was used for both bread making and pasta manufacture in its country.

224. The Committee agreed therefore that a standard be elaborated for milled durum wheat products and accepted the kind offer of the United States to provide background material and a first draft of the standard for the next session of this Committee.

#### Survey on Contaminants

225. The Committee recalled it had already discussed the question of more details on contaminants (see paras 91-94) and agreed that a survey should be undertaken similar to that already carried out by CC/PFV and the Joint ECE/Codex Alimentarius Group of Experts on Fruit Juices. The delegation kindly offered to prepare an appropriate questionnaire for circulation and to coordinate the survey. A report would be submitted to the next session of the Committee.

#### Elaboration of Sampling Plans for Lot Acceptance

226. The Committee recalled that the AOAC/ICC/ISO Working Group had considered this matter in accordance with the Codex General Principles for the Selection of Sampling Procedures. The Working Group had recommended not to establish sampling plans at this time.

227. The Committee also noted that CCMAS was still working on guidance for the application of the General Principles and decided not to develop sampling plans for inclusion in the standards.

#### OTHER BUSINESS (Agenda Item 9)

228. None.

229. The Committee concurred with the view of the Chairman that the willingness of delegations to participate actively at numerous small Working Groups and to resolve thus difficult technical problems had been the key to the considerable progress which had been made during the present session. The Chairman expressed the Committee's appreciation to the Chairmen, Rapporteurs and Members of the Ad-hoc Working Groups.

#### DATE AND PLACE OF NEXT MEETING (Agenda Item 10)

230. The Committee noted that its 5th Session would be held in Washington, D.C. in Spring 1986. The exact date would be decided and communicated by Circular Letter at a later date.

SUMMARY STATUS OF WORK

Standard/Code	Status Step	To be dealt with by	ALINORM/Appendix Document
Draft Standard for Wheat Flour	8	16th CAC	ALINORM 85/29 Appendix II
Draft Standard for Maize (Corn)	8	16th CAC	ALINORM 85/29 Appendix III
Draft Standard for Whole Maize (Corn) Meal	8	16th CAC	ALINORM 85/29 Appendix IV
Draft Standard for Degermed Maize (Corn) Meal and Maize (Corn) Grits	8	16th CAC	ALINORM 85/29 Appendix V
Draft Standard for Certain Pulses	5	16th CAC	ALINORM 85/29 Appendix VI
Proposed Draft Standard for Milled Durum Wheat Products <sup>1</sup>	2	CC/CPL (5th)	ALINORM 85/29 Paras 222-224 CX/CPL 86/
Survey on Contaminants	-	Governments CC/CPL (5th)	CX/CPL 86/
Sorghum Grains and Sorghum Flour	-	16th CAC	ALINORM 85/29 Paras 219-221
Guidelines on Restoration of Nutrients in Wheat Flour	-	CC/FSDU (15th) CC/CPL (5th)	ALINORM 85/29 Paras 216-218
Milled Rice	-	CC/CPL	ALINORM 85/29 Paras 214-215
Wheat	-	CC/CPL	ALINORM 83/29 Paras 156-165
Code of Hygienic Practice for the Storage of Grains	-	CC/CPL	ALINORM 83/29 Paras 166-173
Further Processed Cereal Products	-	CC/CPL	ALINORM 81/29 Paras 48-49
Rolled Oats	-	CC/CPL	ALINORM 81/29 Paras 70-76

<sup>1</sup> Subject to approval by the 16th Session of the Commission.

ALINORM 85/29  
APPENDIX I

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DRAFT STANDARD FOR WHEAT FLOUR  
(Advanced to Step 8)

1. SCOPE

1.1 This standard applies to wheat flour for human consumption prepared from common wheat, Triticum aestivum L., or club wheat, Triticum compactum Host., or mixtures thereof which are prepackaged ready for sale to the consumer or destined for use in other food products.

1.2 It does not apply:

- to any product prepared from durum wheat (Triticum durum Desf.) singly or in combination with other wheat;
- to whole meal, whole-wheat flour or semolina (farina) milled from common wheat (Triticum aestivum L.), or club wheat (Triticum compactum Host.), or mixtures thereof;
- to wheat flour destined for use as a brewing adjunct or for the manufacture of starch and/or gluten;
- to wheat flour for non-food industrial use;
- flours whose protein content have been reduced or which have been submitted after the milling process to a special treatment other than drying bleaching and/or to which have been added other products than those mentioned under Sections 3.4, 4.1 and 4.2.

2. DESCRIPTION

2.1 Product Definition

2.1.1 Wheat flour is the product prepared from grain of common wheat Triticum aestivum L., or club wheat, Triticum compactum Host., or mixtures thereof, by grinding or milling processes in which the bran and germ are partly removed and the remainder is comminuted to a suitable degree of fineness.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Raw Material

3.1.1 The wheat from which the flour is milled shall be of sound and marketable quality.

3.2 Quality Factors - General

3.2.1 The wheat flour and any added ingredients shall be clean, safe, suitable and of food quality.

3.2.2 All processing of the wheat, including drying, milling and ( other treatment of the wheat, intermediate milling products and milled flour, shall be carried out in a manner that:

- (a) minimizes loss of nutritive value;
- (b) avoids undesirable changes in technological properties of the flour.

### 3.3 Quality Factors - Specific

3.3.1 Wheat flour shall conform to the following requirements:

3.3.2 Ash - If the yield of ash is determined it shall be by the method given in Section 9.4.

3.3.3 Fat Acidity - Not more than 30 mg of KOH required to neutralize the free fatty acids in 100 grammes flour on dry matter basis.

3.3.4 Protein - (N x 5.7) shall be not less than 7.0% on dry weight basis.

3.3.5 Moisture Content - The moisture content of the product shall be governed by good manufacturing practice. The moisture content shall not exceed 15.5% m/m.

### 3.4 Optional Ingredients

3.4.1 The following ingredients may be added to flour in amounts necessary for technological purposes:

- malted products with enzymatic activity made from wheat, rye, or barley;
- vital wheat gluten;
- soybean flour and pulse flour of appropriate food quality.

3.4.2 Nutrients - The addition of vitamins, minerals and specific amino acids shall be in conformity with the legislation of the country in which the product is sold.

3.5 Particle Size - Not less than 98% of the flour shall pass through a 212 millimicron (No. 70) sieve using the method given in Section 9.3.1.

## 4. FOOD ADDITIVES

	<u>Maximum Levels</u>	<u>Maximum Levels of Use</u>
4.1 <u>Enzymes</u>		
4.1.1 *Fungal amylase from <u>Aspergillus oryzae</u> <u>Aspergillus niger</u>	GMP	
4.1.2 *Proteolytic enzymes from <u>Aspergillus oryzae</u> <u>Bacillus subtilis</u>	GMP	
4.2 <u>Flour Improvers</u>		
4.2.1 *L-ascorbic acid	300 mg/kg	
4.2.2 *Azodicarbonamide		45 mg/kg
4.2.3 *Potassium bromate		50 mg/kg
4.2.4 L-cysteine hydrochloride	90 mg/kg	
4.2.5 Sulphur dioxide (in flours for biscuit and pastry manufacture only)	200 mg/kg	
4.2.6 *Mono-calcium phosphate	2500 mg/kg	
4.2.7 *Lecithin	2000 mg/kg	

\* To be endorsed by the Codex Committee on Food Additives.

## 5. CONTAMINANTS

5.1 Wheat flour shall be free from heavy metals in amounts which may represent a hazard to health. <sup>1</sup>

<sup>1</sup> Temporarily endorsed.

## 6. HYGIENE

6.1 It is recommended that the food covered by the provisions of this standard should be prepared in accordance with the Code of Hygienic Practice - General Principles of Food Hygiene recommended by the Codex Alimentarius Commission (CAC/RCP 1-1969, Rev. 1).

6.2 When tested by appropriate methods of sampling and examination, the flour shall be:

6.2.1 To the extent possible in Good Manufacturing Practice, free from objectionable matter.

6.2.2 Free from micro-organisms, substances originating from micro-organisms, or other poisonous or deleterious substances, in amounts which may reasonably represent a hazard to health.

## 7. PACKAGING

7.1 The wheat flour shall be packed and transported in containers which will safeguard the hygienic, nutritional and technological qualities of the product.

7.2 The containers shall be made only of substances which are safe and suitable for their intended use. They should not impart any toxic substance or undesirable odour or flavour to the product. Where the Codex Alimentarius Commission has established a standard for any such substance used as packaging material, that standard shall apply.

## 8. LABELLING

In addition to Sections 1, 2, 4 and 6 of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1981) the following provisions apply:

### 8.1 Name of the Food

8.1.1 The name of the food declared on the label shall be "wheat flour" or "flour" as appropriate in the country where the product is sold.<sup>1</sup>

<sup>1</sup> In accepting this standard Governments are requested to indicate the requirement in force in their country.

8.1.2 In addition thereto, there shall be added any qualifying term required by national legislation in the country where the product is sold (e.g., enriched).

8.1.3 The ash yield may be declared in close proximity thereto. This provision does not apply to flour to which has been added chalk (Calcium carbonate) or other constituents with a mineral content level different from that of flour.

### 8.2 List of Ingredients

8.2.1 A complete list of ingredients shall be declared on the label in descending order of proportion in accordance with Section 3.2(c) of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1981) except that in the case of added vitamins and added minerals these shall be arranged as separate groups for vitamins and minerals respectively and within these groups the vitamins and minerals need not be listed in descending order of proportion.

### 8.3 Declaration of Nutritive Value

If vitamins and/or minerals are added to the product the following information shall be given:

"The total quantity in the final product of each vitamin and/or mineral added in accordance with Section 3.4.2 for 100 grammes of the food as sold for consumption."

#### 8.4 Name and Address

The name and address of the manufacturer, packer, distributor, importer, exporter or vendor of the product shall be declared.

#### 8.5 Country of Origin

8.5.1 The country of origin of the product shall be declared if its omission would mislead or deceive the consumer.

8.5.2 When processing which changes the nature of the product is undergone in a second country, the country in which the processing is performed shall be declared to be the country of origin for the purposes of labelling.

#### 8.6 Lot Identification

Each bulk consignment and each individual container of a packaged consignment shall be permanently marked in code or in clear to identify the producing mill and the lot.

#### 8.7 Net Contents

The net content shall be declared by weight in either the metric system ("Système International" units) or avoirdupois or both systems of measurement as required by the country in which the product is sold.

#### 8.8 Date Marking and Storage Instructions

##### 8.8.1 Date Marking

The "date of minimum durability" (preceded by the words "best before") shall be declared by the day, month and year in uncoded numerical sequence except that for products with a shelf-life of more than three months, the month and year will suffice. The month may be indicated by letters in those countries where such use will not confuse the consumer. In the case of products requiring a declaration of month and year only, and the shelf-life of the product is valid to the end of a given year, the expression "end (stated year)" may be used as an alternative.

##### 8.8.2 Storage Instructions

- (a) In addition to the date, any special condition for the storage of the food shall be indicated if the validity of the date depends thereon.
- (b) Where practicable, storage instructions shall be in close proximity to the date marking.

#### 8.9 Non-Retail Containers

In the case of wheat flour in non-retail containers the information given on the container required by Section 8.1 to Section 8.8 shall either be given on the container or in accompanying documents except that the name of the product and the name and address of the manufacturer or packer should appear on the container. However 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 Sampling

According to:

9.1.1 ISO 2170-1980 Cereals and Pulses - Sampling of Milled Products (for packaged products)

9.1.2 ICC 130 Sampling of Milled Products (Semolinas, Flours, Agglomerated Flours and By-Products). Stated to be identical to ISO 2170-1980.

9.1.3 ISO 6644-1981 Cereals and Milled Cereal Products - Automatic Sampling by Mechanical Means.

9.1.4 ICC 138 Mechanical Sampling of Milled Products (Semolinas, Flours, Agglomerated Flours, and By-Products) (Method for sampling the moving product). Stated to be identical to ISO 6644-1981.

9.1.5 AACC 64-60 Sampling of Flour, Semolina, and Similar Products: Feeds and Feed- stuffs in Sacks.

### 8.2 Determination of Moisture

According to:

9.2.1 ISO 712-1979 Cereals and Cereal Products - Determination of Moisture Content (Routine reference method). Air oven (Type II).

9.2.2 ICC 110/1 Determination of Moisture Content of Cereals and Cereal Products - Practical Method. Stated to be identical to ISO 712-1979.

9.2.3 AOAC(1980) 14.004 Air Oven Method (Type III).

9.2.4 AACC 44-15A Moisture - Air Oven Method (Type III).

### 8.3 Determination of Particle Size (Granularity)

According to:

9.3.1 AOAC(1980) Cereal Adjuncts - Assortment of Grits, 10.128-10.129 (Ro-Tap sieve shaker method or equivalent) (Type I method with the limitation that not less than 98 per cent shall pass through a 212 millimicron (No. 70) sieve).

### 8.4 Determination of Ash

According to:

9.4.1 AOAC(1980) Cereal Foods - Direct Method, 14.006 (Type II; 550°C to constant weight).

9.4.2 ISO 2171-1980 Cereals, Pulses and Derived Products - Determination of Ash. (Method B - 550°C to constant weight; Type III).

9.4.3 AACC 08-01 Ash - Basic method (Type III).

### 9.5 Determination of Fat Acidity

According to:

9.5.1 AOAC(1980) Cereal Foods - Fat Acidity (applicable to wheat and corn) 14.070-14.072 (Type I method, with a value for fat acidity in flour of not more than 30 mg of

potassium hydroxide required to neutralize the free fatty acids in 100 g of flour on dry matter basis).

9.5.2 AACC 02-01A Fat Acidity - General Method (Type III method).

9.6 Determination of Protein

According to:

9.6.1 ICC 105/1 Method for the Determination of Crude Protein in Cereals and Cereal Products for Food and for Feed (Type II method). Selenium/copper catalyst,

9.6.2 AOAC(1980) 2.055-2.057 Improved Kjeldahl Method for Nitrate/Free Samples (Type III method).

9.6.3 AACC 46-11 Crude Protein - Improved Kjeldahl Method for Nitrate-Free Samples (Type III method).

DRAFT STANDARD FOR MAIZE (CORN)  
(Advanced to Step 8)

1. SCOPE

This standard applies to maize (corn) for direct human consumption, i.e., ready for its intended use as human food, presented in packaged form or sold loose from the package directly to the consumer. This standard specifies requirements for whole grain, shelled dent maize (Zea mays indentata L.) and/or shelled flint maize (Zea mays indurata L.) or their hybrids. It does not apply to processed maize.

2. DESCRIPTION

2.1 Product Definition

Maize is the shelled grains of the species defined in the scope.

2.2 Presentation

2.2.1 Maize may be presented as yellow, white, or red, or a mixture of these colours.

2.2.1.1 Yellow maize may contain not more than 5.0% by weight of maize of other colours. Maize grains which are yellow and/or light red in colour are considered to be yellow maize. Yellow maize also means maize grains which are yellow and dark red in colour, provided the dark red colour covers less than 50% of the surface of the grain.

2.2.1.2 White maize may contain not more than 2.0% by weight of maize of other colours. Maize grains which are white and/or light pink in colour are considered to be white maize. White maize also means maize grains which are white and pink in colour, provided the pink colour covers less than 50% of the surface of the grain.

2.2.1.3 Red maize may contain not more than 5.0% by weight of maize of other colours. Maize grains which are pink and white or dark red and yellow in colour are considered to be red maize, provided the pink or dark red colour covers 50% or more of the surface of the grain.

2.2.1.4 Mixed maize includes maize not falling into the classes of white, yellow or red maize as defined in Sections 2.2.1.1 to 2.2.1.3.

2.2.2 Maize also may be presented as flint or dent or their hybrids or mixtures thereof.

2.2.2.1 Flint maize includes maize of any colour which consists of 95% or more by weight of grains of flint maize.

2.2.2.2 Dent maize includes maize of any colour which consists of 95% or more by weight of grains of dent maize.

2.2.2.3 Flint and dent maize includes maize of any colour which consists of more than 5.0% but less than 95.0% of flint maize.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Quality Factors - General

3.1.1 Maize grains shall not contain any abnormal or foreign odour as determined from samples representative of the lot.

3.1.2 Maize grains shall be of a reasonably uniform colour according to type, be whole, clean and be practically free from impurities and Insects.

## 3.2 Quality Factors - Specific

### 3.2.1 Moisture Content

The moisture content of lots of maize grains shall not exceed 15.5% m/m as determined from samples representative of the lot.

### 3.3 Definition of Defects

3.3.1 Blemished grains means grains which are insect or vermin damaged, stained, diseased, discoloured, germinated, frost damaged, or otherwise materially damaged.

3.3.1.1 Insect or vermin damaged grains include those kernels with obvious weevil-bored holes or which have evidence of boring or tunneling, indicating the presence of insects, insect webbing or insect refuse, or degermed grains, chewed in one or more than one part of the kernel which exhibit evident traces of an attack by vermin.

3.3.1.2 Stained kernels are those whose natural colour has been altered by external factors. This includes ground or weather damaged kernels, which may have dark stains or discolourations with a rough external appearance.

3.3.1.3 Diseased grains are rotting kernels which can usually be detected without opening the kernel for examination.

3.3.1.4 Discoloured kernels include those materially discoloured by excessive heat, including that caused by excessive respiration (heat damage) and dried damaged kernels. Kernels may appear darkened, wrinkled, blistered, puffed or swollen, often with discoloured, damaged germs. The seed coat may be peeling or may have peeled off completely, giving kernels a checked appearance.

3.3.1.5 Germinated kernels are those kernels showing visible signs of sprouting, such as cracked seed coats through which a sprout has emerged or is just beginning to emerge.

3.3.1.6 Frost damaged kernels may appear bleached or blistered and the seed coat may be peeling. Germs may appear dead or discoloured.

### 3.3.2 Broken Kernels, Other Grains, Foreign Matter and Filth

3.3.2.1 Broken kernels: Maize and pieces of maize which will pass through 4.50 mm metal sieve according to ISO 5223-1983 "Test sieves for cereals".

3.3.2.2 Other grains: Other grains are edible grains, whole or identifiable broken, other than maize (i.e., cereals, pulses and other edible legumes).

3.3.2.3 Foreign matter are all organic and inorganic material other than maize, broken kernels, other grains and filth.

3.3.2.4 Filth are impurities of animal origin.

## 3.4 Tolerance for Defects

Based on a sample, the product shall have not more than the following:

3.4.1	Blemished grains -----	7.0% m/m
	----- Including -----	
3.4.1.1	Diseased grains -----	0.5% m/m
3.4.2	Broken kernels -----	6.0% m/m
3.4.3	Other grains -----	2.0% m/m
3.4.4	Foreign matter -----	2.0% m/m
	----- of which -----	
3.4.4.1	Inorganic matter -----	0.5% m/m
3.4.5	Filth -----	0.1% m/m
3.4.6	Toxic or noxious seeds - maize shall be free from toxic or noxious seeds in amounts which may represent a hazard to health.	

#### 4. CONTAMINANTS

4.1 Maize shall be free from heavy metals in amounts which may represent a hazard to health.<sup>1</sup>

<sup>1</sup> Temporarily endorsed.

#### 5. HYGIENE

5.1 It is recommended that the product covered by the provisions of the standard be prepared in accordance with the appropriate sections of the Code of Hygienic Practice - General Principles of Food Hygiene (Ref. No. CAC/RCP 1-1969, Rev. 1).

5.2 When tested by appropriate methods of sampling and examination the maize shall be:

5.2.1 To the extent possible in Good Manufacturing Practice, free from objectionable matter, having regard to the tolerances indicated in Section 3.4 where applicable.

5.2.2 Free from microorganisms, substances originating from microorganisms, or other poisonous or deleterious substances, in amounts which may reasonably represent a hazard to health.

#### 6. PACKAGING

6.1 The product shall be packed in containers which will safeguard the hygienic and other qualities of the food.

6.2 The containers including packaging material shall be made only of substances which are safe and suitable for their intended use.

#### 7. LABELLING (To be endorsed by the Codex Committee on Food Labelling)

In addition to Sections 1, 2, 4 and 6 of the Codex General Standard for the Labelling of Prepackaged Foods (Ref. No. CODEX STAN 1-1981) the following specific provisions apply:

##### 7.1 The Name of the Food

7.1.1 The name of the food shall be "maize" or "corn".<sup>2</sup>

<sup>2</sup> In accepting the standard, Governments are requested to indicate which terra is required in their country.

7.1.2 In addition, the food may be designated with the appropriate terms indicated in Sections 2.2.1 and 2.2.2 provided the food complies with the requirements defined in Sections 2.2.1.1 to 2.2.1.4 and 2.2.2.1 to 2.2.2.3 respectively.

## 7.2 Net Contents

The net contents shall be declared by weight in either the metric ("Système International" units) or avoirdupois or both systems of measurement as required by the country in which the food is sold.

## 7.3 Name and Address

The name and address of the manufacturer, packer, distributor, importer, exporter or vendor of the food shall be declared.

## 7.4 Country of Origin

The country of origin of the food shall be declared if its omission would mislead or deceive the consumer.

## 7.5 Lot Identification

Each container (bag) shall be permanently marked in code or clear to identify the packer and the lot.

## 7.6 Non-Retail Containers

In the case of maize in non-retail containers the information given on the container required by Section 7.1 to Section 7.5 shall either be given on the container or in accompanying documents except that the name of the product and the name and address of the manufacturer or packer should appear on the container. However 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 Sampling

According to:

8.1.1 ISO 950-1981 Cereals - Sampling (as Grain)

### 8.2 Determination of Moisture

According to:

8.2.1 ISO 6540-1980 Maize - Determination of moisture content (on milled grains and on whole grains ) (Type II method).

8.2.2 ICC 110/1 Determination of moisture content of cereals and cereal products (Reference method) (Type III).

8.2.3 AOAC(1980) 14.004 Air Oven Method (Type III).

DRAFT STANDARD FOR WHOLE MAIZE (CORN) MEAL

(Advanced to Step 8)

1. SCOPE

1.1 This standard applies to whole maize (corn) meal for human consumption prepared from kernels of common maize, Zea mays L..

1.2 This standard does not apply to degermed maize meal, enriched maize meal, maize flours, maize grits, quick grits, hominy grits, self-rising corn meals, bolted corn meals, corn flakes and other corn based ready-to-eat cereals, corn flaking grits, and alkaline treated maize products.

1.3 This standard does not apply to maize meals for use as a brewing adjunct, to meals used for manufacturing of starch and any industrial use, nor to meal for use as an animal feed.

2. DESCRIPTION

2.1 Whole maize meal is the food prepared from fully mature, sound, ungerminated, whole kernels of maize, Zea mays L., by a grinding process in which the entire grain is comminuted to a suitable degree of fineness to comply with Section 3.3.1. In its preparation coarse particles of the ground maize kernel may be separated, reground and recombined with all of the material from which they were separated.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

Essential Composition

3.1 Whole maize meal shall conform to the following compositional requirement:

3.1.1 Ash content shall be not more than 3.9 percent on a dry weight basis.

3.1.2 Protein content (N x 6.25) shall be not less than 8 percent on a dry weight basis.

3.1.3 Crude fat content shall be not less than 3.1 percent on a dry weight basis.

3.2 Quality Factors

3.2.1 Whole maize meal shall be clean, safe, suitable and of food quality and free from abnormal flavours and odours.

3.2.2 All processing of the maize, including drying, milling and other treatment of the maize, intermediate milling products and milled maize meal shall be carried out in a manner that:

- (a) minimizes loss of nutritive value, particularly protein quality;
- (b) avoids undesirable changes in technological properties of the whole maize meal.

3.2.3 The moisture content of the product shall be governed by Good Manufacturing Practice. The moisture content of the product shall not exceed 15%.

3.3 Granularity

3.3.1 Not less than 95 percent of the whole maize meal shall pass through a sieve of 1.70 mm aperture size, not less than 45% through a sieve of 0.71 mm aperture size, but not more than 35% through a sieve of 0.212 mm aperture size.

#### 4. CONTAMINANTS

4.1 Whole maize meal shall be free from heavy metals in amounts which may represent a hazard to health. <sup>1</sup>

<sup>1</sup> Temporarily endorsed.

#### 5. HYGIENE

5.1 It is recommended that the food covered by the provisions of the standard be prepared in accordance with the appropriate sections of the Code of Hygienic Practice - General Principles of Food Hygiene (Ref. No. CAC/RCP 1-1969, Rev. 1).

5.2 When tested by appropriate methods of sampling and examination the whole maize meal shall be:

5.2.1 To the extent possible in Good Manufacturing Practice, free from objectionable matter.

5.2.2 Free from microorganisms, substances originating from microorganisms, or other poisonous or deleterious substances, in amounts which may reasonably represent a hazard to health.

#### 6. PACKAGING

6.1 Whole maize meal shall be packed and transported in containers which will safeguard the hygiene, nutritional and technological qualities of the product.

6.2 The containers shall be made only of substances which are safe and suitable for their intended use. They should not impart any toxic substance or undesirable odour or flavour to the product. Where the Codex Alimentarius Commission has established a standard for any such substance used as packaging material, that standard shall apply.

#### 7. LABELLING (Subject to endorsement by the Codex Committee on Food Labelling)

In addition to Sections 1, 2, 4 and 6 of the Codex General Standard for the Labelling of Prepackaged Foods (Ref. No. CODEX STAN 1-1981) the following specific provisions shall apply:

##### 7.1 Name of the Food

The name of the food described under Section 2.1 and complying with Section 3.1 of the standard shall be: "Whole Maize Meal" or "Whole Corn Meal".<sup>1</sup>

##### 7.2 Net Contents

The net contents shall be declared by weight in either the metric system ("Système International" units) or avoirdupois or both systems of measurement as required by the country in which the food is sold. <sup>1</sup>

<sup>1</sup> In accepting the standard, Governments are requested to indicate the term which is required in their country.

##### 7.3 Name and Address

The name and address of the manufacturer, packer, distributor, importer, exporter or vendor of the food shall be declared.

##### 7.4 Country of Origin

7.4.1 The country of origin of the product shall be declared if its omission would mislead or deceive the consumer.

7.4.2 When the product undergoes processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling.

#### 7.5 Lot Identification

Each container shall be embossed or otherwise permanently marked, in code or in clear, to identify the producing factory and the lot.

#### 7.6 Date Marking and Storage Instructions

7.6.1 The "date of minimum durability" (preceded by the words "best before") shall be declared by the day, month and year in uncoded numerical sequence except that for products with a shelf-life of more than three months, the month and year will suffice. The month may be indicated by letters in those countries where such use will not confuse the consumer. In the case of products requiring a declaration of month and year only, and the shelf-life of the product is valid to the end of a given year, the expression "end (stated year)" may be used as an alternative.

#### 7.6.2 Storage Instructions

(a) In addition to the date, any special conditions for the storage of the food shall be indicated if the validity of the date depends thereon.

(b) Where practicable, storage instructions shall be in close proximity to the date marking.

#### 7.7 Non-Retail Containers

In the case of whole maize meal in non-retail containers the information given on the container required by Section 7.1 to Section 7.6 shall either be given on the container or in accompanying documents except that the name of the product and the name and address of the manufacturer or packer should appear on the container. However 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 Sampling

According to:

8.1.1 ISO 2170-1980 Cereal and Pulses - Sampling of Milled Products

8.1.2 ICC 130 Sampling of Milled Products (Semolinas, Flours, Agglomerated Flours and By-Products).

8.1.3 AOAC(1980) 10.092, 10.125.

8.1.4 AACC 64-60 Sampling of Flour, Semolina, and Similar Products; Feeds and Feedstuffs in Sacks.

#### 8.2 Determination of Moisture

According to:

8.2.1 ISO 712-1979 Cereals and Cereal Products Determination of Moisture (Routine Reference Method). (Type II; air oven).

8.2.2 ICC 110/1 Determination of Moisture Content of Cereals and Cereal Products (Reference Method). (Stated to be identical to ISO 712-1979).

8.2.3 AOAC(1980) 14.004 Air Oven Method (Type III).

8.2.4 AACC 44-15A Air Oven Method (Type III).

### 8.3 Determination of Granularity

According to:

8.3.1 AOAC(1980) 10.128-10.129 (Ro-Tap sieve machine method or equivalent). (Type I method with sieve specifications as in ISO 3310/1-1982 Test sieves).

### 8.4 Determination of Ash

According to:

8.4.1 AOAC(1980) 14.006 (Type II method; 550°C to constant weight).

8.4.2 ISO 2171-1980 (Method B - 550°C to constant weight; Type III method). AACC 08-01 (Type III method).

### 8.5 Determination of Protein

According to:

8.5.1 ICC 105/1 Method for the Determination of Crude Protein in Cereals and Cereal Products for Food and Feed (Type II Method). Selenium/copper catalyst.

8.5.2 AOAC(1980) Total Nitrogen 14.026, 2.055-2.057 Improved Kjeldahl Method for Nitrate-Free Samples (Type III Method).

8.5.3 AACC 46-11 Crude Protein - Improved Kjeldahl Method for Nitrate-Free Samples (Type III Method).

### 8.6 Determination of Crude Fat

According to:

8.6.1 AOAC(1980) 14.067, 7.056 Crude Fat or (Anhydrous) Ether Extract (Type II Method).

8.6.2 ISO 5986-1983 Animal Feeding Stuffs - Determination of Diethyl Ether Extracts (Type III Method).

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## APPENDIX V

### DRAFT STANDARD FOR DEGERMED MAIZE (CORN) MEAL AND MAIZE (CORN) GRITS

(Advanced to Step 8)

#### 1. SCOPE

1.1 This standard applies to degermed maize (corn) meal and maize (corn) grits for human consumption milled from kernels of common maize, Zea mays L..

1.2 This standard does not apply to whole maize meal, corn flours, quick grits, hominy grits, self-rising corn meals, enriched maize meals, enriched maize grits, bolted corn meals, corn flakes, and alkaline treated maize products.

1.3 This standard does not apply to maize meals for use as a brewing adjunct, to meals used for manufacturing of starch and any industrial use, nor to meal for use as an animal feed.

## 2. DESCRIPTION

2.1 Degermed maize meal is the food prepared from fully mature, sound, degermed kernels of maize, Zea mays L., by a grinding process in which the grain is comminuted to a suitable degree of fineness to comply with Section 3.3.1 and from which bran and germ are removed. In its preparation, coarse particles of the ground maize kernel may be separated, reground and recombined with all of the material from which they were separated.

2.2 Degermed maize grits is the food prepared from fully mature, sound, ungerminated, kernels of maize, Zea mays L., cleaned from impurities, mold, seeds of weeds and other cereals, by a grinding process in which the grain is comminuted to a suitable degree of fineness to comply with Section 3.3.2 and from which bran and germ are almost completely removed.

## 3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

### 3.1 Essential Composition

Degermed maize meal and maize grits shall conform to the following compositional requirement:

3.1.1 Ash content shall be not more than 1.0 percent on a dry weight basis.

3.1.2 Protein content (N x 6.25) shall be not less than 7.0 percent on a dry weight basis.

3.1.3 Crude Fat content shall be not more than 2.25 percent on a dry weight basis.

### 3.2 Quality Factors

3.2.1 Degermed maize meal, maize grits shall be clean, safe and of food quality and free from abnormal flavours and odours.

3.2.2 All processing of the maize, including drying, milling and other treatment of the maize, intermediate milling products, milled degermed maize meal and maize grits shall be carried out in a manner that:

- (a) minimizes loss of nutritive value, particularly protein quality;
- (b) avoids undesirable changes in technological properties of the degermed maize meal and the maize grits.

3.2.3 The moisture content of the product shall be governed by good manufacturing practice. The moisture content of the product should not exceed 15.0%.

### 3.3 Degermed Granularity<sup>1</sup>

3.3.1 Maize meal - not less than 95 percent of the degermed maize meal shall pass through a sieve of 0.85 mm aperture size, not less than 45 percent through a sieve of 0.71 mm aperture size, but not more than 25 percent through a sieve of 0.210 mm aperture size.

3.3.2 Maize grits - not less than 95 percent of the maize grits shall pass through a sieve of 2.00 mm aperture size but not more than 20 percent through a sieve of 0.71 mm aperture size.

#### 4. CONTAMINANTS

4.1 The product shall be free from heavy metals in amounts which may represent a hazard to health.<sup>1</sup>

<sup>1</sup> Temporarily endorsed.

#### 5. HYGIENE

5.1 It is recommended that the food covered by the provisions of the standard be prepared in accordance with the appropriate sections of the Code of Hygienic Practice - General Principles of Food Hygiene (Ref. No. CAC/RCP 1-1969, Rev. 1).

5.2 When tested by appropriate methods of sampling and examination the product shall be:

5.2.1 To the extent possible, in Good Manufacturing Practice, free from objectionable matter.

5.2.2 Free from microorganisms, substances originating from microorganisms, or other poisonous or deleterious substances, in amounts which may reasonably represent a hazard to health.

#### 6. PACKAGING

6.1 The degermed maize meal and maize grits shall be packed and transported in containers which will safeguard the hygiene, nutritional and technological qualities of the product.

6.2 The containers shall be made only of substances which are safe and suitable for their intended use. They should not impart any toxic substance or undesirable odour or flavour to the product. Where the Codex Alimentarius Commission has established a standard for any such substance used as packaging material, that standard shall apply.

#### 7. LABELLING

In addition to Sections 1, 2, 4 and 6 of the Codex General Standard for the Labelling of Prepackaged Foods (Ref. No. CODEX STAN 1-1981) the following specific provisions shall apply:

##### 7.1 Name of the Food

7.1.1 The name of the product described under Section 2.1 and complying with Section 3.1 of the standard shall be: "Degermed Maize Meal" or "Degerraed Corn Meal".<sup>1</sup>

7.1.2 The name of the product described under Section 2.2 and complying with Section 3.1 of the standard shall be: "Degermed Maize Grits" or "Degermed Corn Grits".<sup>1</sup>

##### 7.2 Net Contents

The net contents shall be declared by weight in either the metric system ("Système International" units) or avoirdupois or both systems of measurement as required by the country in which the food is sold.<sup>1</sup>

<sup>1</sup> In accepting the standard, Governments are requested to indicate the term which is required in their country.

##### 7.3 Name and Address

The name and address of the manufacturer, packer, distributor, importer, exporter or vendor of the food shall be declared.

#### 7.4 Country of Origin

7.4.1 The country of origin of the product shall be declared if its omission would mislead or deceive the consumer.

7.4.2 When the product undergoes processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling.

#### 7.5 Lot Identification

Each container shall be embossed or otherwise permanently marked, in code or in clear, to identify the producing factory and the lot.

#### 7.6 Date Marking and Storage Instructions

##### 7.6.1 Date Marking

The "date of minimum durability" (preceded by the words "best before") shall be declared by the day, month and year in uncoded numerical sequence except that for products with a shelf-life of more than three months, the month and year will suffice. The month may be indicated by letters in those countries where such use will not confuse the consumer. In the case of products requiring a declaration of month and year only, and the shelf-life of the product is valid to the end of a given year, the expression "end (stated year)" may be used as an alternative.

##### 7.6.2 Storage Instructions

(a) In addition to the date, any special conditions for the storage of the food shall be indicated if the validity of the date depends thereon.

(b) Where practicable, storage instructions shall be in close proximity to the date marking.

#### 7.7 Non-Retail Containers

In the case of degermed maize meal and degermed maize grits in non-retail containers the information given on the container required by Section 7.1 to Section 7.6 shall either be given on the container or in accompanying documents except that the name of the product and the name and address of the manufacturer or packer should appear on the container. However 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 Sampling

According to:

8.1.1 ISO 2170-1980 Cereal and Pulses - Sampling of Milled Products.

8.1.2 ICC 130 Sampling of Milled Products (Semolinas, Flours, Agglomerated Flours and By-Products).

8.1.3 AOAC(1980) 10.092 Sampling, 10.125 Cereal Adjuncts.

8.1.4 AACC 64-60 Sampling of Flour, Semolina and Similar Products; Feeds and Feedstuffs in Sacks•

## 8.2 Determination of Moisture

According to:

8.2.1 ISO 712-197:9 Cereals and Cereal Products - Determination of Moisture (Routine Reference Method). (Type II; air oven).

8.2.2 ICC 110/1 Determination of Moisture Content of Cereals and Cereal Products (Reference Method). Stated to be identical to ISO 712-1979.

8.2.3 AOAC(1980) 14.004 Air Oven Method (Type III).

8.2.4 AACC 44-15A Air Oven Method (Type III).

## 8.3 Determination of Granularity

According to:

8.3.1 AOAC(1980) 10.128-10.129 (Ro-Tap sieve machine method or equivalent). (Type I method with sieve specifications as in ISO 3310/1-1982 Test sieves).

## 8.4 Determination of Ash

According to:

8.4.1 AOAC(1980) 14.006 (Type II method; 550°C to constant weight).

8.4.2 ISO 2171-1980 (Method B - 550°C to constant weight; Type III method).

8.4.3 AACC 08-01 (Type III method).

## 8.5 Determination of Protein

According to:

8.5.1 ICC 105/1 Method for the Determination of Crude Protein in Cereals and Cereal Products for Food and for Feed (Type II method). Selenium/copper catalyst.

8.5.2 AOAC(1980) Total Nitrogen 14.026, 2.055-2.057 Improved Kjeldahl Method for Nitrate-Free Samples (Type III method).

8.5.3 AACC 46-11 Crude Protein - Improved Kjeldahl Method for Nitrate-Free Samples (Type III method).

## 8.6 Determination of Crude Fat

According to:

8.6.1 AOAC(1980) 14.067, 7.056 Crude Fat or (Anhydrous) Ether Extract (Type II method).

8.6.2 ISO 5986-1983, Animal Feeding Stuffs - Determination of Diethyl Ether Extracts (Type III method).

PROPOSED DRAFT CODEX STANDARD FOR CERTAIN PULSES  
(Advanced to Step 5)

1. SCOPE

This standard applies to the whole, shelled or split pulses defined below which are intended for direct human consumption. The standard does not apply to pulses intended for factory grading and packaging, industrial processing, or to those pulses intended for use in the feeding of animals. It does not apply to fragmented pulses when sold as such, or to other legumes for which separate standards may be elaborated.

2. DESCRIPTION

2.1 Product Definition

Pulses are dry seeds of leguminous plants which are distinguished from leguminous oil seeds by their low fat content and include for the purpose of this standard:

- dry beans of Phaseolus spp. (except Phaseolus mungo (Vigna mungo) and Phaseolus radiatus (Vigna radiata);
- lentils of Lens culinaris Medikus;
- round peas of Pisum sativum L.;
- chick peas of Cicer arietinum L.;
- broad beans of Vicia faba L.;
- cow peas of Vigna unguiculata L. Syn. (Vigna sinensis L.).

2.2 Presentation

Pulses may be presented as whole, shelled or split styles:

- shelled pulses are pulses without their exterior skin, but the cotyledons not separated;
- split pulses are those without their exterior skin and with the two cotyledons separated one from the other.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 General requirements

3.1.1 Pulses shall be free of any abnormal smell or taste.

3.1.2 Subject to the tolerances allowed for defects, pulses shall be:

- whole, except in the case of shelled or split styles;
- sound;
- clean.

3.1.3 The condition of the pulses shall be such as to enable them to withstand normal transport and handling and ensure that they arrive in a satisfactory condition at the place of destination.

3.2 Analytical Characteristics

3.2.1 Moisture Content

3.2.1.1 The moisture content of pulses shall not, for each of the species specified, exceed the following levels:

<u>Species</u>	<u>Moisture Content</u> (per cent)
- beans	[18]
- lentils	[16]
- round peas	[18]
- chick peas	[14]
- broad beans	[18]
- cow peas	[18]

3.2.1.2 In the case of shelled or split pulses, the maximum moisture content shall be 2 per cent (absolute) lower in each case.

### 3.3 Definition of Defects

#### 3.3.1 Broken or Damaged:

3.3.1.1 In the case of whole or shelled styles, seeds which have been accidentally damaged so that one or both cotyledons are affected.

3.3.1.2 In the case of split styles, seeds of which one cotyledon has been accidentally damaged.

3.3.2 Foreign Matter: mineral or vegetable fragments, dust, twigs, skin, seed of other varieties, dead insects, fragment or remains of insects.

3.3.3 Fragments: pieces of "broken" or "damaged" seeds representing more or less than half the cotyledon.

3.3.4 Serious Defects: seeds in which the [albumen] has been affected or attacked by pests; seeds with very slight traces of mould or decay; or seeds with very slight [albumen] staining.

3.3.5 Slight Defects: seeds which have not reached normal development; seeds with more or less extensive surface staining, without the [albumen] being affected; seeds in which the outside skin is wrinkled, with pronounced folding; or in the case of whole seeds, when the cotyledon has been separated or fragmented.

### 3.4 Tolerances for Defects

The following tolerances in respect of quality, as percentages by weight of seeds showing defects, are allowed in each package:

#### 3.4.1 Quality Tolerances

3.4.1.1 - Foreign matter with not more than 0.25% of mineral matter and not more than 0.20% of dead insects, fragments or remains of insects.	1%
3.4.1.2 - Seeds with serious defects	1%
3.4.1.3 - Seeds with slight defects	7%
3.4.1.4 - Seeds of a similar colour but of a different commercial type <sup>1</sup>	3%
3.4.1.5 - Seeds of different colour (other discoloured seeds)	3%
3.4.1.6 - Discoloured seeds of the same commercial type <sup>2</sup>	10%

<sup>1</sup> In the case of white beans, the tolerance shall be 6%.

<sup>2</sup> Regarding green beans, the International Pulse Trade Confederation has suggested a tolerance of 20% because it was considered that not all green beans retained their green colour; some tended to lose it and become discoloured.

4. CONTAMINANTS (To be endorsed by the Codex Committee on Food Additives)

4.1 Pulses shall be free from heavy metals in amounts which may represent a hazard to health.

5 HYGIENE (To be endorsed by the Codex Committee on Food Hygiene)

5.1 It is recommended that the product covered by the provisions of the standard be prepared in accordance with the appropriate sections of the Code of Hygienic Practice - General Principles of Food Hygiene (Ref. No. CAC/RCP 1-1969, Rev. 1).

5.2 When tested by appropriate methods of sampling and examination the pulses shall be:

5.2.1 To the extent possible in Good Manufacturing Practice, free from objectionable matter, having regard to the tolerances indicated in Section 3.4 where applicable.

5.2.2 Shall be free from microorganisms, substances originating from microorganisms, or other poisonous or deleterious substances, in amounts which may reasonably represent a hazard to health.

6. PACKAGING

6.1 The products shall be packed in containers which will safeguard the hygienic properties and other qualities of the food.

6.2 The containers including packaging material shall be made only of substances which are safe and suitable for their intended use.

6.3 [The presentation for sale of legume seeds in small packages wholly or partly made of coloured or tinted transparent materials is prohibited if it is likely to mislead the consumer].

7. LABELLING (To be endorsed by the Codex Committee on Food Labelling)

In addition to Sections 1, 2, 4 and 6 of the General Standard for the Labelling of Pre-packaged Foods (Ref. No. CAC/RS 1-1969) the following specific provisions shall apply:

7.1 The Name of the Food

The name of the food shall be the common name of the species listed in Section 2.1 followed optionally, by the style.

7.2 Net Contents

The net contents shall be declared by weight in either the metric ("Système International" units) or avoirdupois or both systems of measurement as required by the country in which the food is to be sold.

7.3 Name and Address

The name and address of the manufacturer, packer, distributor, importer, exporter or vendor of the food shall be declared.

7.4 Country of Origin

The country of origin of the food shall be declared if its omission would mislead or deceive the consumer.

## 7.5 Lot Identification

Each container (bag) shall be permanently marked in code or in clear to identify the packer and the lot.

## 7.6 Non-Retail Containers

In the case of pulses in non-retail containers the information given on the container required by Section 7.1 to Section 7.5 shall either be given on the container or in accompanying documents except that the name of the product and the name and address of the manufacturer or packer should appear on the container. However 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<sup>1</sup> (To be endorsed by the Codex Committee on Methods of Analysis and Sampling)

<sup>1</sup> See paras 211-212

The methods of analysis and sampling referred to hereunder are proposed to be used as international referee methods.

### 8.1 Moisture Content

According to ISO Recommendation ISO - R665 "Determination of Moisture and Volatile Matter in Oilseeds".

### 8.2 Method of Sampling

It is recommended that sampling shall be in accordance with the ISO Standard ISO - R950-1969 "Standard for the Sampling of Cereals (as grains)".

ALINORM 85/29

APPENDIX VII

REPORT OF THE WORKING GROUP ON METHODS OF ANALYSIS AND SAMPLING  
FOR WHEAT FLOUR, MAIZE (CORN), WHOLE MAIZE (CORN) MEAL, AND  
DEGERMED MAIZE (CORN) MEAL AND DEGERMED MAIZE (CORN) GRITS

1. The Working Group met on September 21, 1984 at the US Food and Drug Administration Building, Washington, D.C.. Those in attendance were:
  - William Horwitz, US Food and Drug Administration, Washington, D.C., USA, (Chairman)
  - Werner Saurer, International Association for Cereal Science and Technology (ICC), Zurich, Switzerland
  - Etienne Nouat, International Organization for Standardization (ISO), Paris, France
  - Edith A. Christensen, American Association of Cereal Chemists (AACC), St. Paul, Minnesota, USA
  - James F. Lin, US Food and Drug Administration, Washington, D.C., USA
  - Arthur R. Johnson, Association of Official Analytical Chemists, Arlington, Virginia, USA, (Recorder)
  - Robert W. Weik, US Food and Drug Administration, Washington, D.C., USA
  - Barbara Dix, FAO Secretariat, Rome, Italy
  - James M. Hutchinson, FAO Secretariat, Rome, Italy
- 2 The purpose of the meeting was to recommend methods of analysis and sampling for inclusion in the Codex Standards under consideration by the Codex Committee on Cereals, Pulses and Legumes. Methods were selected according to the criteria set out in the Procedural Manual of the Codex Alimentarius Commission (Fifth Edition) pp. 77-79.
- 3 In standards where values have not been established, the Working Group has not supplied these values, except where necessary with a Type I (Defining) method. Likewise, the Working Group has not considered the matter of contaminant levels for the standards nor the question of methods of analysis for food additives. The Working Group recommended that matters dealing with contaminants and food additives be referred to the Committee on Food Additives for discussion.
- 4 In several cases, representatives indicated their organizations were working on the determinations under consideration or were finalizing them. The Working Group indicated that these methods, when finalized, could be submitted for addition to the recommendations.
- 5 The representative from ISO and ICC stated a reservation with regard to the acceptance of methods of analysis and sampling from the American Association of Cereal Chemists (AACC) on the grounds that AACC was not an international organization. The representative from AACC indicated that the methods were in use internationally. The Working Group indicated that this was not a matter for its decision.
- 6 Fat Acidity - The representatives of ISO and ICC had no opinion on the suitability of the value to accompany the Type I method for Fat Acidity in Wheat Flour. The Working Group needs further information on the quality factor which is desired to be measured under Section 3.3.3-Acidity, in Wheat Flour and the corresponding determinations, Section 3.1.1.3, for the corn products.

7. Sampling Methods - The sampling methods recommended apply to sampling for quality criteria and moisture only.
8. Crude Fibre - The Working Group discussed the problem regarding definitions for crude fibre and dietary fibre and the availability of suitable methods of analysis. It is apparent that, at present, there are no standardized, approved methods available for the determination of dietary fibre. A number of collaborative studies have been conducted which are currently being evaluated. The Working Group recommends that no quality factor limits for crude fibre be established for any of the commodities under consideration.
9. CuSum - The Working Group considered whether to adopt the CuSum plan for sampling wheat flour and corn for quality factors and recommends against including it in the standard since the plan applies only to the quality control of bulk products and not to quality evaluation of packaged product.
- 10 Corn Sieve - The 4.50 mm sieve given in Section 3.3.2.1 of the Maize (Corn) Standard, as used for broken grains and extraneous matter, should be stated as a metal sieve, according to ISO 5223-1983 Test Sieves for Cereals, in order to utilize an established international standard.

11 The methods recommended by the Working Group are as follows:

DRAFT STANDARD FOR WHEAT FLOUR  
(At Step 6)

9. METHODS OF ANALYSIS AND SAMPLING

9.1 Sampling

According to:

- 9.1.1 ISO 2170-1980 Cereals and Pulses - Sampling of Milled Products (for packaged products)
- 9.1.2 ICC 130 Sampling of Milled Products (Semolinas, Flours, Agglomerated Flours and By-Products). Stated to be identical to ISO 2170-1980.
- 9.1.3 ISO 6644-1981 Cereals and Milled Cereal Products - Automatic sampling by mechanical means.
- 9.1.4 ICC 138 Mechanical Sampling of Milled Products (Semolinas, Flours, Agglomerated Flours, and By-Products). (Method for sampling the moving product). Stated to be identical to ISO 6644-1981.
- 9.1.5 AACC 64-60 Sampling of Flour, Semolina, and Similar Products: Feeds and Feedstuffs in Sacks.

9.2 Determination of Moisture

According to:

- 9.2.1 ISO 712-1979 Cereals and Cereal Products - Determination of Moisture Content. (Routine reference method). Air oven (Type II).
- 9.2.2 ICC 110/1 Determination of Moisture Content of Cereals and Cereal Products - Practical Method. Stated to be identical to ISO 712-1979.
- 9.2.3 AOAC(1980) 14.004 Air Oven Method (Type III).
- 9.2.4 AACC 44-15A Moisture - Air Oven Method (Type III).

### 9.3 Determination of Particle Size (Granularity)

According to:

9.3.1 AOAC(1980) Cereal Adjuncts - Assortment of Grits, 10.128-10.129 (Ro-Tap sieve or equivalent shaker method). (Type I method with the limitation that not less than 98 percent shall pass through a 212 millimicron (No. 70) sieve).

### 9.4 Determination of Ash

According to:

9.4.1 AOAC(1980) Cereal Foods - Direct Method, 14.006 (Type II; 550°C to constant weight).

9.4.2 ISO 2171-1980 Cereals, Pulses and Derived Products - Determination of Ash. (Method B - 550°C to constant weight; Type III).

9.4.3 AACC 08-01 Ash - Basic method (Type III).

### 9.5 Determination of Fat Acidity

According to:

9.5.1 AOAC(1980) Cereal Foods - Fat Acidity (applicable to wheat and corn) 14.070-14.072 (Type I method, with a value for fat acidity in flour of not more than 30 mg of potassium hydroxide required to neutralize the free fatty acids in 100 g of flour on dry matter basis).

9.5.2 AACC 02-01A Fat Acidity - General Method (Type III method).

### 9.6 Determination of Protein

According to:

9.6.1 ICC 105/1 Method for the Determination of Crude Protein in Cereals and Cereal Products for Food and for Feed (Type II method). Selenium/copper catalyst.

9.6.2 AOAC(1980) 2.055-2.057 Improved Kjeldahl Method for Nitrate-Free Samples (Type III method).

9.6.3 AACC 46-11 Crude Protein - Improved Kjeldahl Method for Nitrate-Free Samples (Type III method).

## DRAFT STANDARD FOR MAIZE (CORN)

(At Step 6)

### 8. METHODS OF ANALYSIS AND SAMPLING

#### 8.1 Sampling

According to:

8.1.1 ISO 950-1981 Cereals - Sampling (as Grain).

#### 8.2 Determination of Moisture

According to:

8.2.1 ISO 6540-1980 Maize - Determination of Moisture Content (on milled grains and on whole grains). (Type II method).

8.2.2 ICC 110/1 Determination of moisture content of cereals and cereal products (Reference method) (Type III).

8.2.3 AOAC(1980) 14.004 Air Oven Method (Type III).

PROPOSED DRAFT STANDARD FOR WHOLE MAIZE (CORN) MEAL  
(At Step 3)

9. METHODS OF ANALYSIS AND SAMPLING

9.1 Sampling

According to:

9.1.1 ISO 2170-1980 Cereal and Pulses - Sampling of Milled Products.

9.1.2 ICC 130 Sampling of Milled Products (Semolinas, Flours, Agglomerated Flours and By-Products).

9.1.3 AOAC(1980) 10.092, 10.125.

9.1.4 AACC 64-60 Sampling of Flour, Semolina and Similar Products; Feeds and Feedstuffs in Sacks.

9.2 Determination of Moisture

According to:

9.2.1 ISO 712-1979 Cereals and Cereal Products - Determination of Moisture (Routine Reference Method). (Type II; air oven).

9.2.2 ICC 110/1 Determination of Moisture Content of Cereals and Cereal Products (Reference Method). Stated to be identical to ISO 712-1979.

9.2.3 AOAC(1980) 14.004 Air Oven Method (Type III).

9.2.4 AACC 44-15A Air Oven Method (Type III).

9.3 Determination of Granularity

According to:

9.3.1 AOAC(1980) 10.128-10.129 (Ro-Tap sieve machine method or equivalent) (Type I method with sieve specifications as in ISO 3310/1-1982 Test sieves).

9.4 Determination of Ash

According to:

9.4.1 AOAC(1980) 14.006 (Type II method; 550°C to constant weight).

9.4.2 ISO 2171-1980 (Method B - 550°C to constant weight; Type III method). AACC 08-01 (Type III method).

[9.5 Determination of Fat Acidity]

9.6 Determination of Protein

According to:

9.6.1 ICC 105/1 Method for the Determination of Crude Protein in Cereals and Cereal Products for Food and for Feed (Type II method). Selenium/copper catalyist.

9.6.2 AOAC(1980) Total Nitrogen 14.026, 2.055-2.057 Improved Kjeldahl Method for Nitrate-Free Samples (Type III method).

9.6.3 AACC 46-11 Crude Protein - Improved Kjeldahl Method for Nitrate-Free Samples (Type III method).

[9.7 Determination of Fat

According to:

9.7.1 From the limits in brackets, it is deduced that "crude fat, solvent extraction" rather than "total lipids, with acid hydrolysis and solvent extraction" is desired. On this basis, the following is recommended:

AOAC(1980) 14.067, 7.056 Crude Fat or (Anhydrous) Ether Extract (Type II method).]

DEGERMED MAIZE (CORN) MEAL AND MAIZE (CORN) GRITS  
(At Step 5)

9. METHODS OF ANALYSIS AND SAMPLING

9.1 Sampling

According to:

9.1.1 ISO 2170-1980 Cereal and Pulses - Sampling of Milled Products.

9.1.2 ICC 130 Sampling of Milled Products (Semolinas, Flours, Agglomerated Flours and By-Products).

9.1.3 AOACU980) 10.092 Sampling, 10.125 Cereal Adjuncts.

9.1.4 AACC 6460 Sampling of Flour, Semolina and Similar Products; Feeds and Feedstuffs in Sacks.

9.2 Determination of Moisture

According to:

9.2.1 ISO 712-1979 Cereals and Cereal Products - Determination of Moisture (Routine Reference Method). (Type II; air oven).

9.2.2 ICC 110/1 Determination of Moisture Content of Cereals and Cereal Products (Reference Method). Stated to be identical to ISO 712-1979.

9.2.3 AOAC(1980) 14.004 Air Oven Method (Type III).

9.2.4 AACC 44-15A Air Oven Method (Type III).

9.3 Determination of Granularity

According to:

9.3.1 AOAC(1980) 10.128-10.129 (Ro-Tap sieve machine method or equivalent). (Type I method with sieve specifications as in ISO 3310/1-1982 Test sieves).

9.4 Determination of Ash

According to:

9.4.1 AOAC(1980) 14.006 (Type II method; 550°C to constant weight).

9.4.2 ISO 2171-1980 (Method B - 550°C to constant weight; Type III method).

9.4.3 AACC 08-01 (Type III method).

[9.5 Determination of Fat Acidity]

## 9.6 Determination of Protein

According to:

9.6.1 ICC 105/1 Method for the Determination of Crude Protein in Cereals and Cereal Products for Food and for Feed (Type II method). Selenium/copper catalyst.

9.6.2 AOAC(1980) Total Nitrogen 14.026, 2.055-2.057 Improved Kjeldahl Method for Nitrate-Free Samples. (Type III method).

9.6.3 AACC 46-11 Crude Protein - Improved Kjeldahl Method for Nitrate-Free Samples (Type III method).

## [9.7 Determination of Fat

According to:

9.7.1 From the limits in brackets, it is deduced that "crude fat, solvent extraction" rather than "total lipids, with acid hydrolysis and solvent extraction" is desired. On this basis, the following is recommended:

AOAC(1-980) 14.067, 7.056 Crude Fat or (Anhydrous) Ether Extract (Type II method).]

REPORT ON THE AD-HOC WORKING GROUP ON FOOD ADDITIVES  
IN THE DRAFT STANDARD FOR WHEAT FLOUR

1. An Ad-hoc Working Group was convened under the Chairmanship of Dr. R.J. Harding (United Kingdom) with Dr. D. Murphy (Australia) acting as Rapporteur, The following delegations took part: Australia, Argentina, Brazil, Finland, France, Gabon, Federal Republic of Germany, Greece, Japan, Madagascar, The Netherlands, Spain, Thailand, the United Arab Republic, the United Kingdom, the United States of America, the International Standards Organization and the International Association of Cereal Science and Technology. Representatives of the FAO Secretariat were in attendance.
2. The Chairman outlined the state of affairs faced by the Group. The Committee at its 3rd Session had agreed to a list of food additives for flour treatment with accompanying maximum levels of use where appropriate, and also a paper outlining the technical justification for food additives, (ALINORM 83/12A, paras 90-98), which endorsed only three of the additives: L-ascorbic acid up to a level of 200 mg/kg; L-cysteine hydrochloride up to a level of 90 mg/kg; and sulphur dioxide up to a level of 90 mg/kg for flour destined for the manufacture of biscuits and pastry only.
3. The Chairman of the Committee, Mr. Galliard, had circulated a letter to Codex Contact Points asking interested countries to submit additional data in support of the additives not endorsed by the CCFA. Written replies had been received from the Netherlands and Switzerland, and these were considered by the Working Group. Mr. Galliard also proposed that the Working Group should determine whether:
  - (a) some of the additives are in fact "processing aids";
  - (b) whether some additives should be limited for use only in certain types of flour; and
  - (c) what improvements can be made in the "Technical Justification" document to be resubmitted to the CCFA.
4. The Working Group considered all the flour treatment agents and in each case addressed the questions in Mr. Galliard's letter. The Codex definition of a processing aid, and in the Codex Procedural Manual (p. 30, 5th Ed.) was available for reference. The Group was informed of the important distinction drawn in Codex standards between additives which remained in the final product (expressed as "maximum level") and additives for which treatment levels were prescribed (expressed as "maximum level of use"). Certain flour treatment agents for which JECFA had established maximum treatment levels (benzoyl peroxide, chloride dioxide, potassium bromate and azodicarbonamide) fall into the latter category.
5. Benzoyl Peroxide - Several delegations provided information on the use of this additive as a bleaching agent in their countries. Flours destined for all food purposes were treated, and although the actual levels used differed from country to country, agreement was reached on a maximum level of 60 mg/kg. The Working Group was informed that it reacts immediately and completely with flour, leaving a residue of benzoic acid. It therefore fell within the Codex definition of a processing aid and could be considered as such.
6. Chlorine Dioxide - The countries in which the use of chlorine dioxide was permitted indicates that it performed primarily as an improving agent for flours destined

for breadmaking, and it had only a secondary, incidental bleaching effect. It was agreed therefore that it should be considered as a flour improver and not as a bleaching agent. A maximum level of 30 mg/kg was confirmed as appropriate and necessary, and its mode of action and effect made it suitable for yeast raised bakery products only. Although it was not permitted in that country, France was able to provide technical information on its action on flour. Technical experts in the USA Delegation confirmed that it reacted immediately and completely with flour leaving a chloride residue and so fulfilled no technological purpose in the final product. It could, therefore, be regarded as a processing aid under the Codex definition.

7. Chlorine - The Working Group noted that this flour treatment agent had not yet been evaluated by JECFA. The countries in which its use is authorized confirmed its levels of use up to 2500 mg/kg. These levels were necessary to produce the desired aging effect on the flour. Its bleaching effect was secondary and so, like chlorine dioxide, it should be considered as a flour improver. They further confirmed that its use was restricted to flours for the manufacture of high ratio cakes. Technical information, submitted by the USA delegation, indicated that it reacted completely and immediately with flour and therefore could be regarded as a processing aid.

8. L-Ascorbic Acid - The CCFA had endorsed this flour treatment agent up to 200 mg/kg. The French delegate informed the Working Group that it was the only flour treatment agent permitted in France where it was used up to a level of 300 mg/kg. The Working Group agreed to refer this request to the Plenary.

9. Azodicarbonamide - Technical information from Brazil, USA, UK and Australia confirmed the need of this improving agent for increasing the strength of breadmaking flours at a level of 45 mg/kg. It remains inactive until water is added in the breadmaking process and therefore cannot be regarded as a processing aid.

10. Potassium Bromate - The Working Group noted that JECFA had, at its 27th Session, decided to change the previous acceptance of bromate for the treatment of flour used for bakery products to a temporary acceptance with a maximum treatment level of 75 mg/kg, provided that bakery products prepared from such treated flour contain negligible residues of potassium bromate. Technical information from the USA and the UK confirmed the need of this flour treatment agent in breadmaking up to a level of 50 mg/kg, depending on the type of flour and bread required. The UK and the Netherlands informed the Working Group of a small use in some biscuits and rusks, and consequently the Group felt able to restrict its use, as did JECFA in its evaluation, to bakery products. The Group formed the view that, as it is inactive until water is added to the flour, it cannot be regarded as a processing aid.

11. Sulphur Dioxide - The Group noted that the use of sulphur dioxide had been endorsed by the CCFA in flour for biscuit and pastry manufacture at a level of 200 mg/kg. The Netherlands raised the question of the inclusion of metabisulphite salts in this category. Bearing in mind the current practice of treating flour with sulphur dioxide gas only, while metabisulphite salts are only added by the baker, the Group agreed not to seek in addition the endorsement for metabisulphite salts.

12. Monocalcium Phosphate - The Group noted the concern of the CCFA regarding this additive, that the proposed maximum level of use of 2500 mg/kg might result in exceeding the maximum tolerable daily intake of phosphate (0-70 mg/kg bodyweight). Technical information from the UK, Spain and the USA confirmed the levels of use in all flours of up to 2,500 mg/kg, as a yeast stimulant and pH modifier. The Chairman noted that no information had been put forward to overcome the main CCFA objection.

13. Fungal Amylases - Technical information from Brazil, France, the UK and the USA indicated that amylases from Aspergillus niger and Aspergillus oryzae were used in breadmaking to supplement the amylases naturally found in flour. The Group noted that JECFA had not given an ADI to either enzyme, and recognized that since enzymes were active in the dough making process, they could not be regarded as processing aids.

14. Proteolytic Enzymes - The Group was informed that proteolytic enzymes from Aspergillus oryzae and Bacillus subtilis were used in biscuit flours. The protease from Bacillus subtilis had been given an ADI (limited by GMP) by JECFA.

15. Lecithin - The Netherlands and the FRG repeated their request for the inclusion of lecithin in the list of food additives, bearing in mind its important role in preparing flours with a rheological optimum. The Group noted this and referred the request to the Plenary.

16. Labelling - The Group recommended that special attention should be paid to labelling. If the distinction was made between food additives and processing aids, processing aids would not have to be included in the list of ingredients. If the use of certain food additives was restricted to flours with a specified end use (e.g. breadmaking) there might be a need for an appropriate indication on the label.

TECHNOLOGICAL JUSTIFICATION FOR THE USE OF  
FOOD ADDITIVES IN WHEAT FLOUR

1. All over the world wheat flour is used as the major ingredient for the production of numerous bakery products, from bread to cakes, biscuits, etc. Each of these products requires flour with certain qualities in order to meet the standards demanded by the consumer. Additives are used extensively to enable the flour to meet these required technological qualities. Further, the wide variability in flour quality, the type of bakery product, the processing method, and the legislation and customs prevalent in each individual country are important factors governing their use. The additives discussed below and cited in Section 4 of the draft Standard for Wheat Flour include those which are used by industry to upgrade or improve the technical performance of certain types of flour which otherwise would have unsuitable baking or dough handling properties.
2. The technological quality of commercial flour depends on the wheat variety, environmental conditions prevalent during the growing of the wheat, the method of milling and the extraction rate. These factors should directly influence the end use to which the flour is put. However, even with an appropriate choice, which is often difficult for technical, commercial, economic or political reasons, differences in baking quality between batches of flour are inevitable. Additives are instrumental in minimizing these differences.
3. The use of additives in bread production has made possible a reduction in processing time, and an increase in production rate (with consequential reduction in costs) without sacrificing quality. Indeed, additives have played such a major role in the development of modern breadmaking processes that the mass production of bread by these processes is simply not practicable without them.
4. It should be noted that all of these additives could be used directly at the dough mixing stage. They are, in practice, added to flour at the mill since this is the most convenient and practicable stage enabling a degree of control over their addition not attainable at a later stage.
5. Fungal Amylase. The use of alpha amylase standardizes the fermentation characteristics of bread flour where natural variation of cereal alpha amylase occurs. Alpha amylases from fungal sources are more thermally labile than that from malt (the traditional alternative) and therefore are inactivated rapidly during baking, and will not remain to damage the starch structure of the bread crumb. A further advantage is that they are available relatively free from proteases (again, unlike malt) and will not affect the protein structure of the dough.
6. Proteolytic enzymes. The addition of proteolytic enzymes to dough allows a controlled and gentle modification of protein quality in the manufacture of crackers and similar products. The strength of the dough is modified leading to an improvement in extensibility and machine handling properties.
7. L-Ascorbic acid. L-ascorbic acid has long been used as an agent to increase the rate of dough development in breadmaking. Actual levels of addition vary up to a maximum of 300 mg/kg. In some countries it is used as the sodium or potassium salt\*

8. Azodicarbonamide. Azodicarbonamide is a widely used oxidizing agent which directly affects the rheological properties of the dough during mixing and fermentation leading to improved resistance to extension and therefore to better gas retention capacity. Levels of use depend on the intrinsic strength of the flour and the process, but different authorities appear to agree on a maximum level of 45 mg/kg.
9. Potassium bromate. Potassium bromate has been used as an oxidizing agent in breadmaking since the early years of modern bread production. Its mode of action is similar to that of azodicarbonamide, except that it is active mainly at the baking stage when it becomes transformed to potassium bromide. It is found to be useful not only in breadmaking but also in other fermented bakery products. Levels of use vary as with azodicarbonamide, but the maximum treatment level is 50 mg/kg.
10. Mono-calcium phosphate. Although it is included in the list of flour improvers, its main use (up to 2,500 mg/kg) is as a yeast stimulant both by controlling pH and by supplying phosphate. As such it is utilized by the yeast and should lead to no substantial increase in the phosphate content of bread. Further, being acidic in nature it acts as a raising agent in chemically leavened products.
11. Lecithin. Lecithin, which can be added in powder form to flour, is an emulsifier. While having no oxidizing or reducing effect, it modifies the texture and mechanical handling properties of the dough. Maximum is 2,000 mg/kg.

TABLE 1. ADDITIVES IN WHEAT FLOUR

Additive	Maximum Level of Use	Maximum Level	JECFA Evaluation
Fungal amylase		GMP	
Proteolytic enzyme		GMP	
L-Ascorbic acid		300 mg/Kg	ADI 0-15 mg/kg BW
Azodicarbonamide	45 mg/Kg		treatment level 0-45 mg/Kg
Potassium bromate	50 mg/Kg		treatment level 0-50 mg/kg
mono-Calcium phosphate		2500mg/Kg	ADI 0-70mg/Kg BW
Lecithin		2000 mg/Kg	ADI not specified