

**codex alimentarius commission**

FOOD AND AGRICULTURE  
ORGANIZATION  
OF THE UNITED NATIONS

WORLD HEALTH  
ORGANIZATION

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ALINORM 89/29

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION

Eighteenth Session

Geneva, 3-14 July 1989

REPORT OF

THE SIXTH SESSION OF THE

CODEX COMMITTEE ON CEREALS, PULSES AND LEGUMES

Washington, D.C. 24 - 28 October 1988

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CX 5/80.2

CL 1988/51-CPL  
January 1989

TO: - Codex Contact Points  
- Participants at the Sixth Session of the Codex Committee on Cereals, Pulses and Legumes  
- Interested International Organizations

FROM: Chief, Joint FAO/WHO Food Standards Programme, FAO, 00100 Rome, Italy

SUBJECT Distribution of the Report of the Sixth Session of the Codex Committee on Cereals, Pulses and Legumes (ALINORM 89/29)

PART A: MATTERS OF INTEREST TO THE 18TH SESSION OF THE CODEX ALIMENTARIUS COMMISSION

1. Draft Standards at Step 8 of the Procedure

The following standards have been submitted to the 18th Session of the Commission at Step 8 of the Procedure.

Draft Standard for Certain Pulses (Para 62, Appendix II)  
Draft Standard for Sorghum Grains (Para 80, Appendix III)  
Draft Standard for Sorghum Flour (Para 93, Appendix; IV)

Governments wishing to propose amendments, to the above draft standards should do so in writing in conformity with the Guide to the consideration of Standards at Step 8 (See 6th Ed. of the Procedural Manual of the Codex Alimentarius Commission),

2. Proposed Draft Standards and Amendments at Step 5 of the Procedure

The following Draft Standard and Amendment have been submitted to the 18th Session of the Commission at Step 5 of the Procedure.

- i) Draft Standard for Durum Wheat Semolina and Durum Wheat Flour (Para 113, Appendix V);
- ii) Amendment to increase the Fat Acidity in Wheat Flour from 30 mg to 50 mg KOH/100 g (Para 32)

Governments wishing to submit an economic impact statement on the above proposed draft standard should do so in writing in conformity with the procedure for the elaboration of Codex Standards (Step 5) (See 6th Ed. of the Procedural Manual of the Codex Alimentarius Commission).

PART B: MATTERS OF INTEREST TO GOVERNMENTS AND INTERESTED INTERNATIONAL ORGANIZATIONS

3. Sampling Plans and Guideline Levels for Aflatoxins in Cereals, Pulses and Legumes

A Separate Circular Letter CL 1988/50-CPL has been issued on the subject.

4. Determination of Fat Acidity in Wheat Flour

The Committee adopted the method "Fat Acidity" AOAC 14th Ed. (1984), 14.069-14.072 which was a Type I defining method for determination of fat acidity in wheat flour but agreed to discuss alternate methodology for determination of wheat flour at a future session on the basis of additional data which might be made available to it (Para 29).

5. Request for Comments at Step 3 on the Provisional/Guideline Levels for

### Contaminants in Cereals, Pulses and Legumes

The Committee proposed the following Provisional/Guideline Levels for Contaminants in Cereals, Pulses and Legumes for comments at Step 3 (Para 36).

<u>Contaminant</u>	<u>Provisional/Guideline Level in Cereals, Pulses and Legumes</u>
Arsenic	0.5 mg/kg
Cadmium	0.05 mg/kg
Mercury	0.05 mg/kg
Lead	0.5 mg/kg

Governments and Interested International Organizations are requested to submit their comments at Step 3 on the above Standard.

#### 6. Latest Date for Receipt of Comments

- a) Comments on Part A should be sent to the Chief, Joint FAD/WHO Food Standards Programme, FAO, 00100 Rome, Italy, not later than 28 March 1989.
- b) Information on Para 4, Part B and Comments on Para 5, Part B, should be sent to the Chairman of the Committee, Mr. Steven N. Tanner, Assistant to the Administrator for Technology, Federal Grain Inspection Service, U.S. Department of Agriculture, Room 1627 South Building, P.O. Box 96454, Washington D.C, 20090 - 6454, USA, with a copy to the Chief, Joint FAO/WHO Food Standards Programme, FAO, 00100 Rome, Italy, not later than 15 November 1989.

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## SUMMARY AND CONCLUSIONS

The 6th Session of the Codex Committee on Cereals, Pulses and Legumes reached the following conclusions during its deliberations:

- Advanced the Draft Standard for Certain Pulses to Step 8 (Para 62);
- Advanced the Draft Standard for Sorghum Grains to Step 8 (Para 80);
- Advanced the Draft Standard for Sorghum Flour to Step 8 (Para 93);
- Advanced the Draft Standard for Durum Wheat Flour and Semolina to Step 5 (Para 113);
- Advanced the Amendment to increase the fat acidity in wheat flour from 30 mg to 50 mg KOH/100 g (Para 32) to Step 5;
- Agreed to discuss alternate methodology for determination of fat acidity in wheat flour (Para 29);
- Agreed to seek comments from governments on the provisional guideline levels for contaminants at Step 3 (Para 36);
- Agreed to accept, until such time as a statistically derived sampling plan for aflatoxins is developed, a simple and practical sampling plan based on the principle of average of the lot by a single randomly selected composite for cereals, pulses and legumes using 50 sample units of 450 g (1 lb) each in the case of consumer packs and 10 sample units of 450 g (1 lb) each for bulk consignment (Para 44);
- Agreed to seek comments from governments on the guideline level of 5 µg/kg for aflatoxin B<sub>1</sub>, or alternatively, 15 µg/kg total aflatoxin B<sub>1</sub>, B<sub>2</sub>, G<sub>1</sub>, and G<sub>2</sub> for cereals, pulses and legumes (Para 49);
- Agreed to request the approval of the Commission to proceed with the elaboration of a worldwide standard for rice including milled rice (Para 115);
- Expressed interest in developing a Codex standard for oats (Para 117).

## INTRODUCTION

1. The Sixth Session of the Codex Committee on Cereals, Pulses and Legumes was held in Washington, D.C., from 24-28 October 1988 through the courtesy of the Government of the United States of America; 101 Representatives and Observers from 22 countries and 7 International Organizations were present. The Session was chaired by Mr. Steven Tanner, Assistant to the Administrator for Technology, Federal Grain Inspection Service, United States Department of Agriculture. The list of participants is given in Appendix I to this Report.

### OPENING OF THE SESSION (Agenda Item 1)

2. Dr. Lester M. Crawford, U.S. Coordinator for Codex Alimentarius introduced the guest speaker, Dr. Kenneth A. Gilles, Assistant Secretary of Agriculture, Marketing and Inspection Services.

3. Dr. Gilles in opening the session stated that the Codex Alimentarius Commission, which was now in its twenty-seventh year of productive activity, continued its work effectively as a global organization protecting the health of the consumer and facilitating international trade. Dr. Gilles emphasized the benefits of the work of Codex including the high quality of the standards that are produced. In addition Codex gave regulators the chance to discuss common problems and learn from each other, and scientists and business people from around the world have the opportunity to discuss their problems and to transfer information informally in a non-competitive atmosphere. Dr. Gilles emphasized the need for updating and modifying the commodity standards elaborated by Codex in light of changes in food processing technology and analytical methodology and changes in consumer preferences and life style which result in the need to consider commodity standards as dynamic and changing in nature rather than static and fixed. He proposed that the industry in each country to take an active role in the development of food standards and appealed to the Governments to work with industry to accomplish well-defined and useful standards. Dr. Gilles stated that the United States encouraged the development of high-quality food standards that promoted fair trade. The United States would continue to take an active interest in promoting and encouraging trade and the use of hygienic and nutritional quality foods around the world.

### IN MEMORIAM: DR. D.L. HOUSTON AND DR. R.W. WEIK

4. The Committee recalled with sincere appreciation the contributions made to its work and to the work of the Codex Alimentarius Commission by the late Dr. D.L. Houston, National Codex Coordinator for the U.S.A. and former Administrator, Food Safety Inspection Service, U.S.D.A. and the late Dr. R.W. Weik, delegate to this Committee from U.S.A., both of whom had passed away since the Committee's previous session. The Committee observed a minute's silence in memory of Dr. Houston and Dr. Weik,

### ADOPTION OF PROVISIONAL AGENDA

5. The Committee had before it the provisional agenda of the session as set-out in document CX/CPL 88/1. To facilitate discussion of Agenda Items 4 and 6 and methods of analysis and sampling contained in the standards under review (Agenda Items 7-10), the Committee agreed to set up a working group to consider the relevant papers and to provide advice to the Committee. The Working Group had the following terms of reference.

- To review methods of analysis and sampling in the different standards under

review in the light of comments from CCMAS (ALINORM 87/23, Appendix III, paragraphs 6 and 7 and Table 1),

- To update references to methods of analysis and sampling which had been included in the standards and endorsed by CCMAS.
- To analyse government comments on fat acidity in wheat flour received in response to CL 1986/78-CPL and CL 1987/49-CPL.
- To consider the paper CX/CPL 88/9, sampling plans for aflatoxins in cereals, pulses and legumes and make proposals for consideration by the Committee.

6. Delegations of United Kingdom, Switzerland, Finland, Canada, Netherlands, U.S.A. and France and observers from the AOAC, GAM, International Association for Cereal Science and Technology (ICC) and the Commission of the European Communities (EEC) participated in the Working Group under the chairmanship of Dr. William Horwitz of the Association of Official Analytical Chemists (AOAC).

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

7. The Committee had before it document CX/CPL 88/2, containing matters of interest to it arising from sessions of the Codex Alimentarius Commission and other Codex Committees. The Committee noted that there were a number of matters which would be discussed under other agenda items and agreed to defer discussion on them until the particular agenda item was presented.

#### General Standard for the Labelling of Prepackaged Foods and Guidelines on Labelling Provisions in Codex Standards

8. The Committee noted that the CAC at its 17th Session amended section 5.3 of the Guidelines for non-retail containers by including into the preamble reference to Section 8.1.3 of the General Standard (CODEX STAN 1-1985) to resolve the problem of clear shrink wraps. Further it had proposed a footnote indicating that Codex Committees should determine in individual standards to which type of non-retail containers these labelling provisions should apply (ALINORM 87/39, para 135).

9. The Committee noted that the section on labelling of non-retail containers in the different standards under elaboration would need to be changed as a result of the amendments proposed by the Commission and agreed to take action while considering the draft standards under agenda items 7 to 10.

#### Regular Reviews of Food Additive Provisions in Codex Standards

10. The Committee noted that the CCFAC had agreed to discuss the future activities of the Committee in regard to the establishment and regular review of provisions relating to food additives in Codex standards and the possible mechanism for establishment of general provisions for the use of non standardized foods as a general approach in the light of changing requirements in international trade. A paper would be prepared for its next session by a consultant.

#### Milled rice

11. The Committee noted that the specification for rice (ISO 7301) had been adopted by ISO. The Committee recalled its discussions at its third session as to the need for the elaboration of a separate Codex Standard for Rice that would cover not only essential composition and quality but also provisions for hygiene, contaminants, packaging, labelling and methods of analysis and sampling for products intended for direct

consumption. It agreed to discuss the subject under Other Business (Agenda Item 11) (see paras 114-115)

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

##### Report on Work Programme of ISO:

12. The Secretariat presented Conference Room Document 4, which reported the status of activities of ISO concerning cereals and pulses from March 1986 to July 1988. The Committee noted that all the activities of ISO concerning cereals and pulses were carried out by the ISO subcommittee ISO/TC 34/SC4. The Committee also noted that the specifications for rice (ISO 7301) was not contained in the list of issued international standards since it was issued only as recently as October 1988.

##### Report on Work Programme of ICC

13. The observer of the International Association of Cereal Science and Technology (ICC) presented Conference Room Document 5 which reported the status of activities of the Organization concerning Cereals and Pulses during 1986-88.

#### REPORT ON THE AD HOC WORKING GROUP ON METHODS OF ANALYSIS AND SAMPLING (Agenda Item 3c)

14. Dr. W. Horwitz (AOAC) Chairman of the Working Group, presented the report to the plenary.

15. The Working Group had provided recommendations on (i) Methodology for determination of fat-acidity in wheat flour and (ii) Sampling Plans for Aflatoxins in Cereals, Pulses and Legumes, and the conclusions of the Working Group are described under Agenda Items 4 and 6.

16. With regard to consideration of the updating of references to methods of analysis and sampling, the ad hoc Working Group found that no updating was necessary with the exception that the sampling plans cited in the standards for maize, maize grits and maize meal should exclude aflatoxins as an element for listing by the methods cited. The Committee accepted the recommendation of the Working Group and agreed to refer this to the Commission with a request to amend the reference to sampling plans in earlier standards accordingly. Sampling for aflatoxins was considered as a separate issue.

17. The Committee also adopted the Working Group's suggestion that at some future time, it should investigate sampling plans and methods of analysis to assess levels for arsenic, mercury, cadmium and lead in the standards under review by the Committee.

#### CONSIDERATION OF AS-YET-UNENDORSED FOOD ADDITIVE PROVISIONS IN THE STANDARD FOR WHEAT FLOUR (Item 3d)

18. The Committee recalled that the use of a number of the food additives originally included in the Standard for Wheat Flour had not been endorsed by the Committee on Food Additives and Contaminants, due to a lack of technological justification. The 5th Session of CCCPL had prepared a comprehensive justification paper (ALINORM 87/29, Appendix IX) for submission to the 19th Session of the Committee on Food Additives and Contaminants (CCFAC) which had not been examined because the paper had not been available to delegates before the meeting. A revised paper was prepared by the Codex Secretariat which gave up-dated information, especially in regard to the evaluation of the use of the additives under consideration by the Joint FAO/WHO Expert Committee on Food Additives (JECFA). When this paper (CX/FAC 88/10 - Part II) was submitted to the 20th Session of CCFAC, the delegation of the U.S.A. informed the Committee that it had discussed the Secretariat's paper with the Chairman of CCCPL

who had proposed that the CCFAC should consider the food additive provisions as proposed by the CCCPL or, in the event that CCCPL's proposal could not be endorsed, the CCCPL should review the Secretariat's paper and submit comments on it to the next CCFAC. The CCFAC had accepted the latter proposal.

19. The Committee, therefore, had before it the Secretariat paper CX/FAC 88/10 - Part II, and a single comment received from the Federal Republic of Germany in response to Circular Letter 1988/12-CPL, as contained in Conference Room Document N<sup>o</sup> 2.

20. The Committee noticed that the comment of the Federal Republic of Germany was similar to the views expressed by several delegations on previous occasions. In particular, the delegations of France, Switzerland, the Netherlands, Sweden, Spain, Norway and Finland stated that the use of bleaching agents in flour was not permitted in their countries. However, several of these delegations recognized that the use of these agents was well-established in other countries. Provided that the standard clearly indicated that there would be certain restrictions on their use, countries would be able to indicate specified deviations from the Standard at the time of acceptance.

21. The delegation of the United Kingdom stated that the term "bleaching agent" which had been used in relation to some of the additives in question was inappropriate since, in fact, only benzyl peroxide was primarily used for this purpose. It also provided the Committee with detailed information on the breakdown of potassium bromate in bread (Conference Room Document N<sup>o</sup> 7).

22. The delegation of the United States suggested that there was technological justification for the use of chlorine as a treatment agent in "all-purpose flour", but this was not accepted by the Committee.

23. The Committee endorsed the statement of technological justification contained in CX/FAC 88/10-Part II, and requested that this statement be re-submitted to CCFAC. Noting that this matter had been under consideration over a number of sessions of both Committees, that the additives in question had been evaluated and cleared by JECFA and that, in its opinion, adequate technological justification had been provided, the Committee saw no impediment to the endorsement of these provisions by CCFAC. In the event that CCFAC would be unable to endorse these provisions the Committee requested the Commission's final decision in this matter in order to complete the Standard for Wheat Flour.

#### FURTHER CONSIDERATION OF SECTION 3.3.3. (FAT ACIDITY) OF CODEX STANDARD FOR WHEAT FLOUR (Agenda Item 4)

24. The Committee recalled the discussions at its last (5th) Session (ALINORM 87/29, Paras 67-80) on Section 3.3.3 (fat acidity) of Codex Standard for Wheat Flour. The Committee had agreed to increase the value of fat acidity in the Codex Standard for Wheat Flour from 30 to 50 expressed as milligrams of potassium hydroxide needed to neutralize the free fatty acids extracted from 100 grams of product on a dry basis, as determined by the method "Fat Acidity" AOAC 14th Ed. (1984), 14.069-14.072, which was a Type I "defining" method.

25. At that Session the observers from EEC and the Millers Association of the EEC (GAM) citing the health hazards of benzene and toluene, proposed consideration of the ISO method 7305 Milled Cereal Products - Determination of Fat Acidity (First edition 15-3-1986) which used ethanol for extracting, as an alternate method for determination of fat acidity in cereals including wheat flour.

26. A circular letter, CL 1986/78 CPL, was issued soliciting information on the ISO methodology and other comparable methods for determination of fat acidity in wheat flour of different quality. The comments received in response to the CL were contained in the document CX/CPL 88/8, and were analyzed by the Working Group. The Chairman of the Working Group, Dr. W. Horwitz (AOAC) presented the Working Group's report on the subject to the plenary.

27. The Committee noted that the delegation of France and observers from GAM and EEC had objected to the use of AOAC method for determination of fat acidity in wheat flour on safety grounds, the lengthy time taken for evaporation of the solvent and reliability of the method and proposed as an alternative the ISO method. Studies carried out in France and USA showed no correlation between the ISO and AOAC methods for determination of fat acidity. Consequently no equivalent specifications for fat acidity determined by the ISO method could be proposed. The general consensus was that the present AOAC method should be retained. The Committee agreed to reconsider the specification for acidity when an alternative specification utilizing the ISO alcohol method could be proposed.

28. The Delegation of France and the observer from the GAM made the following observations:

"During the fifth session at Washington, a simple calculation permitted the establishment of a comparative threshold between the two methods (AACC and ISO N<sup>o</sup> 7305), pending the examination of results obtained on identical products using the two proposed methods.

Work carried out by a French laboratory had enabled the Working Group, designated by the Committee currently in session, to establish that no correlation existed between the two methods.

France and the GAM show that, by virtue of the results presented, the ISO method should be the method used for the determination of fat acidity. Given that it has not been possible to officially submit during this session the analytical results and the conclusions of this work, which have been addressed by France, the delegation of France requested that this document be translated into the official languages and transmitted to the different governments for their comments. France and the GAM have proposed a maximum level of fat acidity of 70 mg expressed in H<sub>2</sub>SO<sub>4</sub> according to the ISO method.

The Delegation of France agreed to furnish complementary data concerning the proposed level, the degree of flour deterioration, and the impact on the technical value.

29. The Committee agreed to discuss the methodology for determination of fat acidity in wheat flour at a future session on the basis of additional data which might be made available to it. These data should indicate specifications for fat acidity reported as mg of sulphuric acid per 100 g of dry matter, which would be consistent with the same baking quality of wheat flour provided for in the current standard.

AMENDMENT TO INCREASE THE FAT ACIDITY IN WHEAT FLOUR FROM  
30 MG TO 50 MG KOH/100 G

30. The Committee noted that the Commission at its 17th session approved the Initiation of the amendment procedure to raise the value for fat acidity in wheat flour to 50 mg KOH/100 g retaining the present Type I method as proposed by the Committee at

its 5th Session. CL 1987/69-CPL was issued inviting comments from governments on the proposed amendment.

31. Comments received from Cuba and Mexico supported the increase in fat acidity to 50 mg. The delegation of U.K. informed the Committee that studies carried out on wholemeal flours had demonstrated the presence of an active lipase in the wheat bran. The fatty acid content of wholemeal flours increased rapidly with storage and levels equivalent to 70 mg KOH/100 g dry flour or greater were not uncommon in commercial flours which were stored up to six weeks. Therefore, it would be difficult to predict levels of fat acidity in flour with high bran contents. It proposed that a limit of fat acidity should apply only to white flours of extraction rates up to 75%.

32. The Committee agreed with this proposal and advanced to Step 5, the amendment to increase the fat acidity in wheat flour from 30 mg to 50 mg KOH/100 g in white flours of extraction rates of 75% or less. The Committee, however, noted that there was no method for determination of extraction rates of wheat flour.

#### SURVEY OF CONTAMINANTS (Agenda Item 5)

33. The Committee had before it document CX/CPL 88/3 containing the results of a second survey on levels of contaminants in Cereals, Pulses and Legumes. Twenty countries had participated in the survey. The contaminants surveyed were arsenic, cadmium, lead, mercury and aflatoxins. The survey contained figures for national tolerances for contaminants as well as minimum, maximum and average values reported by the countries for contaminants in wheat-grains, wheat flour, maize grains, degermed maize grains, whole maize meal, pulses and legumes.

34. Presenting the paper, Mr. Pierre Rossier of Switzerland informed the Committee that it would be difficult, based on the results of the survey to propose maximum levels for the contaminants surveyed, in cereals, pulses and legumes. The values reported by the different countries appeared to vary significantly because of the differences in methodology and sampling adopted. He also informed the Committee that the contaminants surveyed were all of environmental origin and their levels in cereals, pulses and legumes were not influenced by processing.

35. Since the data collected were not adequate to establish mandatory maximal levels for contaminants, the Committee agreed to recommend that provisional guideline levels for the contaminants in cereals, pulses and legumes should be established.

36. The following proposal made by Mr. Rossier was considered by the Committee.

Contaminant	Provisional/Guideline Level in <u>cereals, pulses and legumes</u>
Arsenic	0.5 mg/kg
Cadmium	0.05 mg/kg
Mercury	0.05 mg/kg
Lead	1.0 mg/kg

The Committee expressed its views that the level of lead (1.0 mg/kg) was rather high especially in view of its toxicity to infants, and noting that national tolerances for lead in cereals were much lower, agreed that the provisional guideline level for lead should be 0.5 mg/kg. It was agreed to seek comments from governments on the provisional guideline levels for contaminants at Step 3.

37. The Committee deferred discussion on levels for mycotoxins to Agenda Item 6,

38. The Chairman of the Committee expressed the appreciation of the Committee to Mr. Rossier for his excellent work.

SAMPLING PLANS FOR AFLATOXIN IN CEREALS, PULSES AND LEGUMES  
(Agenda Item 6)

39. The Committee noted that CCFAC at its 20th session had proposed a guideline level of 5 µg/kg for total aflatoxin for cereals and, recognizing that the expertise for sampling from bulk consignments of cereals, pulses and legumes resided with CCCPL, referred the development of sampling plans for analysis of aflatoxin to this Committee.

40. The delegation of U.S.A. had prepared the document CX/CPL 88/9 on the subject of sampling plans for aflatoxin in cereals, pulses and legumes which was first considered by the Working Group (see para 15) and later by the plenary.

41. The Committee noted that the document summarized Recommendations on sampling from CCMAS; opinions of other international and national bodies; the report of, and papers prepared for the Second Joint FAO/WHO/UNEP International Conference on Mycotoxins; and national regulations on sampling plans for aflatoxin. While the plan based on "Average of a lot by a single blended bulk sample" was found acceptable to governments (ALINORM 89/12, para 125) for determination of certain environmental contaminants like arsenic, mercury and cadmium in commodities, such a plan was not acceptable for aflatoxin especially because of the heterogeneous distribution of the contaminant.

42. The distribution of aflatoxins in consignments made development of statistical sampling plans very difficult. The Committee noted that a sampling plan for aflatoxins could only be achieved when a statistical model capable of describing the distribution of aflatoxins in commodities had been identified.

43. The Committee noted that surveys of governments on the subject of sampling plans for aflatoxins by the CCFAC and for the Second International Conference on Mycotoxins have resulted in a relatively few replies in relation to the number of government's surveyed. In the face of this diversity of sampling plans it concluded that there was no current international consensus. Experts in the development of statistically derived sampling plans had concluded that such a plan would require much more data, and it would take considerable efforts and time to develop an effective sampling plan for aflatoxins.

44. The Committee agreed to accept in the interim, for immediate guidance, a simple and practical sampling plan based on the principle of average of the lot by a single randomly selected composite (CX/CPL 88/9, Appendix I, plan II .C) for cereals pulses and legumes using 50 sample units of 450 g (1 lb) each in the case of consumer packs, and 10 sample units of 450 g (1 lb) each for bulk consignments,

45. Some delegations among which especially France expressed the view that the sampling plan based on average of the lot would not be effective in the case of aflatoxins in view of the heterogeneous distribution of the contaminant in bulk sample. The Committee agreed that when an international consensus was developed on a statistically derived sampling plan based on data concerning the distribution of aflatoxins in consignments, such plans will be substituted for the "average value by single composite plan".

46. The Committee also received an inspection scheme for shelled peanuts with

regards to aflatoxins in Netherlands presented by the delegation of Netherlands. The Committee noted that the sampling plan followed in Netherlands was based on the analysis of multiple composites (CX/CPL 88/9, appendix I, plan IIb).

47. The Committee agreed to invite comments on document CX/CPL 88/9, prepared by the delegation of USA and the document on inspection schemes for shelled peanuts with regard to aflatoxins in the Netherlands, from governments. The Committee also agreed to seek for more information from the governments on the distribution of aflatoxins in commodities of interest. Such information was considered necessary for formulation of a statistically based sampling plan in the future.

48. The Committee was reluctant to propose any guideline level for aflatoxins in cereals, pulses and legumes since it was convinced that the levels to be proposed would need to be linked to the sampling plan. It noted, however, that national regulations in many countries for aflatoxins in cereals, pulses and legumes was 5 µg/kg for aflatoxin B<sub>1</sub> or 15 µg/kg for total aflatoxin B<sub>1</sub>+B<sub>2</sub>+G<sub>1</sub>+G<sub>2</sub>.

49. The Committee agreed to seek comments from governments on the guideline level of 5 µg/kg for aflatoxin B<sub>1</sub> or, alternatively, 15 µg/kg total aflatoxin B<sub>1</sub>, B<sub>2</sub>, G<sub>1</sub> and G<sub>2</sub>. The comments would be reviewed both by CCFAC and also by CCCPL.

50. delegation of Switzerland expressed its reservation to the conclusions of the Committee as regards sampling plans and guideline levels for aflatoxins in cereals, pulses and legumes. It informed the Committee of the regulations in force in Switzerland according to which the levels of aflatoxin B<sub>1</sub> should not exceed 1-2 µg/kg in any commodity. Different sampling plans were used in the country dependent on whether the distribution of aflatoxins was (1) heterogeneous e.g., cereals (2) partially heterogeneous, e.g., in cheese and (3) almost homogeneous, e.g., in milk or peanut butter.

51. The Committee expressed its thanks to the delegation of U.S.A. for the excellent document that it had prepared and also to the Working Group for its excellent work.

#### CONSIDERATION OF THE DRAFT STANDARD FOR CERTAIN PULSES, AT STEP 7 (Agenda Item 7)

52. The Committee recalled that the Draft Codex Standard for Certain Pulses (ALINORM 87/29, Appendix II) had been considered by the 17th Session of the Commission at Step 8, but had been returned to Step 6 of the Procedure in view of comments made by governments especially in regard to the provisions concerning moisture content (ALINORM 87/39, paragraphs 466-472). Comments on the Draft Standard, received from the governments of Cuba, Ireland, Thailand, France, Federal Republic of Germany, Egypt, The Netherlands, the United States of America and the International Pulse Trade and Industry Confederation (IPTIC) in response to CL 1987/49-CPL, were contained in document CX/CPL 88/4 and Addendum I to this document.

53. The Committee noted several errors in the French version of the Draft Standard, especially in the section giving the common and scientific names of the products concerned (section 2.1). These errors were corrected to the best of the Committee's ability.

#### Section 2: Description

54. The Committee retained the present wording (2.1) of this section, and considered that no change need be made to the description on the drying procedure as this was

adequately covered by the section on quality factors.

### Section 3.2: Moisture

55. The Committee noted that a wide range of proposals for maximum moisture content had been proposed in the written comments submitted to it and considered various approaches to satisfying the requirements and marketing situations of the different countries which commented. Some delegations proposed that it would be possible to delete this provision completely and to allow the buyer and seller of the commodities to agree on moisture levels under their contractual agreements. However, noting that maximum levels were required for control during retail marketing, and to provide a certain degree of harmonization in international trade, the Committee requested a small Working Group to prepare proposals for its consideration. Representatives of Australia, Brazil, Canada, France, Netherlands and the U.S.A. participated in the Working Group.

56. The Working Group reported that the principal difficulty seemed to be that there were two groups of maximum levels being proposed. The first group related to relatively low moisture pulses which were intended for long term storage before marketing and use, or which were stored under conditions which would be favorable to mould growth if the moisture level would be higher. The second group of levels related to pulses which were normally marketed within the short period of time (i.e., the same crop year) and stored under conditions which were not favourable to mould growth even at the higher moisture level.

57. The Working Group proposed the following re-wording of Section 3.2.1.1:

"Two maximum moisture levels are provided to meet different climatic conditions and marketing practices. Lower values in the first column are suggested for countries with tropical (or similar) climates or when long-term (more than one crop year) storage is a normal commercial practice. The values in the second column are suggested for more moderate climates or when other short-term storage is the normal commercial practice.

	Moisture Content (Percent)	
beans	15	19
lentils	15	16
peas	15	18
chick peas	14	16
field beans	15	19
cow peas	15	18

Countries should select either list as applicable to their climatic conditions and marketing practices."

58. The Committee agreed to amend the Draft Standard as proposed by the Working Group. The Delegation of the United Kingdom stated however, that such provisions were too complicated, and were, in fact, not a standard at all. The delegation stated that there appeared to be no need for moisture provisions, and that this should be left to the commercial agreements between traders. The Delegation of France did not agree with the minimum levels indicated in the first column (para 57).

### Section 3.3: Definition of Defects

59. The Committee accepted the proposals of France and the United States to

modify sub-sections 3.3.2.2, 3.3.3 and 3.4.1 (consequentially), to improve the understanding of these sections.

#### Section 3.4: Tolerances for Defects

60. The Committee did not accept the proposal of Cuba to establish a separate quality grade "good quality" with lower tolerances, as the standard was intended to apply only to the basic quality of pulses moving in international trade.

61. It was agreed to reduce the tolerance for dead insects (section 3.4.1) to 0.1% in place of 0.2%, and to amend the format of section 3.4.6 so as to improve the understanding of the section.

62. The Committee considered all other comments submitted, but noted that many of these had been considered at previous sessions. It agreed to advance the Draft Standard to Step 8 of the Procedure for the consideration of the Commission for adoption as a world-wide Codex Standard, The Revised Draft Standard appears as Appendix II to this report.

#### CONSIDERATION AT STEP 7 OF THE DRAFT STANDARD FOR SORGHUM GRAINS (Agenda Item 8)

63. The Committee had before it document CX/CPL 88/5 containing comments from governments on the Draft Standard for Sorghum Grains received in response to CL 1986/58 CPL and the Draft Standard for Sorghum Grains at Step 6 contained in ALINORM 87/29, Appendix III.

#### Section 1 - Scope

64. The Committee agreed with the comments of France to change the text to make it clear that the Standard applied both to whole sorghum grains as well as decorticated grains. The Committee agreed to use the word "whole" for "non-decorticated" throughout the text.

#### Section 2 - Description

65. The Committee corrected the name of the species for sorghum grains to read as Sorghum bicolor (L) Moench. It also noted that the description of the parts removed during decortications as "outer parts" was not specific and agreed to replace the term "outerparts" by the term "external casings and whole or parts of the germ".

#### Section 3 - Essential Composition and Quality Factors

66. The Committee noted that Sorghum grains with orange and yellow colour also move in international trade and agreed to include those colours in section 3.1.2 as quality factors. It also noted that the grains should always be "sound" and replaced the word "whole" by "sound".

#### Section 3.2.1 - Moisture Content

67. The Delegations of Brazil, Canada and France informed the Committee that in their countries the national regulations for the maximum moisture content ranged from 13 - 14.5%. The Committee agreed to lower the maximum moisture content of sorghum grains from 15.0% to 14.5%.

#### Section 3.2.2 - Ash

68. The Delegation of U.S.A. proposed that the maximum ash content of decorticated sorghum grains be reduced from 1.6% to 1.5%, The Delegation of France

informed the Committee that ash content was dependent on variety and that tropical countries producing sorghum grains with higher ash content would have problems if the ash content was lowered. The Committee, however, agreed to lower the ash content from 1.6% to 1.5%.

#### Section 3.2.3 - Protein

69. The Committee noted the proposal to change the factor from 6.25 to 5.7 for converting nitrogen to protein. The Delegations of U.S.A. and Argentina informed the Committee that in their countries factor of 6.25 was used for regulatory purposes although it was recognized that the scientific conversion factor was closer to 5.7. In addition the Delegation of U.S.A. informed the Committee that the protein content of sorghum grains analysed in its country ranged from 8-9%. The Committee retained the factor of 6.25 for converting nitrogen to protein and left the figure for minimum protein content of 7%.

#### Section 3.2.4 - Fat Content

70. The Committee agreed with the proposal of the delegation of U.S.A. and reduced the maximum fat percent from 4.7 to 4.0%.

#### Section 3.2.5 - Tannin Content

71. The Committee agreed that the tannin content of whole sorghum grains and decorticated grains shall not exceed 0.5% and 0.3% respectively. The delegation of Norway inquired whether the tannin content was expressed as soluble tannin or insoluble tannin. The Committee noted that the method NFV 03-751 September 1985 (Norme française "sorghum": determination of tannin content) which was endorsed by CCMAS, was an empirical method and one which measured total tannins. The Committee noted that a draft ISO method was in the course of elaboration.

#### Section 3.3 - Definition of Defects and Section 3.4 - Tolerances for Defects

72. The Committee noted that the text in Section 3.3 and 3.4 of the Standard (ALINORM 87/29, Appendix III) was not consistent with that in earlier standards, e.g. Codex Standard for Maize (CODEX STAN 153-1985) that it had elaborated. The Committee appointed a small working group with the membership of U.S.A., Argentina and France, to prepare a revised draft of the sections. The Committee adopted the revised draft with minor changes as outlined below. The revision appears as part of Appendix III.

##### Section 3.3.1.5 - Frost-Damaged Grains

73. The Committee noted that sorghum grown in tropical countries would not be damaged by frost while in the field but could undergo such damage during transport. The Committee agreed to retain a definition for frost-damaged grains and accepted the amended version proposed by the U.K. The amended version read as "Frost-Damaged grains are grains which are damaged by frost and which may appear bleached or blistered and the seed coat may be peeling. Germs may appear to be dead or discoloured".

##### Section 3.4 - Tolerances for Defects

74. The Committee agreed that the limits for tolerances for defects represented the maximum limits and amended the text accordingly.

75. The Delegation of France proposed for inclusion in section 3.3, harmful grains which it defined as those which could alter the organoleptic and technological properties

of sorghum and cited as examples fenugreek and garlic. The Committee noted that this was covered under section 3.1.1 and took no action.

#### Section 5 - Hygiene

76. The Committee noted that the section under hygiene was endorsed by the 22<sup>nd</sup> Session of the Codex Committee on Food Hygiene with slight modifications.

#### Section 6 - Packaging (Transport and Storage)

77. The Committee noted that storage was normally dealt under "Labelling"<sup>11</sup> and agreed to the proposal of Switzerland to delete reference to transport and storage from the provision.

#### Section 7 - Labelling

78. The Committee noted that all the provisions in the labelling section had been endorsed by the Codex Committee on Food Labelling and left the text unchanged.

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

79. The Committee noted that the section was reviewed by the Working Group (See para 16) which had no suggestions to update the references. The Committee left the text unchanged.

#### Status of the Standard

80. The Committee agreed to advance the Draft Standard for Sorghum Grains to Step 8 of the procedure. The revised standard is attached as Appendix III to this report.

#### CONSIDERATION AT STEP 7 OF THE DRAFT STANDARD FOR SORGHUM FLOUR (Agenda Item 9)

81. The Committee had before it document CX/CPL 88/6 containing comments from governments on the draft standard for sorghum flour received in response to CL 1987/49-CPL and the Draft Standard for Sorghum Flour at Step 6 as contained in ALINORM 87/29, Appendix IV.

#### Section 2 - Description

82. The Committee noted that sorghum flour which moved in international trade was obtained from sorghum grain through industrial milling during which the seed coat and germ were partially or completely removed and the endosperm was finely ground. The Committee accordingly agreed to change the text in 2.1 to read as "Sorghum flour is the product obtained from grains of Sorghum bicolor (L) Moench through a process of industrial milling during which the seed coat is removed and the germ is removed to a large extent and the endosperm is comminuted to a suitable degree of fineness to comply with section 3.2.2".

#### Section 3.1.1 - Degree of Extraction

83. The Committee noted that there was no methodology available to determine the degree of extraction and agreed to delete the provision.

#### Section 3.1.5 - Cellulose Content

84. The Committee noted that there was a reference in Section 8 only to methodology for the determination of crude fibre content and hence agreed to change the provision to read as "crude fibre content". The Committee also agreed that there was no need for limiting the minimum crude fibre content but only to limit the maximum

level.

85. The delegation of Norway raised the question about the desirability for replacing the reference to crude fibre by a reference to dietary fibre, since that had more nutritional significance. The Delegation stressed that the Commission had agreed that nutritional consideration should be included in Codex Standards when appropriate and that an adequate AOAC method was available for the determination of dietary fibre. The Committee, noting that the crude fibre content was included in the Standard as a quality parameter, retained the reference to crude fibre. It however agreed to include a footnote that the provision remained under review; at a later date it might be possible for this provision to be replaced by a provision for dietary fibre.

#### Section 3.1.6 - Tannin Content

86. The Committee agreed to specify a provision of 0.3% on a dry basis for tannin content for sorghum flour, which was the same as that of decorticated sorghum grains.

#### Section 3.1.7 - Colour

87. The Delegation of France informed the Committee that, in its view, the figures for colour were high and agreed to provide data to substantiate its view in the near future. Since the Committee expected to advance the Standard to Step 8, it expressed the view that it would not be possible to keep consideration of any of the provisions pending. The delegation of France was informed that it would have the opportunity to comment at Step 8, in accordance with the Codex Procedure. Such comments would be considered by the Commission.

#### Section 3.2.3 - Moisture

88. The Delegation of France proposed that the maximum moisture content be reduced to 14%; in its view 15% moisture content was a critical point, above which the storage quality of the flour would be affected. The delegation of Switzerland informed the Committee that sorghum flour with moisture content of 13.5% had been shown to have satisfactory storage life. The Committee, however, noting that the Standard was meant for sorghum flour moving in international trade, took no action.

#### Section 5 - Hygiene

89. The Committee noted that the text was similar to the one in the Draft Standard for Sorghum Grains and made similar changes in the text.

#### Section 6 - Packaging

90. The Committee deleted reference to transport and storage from the provision. The Committee took such action to be consistent with the Codex Standard for Wheat Flour.

#### Section 7 - Labelling

91. The Committee noted that the section on labelling was endorsed by the Codex Committee on Food Labelling and left the text unchanged.

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

92. The Committee noted that the section had been reviewed by the Working Group (see para 16) which had considered that all the references were current. The Committee left the text unchanged.

#### Status of the Standard

93. The Committee agreed to advance the Draft Standard for Sorghum Flour to Step 8 of the Procedure. The revised Standard is attached as Appendix IV to this report.

#### CONSIDERATION AT STEP 4 OF THE DRAFT STANDARD FOR DURUM WHEAT FLOUR AND SEMOLINA (Agenda Item 10)

94. The Committee had before it document CX/CPL 88/7 containing comments from governments on the Draft Standard for Durum Wheat Flour and Semolina received in response to CL 1986/58-CPL and the Draft Standard for Durum Wheat Flour and Semolina at Step 3 as contained in ALINORM 87/29, Appendix V. The Committee had also before it comments of the "Union des Associations des Semouliers des Communautés Européennes (UASCE)" as contained in Conference Room Document 6, as amended by the representative of the UASCE in regard to ash content in whole wheat semolina.

#### Title

95. The Committee noted that semolina represented the most important product in the processing of durum wheat and hence agreed to mention semolina ahead of the flour product in the title as well as in other sections of the text in the Standard. Since semolina-type products could also be produced from soft varieties of wheat, the Committee agreed to qualify the semolina as "Durum Wheat Semolina".

#### Scope

96. The Committee noted that semolina prepared from whole durum wheat was used in Europe and moved in international trade. The Committee hence agreed to expand the scope of the Standard to cover "Whole Durum Wheat Semolina".

#### Section 2.1 - Product Definition

97. The Committee accepted the following product definition for Whole Durum Wheat Semolina elaborated by U.K., Spain, France and UASCE:

"Whole Durum Wheat Semolina is prepared by a similar comminuting process (as that for semolina), but the bran and part of the germ are retained."

#### Section 3 - Essential Composition and Quality Factors

98. The Committee noted that ingredients referred to in section 3.2.1 were nutrients (vitamins and minerals) which were used in certain countries for enriching durum wheat semolina and durum wheat flour. The Committee noted that addition of nutrients to durum wheat semolina and durum wheat flour was not a normal practice in many countries of the world, although soft wheat flour and semolina-type products may be enriched. Also the nutrients were added only in special cases when authorized,

99. The Committee therefore agreed to enclose Section 3.4 in square brackets and ask for government comments as to the need for retention of the provision. Since the only ingredients that could be used in these products were nutrients as defined, the Committee agreed to change ingredients in section 3.2.1 to read as nutrients and enclose the words "and any added nutrients" in square brackets.

#### Section 3.3.2 - Ash and 3.3.3 Protein

100. The Committee indicated that there was no need to express the values for ash and protein both on fresh basis and moisture free (dry) basis and agreed to use the dry basis only, realizing that the moisture of the products could vary significantly. The delegation of France proposed that the ISO method (ashing at 900°C) for determination of ash content, be adopted.

101. The Committee accepted the figures for ash and protein (N x 5.7) provided by UASCE.

#### Section 3.3.4 - Moisture Content

102. The Committee agreed to reduce the maximum moisture content from 15% to 14.5%. It accepted the comment of the delegation of France that a moisture content of 15% could be critical as regards conservation of the product.

#### Section 3.5 - Particle Size

103. The Committee noted that semolina and flour obtained from Durum wheat were different food products and differentiation of the products could be made only based on particle size. The Committee also noted that provisions for particle size of the products were included in the Brussels Nomenclature issued by the Customs Cooperation Council.

104. The Committee, however, noted that figures given in section 3.5 for particle size were different from the figures agreed to by the Brussels Nomenclature. The Committee agreed to enclose the section 3.5 in square brackets and ask for government comments. It also agreed to include a footnote to section 3.5 that would draw the attention of governments to the Brussels Nomenclature.

#### Section 4 - Contaminants

105. The Committee noted that elaboration of maximum levels for contaminants would take some time and agreed to include in the interim a statement to the effect that the products shall be free from heavy metals in amounts which may represent a hazard to health.

#### Section 5 - Hygiene

106. The Committee agreed to change the text to be consistent with that present in the draft standards for sorghum grains and sorghum flour.

#### Section 7 - Labelling

107. The Committee noted that the foods to which the Standard applied were: (i) Durum wheat flour, (ii) Durum wheat semolina, and (iii) whole Durum wheat semolina and changed section 7.1.1 to reflect this accordingly.

108. The Committee noted that the ash content to be declared under provisions 7.1.3 would provide a measure of the extraction rate for the purchaser. However, considering that declaration of ash content or addition of calcium carbonate to the products would not be essential, the Committee deleted the provision 7.1.3.

109. The Committee noted that provisions 7.1.2, 7.2 and 7.3 related to addition of nutrients and enclosed it in square brackets to be consistent with its earlier decision regarding provision 3.4 nutrients.

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

110. The observer from EEC proposed the inclusion of an electrophoretic method for the purpose of detecting the possible presence of flours milled from varieties of wheat other than durum wheat. It proposed that the methods of Feillet and Resmini be used for the purpose.

111. The Committee was informed that methods recommended for adoption by Codex should have reliability established in respect of (i) specificity, (ii) accuracy, (iii) precision,

(iv) repeatability, (v) reproducibility, (vi) practicability, and (vii) applicability under normal laboratory conditions. The Committee was not aware of any electrophoresis method which met these criteria. The delegation of France referred to the official methods for the determination of content of soft wheat in pasta and semolina followed in its country and in Italy, and informed the Committee that the methods gave reliable and reproducible results. The Committee agreed to include it in the section on Methods of Analysis and Sampling, enclose it in square brackets and ask for government comments.

112. The Committee noted that there would be a need for inclusion in the Standard of tolerances for contamination by soft wheat varieties of wheat that would be acceptable in durum wheat products. The Committee agreed to collect information on the subject by means of a Circular Letter.

#### Status of the Standard

113. The Committee agreed to advance the Draft Standard for Durum Wheat Semolina and Durum Wheat Flour to Step 5 of the procedure. The revised standard is attached as Appendix V to this report.

#### OTHER BUSINESS (Agenda Item 11)

##### Future Work

##### - Rice

114. The Committee recalled its earlier discussion (see para 11 above) in relation to the possibility of elaborating a Codex Standard for Milled Rice. The Delegation of the Netherlands drew attention to the recently published ISO Specification for Rice (ISO - 7301) and stated that this Specification overlooked several substantial issues which would need to be covered for a World-wide Codex Standard for Rice, including aspects related to classification.

115. The Committee noted that the Commission had asked for the opinions of the Regional Coordinating Committees on the need for a standard for milled rice and that only one Regional Committee, that for Asia, had so far stated its opinion, which was negative. The Committee was of the opinion that an appropriate world-wide standard for rice, including milled rice, would, indeed, facilitate world trade and agreed to request the approval of the Commission to proceed with the elaboration of such a standard. The Delegation of the United States, assisted by the Delegations of France and the Netherlands, agreed to prepare a first draft proposal, which would take into account the ISO Specification, for discussion at the Committee's next session.

##### - Wheat

116. The Committee was informed that the draft ISO Specification for Wheat was nearing finalization, and it was agreed to await the publication of this document before considering whether a separate Codex standard for wheat should be elaborated.

##### - Oats

117. The Delegation of Australia expressed its interest in developing a Codex Standard for Oats. It drew the Committee's attention to the expansion of world trade in this commodity and the problems of meeting diverse standards. The Delegation of the U.S.A., assisted by the Delegation of Australia, agreed to prepare a working paper for the Committee's next session.

##### - Wild Rice

118. The Committee noted that international trade in Wild Rice (Zizania aquatica) did not justify the elaboration of a Codex standard at this stage.

- Code of Hygienic Practice

119. The Committee noted that the possibility of elaborating a Code of Hygienic Practice for the Storage and Transport of Cereals Pulses and Legumes had been raised at its Third Session (1981). In view of recent developments leading to the elaboration of specific guideline levels for aflatoxin and the applicability of the General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 1, 1979), it agreed not to reopen this matter at the present time.

120. In addition to the above, the Committee noted that its next session would include consideration of:

- Draft Standard for Durum Wheat Semolina and Durum Wheat Flour, at Step 7.
- Consideration of maximum levels for contaminants in cereals, pulses and legumes.
- Consideration of sampling plans, methods of analysis, and guideline levels for aflatoxin in cereals, pulses and legumes.
- Review of methods of analysis and sampling, including the status of methods for the determination of "fat acidity" in wheat flour.

DATE AND PLACE OF NEXT SESSION (Agenda Item 12)

121. The Committee noted that the Seventh Session of the Committee would be held in Washington, D.C. The dates would be determined by the Host Government and the Codex Secretariat, and would be communicated in due course.

VALEDICTION

122. The Committee paid tribute to its former Chairman, Mr. David Galliard, who had relinquished his chairmanship of the Committee in anticipation of his retirement. The Committee recalled his friendly guidance of its affairs since its first meeting in March 1980. It extended to him and his family its best wishes for a long and productive retirement.

**SUMMARY STATUS OF WORK**

<b>Subject Matter</b>	<b>Step</b>	<b>Action by</b>	<b>Reference</b>
Codex Standard for Wheat flour	8	Governments	CAC/VOL. XVIII
Codex Standard for Maize (Corn)	8	Governments	CAC/VOL. XVIII
Codex Standard for Whole Maize (Corn) Meal	8	Governments	CAC/VOL. XVIII
Codex Standard for Degermed Maize (Corn) Meal and Maize (Corn) Grits	8	Governments	CAC/VOL. XVIII
Draft Standard for Certain Pulses	8	18th CAC	ALINORM 89/29, App. II
Draft Standard for Sorghum Grains	8	18th CAC	ALINORM 89/29, App. III
Draft Standard for Sorghum	8	18th CAC	ALINORM 89/29, App. IV

Flour			
Draft Standard for Durum Wheat Flour and Semolina	5	18th CAC CCCPL (7th)	ALINORM 89/29 , App. V
Fat Acidity in Codex Standard for Wheat Flour	5	18th CAC CCCPL (7th)	ALINORM 89/29, para 32
Food Additives in Codex Standard for Wheat Flour	-	21st CCFAC 17th CAC	ALINORM 89/29, paras, 18-23
Sampling Plans for Aflatoxin in Cereals, Pulses and Legumes	-	CCCPL (7th)	CX/CPL 90/...
Provisional Guideline Level for Contaminants in Cereals, Pulses and Legumes	3	Governments CCCPL (7th)	CX/CPL 90/...
Milled Rice	-	18th CAC CCCPL (7th)	CX/CPL 90/...
Wheat	-	CCCPL (7th)	ALINORM 89/29, para 116
Oats	-	CCCPL (7th)	CX/CPL 90/...
Wild Rice	-	CCCPL (7th)	ALINORM 89/29, para 118
Code of Hygienic Practice for the Storage and Transport of Grains	-	CCCPL (7th)	ALINORM 89/29, para 119

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**DRAFT CODEX STANDARD FOR CERTAIN PULSES**  
**(Advanced to Step 8)**

**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. The pulses covered by this Standard are the following:

- Beans of Phaseolus spp. (except Phaseolus mungo L. syn. Vigna mungo (L.) Hepper and Phaseolus aureus Roxb. syn. Phaseolus radiatus L., vigna radiata (L.) Wilczek);
- Lentils of Lens culinaris Mdik. Syn. Lens esculenta Moench.;
- Peas of Pisum sativum L.;
- Chick peas of Cicer arietinum L.;
- Field beans of Vicia fava L.;
- Cow peas of Vigna unguiculata (L.) Walp., syn. Vigna sesquipedalis Fruhw., Vigna sinensis (L.) Savi exd Hassk.

**2.2 Presentation**

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

- shelled pulses are pulses without their seedcoat, but the cotyledons not separated;
- split pulses are those without their seedcoat 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 Two maximum moisture levels are provided to meet different climatic conditions and marketing practices. Lower values in the first column are suggested for countries with tropical climates or when long-term (more than one crop year) storage is a normal commercial practice. The values in the second column are suggested for more moderate climates or when other short-term storage is the normal commercial practice.

<u>Pulse</u>		<u>Moisture Content</u> (per cent)
- beans	15	19
- lentils	15	16
- peas	15	18
- chick peas	14	16
- cow peas	15	18
- field beans	15	19

Countries should select either list as applicable to their climatic conditions and marketing practices.

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 Pulses

3.3.1.1 Broken in whole pulses: pulses in which the cotyledons are separated or one cotyledon has been broken.

3.3.1.2 Broken in split pulse: pulses in which the cotyledon has been broken.

### 3.3.2 Damaged

3.3.2.1 Serious Defects: seeds in which the cotyledons have been affected or attacked by pests; seeds with very slight traces of mould or decay; or seeds with very slight cotyledon staining.

3.3.2.2 Slight Defects: seeds which have not reached normal development; seeds with extensive seedcoat staining, without the cotyledon being affected; seeds in which the seedcoat is wrinkled, with pronounced folding; or broken pulses.

3.3.3 Foreign Matter: mineral or organic matter (dust, twigs, seedcoats, seeds of other species, dead insects, fragments, or remains of insects, other impurities of animal origin).

## 3.4 Tolerances for Defects

The following tolerances with respect to quality, as percentages by weight are allowed:

### Quality Tolerances

3.4.1	- Foreign matter with not more than 0.25% of mineral matter and not more than 0,10% of dead insects, fragments or remains of insects, other impurities of animal origin	1%
3.4.2	- Seeds with serious defects	1%
3.4.3	- Seeds with slight defects including:	7%
3.4.3.1	- Brokens	3%
3.4.4	- Seeds of a similar colour but a different commercial type (except in beans with white seeds)	3% 6%
3.4.5	- Seeds of different colour (other than discoloured seeds)	3%
3.4.6	- Discoloured seeds	
3.4.6.1	- Discoloured seeds of the same commercial type	10 %
3.4.6.2	Beans with green seed and peas with green seeds with slight discolouration of the seed	20 %

#### **4. CONTAMINANTS**

Pulses shall be free from heavy metals in amounts which may represent a hazard to health. 1/

#### **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. N<sup>o</sup> CAC/RCP 1-1969, Rev.1-1979).

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 free from microorganisms, substances originating from microorganisms, or other poisonous substances, in amount which may 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**

In addition to Sections 2, 3, 7, and 8 of the Codex General Standard for the Labelling for Prepackaged Foods (Ref. N<sup>o</sup> CODEX STAN 1-1985) 2/ the following specific provisions apply.

##### **7.1 The Name of the Food**

The name of the food to be declared on the label shall be the commercial type of

the pulse followed by the style.

<sup>1/</sup> Subject to review pending finalization of levels of heavy metal contaminants.

<sup>2/</sup> Hereafter called "General Standard"

## **7.2 Net Content**

The net content shall be declared in weight by metric ("Système International") units in accordance with Section 4.3 of the General Standard.

## **7.3 Name and Address**

The name and address shall be declared in accordance with Section 4.4 of the General Standard.

## **7.4 Country of Origin**

The country of origin shall be declared in accordance with Section 4.5 of the General Standard.

## **7.5 Lot Identification (Not applicable to Non-Retail Containers)**

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

## **7.6 Irradiated Foods**

Where pulses in any presentation (style) covered by this standard have been treated with ionizing radiation/energy, they shall be labelled in accordance with Section 5.2 of the General Standard.

## **7.7 Labelling of Non-Retail Containers**

In addition to Sections 2, 3, and 8.1.3 of the General Standard the following specific provisions apply to pulses covered by this standard in non-retail containers are defined by the Codex Alimentarius Commission (see page 123 of the Procedural Manual, 6<sup>th</sup> Edition).

7.7.1 Information required in Sections 7.1 to 7.4, shall either be given in the container or in accompanying documents, except that the name of the product and name and address of the manufacturer or packer shall appear on the container. However, the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

7.7.2 Where pulses covered by this standard in non-retail containers have been irradiated, they shall be so labelled in accordance with Sections 6.1 and 6.3 of the Codex General Standard for Irradiated Foods (CODEX-STAN 106-1983).

## **8. METHODS OF ANALYSIS AND SAMPLING**

### **8.1 Moisture Content**

ISO 665-1977 - Oilseeds - Determination of moisture and volatile matter content (Type I).

### **8.2 Methods of Sampling**

ISO 951-1979 - Pulses in bags - Sampling

Additional Methods:

AACC 64-70A - Sampling of wheat and other whole grains (large mass; other

than mechanical means).

AACC 64-50 - Sampling of feeds and feedstuffs (bagged materials). AOAC 14th Ed. (1984) 7.001 - Sampling of animal feed (bag sampling).

ISO 950-1979 — Cereals - Sampling (as grain).

ICC 101/1 - Cereals - Sampling as grain (Stated to be identical to ISO 950).

ISO 6644-1981 - Cereals and milled cereal products - automatic sampling by mechanical means.

ICC 120 - Mechanical sampling of grains (Stated to be identical to ISO 6644).

**ALINORM 89/29**  
**Appendix III**

**DRAFT STANDARD FOR SORGHUM GRAINS**  
**(Advanced to Step 8)**

**1. SCOPE**

This Standard applies to sorghum grains as defined in Section 2, 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. It does not apply to other products derived from sorghum grains.

**2. DESCRIPTION**

**2.1 Definition of the Product**

2.1.1 Sorghum grains are whole or decorticated grains obtained from species of *Sorghum bicolor* (L.) Moench. They may be suitably dried if necessary.

2.1.2 Whole Sorghum Grains

These are sorghum grains obtained as such after a complete threshing without any further treatment.

2.1.3 Decorticated Sorghum Grains

These are sorghum grains from which the external casings and whole or parts of the germ have been removed in an appropriate manner, using mechanical treatment.

**3. ESSENTIAL COMPOSITION AND QUALITY FACTORS**

**3.1 Quality Factors- General**

3.1.1 Sorghum grains shall not have abnormal odour or taste as determined from samples representative of the lot.

3.1.2 Sorghum grains may be of white, pink, red, brown, orange, or yellow colour, or they may be a mixture of grains of these colours. Sorghum grains shall be sound, clean and free from living insects, and shall not exceed the maximum impurity content set under Section 3.4.

**3.2 Quality Factors - Specific**

3.2.1 Moisture Content

The moisture content of lots of sorghum grains shall not exceed 14.5 % as determined from samples representative of the lot.

### 3.2.2 Ash

The ash content of decorticated sorghum grains shall be not more than 1.5% on a dry matter basis.

### 3.2.3 Protein Content

The protein content (N x 6.25) shall not be less than 7% on a dry matter basis.

### 3.2.4 Fat Content

For decorticated sorghum grains the fat content shall not exceed 4.0% on a dry matter basis.

### 3.2.5 Tannin Content

(a) For whole sorghum grains, the tannin content shall not exceed 0.5% on a dry matter basis.

(b) For decorticated sorghum grains, the tannin content shall not exceed 0.3% on a dry matter basis.

## 3.3 Definition of Defects

3.3.1 Blemished Grains means grains which are insect or vermin damaged, of abnormal colour, sprouted, diseased, 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 degreed 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 Grains Having an Abnormal Colour

Grains whose natural colour has been modified by bad weather conditions, contact with the ground, heat, and excessive respiration. These grains may be dull, shriveled, swollen, puffed, or bloated in appearance.

### 3.3.1.3 Sprouted Grains

Grains exhibiting obvious signs of sprouting.

### 3.3.1.4 Diseased Grains

Diseased grains shall be grains made unsafe for human consumption due to decay, molding, or bacterial decomposition, or other causes that may be noticed without having to cut the grains open to examine them.

3.3.1.5 Frost-Damaged Grains are grains which are damaged by frost and 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: Sorghum and pieces of sorghum or grains which pass through a screen having round holes 1.8 mm in diameter.

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

3.3.2.3 Foreign Matter: is all organic and inorganic material other than sorghum, broken kernels, other grains and filth. Foreign matter includes loose sorghum seedcoats.

3.3.2.4 Filth: Impurities of animal origin.

#### **3.4 Tolerances for Defects**

The product shall have not more than 8.0% total defects with the following maximum limits:

3.4.1	Blemished grains -----	3.0%
	----- including -----	
3.4.1.1	Diseased grains -----	0.5%
3.4.2	Broken kernels -----	5.0%
3.4.3	Other grains -----	1.0%
3.4.4	Foreign matter -----	2.0%
	of which -----	
3.4.4.1	Inorganic matter -----	0.5%
3.4.5	Filth -----	0.1%
3.4.6	Toxic or noxious seeds	sorghum grains shall be free from toxic seeds in amounts which may represent a health. or noxious hazard to

#### **4. CONTAMINANTS 1/**

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

#### **5. HYGIENE**

5.1 It is recommended that the product covered by the provisions of this Standard should be prepared in accordance with the appropriate sections of the "Recommended International Code of Practice, General Principles of food Hygiene" (CAC/RCP 1-1969, Rev. 1, 1979).

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, having regard to the tolerance indicated in sub-section 3.4, where applicable;

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

#### **6. PACKAGING**

6.1 Sorghum grains shall be packaged in containers which will safeguard the hygienic, nutritional and technological qualities of the product.

6.2 The containers, including packaging material, shall be made of substances which are safe and suitable for their intended use. When a product is packaged in sacks, these must be clean, sturdy, and strongly sewn.

<sup>1/</sup> Subject to review pending finalization of levels of heavy metal contaminants

#### **7. LABELLING**

In addition to Sections 2, 3, 7 and 8 of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX-STAN 1-1985) 1/ the following specific

provisions apply:

### **7.1 The Name of the Food**

The name of the food to be declared *on* the label shall be "sorghum grains" for whole sorghum grains and "decorticated sorghum grains" for decorticated sorghum grains.

### **7.2 Net Contents**

The net contents shall be declared by weight in the metric ("Système International") units in accordance with Section 4.3 of the General Standard.

### **7.3 Name and Address**

The name and address shall be declared in accordance with Section 4.4 of the General Standard.

### **7.4 Country of Origin**

The country shall be declared in accordance with Section 4.5 of the General Standard.

### **7.5 Lot Identification (Not applicable to non-retail containers)**

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

### **7.6 Date Marking**

The date of minimum durability shall be declared in accordance with Sections 4.7.1 and 4.7.2 of the General Standard.

### **7.7 Irradiated Foods**

Where prepackaged sorghum grains have been treated with ionizing radiation/energy, it shall be labelled in accordance with Section 5.2 of the General Standard.

### **7.8 Labelling of Non-Retail Container**

In addition to Sections 2, 3, and 8.1.3 of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX-STAN 1-1985) the following specific provisions apply to sorghum grains in non-retail containers, as defined by the Codex Alimentarius Commission (see page 123 of the Procedural Manual, 6th Edition).

7.8.1 Information required in Sections 7.1 to 7.4, and 7.6 shall either be given on the container or in accompanying documents, except that the name of the product and name and address of the manufacturer or packer shall appear on the container. However, the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

7.8.2 Where sorghum grains in non-retail, containers have been irradiated, they shall be so labelled in accordance with Sections 6.1 and 6.3 of the Codex General Standard for Irradiated Foods (CODEX-STAN 106-1983).

<sup>1/</sup> Thereafter referred to as "General Standard".

## **8. METHODS OF ANALYSIS AND SAMPLING**

### **8.1 Sampling**

#### **8.1.1 ISO 950-1979 Cereals - Sampling (as**

grain).

Additional Methods:

AACC 64-70A - Wheat and Whole Grains

AACC 64-50 Sampling of Feeds and Feed

tuffs

AOAC 14th Ed. (1984) 7.001 Bag Sampling.

## **8.2 Determination of Moisture**

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

## **8.3 Ash**

8.3.1 ICC 104 Method for the determination of ash in cereals and cereal products (Ashing at 900°C).

8.3.2 ISO 2171-1980 Cereals, pulses and derived products - Determination of Ash. Method A is stated to be equivalent to ICC 104.

## **8.4 Crude Fibre**

8.4.1 ICC 113 Determination of crude fibre value.

8.4.2 ISO 6541-1981 Agricultural food products - Determination of crude fibre content - Modified Scharrer method. Identical to ICC 113.

## **8.5 Determination of Protein**

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

## **8.6 Fat**

8.6.1 AOAC 14th Ed. (1984) - 14.066, 7.061 Crude Fat or Anhydrous Ether Extract (Type I method).

8.6.2 ISO 5986-1983 - Animal feeding stuffs - Determination of Diethyl Ether Extract, Stated to be equivalent to the AOAC method.

## **8.7 Tannins**

8.7.1 NF V 03-751 September 1985, Norme Française "Sorghum - Determination of Tannin Content" (Type I method).

**DRAFT CODEX STANDARD FOR SORGHUM FLOUR  
(Advanced to Step 8)**

**1. SCOPE**

This Standard applies to sorghum flour destined for human consumption as defined in Section 2.1 below.

1.2 This Standard does not apply to grits or meal obtained from Sorghum bicolor (L.) Moench.

**2. DESCRIPTION**

2.1 Sorghum flour is the product obtained from grains of Sorghum bicolor (L.) Moench through a process of industrial milling during which the seed coat is removed and the germ is removed to a large extent and the endosperm is comminuted to a suitable degree of fineness to comply with Section 3.2.2.

**3. ESSENTIAL COMPOSITION AND QUALITY FACTORS**

**3.1 Essential Composition**

Sorghum flour shall conform to the following compositional requirements:

3.1.1 Ash

The ash content shall not be less than 0.9% and not more than 1.5% on a dry matter basis.

3.1.2 Protein Content

Content in protein (N x 6.25) shall not be less than 8.5% on a dry matter basis.

3.1.3 Crude Fat

Fat content shall be not less than 2.2% and not exceed 4.7% on a dry matter basis.

3.1.4 Crude Fiber <sup>1/</sup>

Crude fiber content shall not exceed 1.8% on a dry matter basis.

3.1.5 Tannin Content

The tannin content shall not exceed 0.3 % on a dry matter basis.

3.1.6 Colour

Using the method described in Section 8.8 the colour shall be between 18 and 30 units.

**3.2 Quality Factors**

3.2.1 Sorghum flour shall be clean, safe, suitable and of good quality and free from abnormal flavours and odours.

<sup>1/</sup> This provision remains under review

3.2.2 All processing of the sorghum including drying, milling or other treatment of the sorghum, intermediate milling products and the milled sorghum flour 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 sorghum flour.

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 Particle Size (Granularity)**

Using a standard method of sifting, 100% of the flour shall pass through a sieve the dimension of the mesh of which is: diameter of 0.5 mm for "fine" flour and diameter of 1 mm for "medium" flour.

## **4. CONTAMINANTS<sup>1/</sup>**

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

## **5. HYGIENE**

5.1 It is recommended that the product covered by the provisions of this should be prepared in accordance with the International Code of Hygienic entitled "Recommended International Code of Practice, General Principles Hygiene" (CAC/RCP 1-1969, Rev. 1, (1979)).

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

## **6. PACKAGING**

6.1 The flour shall be packaged in containers which will safeguard the hygienic, nutritional, technological and organoleptic 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 2, 3, 7 and 8 of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX-STAN 1-1985) <sup>2/</sup> the following specific provisions apply:

### **7.1 The Name of the Food**

7.1.1 The name of the food to be declared on the label shall be "sorghum flour", the terms "fine" or "medium", in accordance with Section 3.3, shall appear in close proximity to the name of the food.

<sup>1/</sup> Subject to review pending finalization of levels of heavy metal contaminants

<sup>2/</sup> Thereafter referred to as "General Standard".

### **7.2 Net Contents**

The net contents shall be declared by weight in the metric ("Système International") units in accordance with Section 4.3 of the General Standard.

### **7.3 Name and Address**

The name and address shall be declared in accordance with Section 4.4 of the General Standard.

### **7.4 Country of Origin**

The country shall be declared in accordance with Section 4.5 of the General Standard.

### **7.5 Lot Identification**

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

### **7.6 Date Marking**

7.6.1 The date of minimum durability shall be declared in accordance with Sections 4.7.1 and 4.7.2 of the General Standard.

### **7.7 Irradiated Foods**

Where sorghum flour has been treated with ionizing radiation/energy, or has been prepared from raw material treated with ionizing radiation/energy, it shall be so labelled in accordance with Section 5.2 of the General Standard.

### **7.8 Labelling of Non-Retail Container**

In addition to Sections 2, 3, and 8.1.3 of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX-STAN 1-1985) the following specific provisions apply to sorghum flour in non-retail containers, as defined by the Codex Alimentarius Commission (see page 123 of the Procedural Manual, 6th Edition).

7.8.1 Information required in Sections 7.1 to 7.6 shall either be given on the container or in accompanying documents, except that the name of the product, lot identification, and name and address of the manufacturer or packer shall appear on the container. However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

7.8.2 Where sorghum flour in non-retail containers has been irradiated, it shall be so labelled in accordance with Sections 6.1 and 6.3 of the Codex General Standard for Irradiated Foods (CODEX-STAN 106-1983).

## **8. METHODS OF ANALYSIS AND SAMPLING**

### **8.1. Sampling**

According to:

8.1.1 ISO 2170-1980 - Cereals 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 14th Ed. (1984) 10.126 - Sampling of Malt 10.159 (Cereal Adjuncts).

8.1.4 AAC 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 712-1985 - Cereals and cereal products - Determination of moisture (Routine reference method). (Type II).

8.2.2 ICC 1101 - Determination of Moisture Content of Cereals and Cereal Products (Reference Method). (Stated to be identical to ISO 712-1985).

## **8.3 Determination of Granularity**

According to:

8.3.1 AOAC 14th Ed. (1984) - 10.162-10-163 - Sorting of Corn Grits, Sieving Method (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 ICC 104 - Method for the determination of ash in cereals and cereal products (Ashing at 900°C). (Type I method).

8.4.2 ISO 2171-1980 - Cereals, pulses and derived products - Determination of ash. Method A is equivalent to ICC 104.

## **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. Selenium copper catalyst (Type II method).

## **8.6 Determination of Crude Fat**

According to:

8.6.1 AOAC 14th Ed. (1984) - 14.066, 7.061 Crude Fat or Anhydrous Ether Extract (Type I method).

8.6.2 ISO 5986-1983 - Animal feeding stuffs - Determination of Diethyl Ether Extract. Stated to be equivalent to the AOAC method.

## **8.7 Crude Fibre**

8.7.1 ICC 113 - Determination of Crude Fibre Value

8.7.2 ISO 6541-1981 - Agricultural food products - Determination of Crude Fibre Content - Modified Scharrer Method. Identical to ICC 113.

## **8.8 Colour**

Colourimetric Method of Kent Jones using Martin Colour grader. In "Modern Cereal Chemistry", 6th Ed. 1967, edited by Kent Jones-Amos, Published by Food Trade Press Ltd, London, U.K.

**PROPOSED DRAFT STANDARD FOR DURUM WHEAT SEMOLINA  
AND DURUM WHEAT FLOUR  
(At Step 5 of the Procedure)**

**1. SCOPE**

1.1 This Standard applies to durum wheat semolina, including whole durum wheat semolina and durum wheat flour for human consumption prepared from durum wheat (*Triticum durum* Desf.) 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 common wheat (*Triticum aestivum* L.) or club wheat (*Triticum compactum* Host.) or mixtures thereof, or to mixtures of these wheats in combination with durum wheat (*Triticum durum* Desf.).
- to durum wheat flour or semolina for non-food industrial or animal feed use.

**2. DESCRIPTION**

**2.1 Product Definition**

2.1.1 Durum wheat semolina and durum wheat flour are the products prepared from grain of durum wheat (*Triticum durum* Desf.) by grinding or milling processes in which the bran and germ are essentially removed and the remainder is comminuted to a suitable degree of fineness. Whole durum wheat semolina is prepared by a similar comminuting process, but the bran and part of the germ are retained.

**3. ESSENTIAL COMPOSITION AND QUALITY FACTORS**

**3.1 Raw Material**

3.1.1 The wheat from which durum wheat semolina and durum wheat flour are milled shall be of sound and marketable quality.

**3.2 Quality Factors - General**

3.2.1 The durum wheat semolina and durum wheat flour [and any added nutrients] shall be clean, safe, suitable and of food quality.

3.2.2 All processing of the wheat, including drying, milling and other treatments of wheat; intermediate milling products, and milled durum wheat semolina and durum wheat flour 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 durum wheat semolina and durum wheat flour.

**3.3 Quality Factors - Specific**

3.3.1 Durum wheat semolina and durum wheat flour shall conform to the following requirements:

**3.3.2 Ash**

- (i) Durum wheat semolina - not more than 1.3% on a dry basis.

- (ii) Whole durum wheat semolina - not more than 2.1% on a dry basis
  - (iii) Durum wheat flour - not more than 1.75% on a dry basis.
- 3.3.3 Protein - (N x 5.7)
- (i) Durum wheat semolina - shall not be less than 10.5% on a dry basis.
  - (ii) Whole durum wheat semolina - shall not be less than 11.5% on a dry basis.
  - (iii) Durum wheat flour - shall not be less than 11.0% on a dry basis.
- 3.3.4 Moisture Content - The moisture content of the products shall be governed by good manufacturing practice. The moisture content shall not exceed 14.5%.
- 3.4 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<sup>1/</sup>
- (i) Semolina - 100% of the product shall pass through a 850 M sieve (20 USBS wire mesh sieve).
    - Not more than 3.0% shall pass through a 150 M sieve (100 USBS wire mesh sieve).
    - Sieved for 5 minutes on a Ro-Tap sifter or equivalent using a sieving aid.
  - (ii) Durum Wheat flour
    - Not less than 98% of the product shall pass through a 212 M sieve (70 USBS wire mesh sieve).
    - Sieved for 20 minutes on a Ro-Tap sifter or equivalent using a sieving aid.
4. CONTAMINANTS<sup>2/</sup>
- Durum wheat semolina and durum wheat flour shall be free from heavy metals in amounts which may represent a hazard to health.
5. HYGIENE
- 5.1 It is recommended that the products 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.I, 1979)
- 5.2 When tested by appropriate methods of sampling and examination, the durum wheat flour and semolina shall be:
- 1/ Governments should note that according to Brussels Nomenclature issued by the Customs Cooperation Council, the particle size of durum wheat flour should be such that not less than 80% passes through a silk gauze or man made textile sieve with an aperture of 315 microns. A durum wheat product that does not confirm to the above particle size would be classified as durum wheat semolina or meal.
- 2/ Subject to review pending finalization of levels of heavy metal contaminants.
- 5.2.1 To the extent possible in good manufacturing practice, free from objectionable matter.
- 5.2.2 Free from micro-organisms, substances originating from micro-organisms, or

other poisonous substances, in amounts which may represent a hazard to health.

## **6. PACKAGING**

6.1 Durum wheat semolina and durum wheat flour shall be packed and transported in containers which will safeguard the hygienic, 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 2, 3, 7, and 8 of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX-STAN 1-1985) <sup>1/</sup> the following specific provisions apply:

### **7.1 Name of the Food**

7.1.1 The name of the food declared on the label shall be durum wheat semolina, whole durum wheat seolina, or durum wheat flour as appropriate.

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

### **7.2 List of Ingredients**

7.2.1 A complete list of ingredients shall be declared in accordance with Section 4.2 of the General Standard, 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.

### **7.3 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 for 100 g of the food as sold for consumption."

### **7.4 Net Contents**

The net contents shall be declared by weight in metric system ("Système International") units in accordance with Section 4.3 of the General Standard.)

### **7.5 Name and Address**

The name and address shall be declared in accordance with Section 4.4 of the General Standard.

<sup>1/</sup> Thereafter called "General Standard".

### **7.6 Country of Origin**

The country of origin of the product shall be declared in accordance with Section 4.5 of the General Standard.

### **7.7 Lot Identification**

Each container shall be marked in code or in clear to identify the packer and the

lot.

### **7.8 Date Marking and Storage Instructions**

The date of minimum durability shall be declared in accordance with Sections 4.7,1 and 4.7.2 of the General Standard.

### **7.9 Irradiated Foods**

Where durum wheat semolina and durum wheat flour has been prepared from raw material treated with ionizing radiation/energy, it shall be labelled in accordance with Section 5.2 of the General Standard.

### **7.10. Labelling of Non-Retail Containers**

In addition to Sections 2, 3 and 8.1.3 of the General Standard the following specific provisions apply to durum wheat semolina and durum wheat flour in non-retail containers as defined by the Codex Alimentarius Commission (see page 123 of the Procedural Manual, 6th Edition).

7.10.1 Information required in Sections 7.1 to 7.8 shall either be given on the container or in accompanying documents, except that the name of the product, lot identification and name and address of the manufacturer or packer shall appear on the container. However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

7.10.2 Where durum wheat semolina and durum wheat flour have been irradiated, they shall be labelled in accordance with Sections 6.1 and 6.3 of the Codex General Standard for Irradiated Foods (CODEX-STAN 106-1983).

## **8. METHODS OF ANALYSIS AND SAMPLING**

### **8.1 Sampling**

8.1.1 SO 2170-1980 - Cereals and Pulses - Sampling of Milled Products.

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

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

8.1.4 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.

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

### **8.2 Determination of Moisture**

8.2.1 SO 712-1985 - Cereals and Cereal Products - Determination of Moisture Content (Routine reference method). Air oven (Type I).

8.2,2 ICC 110/1 - Determination of Moisture Content of Cereals and Cereal Products - Practical Method. Stated to be identical to ISO 712-1985.

### **8.3 Determination of Particle Size (Granularity)**

8.3.1 AOAC 14th Ed. (1984) - Cereal Adjuncts - Sorting of Corn Grits, Sieving Method)

10.162-10.163 (Ro-Tap sieve shaker method or equivalent) (Type I method with the limitation that not less than 98% shall pass through a 212 millimicron (N<sup>o</sup> 70) sieve).

#### **8.4 Determination of Ash**

8.4.1 AOAC 14th Ed. (1984) - Cereal Foods - Direct Method, 14.006 (550°C to constant weight) (Type I method).

8.4.2 ISO 2171-1980 - Cereals, Pulses and Derived Products - Determination of Ash. Method B - 550°C to constant weight. Stated to be identical to AOAC Method.

#### **8.5 Determination of Fat Acidity**

8.5.1 AACC 02-01A - Fat Acidity - General Method (Type I Method).

#### **8.6 Determination of Protein**

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

#### **8.7 Detection of Other Wheat Flours by Electrophoresis**

8.7.1 Journal Officiel de la République Française, 15 January 1975. Official method for the determination of content of soft wheat in pasta and semolina.

8.7.2 Ordinary Supplement to the Italian Official Gazette N<sup>o</sup> 4 of 5 January 1980, Determination of Dosage of soft Wheat Flour in Durum wheat milled products and in pasta by means of electrophoresis.