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ECONOMIC COMMISSION FOR EUROPE
COMMITTEE ON AGRICULTURAL PROBLEMS
Working Party on Standardization
of Perishable Foodstuffs
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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION

Rome, 7-17 April, 1970

Seventh Session

REPORT OF THE FIFTH SESSION

OF THE

JOINT ECE/CODEX ALIMENTARIUS GROUP OF EXPERTS ON THE
STANDARDIZATION

OF QUICK FROZEN FOODS

Rome
22-26 September 1969

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JOINT FAO/WHO FOOD STANDARDS
PROGRAMME CODEX ALIMENTARIUS
COMMISSION

REPORT OF THE FIFTH SESSION OF THE JOINT ECE/CODEX GROUP OF
EXPERTS ON THE STANDARDIZATION OF QUICK FROZEN FOODS Rome, 22-26
September 1969

Introduction

1. The Joint ECE/Codex Alimentarius Group of Experts on Standardization of Quick Frozen Foods held its fifth session at FAO Headquarters, Rome, from 22-26 September 1969. Delegates and observers from the following countries participated at the session: Argentina, Australia, Austria, Belgium, Canada, Denmark, Finland, Federal Republic of Germany, France, Italy, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, Thailand, United Kingdom and U.S.A. Also present were observers from the European Federation of Importers of Dried Fruits, Preserves, Spices and Honey (FRUCOM), the International Federation of Glucose Manufacturers (IFG), the Organization for Economic Cooperation and Development (OECD) and the Union of Industries of the EEC (UNICE).

The Group of Experts was welcomed on behalf of the Directors-General of FAO and WHO and of the Executive Secretary of the Economic Commission for Europe by the Chief of the Joint FAO/WHO Food Standards Programme, Mr. CO. Kermode,

Election of Officers

3. The Group of Experts was presided over by its Chairman, Mr. R. Linden (Belgium). The Group unanimously re-elected as its Vice-Chairman Mr. W. Orłowski (Poland).

Adoption of Agenda

4. The Group of Experts adopted the Revised Provisional Agenda, AGRI/WP/616/Rev.I.

Matters arising from the Report of the Sixth Session of the Codex Alimentarius Commission

5. The Secretariat informed the Group of Experts of certain developments since its last session which were of interest to its programme of work. Among these were the amendment to the General Principles of the Codex Alimentarius to include texts of an advisory nature which would not need to be submitted to governments for acceptance. The Group was further informed that the Recommended International General Standard for the Labelling of Prepackaged Foods would be sent out shortly to governments for acceptance. The Group of Experts would have to consider, in the individual standards for quick frozen foods, the

mandatory labelling requirements of the General Standard for the Labelling of Prepackaged Foods which contained options. The Codex Committee on Food Labelling had endorsed the labelling requirements for the Standards on Quick Frozen Strawberries and Quick Frozen Peas.

6. The Group of Experts was informed that the Commission had adopted a Code of Hygienic Practice for Quick Frozen Fruits and Vegetables at Step 5 of the Procedure, and that the attention of governments would be drawn to the fact that this code contained references to the General Standard for Quick Frozen Foods.
7. As recommended by the Commission, the Group of Experts decided to commence the work of the session with an examination of the individual product standards. The Group agreed that, at a later stage during the session, and in the light of the decisions to be taken on the individual standards, the question of the nature and type of document to incorporate certain provisions of the General Standard for Quick Frozen Foods would, if necessary, be raised again. The Group of Experts noted that the Commission had not made any change in the Group's terms of reference.

Definition of Freezing Process and Maintenance of Temperature

8. During consideration of the Standard for Quick Frozen Strawberries, the Group of Experts re-examined the temperature requirements of the General Standard for Quick Frozen Foods, to which reference was made in the individual standards for quick frozen fruits and vegetables. It recognized the difficulties in enforcing temperature provisions applicable to the storage, transportation and distribution phases of the cold chain. The Group of Experts therefore agreed that a text put forward, by the United Kingdom delegation, in which temperature requirements were stated in general terms without specifying the limits of the temperatures, should replace the reference to the General Standard for Quick Frozen Foods. The Group of Experts considered that this definition would be of general application to the individual commodity standards and the Group would, as far as possible, apply it in each case. Regarding the setting of temperature limits for the cold chain, the Group of Experts decided that this should be examined at a later stage to see whether this should be the subject of a General Standard or a Code of Practice.

DRAFT STANDARD FOR QUICK FROZEN STRAWBERRIES

9. During the consideration of this standard the following main items were discussed.

Sugars and syrups

10. The Group of Experts considered that the provision for added dry sugars in quick frozen strawberries could not be enforced on the final product because of the presence of natural sugars in the fruit. The Group of Experts therefore adopted the provision of 35% maximum total soluble solids content which would take into account sugars naturally present, as well as traces of organic acids and water soluble minerals. The Group also agreed to retain the limit of 25% m/m of added dry sugars.
11. For similar reasons the Group of Experts agreed to control the strength and quantity of syrup on the end product by setting minimum and maximum total

soluble solids contents of 15 and 25°Brix respectively, determined refractometrically at 20 C. (See also: paragraph 33 of the Report.)

Tolerances

12. The Group of Experts agreed to the existing specifications of defects. With regard to the allowances for defects the Group decided to amend the existing text which permitted tolerances of 3 defects to be exceeded without an upper limit for an individual defect before the sample unit became a defective unit. The Group amended this provision by stating that if one defect exceeded twice the stated tolerance, or the sum of the tolerances for defects (excluding ash insoluble in HCl) exceeded the figure of 20, the sampling unit would be considered as defective. With regard to tolerances on sizing, the Group of Experts agreed to increase the tolerance for sized whole strawberries from 5% to 10% and to include a tolerance of 5% for whole strawberries of Fragaria grandiflora L. of under 12 mm maximum diameter whether sized or unsized.
13. In respect of mineral impurities such as sand (Ash insoluble in HCl), the Group of Experts decided to retain the figure of 0.1% noting that the reliability of the methods proposed by the United States (document QFF/MAS-1(1969) has not yet been fully established. It was agreed that a question of a suitable method of analysis would be examined when more experience was available, (See also: paragraph 27 of this Report.)

Additives

14. The Group of Experts adopted a maximum level of use individually or in combination for ascorbic acid or citric acid of 400 mg/kg. Some delegations were in favour of the addition of iso-ascorbic acid (erythorbic acid) in the standard. Other delegations were opposed since the same technological purpose could be achieved with an addition of ascorbic acid having nutritive properties.

Hygiene

15. The Group of Experts considered the question whether the end-product specifications contained in the Code of Hygienic Practice for Quick Frozen Fruits and Vegetables should be included in the standard as a mandatory requirement. The Group noted that the same sort of end-product specifications contained in the Code of Hygienic Practice for Canned Fruit and Vegetable Products had been included as mandatory provisions in the standards for canned fruits and vegetables. The Group considered that, while it might be feasible to include such provisions as mandatory requirements in the case of canned fruits and vegetables which had been sterilized by heat treatment, it would not be feasible to require this in the case of quick frozen fruits and vegetables. The Group of Experts noted that WHO would be asked to look into the question of microbiological standards for quick frozen fruits and vegetables. The Group of Experts therefore agreed to adhere to its previous decision not to include mandatory end-product specifications and concluded that a reference to the end-product specifications in the Code of Hygienic Practice for Quick Frozen Fruits and Vegetables should only be of an advisory nature. The Group noted that the Code contained references to the General Standard for Quick Frozen Foods and decided to look further into this matter when it came to discuss what action to take following the Commission's recommendation not to continue work on the

General Standard for Quick Frozen Foods. (See also: paragraphs 41, 42 and 43 of this Report.)

Contaminants

16. The Group of Experts noted that the Codex Committee on Pesticide Residues was elaborating tolerances for pesticide residues in fruits and vegetables. It was noted that the tolerances laid down for pesticide residues on fresh fruits and vegetables would have to be examined to see whether or not they applied to quick frozen fruits and vegetables. The Group of Experts agreed to examine this matter again at a later session.

Scope

17. The Group of Experts had a full discussion on the scope of the Standard for Quick Frozen Strawberries. Some delegations were of the opinion that the standard should apply only to prepackaged products ready for retail sale. Other delegations pointed out that in international trade bulk shipments of quick frozen strawberries were probably the most important. The Group of Experts decided that the standard should cover both quick frozen strawberries in retail and catering packs as well as in bulk when intended for direct consumption without further processing except for size grading or repacking, if required. The Group of Experts agreed that the standard did not apply to the product when labelled as intended for further processing or for other industrial purposes.

Labelling

18. The Group of Experts editorially revised the section on labelling to be in accord with the Recommended International General Standard for the Labelling of Prepackaged Foods (CAC/RS-1-1969). The specific labelling provisions which were contained in the General Standard for Quick Frozen Foods were also included in the labelling section with a slight change of the original text. The delegation of the Federal Republic of Germany considered that a declaration of size in millimeters on the label should be mandatory and not optional and reserved their position accordingly. The delegations of Denmark and Finland considered that date marking in code should be mandatory and reserved their positions. The delegation of Argentina in reserving its position stated that in their opinion in each and every case for all quick frozen foods, a declaration of country and origin and date marking in clear, should be mandatory.
19. With regard to products packed in bulk the Group of Experts was of the opinion that such products should be identified by the name "Strawberries" accompanied by the term "quick frozen" and that the indications of the labelling section of the standard for quick frozen strawberries, except for those dealing with keeping, thawing, utilization and date marking, could be included in the commercial document accompanying the product. The delegation of the United States did not consider that this would be satisfactory because such documents might not always be available together with the product and might not contain all the information required. The Group noted that the provisions for the labelling of the product packed in bulk would be submitted to the Codex Committee on Food Labelling for endorsement.

STATUS OF THE STANDARD

20. The amended text of the Draft Standard for Quick Frozen Strawberries is attached as Appendix II to this Report. The Group of Experts decided to return the standard to Step 6 of the Procedure and to seek comments from governments especially concerning Brix values, mineral impurities, total soluble solids content and the related proposed methods of analysis.

DRAFT STANDARD FOR QUICK FROZEN PEAS

21. The Group of Experts amended the Draft Standard for Quick Frozen Peas on the same lines as it had amended the Draft Standard for Quick Frozen Strawberries. As regards the designation for this product, the Group of Experts agreed to the use of only two designations, namely "Peas" and "Garden Peas" on the understanding that this would not prevent a country from labelling "Garden Peas" by any other synonymous designations. The delegation of the Federal Republic of Germany stated that in the German translation the term "Garden Peas" would be translated by "Markerbsen" and the term "Peas" as "Palerbsen". The delegation of Argentina stated that in their country "guisantes" would be called "arvejas".

Food Additives

22. The Group of Experts agreed that this section should contain only substances defined as additives and that the provision for ingredients such as sugars, salt and condiments should be transferred to the section dealing with Essential Composition and Quality Factors. It was pointed out that 'natural flavourings' meant such substances as essential oils, essences and extracts of natural aromatics requiring specifications of identity and purity. The delegations of Poland, Norway and Spain reserved their positions as to the use of flavourings. The delegation of France reserved its position as to the addition of synthetic flavours. The delegation of Argentina made a similar reservation. Labelling
23. The Group of Experts amended this section in the light of the decisions taken on the Standard for Quick Frozen Strawberries. The delegation of the Federal Republic of Germany wished to reserve its position concerning the provision that the addition of small quantities of sugar should not be indicated on the label, except in a list of ingredients. With reference to section 3.2(a)(iii) of the Recommended International General Standard for the Labelling of Prepackaged Foods, the delegation stated that national legislation in their country did not require a complete declaration of ingredients and for that reason any addition of sugar should be declared because, in their opinion, this was necessary in order to enable "the consumer to understand the nature of the food". The delegations of France and Poland made a similar reservation.
24. The amended text of the Draft Standard for Quick Frozen Peas is attached as Appendix II to this Report. The Group of Experts decided to send the standard forward to the next session of the Codex Alimentarius Commission at Step 8 of the Procedure.

METHODS OF ANALYSIS AND SAMPLING

25. The Group of Experts had before it a number of documents on the methods of determination of various provisions in quick frozen foods. The Group of Experts

also discussed methods of analysis for certain provisions for which no working documents had been prepared.

Determination of Alcohol Insoluble Solids Content, Quick Frozen Peas (Doc. CODEX/ANALYS/68/15, October 1968)

26. The Group of Experts agreed to the methods proposed by the delegation of the United States and they are included in the standard (Appendix III to this Report).

Determination of Mineral Impurities such as Sand (Ash insoluble in HCl), Quick Frozen Strawberries and Quick Frozen Raspberries (Doc. QFF/MAS-1(1969))

27. The Delegation of the United States drew the Group of Experts' attention to the fact that the proposed method had been subjected to investigation in the United States and was not found to be entirely satisfactory. It was pointed out that standard amounts of sand added to quick frozen products at levels similar to the limits stated in the Standard for Quick Frozen Strawberries could not be recovered.' In view of this the delegation of France proposed the adoption of the ISO Recommendation R763 (Doc. ISO/R763-1968). It was pointed out that the ISO method had been adopted by a large number of countries and had been subjected to adequate inter-laboratory testing and had been found satisfactory. In View of this the Group of Experts agreed that the ISO method should be referred to the Codex Committee on Methods of Analysis and Sampling for examination and that the method proposed by the delegation of the USA be also submitted to that Committee. (See also; paragraph 13 of this Report.)

Method for Checking Temperature of Quick Frozen Foods (Doc. QFF/MAS/2(1969))

28. The Group of Experts discussed proposals by the delegations of the United States and Sweden for the temperature control of quick frozen foods. In view of the fact that specific provisions for the maintenance of temperatures necessary to assure preservation of the product laid down in the General Standard for Quick Frozen Foods had been deleted, the Group of Experts agreed that there was no need at the present moment to agree on International Referee Methods of temperature control. It was decided that the method for checking temperature of quick frozen foods should be revised in the light of comments so far received noting that the IIR were working on the subject. The delegation of the United States agreed to prepare a working document for the next Session of the Group of Experts and delegations were requested to send their comments to the Rapporteur, Mr. F. Dunn, by the end of December 1969. (See: List of Participants.)

Determination of Net Weight for Quick Frozen Fruit and Vegetables (Doc. CODEX/ANALYS/68/14, October 1968)

29. The Group of Experts agreed to the method proposed by the delegation of the United States and noted it was based on the AOAC Method, (Official Methods of Analysis, 1965, 30.018 - 30.019).

Thawing Procedure for Quick Frozen Fruit and Vegetables (Doc. CODEX/MAS/4(1969) July 1969)

30. The Group of Experts discussed whether the thawing procedure should have the status of an International Referee Procedure or whether it should only be of an advisory nature. Some delegations were of the opinion that the, thawing procedure was essential for the organoleptic examination of the product since

certain organoleptic characteristics may depend on the method of thawing used. Other delegations were in favour of the thawing procedure becoming a recommendation rather than a referee method. The Group of Experts adopted the thawing procedure as proposed by the delegation of the USA and agreed that it should become a referee method to be used prior to organoleptic examination.

Cooking Procedure for Quick Frozen Vegetables

31. The Group of Experts examined and adopted as a referee method the cooking procedure proposed by the delegation of the USA in relation to quick frozen peas and spinach.

Enzyme Inactivation Tests (Doc. QFF/MAS/3 (1969))

32. The Group of Experts examined the method proposed by the delegation of the USA. In view of the fact that the provisions for the inactivation of the enzyme systems of quick frozen peas had been amended, permitting some enzyme activity without specifying limits for catalase and peroxidase activities, the Group of Experts decided not to examine the enzyme inactivation tests at the present moment. It was agreed, however, that this matter would be considered at a future session with a view to establishing a recommended method for the determination of enzyme activity.

Determination of Total Soluble Solids Content

33. As discussed in paragraph 10 the Group of Experts agreed that the total soluble solids content should be determined using refractometer at 20°C. The delegation of the US agreed to provide a detailed method for the next session.

Determination of Types of Frozen Peas

34. The Group of Experts noted that the microscopic determination of type based on starch pattern was not sufficiently reliable and decided that this method be deleted. It was agreed that it should be replaced by an organoleptic examination of the product using reference types such as "Kelvedon Wonder", "Dark Skin Perfection".

Determination of Total Dry Spinach Matter

35. The Group of Experts noted that the provision for drying for 4 hours at 105°C was intended to safeguard against excessive hydration of the product as well as the inclusion of excessive amounts of free water. In this respect it was pointed out that in regions of high rain fall sometimes the minimum of 5.5% total dry matter in the final product could not be reached and that this was not an indication of lesser quality. In view of the fact that the provisions for salt and calcium salts were deleted from the additive section of the Standard for Quick Frozen Spinach, it was agreed that a simple drying method was sufficient to verify this provision. The delegation of the Netherlands agreed to provide a method for the determination of total dry spinach matter for the next session of the Group.

Methods referred to the Codex Committee on Methods of Analysis and Sampling

36. The Group of Experts agreed that the following methods of analysis should be referred to the Codex Committee on Methods of Analysis and Sampling for examination and endorsement.

For Endorsement:

Net Weight determination

Quick frozen fruits and vegetables (Document CODEX/ANALYS/68/14
October 1968. Appendix VI to this
Report)

Thawing Procedure

Quick frozen fruits and vegetables (Document QFF/MAS/4(1969)
Appendix VII to this Report)

Cooking Procedure

Quick frozen fruits and vegetables (Document QFF/MAS/5(1969)
Appendix VIII to this Report)

Determination of the Alcohol
insoluble solids content

Quick frozen peas (Document CODEX/ANALYS/68/15
Incorporated in text of standard)

For Examination and/or Endorsement:

Mineral impurities - sand (Ash insoluble in HC1)

Quick frozen strawberries) Documents QFF/MAS/1(1969) and ISO
R 763

Quick frozen raspberries)

Sampling Plans for Prepackaged Foods

37. The Group of Experts had before it document ALINORM 69/27. It was pointed out that this document had been elaborated by the Codex Committee on Processed Fruits and Vegetables and adopted by the Commission at Step 5; furthermore that the Codex Committee on Methods of Analysis and Sampling had endorsed it. The Group of Experts agreed that as far as the number of primary containers in the sample (n) was concerned, this was based on statistical laws and would be applicable to prepackaged quick frozen foods. With regard to the acceptance number (c) the Group of Experts noted that it referred to an AQL, of 6.5 and that this acceptable quality level was appropriate to the quick frozen products so far considered, as regards lot acceptance. It was pointed out that there may be difficulties if a particular lot was not homogeneous. In this respect it was noted that the sampling plans were designed to cover lots which represented substantial portions of factory production or relatively large blocks of merchandise but that governments may select any other sampling procedure for enforcement at the retail level. It was further recognised that the sampling plans did not cover factors that might present a hazard to health or which were unwholesome or otherwise highly objectionable to the consumer. The Group of Experts agreed that there was a need to elaborate sampling methods for bulk

containers. The delegation of the United States agreed to submit additional plans for sampling of bulk containers for consideration at the next session.

PROPOSED DRAFT STANDARD FOR QUICK FROZEN RASPBERRIES

38. The Group of Experts amended the Proposed Draft Standard for Quick Frozen Raspberries on the same lines as it had amended the Draft Standard for Quick Frozen Strawberries. The amended text of the Proposed Draft Standard for Quick Frozen Raspberries is attached as Appendix IV to this Report. The Group of Experts decided to send the standard forward to the next session of the Commission at Step 5 of the Procedure.

PROPOSED DRAFT STANDARD FOR QUICK FROZEN SPINACH

39. The Group of Experts amended the text of the Proposed Draft Standard for Quick Frozen Spinach on the same lines as it had amended the Draft Standard for Quick Frozen Strawberries. The Group of Experts was of the opinion that the question of the addition of ascorbic acid to spinach was of particular interest in connection with its possible effect on nitrates. It was suggested that the Codex Committee on Foods for Special Dietary Uses in collaboration with the Codex Committee on Food Additives should concern itself with this problem especially as regards baby foods.
40. The amended text of the Proposed Draft Standard for Quick Frozen Spinach is attached as Appendix IV to this Report. The Group of Experts decided to send the standard forward to the next session of the Commission at Step 5 of the Procedure.

DECISION OF THE GROUP OF EXPERTS REGARDING THE GENERAL STANDARD FOR QUICK FROZEN FOODS

41. The Group of Experts had a full discussion on the procedure to be followed with regard to the General Standard for Quick Frozen Foods. The Group reaffirmed its belief that the quick frozen food industry be treated as a whole and recognized that it had been assigned the responsibility of ensuring that standards and codes of practice for quick frozen food products to be published in the Codex Alimentarius be brought into harmony. The Group of Experts noted that the International Institute of Refrigeration was presently preparing a publication containing recommendations for the freezing and storage of frozen foods which, when completed, would be of considerable importance for the work of the Group in preparing a detailed Code of Practice for Quick Frozen Foods.
42. In the meantime some further elaboration of the General Standard for Quick Frozen Foods would be necessary in order for it to serve not as a standard but as a guideline for Codex Committees and other Groups elaborating standards for quick frozen foods. The Delegation of the U.K. in collaboration with the Netherlands, Belgium and the Federal Republic of Germany agreed to prepare a redraft of the General Standard for Quick Frozen Foods introducing any changes as appropriate to guidelines and to submit this document to the next session of the Group of Experts.
43. The Group of Experts noted that the Code of Hygienic Practice for Quick Frozen Fruits and Vegetables which had been advanced to Step 6 of the Procedure by the Commission at its Sixth Session contained a number of references to the General Standard for Quick Frozen Foods. The Group of Experts agreed that in

seeking comments on that Code, the attention of governments should be drawn to the fact that these references related to the labelling, storage, transportation and distribution of quick frozen foods. In view of the decision that a new document would be prepared to replace the General Standard, the Group thought that no reference should be made in the Code of Hygienic Practice to the General Standard for Quick Frozen Foods, but that there should be a reference to the detailed Code of Practice referred to in paragraph 41 above.

44. The Group of Experts instructed the Secretariat to convey to the Codex Committee on Fish and Fishery Products the decisions it had taken on the content of mandatory standards for quick frozen foods and on the elaboration of a detailed Code of Practice for the quick frozen food industry.

Action on the Step 3 and Step 2 standards

45. The Group agreed that the Proposed Draft Standards for Quick Frozen Bilberries, Peaches and Brussels Sprouts at Step 3, and the Proposed Draft Standards for Quick Frozen Blueberries, Red Sour Cherries, Green Beans, Broccoli, Cauliflower and Leeks at Step 2 should be redrafted by the Secretariat in the light of the decisions taken during the session.

CHAIRMANSHIP OF THE JOINT ECE/CODEX ALIMENTARIUS GROUP OF EXPERTS ON QUICK FROZEN FOODS

46. The Group of Experts re-elected Mr. R. Linden (Belgium) as Chairman of the Group to serve from the end of the fifth to the end of the sixth session of the Group.

DATE AND PLACE OF THE NEXT SESSION

47. The Group noted that its next session would probably be held in May 1970 in Geneva.

Summary of Status of Work

prepared by the Secretariat

1. STANDARDS CONSIDERED AT THE FIFTH SESSION OF THE JOINT
ECE/CODEX ALIMENTARIUS GROUP OF EXPERTS ON THE
STANDARDIZATION OF QUICK FROZEN FOODS

- (a) Draft Standard for Quick Frozen Peas
Appendix III of this Report
Advanced to Step 8 for adoption "by the Seventh Session of the
Codex Alimentarius Commission
- (b) Draft Standard for Quick Frozen Strawberries
Appendix II of this Report
Returned to Step 6 for a third round of government comments
- (c) Proposed Draft Standard for Quick Frozen Raspberries
Appendix IV of this Report
- (d) Proposed "Draft Standard for Quick Frozen Spinach
Appendix V of this Report

Standards under (c) and (d) advanced to Step 5 for submission to the
Seventh Session of the Codex Alimentarius Commission.

2. PROPOSED DRAFT STANDARDS NOT CONSIDERED AT THE FIFTH
SESSION OF THE JOINT ECE/CODEX ALIMENTARIUS GROUP OF EXPERTS
ON THE STANDARDIZATION OF QUICK FROZEN FOODS

Quick Frozen

- (a) - Bilberries
- (b) - Peaches
- (c) - Brussels Sprouts

to be redrafted by the Secretariat and to be sent for government comments at
Step 3 of the Procedure.

Quick Frozen

- (d) - Blueberries
- (e) - Red Sour Cherries
- (f) - Green Beans
- (g) - Broccoli
- (h) - Cauliflower
- (i) - Leeks

to be redrafted by the Secretariat and to be sent to members of the Group of Experts as working papers for the sixth session of the Group.

3. REFERRALS TO OTHER COMMITTEES

A. Methods of Analysis for Quick Frozen Fruits and Vegetables

- Net weight determination (Doc. CODEX/ANALYS/68/14)
Appendix VI to this Report' and paragraph 29 of the Report
- Thawing procedure (Doc. QFF/MAS/4(1969))
Appendix VII to this Report and paragraph 30 of the Report
- Cooking procedure (Doc. QFF/MAS/5(1969))
Appendix VIII to this Report and paragraph 31 of the Report

to be sent for endorsement to the Fifth Session of the Codex Committee of Methods of Analysis and Sampling.

- Mineral impurities - sand (Ash insoluble in HCl) (Docs. QFF/MAS/1(1969) and ISO/R 763-1968) Paragraphs 13 and 27 of the Report

sent for examination and/or endorsement to the Fifth Session of the Codex Committee on Methods of Analysis and Sampling.

B. Labelling

Labelling provisions concerning products packed in bulk to be sent for endorsement to the Fifth Session of the Codex Committee on Food Labelling.

4. DOCUMENTS TO BE PREPARED BY AUTHOR COUNTRIES FOR THE SIXTH SESSION OF THE GROUP OF EXPERTS

(a) Determination of Total Soluble Solids Content

The delegation of the United States to provide a detailed method for the Sixth Session of the Group of Experts (Paragraph 33 of this Report).

(b) Determination of Total Dry Spinach Matter

The delegation of the Netherlands to provide a method for the Sixth Session of the Group of Experts (Paragraph 35 of this Report).

(c) Sampling Plans for Bulk Containers

The delegation of the United States to submit a document for the Sixth Session of the Group of Experts (Paragraph 37 of this Report).

(d) Guidelines for Quick Frozen Foods

The delegation of the U.K., in collaboration with the delegation of Belgium and the Federal Republic of Germany to submit a document for the Sixth Session of the Group of Experts (Paragraph 42 of this Report).

LIST OF PARTICIPANTS
LISTE DES PARTICIPANTS
LISTA DE PARTICIPANTES

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DRAFT STANDARD
FOR QUICK FROZEN STRAWBERRIES
(Retained at Step 6 for a third round of comments)

1. SCOPE

This standard shall apply to quick frozen strawberries of the species Fragaria grandiflora L. and Fragaria vesca L. as defined below and offered for direct consumption without further processing, except for size grading or repacking if required. It does not apply to the product when labelled as intended for further processing or for other industrial purposes.

2. DESCRIPTION

2.1 Product and process definition

Quick frozen strawberries are the product:

- (a) prepared from sound, ripe, clean and stemmed strawberries of firm texture conforming to the characteristics of Fragaria grandiflora L. and Fragaria vesca L.;
- (b) packed with or without dry sugar(s) or sugar syrup(s) (sucrose, invert sugar, dextrose, fructose, glucose syrup, dried glucose syrup);
- (c) subjected to a freezing process in appropriate equipment and complying with the conditions laid down hereafter. This freezing operation shall be carried out in such a way that the range of temperature of maximum crystallization is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C (0°F) at the thermal centre after thermal stabilization. The product shall be maintained at a low temperature such as will maintain the quality during transportation, storage and distribution up to and including the time of final sale. The recognized practice of thawing and repacking products under controlled conditions followed by the application of the quick freezing process as defined is permitted.

2.2 Presentation

2.2.1 Style

Quick frozen strawberries may be presented as free-flowing (i.e. as individual berries not adhering to one another) or non free-flowing (i.e. as a solid block), and in the following forms:

- (a) whole
- (b) halves
- (c) sliced

2.2.2 Sizing

Whole strawberries may be presented as sized or unsized. If whole strawberries are presented sized the berries shall be reasonably uniform within each package such that the diameter of the largest berry does not

exceed the diameter of the smallest berry by more than 10 mm measured according to the maximum diameter.

2.2.3 In the case of Fragaria grandiflora L. the maximum diameter of each berry whether sized or unsized shall not be less than 12 mm*

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Composition

3.1.1 Strawberries prepared with dry sugars

The product shall be prepared with not more than 25% m/m of the dry sugars and the total soluble solids content of the liquid extracted from the thawed, comminuted sample shall be not more than 35°Brix nor less than 18°Brix as determined by refractometer at 20°C.

3.1.2 Strawberries prepared with syrup

The amount of syrup used shall be no more than that required to cover the berries and fill the spaces between them. The total soluble solids content of the liquid extracted from the thawed, comminuted sample shall be not more than 25°Brix nor less than 15°Brix, as determined by refractometer at 20°C.

3.2 Quality factors

3.2.1 Organoleptic and other characteristics

Quick frozen strawberries shall be:

- of good colour and free from foreign flavour and odour;
- intact if whole, and not materially disintegrated;
- intact if sliced or halved, and not seriously affected by disintegrated fruit;
- clean, practically free from sand and grit and other foreign material;
- practically free from stalks, calyces, leaves and other extraneous vegetable material;
- sound, practically free from insect bites and other blemishes;
- practically free from immature berries;
- normally developed;
- when presented as free-flowing, practically free from berries adhering to one another and not icy.

3.2.2 The contents of each pack must be of similar varietal characteristics.

3.2.3 Analytical characteristics

Mineral impurities, such as sand (Ash insoluble in HCl) not more than 0.1% m/m on a whole product basis.

3.3 Tolerances

3.3.1 Specification of defects

Based on a sample unit of 500 g the thawed product shall have not more than the following:

- | | |
|--|--|
| (a) stalks or parts of stalks each greater than 83 mm in one dimension | including sugar or syrup |
| (b) calyces, leaves or similar extraneous vegetable material | 3 sq.cm/500 g fruit including sugar or syrup |

(c) berries of dissimilar varieties	5% m/m on a fruit ingredient basis
(d) blemished fruit	5% m/m on a fruit ingredient basis
(e) partially uncoloured berries with 25% or more of the outer surface area uncoloured	5% on a fruit ingredient basis
(f) berries completely uncoloured	1 by number/500 g fruit ingredient
(g) broken or smashed whole berries	5% m/m on a fruit ingredient basis

In applying the above tolerances, examination of defects (a) and (b) shall be done on a thawed product including both fruit and sugar or syrup and defects (c) to (g) shall be done on the fruit alone.

3.3.2 Tolerance for sizes of whole strawberries

- (a) When presented as sized, a tolerance of 10% m/m is allowed for fruit that fail to meet the requirements of paragraph 2.2.2.
- (b) In the case of Fragaria grandiflora L. whether sized or unsized, the amount of fruit having a maximum diameter of less than 12 mm shall not exceed 5%

3.3.3 Allowances for defects

Any sample unit from a sample taken in accordance with the Sampling Plans for Prepackaged Foods (ALINORM 69/27) shall be regarded as "defective" when any of the defects listed under 3.3.1 is present in more than twice the amount of the specified tolerance for the individual defect, or if the total of (a) to (g) exceeds 20.

3.3.4 Lot acceptance

A lot is considered acceptable when the number of such "defectives" as specified in 3.3.3 does not exceed the acceptance number (c) of the Sampling Plans for Prepackaged Foods (ALINORM 69/27).

4.	FOOD ADDITIVES	<u>Maximum level of use</u>
	Ascorbic acid)	400 mg/kg individually
	Citric acid)	or in combination

5. CONTAMINANTS

The product shall comply with such requirements as may be specified by the Codex Committee on Pesticide Residues.

6. HYGIENE

It is recommended that the product covered by the provisions of this standard be prepared in accordance with the Codex Alimentarius Code of Hygienic Practice for Quick Frozen Fruit and Vegetable Products.

7. LABELLING

In addition to Sections 1, 2, 4,5 and 6 of the Recommended International General Standard for the Labelling of Prepacked Foods (Ref. No. CAC/RS 1-1969) the following specific provisions apply:

7.1 The name of the food

The name of the product shall include

- (a) the designation "strawberries. The words "quick frozen" shall also appear on the label;
- (b) in the case of fruit of the species Fragaria vesca L. the designation shall be "wild strawberries" or "alpine strawberries";
- (c) the style "halves" or "slices" as appropriate;
- (d) the packing medium: "with (name of sweetener and whether as such or as the syrup)";
- (e) the name of the product may include the style "whole" or "free-flowing";
- (f) if a term designating the sizing is used, such as "small", "medium" or "large", it must be supported by a correct graphic representation of the predominant range of size of the strawberry and/or by a statement of the predominant range of the maximum dimension in millimeters.

7.2 List of ingredients

A complete list of ingredients shall be declared, in descending order of proportion.

7.3 Net contents

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

7.4 Name and address

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

7.5 Country of origin

The country of origin of the product shall be declared if its omission would mislead or deceive the consumer. When the product undergoes processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling.

7.6 Additional provisions

The following additional specific provisions apply to retail packs:

- (a) there may be an indication in code of the date of production, that is, the date the final product is packaged for final sale;
- (b) there shall be information for keeping and thawing of the product;
- (c) there may be information for utilization.

- 7.7 Bulk packs
In the case of quick frozen strawberries in bulk the information required in 7.1 to 7.5 must either be placed on the container or be given in accompanying documents, except that the name of the food accompanied by the words "Quick Frozen" and the name and address of the manufacturer or packer must appear on the container.
8. PACKAGING
Packaging used for quick frozen strawberries must
- (a) protect the organoleptic and quality characteristics of the product;
 - (b) protect the product from bacteriological and other contamination (including contamination from the packaging material itself);
 - (c) protect the product from moisture loss, dehydration and, where appropriate, leakage;
 - (d) not pass on to the product any odour, taste, colour or other foreign characteristics.
9. METHODS OF ANALYSIS AND SAMPLING (Text added by the Secretariat)
- 9.1 The methods of analysis and sampling described hereunder are international referee methods which are to be endorsed by the Codex Committee on Methods of Analysis and Sampling.
- 9.2 Sampling
Sampling shall be carried out in accordance with the Sampling Plans for Prepackaged Foods (ALINORM 69/27)
- 9.3 Test Procedures
- 9.3.1 Determination of mineral impurities, such as sand (Ash insoluble in HCl).
[Method to be provided]
- 9.3.2 Determination of total soluble solids content. [Method to be provided]

DRAFT STANDARD
FOR QUICK FROZEN PEAS

(Submitted to the Seventh Session of the Codex Alimentarius Commission
at Step 8 of the Procedure)

1. SCOPE

This standard shall apply to quick frozen peas of the species Pisum sativum L. as defined below and offered for direct consumption without further processing, except for size grading or repacking if required. It does not apply to the product when labelled as intended for further processing, or for other industrial purposes.

2. DESCRIPTION

2.1 Product and process definition

Quick frozen peas are the produce:

- (a) prepared from fresh, clean, sound, whole, immature seed of peas which have been washed, sufficiently blanched to ensure adequate stability of colour and flavour during normal marketing cycles and which conform to the characteristics of the species Pisum sativum L.
- (b) subjected to a freezing process in an appropriate equipment and complying with the conditions laid down hereafter. This freezing operation shall be carried out in such a way that the range of temperature of maximum crystallization is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C (0°F) at the thermal centre after thermal stabilization. The product shall be maintained at a low temperature such as will maintain the quality during transportation, storage and distribution up to and including the time of final sale. The recognized practice of thawing and repacking products under controlled conditions followed by the application of the quick freezing process as defined is permitted.

2.2 Presentation

2.2.1 Types

- (a) any suitable variety of pea may be used;
- (b) the product shall be presented as "peas" or may be presented as "garden peas" provided they meet the organoleptical and analytical characteristics of the type, such as "Kelvedon Wonder", "Dark Skin Perfection" ...

2.2.2 Sizing

- (a) Quick Frozen Peas of either type may be presented sized or unsized.
- (b) If size grading is applied, the peas shall conform to one of the two following systems of specifications for the size names:

(i)	Small	up to 8.75 mm	round	hole	sieve	size
	Medium	up to 10.2 mm	"	"	"	"
	Large	over 10.2 mm	"	"	"	"

or

(ii)	Extra small	up to 7.5 mm	round	hole	sieve	size
	Very small	up to 8.2 mm	"	"	"	"
	Small	up to 8.75 mm	"	"	"	"
	Medium	up to 10.2 mm	"	"	"	"
	Large	over 10.2 mm	"	"	"	"

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Optional ingredients

- sugars (sucrose, invert sugar, dextrose, fructose, glucose syrup, dried glucose syrup)
- salt
- condiments, such as spices and herbs

3.2 Quality factors

3.2.1 Organoleptic and other characteristics

The product shall be:

- clean, practically free from grit or silt
- practically free from damage by insects or diseases
- of a reasonably uniform green colour according to type
- whole
- practically free from extraneous vegetable or animal matter and from other objectionable matter
- free from any foreign taste or smell.

The product shall have a normal flavour, taking into consideration any seasonings or ingredients added.

3.2.2 Analytical characteristics

The alcohol-insoluble solids contents as determined by the method specified in this standard must not exceed:

- | | |
|-----------------|-----------|
| for Peas | - 23% m/m |
| for Garden Peas | - 19% m/m |

3.3 Tolerances

3.3.1 Definition of defects

- | | |
|--------------------------|---|
| Blond Peas | - means peas which are yellow or white but which are edible (that is, not sour or rotted). |
| Blemished Peas | - means peas which are slightly stained or spotted |
| Seriously Blemished Peas | - means peas which are hard, shrivelled, spotted, discoloured or otherwise blemished to an extent that the appearance or eating quality is seriously affected. These shall include worm-eaten peas. |

- Pea Fragments - means portions of peas, separated or individual cotyledons, crushed, partial or broken cotyledons and loose skins, but does not include entire intact peas with skins detached.
- Extraneous Vegetable Material (E.V.M.) - means any vine or leaf or pod material from the pea plant, or other vegetable materials such as poppyheads or thistles.

3.3.2 Specification of defects
Based on a sample unit of 500 grams the end product shall have not more than the following

<u>Defects</u>	<u>Tolerance</u>
(a) Blond Peas	2% m/m
(b) Blemished Peas	5% m/m
(c) Seriously Blemished Peas	1% m/m
(d) Pea Fragments	12% m/m
(e) E.V.M.	0,5% m/m but not more than 12 sq. cms. in area

3.3.3 Tolerance for sizes
If size graded, not more than 20% by number or mass belonging to the larger sizes, of which not more than 5% m/m by number or mass of the second larger size.¹

¹ Please see explanation at end of standard

3.3.4 Allowances for defects
Any sample unit from a sample taken in accordance with the Sampling Plans for Prepackaged Foods (ALINORM 69/27) shall be regarded as "defective" when any of the defects listed under 3.3.1 is present in more than twice the amount of the specified tolerance for the individual defect as listed under 3.3.2 or if the total of (a) to (d) exceeds 15% m/m.

3.3.5 Lot acceptance²
A lot is considered acceptable when the number of such "defectives" as specified in 3.3.4 does not exceed the acceptance number (c) of the Sampling Plans for Prepackaged Foods (ALINORM 69/27).

² This section was added by the Secretariat

4. FOOD ADDITIVES

Natural flavourings and their identical synthetic equivalents.

5. CONTAMINANTS

The product shall comply with such requirements as may be specified by the Codex Committee on Pesticide Residues.

6. HYGIENE

It is recommended that the product covered by the provisions of this standard be prepared in accordance with the Codex Alimentarius Code of Hygienic Practice for Deep Frozen Fruit and Vegetable Products.

7. LABELLING

In addition to Sections 1, 2, 4, 5 and 6 of the Recommended International General Standard for the Labelling of Prepackaged Foods (Ref. No. CAC/RS 1-1969) the following specific provisions apply.

7.1 The name of the food

The name of the product shall include

- (a) the designation "peas". The words "quick frozen" shall also appear on the label;
- (b) where a characterizing flavouring or ingredient has been added this shall be stated as "with x", as appropriate;
- (c) where peas are presented in conformity with 2.2.1(b) the designation shall be "garden peas" or the equivalent description used in the country in which the product is intended to be sold.
- (d) where a statement of size is made, either the sieve size or the words "extra small", "very small", "small", "medium" or "large", as appropriate, shall be indicated.

7.2 List of ingredients

A complete list of ingredients shall be declared, in descending order of proportion.

7.3 Net contents

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

7.4 Name and address

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

7.5 Country of origin

The country of origin of the product shall be declared if its omission would mislead or deceive the consumer. When the product undergoes processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling.

7.6 Additional provisions

The following additional specific provisions apply to retail packs:

- (a) there may be an indication in code of the date of production, that is, the date the final product is packaged for final sale;
- (b) there shall be information for keeping and thawing of the product;
- (c) there may be information for utilization,

7.7

Bulk packs

In the case of quick frozen peas in bulk the information required in 7.1 to 7.5 must either be placed on the container or be given in accompanying documents, except that the name of the food accompanied by the words "Quick Frozen" and the name and address of the manufacturer or packer must appear on the container.

8.

PACKAGING

Packaging used for quick frozen peas must

- (a) protect the organoleptic and quality characteristics of the product;
- (b) protect the product from bacteriological and other contamination (including contamination from the packaging material itself);
- (c) protect the product from moisture loss, dehydration and, where appropriate, leakage;
- (d) not pass on to the product any odour, taste, colour or other foreign characteristic.

9.

METHODS OF ANALYSIS AND SAMPLING

9.1

The methods of analysis and sampling described hereunder are international referee methods which are to be endorsed by the Codex Committee on Methods of Analysis and Sampling.

9.2

Sampling

Sampling shall be in accordance with the Sampling Plans for Prepackaged Foods, 1969.

9.3

Test procedures

9.4

Title

Determination of the alcohol insoluble solids content of quick frozen peas.

9.5

Scope

This method is applicable to quick frozen peas.

9.6

Definition

The alcohol insoluble solids content is defined as the percentage by mass of substances as determined by the procedure described.

9.7

Principle of the Method

The alcohol insoluble solids in peas consist mainly of insoluble carbohydrates (starch) and protein. A weighed quantity of the sample is boiled with slightly diluted alcohol. The solids are washed with alcohol until the filtrate is clear. The alcohol insoluble solids are dried and weighed. The amount present is used as a guide to maturity.

9.8

Reagents

9.8.1

Ethanol (95%) or methylated spirit (100 parts ethanol plus 5 parts methanol).

9.8.2 Ethanol or methylated spirit, 80% v/v - dilute 8 liters 95% alcohol to 9.5 L with water.

9.9 Apparatus

9.9.1 Analytical balance.

9.9.2 Beaker, 600 ml, if sample is boiled or 250 ml standard taper ground glass joint flask with reflux condenser if refluxed.

9.9.3 Buchner funnel.

9.9.4 Drying dish with lid, flat bottom.

9.9.5 Hot plates or boiling waterbath for refluxing or boiling.

9.9.6 Clamps or weights to prevent agitation of package in waterbath during thawing.

9.9.7 Desiccator with active desiccant.

9.9.8 Drying oven, well ventilated and thermostatically controlled adjusted to operate at $100 \pm 2^{\circ}\text{C}$.

9.9.9 Filter paper, Whatman No. 1 or equivalent.

9.9.10 Macerator or blender (e.g. Atomix, Turmix, or Waring).

9.9.11 Plastic bag, of capacity to hold entire sample for thawing.

9.9.12 Policeman on glass rods bent so as to facilitate cleaning flask or beaker.

9.9.13 Waterbath, with continuous flow at room temperature or regulated at room temperature for thawing.

9.10. Sampling

9.11 Procedure

9.11.1 Preparation of test sample

Place frozen peas or frozen peas with sauce in plastic bag and tie off. Immerse sample in waterbath with continuous flow at room temperature or regulated at room temperature. Avoid agitation of package during thawing by using clamps or weights if necessary. When completely thawed, remove package from bath. Blot off adhering water from the plastic bag. Transfer the peas from package to a No. 8 sieve. If sauce is present, wash with gentle spray of water at room temperature until the sauce is removed. Without shifting the peas, incline the sieve as to facilitate drainage, and drain two minutes. Wipe the bottom of the sieve. Weigh 250 gms peas into blender, add 250 ml distilled water and macerate to a smooth paste. If there is less than 250 gms sample, use the entire sample of peas with an equivalent quantity of distilled water and macerate to a smooth paste.

9.11.2 Determination

9.11.3 Dry a filter paper in flat-bottomed dish, lid off, for 2 hours at $100 - 2^{\circ}\text{C}$. Cover dish, cool in a desiccator, and weigh accurately. (The filter paper should be larger than the base of the funnel and folded at the circumference to facilitate subsequent removal without loss of solids).

- 9.11.4 Weigh 20 gm \pm 10 mg paste into a 250 ml ground-joint flask, add 120 ml methylated spirit or alcohol, and swirl to mix. If boiling rather than refluxing/is preferred, weigh 40 gm \pm 10 mg paste into a 600 ml beaker. Add 240 ml methylated spirit or alcohol, stir, and cover beaker.
- 9.11.5 Reflux on a steam or water bath for 30 minutes or bring solution in the beaker to a boil and simmer slowly for 30 minutes on a hot plate.
- 9.11.6 Immediately filter with suction on a Buchner funnel through the dried and weighed filter paper.
- 9.11.7 Decant most of the supernatant liquid through the filter paper. Wash the solids in the flask or beaker without delay with small portions of 80% methylated spirit or alcohol until the washings are colourless, decanting through the filter paper each time. Do not allow solids to become dry during the washing. Transfer solids to the filter paper, spreading the solids evenly.
- 9.11.8 Remove the filter paper containing the residue from the funnel, transfer to the dish used in preparing the filter paper and dry uncovered in an air oven for 2 hours at $100 \pm 2^\circ\text{C}$.
- 9.11.9 Cover the dish, cool in a desiccator, and weigh accurately. The weight of the dry residue is the difference between the weight under 9.11.3 and this final weight.
- 9.12 Expression of Results
- 9.12.1 Method of calculation
- Calculate the alcohol insoluble solids content of the sample by means of the following formula:
- 9.12.1.1 If 20 g sample is refluxed:
Alcohol insoluble solids content (%) = $10 W$
Where:
W = the weight in grams of dry residue.
- 9.12.1.2 If 40 g sample is refluxed:
Alcohol insoluble solids content (%) = $5 W$
Where:
W = the weight in grams of the dry residue.
- 9.12.2 Repeatability of results
- The difference between results of duplicate determination (results obtained simultaneously or in rapid succession by the same analyst) should not exceed 0.6 g alcohol insoluble solids for 100 grams of the product.
- 9.13 Test Report
- Report as grams alcohol insoluble solids per 100 grams of the product.

NOTE BY THE SECRETARIAT

Section 3.3.3 "Tolerance for sizes" has been included in this standard as adopted by the Committee.

The Secretariat believes that the text of this provision is not sufficiently clear and has requested the country which had supplied the text in its comments to state more precisely the meaning of this provision.

Pending clarification the Secretariat suggests the following might be a suitable text for section 3.3.3.

"3.3.3 If size graded, the product shall contain not more than 20% by number or mass of peas belonging to larger size groups. Within these groups not more than 5% by number or mass shall belong to groups two or more sizes removed from the declared size."

PROPOSED DRAFT STANDARD
FOR QUICK FROZEN RASPBERRIES

(Submitted to the Seventh Session of the Codex Alimentarius Commission
at Step 5 of the Procedure)

1. SCOPE

This standard shall apply to quick frozen raspberries of the species *Rubus idaeus* L. as defined below and offered for direct consumption without further processing except for size grading or repacking if required. It does not apply to the product when labelled as intended for further processing or for other industrial purposes.

2. DESCRIPTION

2.1 Product and process definition

Quick frozen raspberries are the product:

- (a) prepared from sound, ripe, clean and stemmed raspberries conforming to the characteristics of the species *Rubus idaeus* L. (red, yellow or black varieties).
- (b) packed with or without dry sugar(s) or sugar syrup(s) (sucrose, invert sugar, dextrose, fructose, glucose syrup, dried glucose syrup);
- (c) subjected to a freezing process in an appropriate equipment and complying with the conditions laid down hereafter. This freezing operation shall be carried out in such a way that the range of temperature of maximum crystallization is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached - 18°C (0°F) at the thermal centre after thermal stabilization. The product shall be maintained at a low temperature such as will maintain the quality during transportation, storage and distribution up to and including the time of final sale. The recognized practice of thawing and repacking products under controlled conditions followed by the application of the quick freezing process as defined is permitted.

2.2 Presentation

Quick frozen raspberries may be presented as free-flowing (i.e. as individual berries not adhering to one another) or as non free-flowing (i.e. as a solid block).

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Composition

3.1.1 Raspberries prepared with dry sugars

The product shall be prepared with not more than 25% m/m of the dry sugars and the total soluble solids content of the liquid extracted from the thawed, comminuted sample shall be not more than [35°] Brix nor less than [18°] Brix as determined by refractometer at 20°C.

3.1.2 Raspberries prepared with syrup

The amount of syrup used shall be no more than that required to cover the berries and fill the spaces between them. The total soluble solids content of the liquid extracted from the thawed, comminuted sample shall be not more than [25°] Brix nor less than [17°] Brix, as determined by refractometer at 20°C.

3.2 Quality Factors

3.2.1 Organoleptic and other characteristics

Quick frozen raspberries shall be:

- reasonably intact;
- of good colour and free from foreign flavour and odour;
- clean, practically free from sand and grit and other foreign material;
- practically free from stalks, calyces, leaves and other extraneous vegetable material;
- sound, practically free from mould, insect bites and other blemishes;
- normally developed and practically free from immature berries;
- when presented as free-flowing, practically free from berries adhering to one another and not icy.

3.2.2 The contents of each pack must be of similar varietal characteristics and practically uniform as regards size.

3.2.3 Analytical characteristics

Mineral impurities such as sand (Ash insoluble in HCl) not more than 0.05 m/m on a whole product basis.

3.3 Tolerances

3.3.1 Specification of Defects

Based on a sample unit of 500 g the thawed product shall have not more than the following;

- | | |
|--|--|
| (a) crushed or disintegrated berries | 30% m/m on a fruit ingredient basis |
| (b) calyces, leaves or similar extraneous vegetable matter | 3 sq. cm/500 g fruit including sugar or syrup |
| (c) stalks or parts of stalks, each longer than 3 mm | 3 by number/500 g fruit including sugar or syrup |
| (d) berries visibly blemished by insect bites | 5% m/m on a fruit ingredient basis |
| (e) visibly moulded berries | 3% m/m on a fruit ingredient basis |
| (f) berries of dissimilar variety | 5% m/m on a fruit ingredient basis |
| (g) unripe and/or not normally developed berries | 5% m/m on a fruit ingredient basis |

In applying the above tolerances examination of defects (b) and (c) shall be made on the thawed product including both fruit and sugar or syrup, and defects (a) and (d) to (g) shall be made on the fruit alone.

3.3.2 Allowances for defects

Any sample unit from a sample taken in accordance with the Sampling Plans for Prepackaged Foods (ALINORM 69/27) shall be regarded as "defective" when any of the defects listed under 3.3.1 (b) to (g) inclusive are present in more than twice the amount of the specified tolerance for the individual defect or if the total of (b) to (g) exceeds 20.

3.3.3 Lot acceptance

A lot is considered acceptable when the number of such "defectives" as specified in 3.3.2 does not exceed the acceptance number (c) of the Sampling Plans for Prepackaged Foods (ALINORM 69/27).

4. FOOD ADDITIVES

None permitted.

5. CONTAMINANTS

The product shall comply with such requirements as may be specified by the Codex Committee on Pesticide Residues.

6. HYGIENE

It is recommended that the product covered by the provisions of this standard be prepared in accordance with the Codex Alimentarius Code of Hygienic Practice for Quick Frozen Fruit and Vegetable Products.

7. LABELLING

In addition to Sections 1, 2, 4, 5 and 6 of the Recommended International General Standard for the Labelling of Prepackaged Foods (Ref. No. CAC/RS 1-1969) the following specific provisions apply.

7.1 The name of the food

The name of the product shall include

- (a) the designation "raspberries" together with a reference to their colour for varieties other than the red variety. The words "quick frozen" shall also appear on the label;
- (b) the packing medium: "with (name of sweetener and whether used as such or as the syrup)";
- (c) the name of the product may include the style in the case of "free-flowing" raspberries.

7.2 List of ingredients

A complete list of ingredients shall be declared in descending order of proportion.

Net contents

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

7.4 Name and address

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

7.5 Country of origin

The country of origin of the product shall be declared if its omission would mislead or deceive the consumer. When the product undergoes processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling.

7.6 Additional provisions

The following additional specific provisions apply to retail packs:

- (a) there may be an indication in code of the date of production, that is, the date the final product is packaged for final sale;
- (b) there shall be information for keeping and thawing of the product;
- (c) there may be information for utilization.

7.7 Bulk packs

In the case of quick frozen raspberries in bulk the information required in 6.1 to 6.5 must either be placed on the container or be given in accompanying documents, except that the name of the food accompanied by the words "Quick Frozen" and the name and address of the manufacturer or packer must appear on the container.

8. PACKAGING

Packaging used for quick frozen raspberries must

- (a) protect the organoleptic and quality characteristics of the product;
- (b) protect the product from bacteriological and other contamination (including contamination from the packaging material itself);
- (c) protect the product from moisture loss, dehydration and, where appropriate, leakage;
- (d) not pass on to the product any odour, taste, colour or other foreign characteristic.

9. METHODS OF ANALYSIS AND SAMPLING (Text added by the Secretariat)

9.1 The methods of analysis and sampling described hereunder are international referee methods which are to be endorsed by the Codex Committee on Methods of Analysis and Sampling.

9.1 Sampling

Sampling shall be carried out in accordance with the Sampling Plans for Prepackaged Foods (ALINORM 69/27).

- 9.3 Test Procedures
- 9.3.1 Determination of mineral impurities, such as sand (Ash insoluble in HCl)
 [Method to be provided]
- 9.3.2 Determination of total soluble solids content
 [Method to be provided]

PROPOSED DRAFT STANDARD
FOR QUICK FROZEN SPINACH

(Submitted to the Seventh Session of the Codex Alimentarius Commission
at Step 5 of the Procedure)

1. SCOPE

This standard shall apply to quick frozen spinach of the species Spinacia oleracea L. as defined below and offered for direct consumption without further processing except for repacking if required. It does not apply to the product when labelled as intended for further processing, or for other industrial purposes.

2. DESCRIPTION

2.1 Product and process definition

Quick frozen spinach is the produce:

- (a) prepared from fresh, clean, sound, edible spinach which have been sorted, washed, sufficiently blanched to ensure adequate stability of colour and flavour during normal marketing cycles and which conform to the characteristics of the species Spinacia oleracea L.
- (b) subjected to a freezing process in an appropriate equipment and complying with the conditions laid down hereafter. This freezing operation shall be carried out in such a way that the range of temperature of maximum crystallization is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C (0°F) at the thermal centre after thermal stabilization. The product shall be maintained at a low temperature such as will maintain the quality during transportation, storage and distribution up to and including the time of final sale. The recognized practice of thawing and repacking products under controlled conditions followed by the application of the quick freezing process as defined is permitted.

2.2 Presentation

Quick frozen spinach shall be presented as:

- (a) leaf spinach: whole leaves of spinach;
- (b) cut leaf and chopped spinach: spinach cut or comminuted into discernible parts of leaves;
- (c) spinach puree: mashed.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Optional ingredients

- condiments, such as spices and herbs

3.2 Quality factors

3.2.1 Organoleptic and other characteristics

The product shall be

- sound;
- clean, practically free from Band and grit;
- practically free from extraneous vegetable or animal material;
- practically free from flower stems (seed heads) crowns and root material;
- practically free from damage due to yellow leaves, discolouration and insect or pathological injury;

For leaf spinach: the leaves may have no more mechanical damage than caused by normal industrial processing.

Colour - the product shall have a normal green colour, practically free from yellowish or brownish shades.

Flavour - the product shall have a good characteristic flavour free from foreign odours or flavours of any kind.

Texture - spinach of whole or cut leaves shall be practically free from large, coarse stems. Spinach of pureed style shall be practically free from touch, fibrous material.

3.2.2 Analytical characteristics

The total dry matter of the finished product, determined by drying over sand for 4 hours at 105°C should not be lower than 5.5%.

3.2.3 The mineral impurities (sand) content should not exceed [0.1% m/m] determined as hydrochloric acid insoluble ash content of the finished product*

3.3 Tolerances

3.3.1 Definition of defects

- (a) extraneous vegetable matter (EVM) - means harmless vegetable material such as grass, weeds, straw, etc.
- (b) seed head - means the seed bearing portion of the spinach plans and which is longer than 25 nun.
- (c) seed buds - means the separate flowerbuds which make up the seed heads.
- (d) root stub - means any portion of the root, with or without attached leaves.
- (e) crowns - means the solid area of the spinach plant between the root and the attached leaf clusters.
- (f) damage - means discolouration of any kind, whether caused by pathological, insect or environmental conditions, and which materially detracts from the appearance of the product.

3.3.2

Specifications of defects

(a) Whole leaf and cut leaf styles - Based upon sample unit of 500 grams.

- (i) extraneous vegetable matter - Aggregate length of 300 mm provided that not more than 100 mm aggregate of discoloured material, or one large piece of wood not readily measurable by area.
- (ii) seed heads - 5.
- (iii) root stubs - 1 large piece or 2 small pieces.
- (iv) crowns - 5
- (v) damage - 25 leaves, or portions of leaves, provided that not over 5 are seriously damaged.

(b) Chopped style - Based upon Sample unit of 100 grams. ¹

¹

Except seed buds which are based upon a 5 gram sample unit

- (i) extraneous vegetable matter - Aggregate length of 60 mm.
- (ii) root stub and crowns - 4 pieces
- (iii) seed heads - 2 pieces of measurable size
- (iv) seed buds - 25 for each 5 grams
- (v) damage - aggregate area of 40 cm²

(c) Puree or mashed style - Based on a 100 gram sample unit floated in water or spread in a thin layer. The presence of defects of all types does not materially detract from the appearance of the product.

3.3.3

Allowances for defects

Any sample unit from a sample taken in accordance with the Sampling Plans for Processed Fruits and Vegetables (ALINORM 69/27) shall be regarded as a "defective" if more than 2 of the defects listed in 3.3.1 are in excess of the allowances specified, under 3.3.2 for the respective styles.

3.3.4

Lot acceptance ²

A lot is considered acceptable when the number of such "defectives" as specified in 3.3.3 does not exceed the acceptance number (c) of the Sampling Plans for Prepackaged Foods (ALINORM 69/27).

²

This paragraph was added by the Secretariat

4.

FOOD ADDITIVES None permitted.

5.

CONTAMINANTS

The product shall comply with such requirements as may be specified by the Codex Committee on Pesticide Residues.

6.

HYGIENE

It is recommended that the product covered by the provisions of this standard be prepared in accordance with the Codex Alimentarius Code of Hygienic Practice for Quick Frozen Fruit and Vegetable Products.

7. LABELLING

In addition to sections 1, 2, 4, 5 and 6 of the Recommended International General Standard for the Labelling of Prepackaged Foods (Ref. No. CAC/RS 1-1969) the following specific provisions apply:

7.1 The name of the food

The name of the product shall include

(a) the designation "spinach". The words "quick frozen" shall also appear on the label.

(b) statement of presentation in the following words:

- "whole leaved spinach" or "branched"
- "chopped leaves", "cut leaves" or "chopped spinach"
- "mashed" or "puree".

7.2 List of ingredients

A complete list of ingredients shall be declared, in descending order of proportion.

7.3 Net contents

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

7.4 Name and address

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

7.5 Country of origin

The country of origin of the product shall be declared if its omission would mislead or deceive the consumer. When the product undergoes processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling.

7.6 Additional provisions

The following additional specific provisions apply to retail packs:

- (a) there may be an indication in code of the date of production, that is, the date the final product is packaged for final sale;
- (b) there shall be information for keeping and thawing of the product;
- (c) there may be information for utilization.

7.7 Bulk packs

In the case of quick frozen spinach in bulk the information required in 7.1 to 7.5 must either be placed on the container or be given in accompanying documents, except that the name of the food accompanied by the words "Quick Frozen" and the name and address of the manufacturer or packer must appear on the container.

8. PACKAGING

Packaging used for quick frozen spinach must

- (a) protect the organoleptic and quality characteristics of the product;
- (b) protect the product from bacteriological and other contamination (including contamination from the packaging material itself);
- (c) protect the product from moisture loss, dehydration and, where appropriate, leakage;
- (d) not pass on to the product any odour, taste, colour or other foreign characteristic.

9. METHODS OF ANALYSIS AND SAMPLING

9.1 The methods of analysis and sampling described hereunder are international referee methods which are to be endorsed by the Codex Committee on Methods of Analysis and Sampling.

9.2 Sampling

Sampling shall be in accordance with the Sampling Plans for Prepackaged Foods (ALINORM 69/27)

9.3 Test Procedures

9.3.1 Determination of total dry spinach matter

[Method to be provided]

9.3.2 Determination of mineral impurities, such as sand
(Ash insoluble in HC1)

[Method to be provided]

NET WEIGHT DETERMINATION FOR QUICK FROZEN FRUITS AND VEGETABLES

(Sent for endorsement to the Fifth Session of the Codex Committee on Methods of Analysis and Sampling)

1. TITLE

NET WEIGHT DETERMINATION FOR QUICK FROZEN FRUITS AND VEGETABLES

2. SCOPE

This method is applicable to all frozen fruits and vegetables.

3. DEFINITION

The net weight is the weight of the product itself, including any packing medium, as determined by the procedure described.

In the case of frozen vegetables, there is some disagreement regarding the consideration of loose ice crystals, frost particles and cavity ice. Moisture is a major constituent of fruits and vegetables. During storage there is a migration of product moisture by sublimation from the product to the interior portions of the carton as well as the surface of the product units. This rate of moisture transfer varies with length of storage, insulating capabilities of the packaging materials, temperature variations during defrost cycles, differences in vapor pressure between product and surrounding air, etc.

In some products, such as spinach and leafy greens, a certain amount of layer ice is often noted on the bottom of the container. Efficiency of dewatering varies with the product.

Abnormal amounts of layer ice might be an indication of improper draining at time of packing and would, thereby be in the realm of adulteration. It would be appropriate to determine and record the net weight including product and layer ice. Where an abnormal amount of layer ice is present, a drained weight procedure might demonstrate adulteration.

4.

PRINCIPLE

The weight of the container including the product therein is determined. The weight of the container itself is determined. The net weight is calculated from the difference of these two weights.

5.

APPARATUS

5.1 Balance of adequate capacity having a sensitivity of .25 gm (or 0.01 oz), for containers not in excess of 2 kg (or 5 lb).

5.2 Balance of adequate capacity having a sensitivity of .70 gm (or 0.025 oz), for containers in excess of 2 kg (or 5 lb).

6.

SAMPLING

7.

PROCEDURE

7.1 Set balance on firm, level support and adjust indicator to zero.

7.2 Remove container from low temperature storage and with a towel remove frost and ice from outside of the container.

7.3 Weigh unopened container immediately and record as gross weight.

7.4 Open container and remove contents including product particles, frost or ice crystals, that may be adhere to the container.

7.5 Blot off free water with a towel and air dry empty container at room temperature.

7.6 Weigh the dry, empty container and record as tare weight.

8.

CALCULATION

Calculate the net weight of the sample by means of the following formula:

Net weight = G - T

Where:

G - the gross weight found under 7.3.

T - the tare weight found under 7.6.

THAWING PROCEDURE FOR QUICK FROZEN FRUITS AND VEGETABLES

(Sent for endorsement to the Fifth Session of the Codex Committee on Methods of Analysis and Sampling)

1. TITLE
Thawing Procedure For Quick Frozen Fruits and Vegetables
2. SCOPE
This procedure is generally applicable to all quick frozen fruits and vegetables. If a product requires special treatment not fully covered by the method outlined herein such thawing procedures should be outlined in the appropriate commodity standard.
3. PRINCIPLE OF THE METHOD
There are two general methods for thawing frozen fruits and vegetables -- namely 1) air thawing and 2) water thawing. The latter method, water thawing, is faster and in some instances more desirable than air thawing. Some products also thaw much faster than others. Frozen peas or broccoli thaw much faster than leafy greens. Consequently, no specific time can be allotted in which to accomplish adequate thawing. Through experience the analyst will learn to judge the best procedure and time requirement for each commodity.

Extreme care should be taken during the thawing process in order that the product is not damaged or exposed to abuse that will alter or degrade the true characteristics of the product. Frozen fruits are more susceptible to abuse during thawing than frozen vegetables. Light colored fruits (such as peaches and apricots) and red cherries oxidize quite readily and should be examined for color while some ice crystals still remain in the product. Some fruits show breakdown in texture or "bleed" when thawed more than necessary. Consequently, rapid thawing under controlled conditions is most desirable in preparing the product for laboratory examination.
4. APPARATUS
 - 4.1 Water bath with temperature controls and pump to circulate water.
 - 4.2 Electric Fan - optional for air thawing.
 - 4.3 Plastic bags or suitable container with tight closure – optional for sub samples from large containers.
5. SAMPLING
Entire package or sample unit is used intact, except that in the case of bulk or industrial size containers it is not practical to use the entire container and a representative sub-sample of approximately 1 to 2 kilo is adequate for testing and organoleptic examination.

6. PROCEDURE

6.1 Frozen Fruits and Berries

6.1.1 Consumer-size Packages

Thaw in unopened containers at ambient temperature until the product is sufficiently free from ice so that individual units may be easily separated and handled. The thawing process may be hastened by placing the cartons on a table in such a manner that they are separated by air spaces and directing a stream of air from a fan on the packages.

If packed in tightly sealed containers they may be placed in a water bath at a temperature not to exceed 30°C. to expedite thawing.

6.1.2 Bulk or Industrial Packages

If the entire container is used the thawing procedure is the same as outlined in 6.1.1 for consumer-size packages.

If a representative sub-sample is used (in many cases this is the only practical way) place the sub-sample in a suitable container, which may be a plastic bag or a metal can, and thaw as prescribed above using either air or water thawing.

6.2 Frozen Vegetables

6.2.1 Air Thawing

Allow the product to thaw in unopened containers at ambient temperature. A blast of air from an electric fan may be used to hasten the process.

6.2.2 Water Thawing

6.2.2.1 In Unopened or Sealed Containers - Thaw as specified for frozen fruits, paragraph 6.1.2, by immersing the tightly sealed package in a water bath not to exceed 30° C.

6.2.2.2 By Direct Contact - Most frozen vegetables can be thawed by direct contact with water without affecting the characteristics of the end product. An exception is frozen corn, or products containing corn, which should be air-thawed. Remove the frozen product from the package and place it directly in water at a temperature not exceeding 30° C. As soon as the product is thawed sufficiently to permit easy separation of the individual units, drain on a suitable screen (8 mesh per inch) to remove excess water and place product on tray for examination,

6.2.3 Precautions

6.2.3.1 Special Products

Certain products, such as frozen corn, should always be air thawed; or, thawed in water in sealed containers in order to prevent leaching of soluble solids or product material.

6.2.3.2 Odor and Flavor

If there is an indication of off flavors or off odors in the product when the packages are opened, do not use water thawing (product in contact with

water) as a preparatory step to cooking as the off flavor may be partially removed during such thawing. Place such suspect samples in cooking receptacle while still frozen.

COOKING PROCEDURE FOR QUICK FROZEN VEGETABLES

(Sent for endorsement to the Fifth Session of the Codex Committee on Methods of Analysis and Sampling)

1. TITLE

Cooking Procedure For Quick Frozen Vegetables

2. SCOPE

This method is applicable to all quick frozen vegetables.

3. GENERAL COMMENT

Many frozen products, particularly frozen vegetables, require preparation by cooking in order to complete product examination. In some cases cooking is required for proper evaluation of texture, tenderness or maturity. In other cases there may be a question regarding the flavor of the prepared product.

Most frozen vegetables are blanched or partially precooked during preparation for freezing. The freezing process also softens the tissues still further and consequently frozen vegetables require only from one-third to one-half as much cooking time as compared to the fresh product. Therefore care should be taken so as not to overcook the product beyond what would be expected under normal culinary preparation for serving. At the same time the cook should be sufficiently long to tenderize the product beyond a raw or uncooked state.

4. SAMPLING

Ordinarily those containers used for testing other product characteristics can be used for cooking. A separate set of samples for cooking purposes only is not generally taken. With this in mind, complete testing can be performed by careful segregation and planning during the process of product evaluation.

In the case of bulk or institutional type containers, sufficient product is available so that a portion of each container can be allocated for visual examination and chemical or physical tests, and a separate portion (frozen state) for cooking.

In the case of retail size packages (for example, 500 grams or less) all of the container may require thawing for product examination and testing. In such instances the packages may be partially or completely air thawed and checked for suspect off-odors and flavors. Portions of suspect samples should be cooked for further odor and flavor evaluation. If the odor of the thawed product is normal, one can proceed with product examination and cook representative portions of the samples for whatever checks may be required. If the packages are very small it may be desirable to draw additional containers for cooking purposes only. However, this will depend upon the product and the feasibility of drawing a larger than normal sample.

5. COOKING PROCEDURE

5.1 Basic Steps

The following steps will assure uniformity in the cooking of frozen vegetables for test purposes:

- 1) Place approximately 8 ounces (225 grams) of product in a two- quart sauce pan containing about 180 ml, of water. It is desirable to have the water boiling at the time the product is placed in the pan.
- 2) Bring rapidly to a boll and continue to heat sufficiently to maintain a "rolling boll".
- 3) Start timing the cook from the moment the water returns to a boll after the vegetable is added,
- 4) During the cooking process keep a reasonably tight fitting cover on the pan to avoid excess loss of moisture.
- 5) Continue the cooking for a period of time as specified in the directions on the package label. In the absence of such instructions follow the schedule as indicated in the attached Annex I for the appropriate product.
- 6) At the end of the cooking period, decant any excess water and place the cooked product on a tray.
- 7) Allow to cool sufficiently to be comfortably war . and make the required organoleptic tests.

5.2 Seasonings

In preparing frozen vegetables for home use it is customary to season the product with salt, sugar, butter, vinegar, spices, etc. However, for the purposes of laboratory testing it is recommended that seasonings be used sparingly as they may cover up undesirable flavors.

RECOMMENDED COOKING TIMES

<u>PRODUCT</u>	<u>TIME</u> (Minutes)
Asparagus, Small and Medium Sixes	5 to 7
Asparagus, Large and Very Large Sizes	7 to 9
Green Beans	8 to 10
Wax Beans	7 to 9
Lima Beans (More Mature)	15 to 18
Lima Beans (Less Mature)	12 to 15
Broccoli	5 to 7
Brussels Sprouts	8 to 10
Carrots	6 to 8
Cauliflower	3 to 5
Corn (Whole Kernel)	2 to 4
Corn-on-the-Cob	5 to 8
Leafy Greens - Turnip, Mustard & Kale	20 to 25
Collards	40 to 45
Mixed Vegetables	9 to 12
Okra	8 to 10
Peas	3 to 5
Blackeye or Field Peas	40 to 45
Peas and Carrots	7 to 10
Spinach (Leaf)	3 to 5
Spinach (Chopped)	2 to 4
Squash (Summer)	5 to 7
Succotash (Corn and Lima' Beans)	8 to 10

NOTE: Cooking time may vary within range specified depending upon variety, maturity and size of pieces.