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JOINT FAO/WHO FOOD STANDARDS PROGRAM

CODEX ALIMENTARIUS COMMISSION

Fifth Session, Rome, 19 February - 1 March 1968

DRAFT REPORT OF THE FIFTH SESSION OF THE CODEX COMMITTEE ON  
COCOA PRODUCTS AND CHOCOLATE

1. The Fifth Session of the Codex Committee on Cocoa Products and Chocolate under the chairmanship of the Government of Switzerland, was held in Lugano, 9-12 May 1967. Professor Dr. O. Högl was Chairman for the whole session. The Secretariat consisted of representatives of FAO and the office of Professor Högl. Representatives from 15 countries were present: Austria, Canada, France, Federal Republic of Germany, Ghana, Ireland, Italy, Netherlands, Nigeria, Philippines, Sweden, Switzerland, United Kingdom, U.S.A. and Yugoslavia. Observers were present from the following international organizations: AOAC, CAOBISCO, CEE Comité de liaison des fabricants de glucose, SEC. (See Appendix I for list of participants.)

Permissible Treatment

2. Alkalizing Agents

Of the alkalizing agents which the Joint FAO/WHO Expert Committee on Food Additives had approved, the following were considered to be technologically necessary: hydroxides or carbonates of sodium, potassium, ammonium or magnesium for the following products: cocoa beans, cocoa nibs, cocoa mass (cocoa liquor), cocoa press cake, cocoa powder or cocoa, and products derived there from. The Committee agreed that the addition of alkalizing agents, calculated as anhydrous potassium carbonate, should not exceed 5% of the fat-free dry matter. The Committee was informed that specifications of identity and purity had been drawn up by the FAO/WHO Expert Committee on Food Additives for the above-mentioned alkalizing agents and these specifications would be shortly submitted to the Codex Committee on Food Additives. A number of delegations were in favour of an indication being required on the label of the products which had been treated with alkalizing agents. It was agreed that this matter should be referred to the Codex Committee on Food Labelling.

3. Neutralizing agents

The Committee agreed that citric and tartaric acid should be permitted for use as neutralizing agents up to a level of 0.5% in the final product. Several delegations

informed the Committee that in their countries the use of phosphoric acid was permitted. The delegations of France, the Federal Republic of Germany and Switzerland were not in favour of the use of phosphoric acid because of difficulties concerning the general level of phosphate in the diet. It was agreed that this matter should be referred to the Codex Committee on Food Additives for further examination as it would be necessary to consider the total load of phosphates in the diet.

#### Permissible Ingredients and Additives

##### 4. Sugars

The Committee considered the provisions relating to the addition of sugar in the standards for cocoa products and chocolate and noted that the term "carbohydrate sweeteners" as defined in the Report of the Third Session of the Codex Committee on Sugars did not include sorbitol. The Committee agreed that it would be appropriate for the replacement of sugar by these and any other similar substances and by artificial sweeteners to be dealt with by the Codex Committee on Dietetic Foods. The Committee considered that there was no need to restrict the provision in the standards to sugar (sucrose) only. Some delegations thought that it was not necessary to specify limits to the replacement of sucrose by other sugars because this would be limited in practice by technological factors. Other delegations thought, however, that a maximum amount should be laid down. Some delegations expressed the view that the consumer might be misled by a claim or declaration of the presence of, for example, glucose or dextrose unless there was a significant amount in the product. The delegation of Switzerland thought that a declaration should be allowed only if there was at least 20% in the product. The French delegation thought, however, that declaration should be compulsory if there was a significant amount in the product. The Committee noted these views and agreed that governments should be asked:

- (i) whether a maximum limit should be laid down for the replacement of sugar (sucrose) by other sugars (carbohydrate sweeteners) and, if so, what this should be, and
- (ii) whether declaration should be forbidden; unless X" percent of other sugars was present and, if so, what this percentage should be.

##### 5. Spices and Flavours

The Committee agreed that spices in the form of powders or extracts and also vanillin or ethylvanillin could be added to all types of cocoa products and chocolate. In the case of flavouring components, it was agreed to postpone consideration of these matters until such time as the Codex Committee on Food Additives had drawn up a general list of flavouring substances which could be used in food. The Committee would then decide whether this general list would be suitable for chocolate and cocoa products or whether modifications or specific prescriptions would require to be made for chocolate and cocoa products. Meanwhile, the Committee agreed that if the amount of spices or flavours added to these products were small and were only used to achieve an organoleptic equilibrium no special declaration on the label would be necessary. If, however, the character of the chocolate were appreciably modified, an appropriate indication would need to be given on the label, e.g. "peppermint-chocolate", or "chocolate with orange flavour", etc. The delegation of the U.S. raised a question of principle as to whether flavours which would imitate the chocolate or milk fat flavour should be permitted in these products. Several delegations thought that there could be no objection to the use of such imitative flavours in products which complied with the requirements of Codex standards. It was, however, agreed that this was a general issue

which would require to be examined by the Codex Alimentarius Commission as it might be applicable to other foods.

### Emulsifiers and Stabilizers

#### 6. Lecithin

The Committee was informed that the FAO/WHO Committee on Food Additives has drawn up a specification of purity and identity for lecithin. This was commercial lecithin for use in foodstuffs and there was specified a minimum content of 60% acetone insoluble portion which corresponds to the phosphatide content. The Committee agreed that lecithin may be added to chocolate up to 0.5% of this acetone insoluble portion and to cocoa powder and products made therefrom to an amount up to 1% of this acetone insoluble portion without declaration on the label. The Committee agreed that the percentage addition of lecithin should be brought to the attention of the purchaser in the case of basic materials and partially processed products. The delegation of the United Kingdom considered that it was not necessary to prescribe limits for lecithin as in their opinion it was self-limiting because of technological reasons.

#### 7. Other emulsifiers

A number of delegations informed the Committee that other emulsifiers and stabilizers were permitted in their countries in chocolate. These were: mono and diglycerides of fatty acids, polyglycerol esters of fatty acids, emulsifier YN (mainly ammonium salts of phosphatidic acids), polyglycerol esters of polymerized ricinoleic acid, and Sorbian esters of fatty acids, including their poly ethylene derivatives. The Committee agreed that out of the foregoing lecithin and mono and diglycerides of fatty acids should be included in the standards for chocolate products subject to ratification by the Codex Committee on Food Additives. The United Kingdom and some other delegations stated that there were advantages in using the other above- mentioned emulsifiers. Other delegations expressed doubts as to their need in these products. It was agreed by the Committee that government comments should be sought on these emulsifiers. The list was also to be submitted to the Codex Committee on Food Additives for a re-examination of the total consumption of these additives and it was requested that those not yet examined by the Joint FAO/WHO Expert Committee on Food Additives should be submitted to the Expert Committee for evaluation.

#### 8. Additives in Cocoa Powder Mixtures (Standard No.10)

The Committee requested those delegations which were interested in Cocoa Powder Mixtures covered by the Standard No.10 to supply for the next session of the Committee a comprehensive statement of additives (whether natural products or not) permitted in their countries together with information as to permitted level of use and technological need. Such information should include any emulsifiers and stabilizers used in these products. The Committee tentatively proposed a total limit of [1.5%] for free-flowing agents and invited governments to comment on this proposed maximum. The delegation of France stated that in their opinion there was no technological need for the use of free-flowing agents in cocoa powder mixtures. Several other delegations indicated that the use of starch in these products would not be allowed under their existing national legislation. The Committee agreed to submit the following free-flowing agents: Tribalsim phosphate, calcium and magnesium phosphate and similar products, magnesium carbonate, silica gel and silicates as talc, calcium silicate, and sodium-calcium-silica aluminates, to the Codex Committee on food Additives for consideration and their reference to the Joint FAO/WHO Expert Committee on food Additives for

technological evaluation and specific fixations of identity and purity to be established. The Committee was informed that an acceptable daily intake figure had been established for magnesium carbonate.

#### 9. Hygiene Requirements

The Committee agreed that there were no special problems involved in the hygienic requirements for chocolate and cocoa products which would not be covered by the General Principles of food Hygiene currently under consideration by the Codex Committee on food Hygiene. Cocoa and chocolate products should not contain harmful substances or micro-organisms which would endanger the health of the consumer.

#### 10. Heavy Metals and Contaminants

The Committee took note of the recommendations of the Joint FAO/WHO Expert Committee on food Additives concerning overall general limits in food for Arsenic – 1 mg/kg, Lead – 0.1 mg/kg and Copper – 10 µg/kg. The Committee decided to request information from governments on the levels of heavy metals found in cocoa and chocolate products and requested the Secretariat to transmit this information to the Office International du Cacao et Chocolat. The OICC was requested to prepare a paper on this subject for consideration by the Committee at its next session. Several delegations were of the opinion that the natural content of copper and lead in dried cocoa nib would be found to be higher than the overall limits proposed by the Expert Committee. In particular the limit for lead contamination did not appear to be technologically attainable in food and a number of countries had a general limit of the order of 1 mg/kg with specific exemptions from this limit for certain foods in which the natural content of lead exceeds 1 mg/kg. It was suggested that the FAO/WHO Expert Committee on Food Additives be requested to give further consideration to the problem of lead in food.

#### 11. Pesticide Residues

The Committee agreed that tolerances established by the Codex Committee on Pesticide Residues should apply to cocoa and chocolate products. It would be necessary for the Codex Committee on Pesticide Residues to examine both residues arising from pre and post harvest treatment of cocoa beans. It was agreed to forward the working paper of the U.K. delegation on pre-harvest treatment of cocoa beans to the Codex Committee on Pesticide Residues together with any other information which the OICC and delegations were able to supply on the subject of pesticide residues in cocoa and chocolate products.

#### 12. Labelling

The Committee took note that the Codex Committee on Food Labelling would be re-examining the General Standard for Food Labelling in the light of government comments. The question of the need for the declaration of ingredients for cocoa products and chocolate covered by Codex Standards was briefly discussed. Some delegations were in favour of a complete declaration of ingredients. Other delegations thought that a declaration of ingredients was unnecessary for a standardized product. The Committee agreed to postpone discussion of this matter until the Codex Committee on Food Labelling had re-examined the General Standard for Food Labelling and the provisions relating to declaration of ingredients were available for consideration by the Committee at its next session.

## STANDARDS AT STEP 5 OF CODEX PROCEDURE FOR THE ELABORATION OF STANDARDS

### 13. Cocoa (Cacao) Beans – Standard No.1

The Committee agreed to retain the proposed moisture limitation at 7% and qualified the meaning of "merchantable quality" in the text to mean the requirements at least of Grade 2 of the FAO Model Ordinance and Code of Practice for Cocoa Beans. (See Appendix 3 to the Report for the FAO Model Ordinance and Code of Practice) The revised text of the Standard for Cocoa Beans agreed upon by the Committee is contained in Appendix 2 to the Report.

### 14. Cocoa (Cacao) Nib – Standard No.2

The Committee agreed that the Standard did not require any amendment other than the consequential change to the footnote as a result of the Committee's decisions concerning alkalizing agents. The delegation of Prance stated that in their opinion the Standard should require the product to be free from germ as well as shell. The revised text of the Standard for Cocoa (Cacao) Nib agreed upon by the Committee is contained in Appendix 2 to the Report.

### 15. Cocoa (Cacao) Mass – Standard No.3

The Committee agreed that this was a definition and not a standard of composition for this intermediate product. The product of a similar nature which was sold directly to the consumer as a "cooking or unsweetened chocolate" would be dealt with specially in relation to the Standard for chocolate- The text of the definition as approved by the Committee is contained in Appendix 2 to the Report.

### 16. Cocoa Press Cake – Standard No.5

The Committee agreed that this was a definition and not a standard of composition. The text of the definition as approved by the Committee is contained in Appendix 2 to the Report.

### 17. Cocoa Powder or Cocoa – Standard No.6 and low-fat Cocoa Powder or low-fat Cocoa – Standard No.7

The Committee examined the question of maximum moisture content in Standards Nos. 6 and 7. The delegations of the U.S.A. and Switzerland considered that a moisture limit of 9% might permit the development of mould in these products. It was pointed out that in the case of low-fat cocoa powders the moisture content could be over 8% when the relative humidity of the atmosphere was above 65%. The text of Standards Nos. 6 and 7 as agreed upon by the Committee are contained in Appendix 2 to the Report.

### 18. Sweetened Cocoa Powder or Sweetened Cocoa – Standard No.8 and Sweetened Low-fat Cocoa Powder or Sweetened Low-fat Cocoa – Standard No.9

The Committee examined Standards Nos. 8 and 9 and recommended that a footnote should accompany these Standards, when they were considered by the Codex Alimentations Commission and Governments, referring to the Committee's decisions concerning Sugars in paragraph 3 of this Report. The texts of Standards Nos. 8 and 9, as agreed upon by the Committee, are contained in Appendix 2 to the Report.

19. Cocoa Butter – Standard No.4

The Committee examined, in the light of the comments received from Governments, the three texts for Cocoa Butter proposed at its previous session. The Committee agreed that the three types of cocoa butter should be clearly described in order to inform the purchasers of the nature of these products, and that the first type could be described as 'press cocoa butter'. The United States delegation suggested as further names for these products 'Solvent extracted cocoa butter. and 'whole bean cocoa butter'. It was further agreed that the texts should be amended to make optional the declaration of deodor- station if the products had been deodorized. In the light of the foregoing decisions the Committee discussed the following propositions:

- (a) whether press cocoa butter only should be permitted as an ingredient of chocolate, or
- (b) whether press cocoa butter, and solvent extracted cocoa butter (with or without provision as to refining) should be permitted as ingredients of chocolate, or
- (c) whether press cocoa butter, solvent extracted cocoa butter (with or without provision as to refining) and whole bean cocoa butter should be permitted as ingredients of chocolate.

The views of all delegations present at the discussion were sought on the above propositions and can be summarized as follows. Six delegations were of the opinion that press cocoa butter, solvent extracted cocoa butter and whole bean cocoa butter should be permitted as ingredients of chocolate. because they thought that from the point of view of the consumer of choc- late the inclusion of these three types of cocoa butter in no way affected the quality of the product which would be amply safeguarded by the compo- sit ional requirements of the Standards for chocolate Moreover, analytical methods were not available at the present time which would in every case enable the identification in chocolate of the original method of preparation used for these cocoa butters. Five delegations were of the opinion that press cocoa butter and solvent extracted cocoa butter (without provision to allow the refining of the product) only should be permitted as ingredients of chocolate because to permit refined whole bean cocoa fat in chocolate may open the door for the introduction of substitute fats and involve the risk that from the point of view of the consumer hygienic conditions might not always be respected. The delegation of Ghana pointed out that there should be no problems concerning the hygienic conditions of cocoa beans if they conformed to the requirements of the FAO Model Ordinance other than any unavoidable natural impurities in the beans. One delegation was of the opinion that press cocoa butter and solvent extracted cocoa butter (including the provision to permit the refining of the product) should be permitted as ingredients of chocolate, and one other delegation was of the opinion that press cocoa butter only should be permitted in chocolate. A further delegation abstained from expressing any opinion on the above propositions. The Committee decided to bring the revised texts contained in Appendix 2 to the Report for cocoa butter to the attention of the Codex Alimentary Commission, together with the draft specifications for cocoa butter contained in document SP 10/37-Format, Annex III. The specifications for cocoa butter are contained in Appendix 2. It was recognized that governments would need to consider the compositional requirements for cocoa butter in the light of the General Standard for Fats and Oils prepared by the Codex Committee on Fats and Oils.

20. Cocoa Powder Mixtures including Low-fat Cocoa Powder Mixtures - Standard No.10

The Committee agreed that the list of ingredients should be definitive and was amended as indicated in Appendix 2 to this Report. It was agreed to refer the problem of the use of vitamins in this product to the Codex Committee on Dietetic Foods. It was also pointed out that this product was outside the scope of the Code of Principles on Milk and Milk Products.

21. Chocolate – Standard No.12

The Committee agreed that the Standard should provide for a minimum of 14% fat-free cocoa solids. The United States delegation pointed out that the Standard did not provide for sweet, bitter-sweet and semi-sweet chocolate which had been consumed for many years in the United States. The U.K. delegation said that if a satisfactory provision could be made for unsweetened chocolate and for these products he thought it might also provide a solution to the question of blended products and would also enable the U.K. to accept the figure of 14% for chocolate. The delegation of the U.K. in collaboration with Ireland, Canada and the U.S.A. agreed to submit draft Standards for these products for consideration at the Committee's next session. The delegations of Austria and U.S.A. indicated that in their opinion the starting material should be cocoa liquor rather than cocoa press cake and cocoa butter. The revised text of the Standard agreed upon by the Committee is contained in Appendix 2 to the Report.

22. Milk Chocolate and Skimmed Milk Chocolate - Standard No.13

The majority of the Committee favored a minimum 25% cocoa solids in the product. The delegations of the U.K., Sweden and Ireland held the view that this limit should be reduced to 20% cocoa solids. The written comments of Cuba and Denmark also supported the lower limit. The delegations of Austria and the U.S.A. favored a raising of the level of the minimum of 5% of fat-free cocoa solids. The delegations of the U.K, Sweden and Ireland stated they would prefer no limitation on the maximum sugar content in these Standards or at a raising of the maximum to 60% to accommodate consumer taste. The majority of the Committee were opposed to any increase in the maximum allowed for sugar content. The delegation of the U.S.A. informed the Committee that their national Standards required a more stringent provision in respect of the ratio of 1.20 to 2.43 of fat-free milk solids to milk fat than that proposed in the Standard. The text of the Standard as agreed upon by the Committee is contained in Appendix 2 to the Report.

23. Cream Chocolate - Standard 14

The Committee discussed a written proposal submitted by the Government of Denmark concerning the upper limit of 14% fat-free milk solids. The Committee agreed that the text of the Standard should be left unchanged and is contained in Appendix 2 to the Report.

24. Couverture Chocolate (including Dark Couverture Chocolate - former Standard 16) – Standard 15

The Committee discussed whether it was necessary to require a minimum cocoa butter content of 31% in view of recent technological developments. It was agreed to place the proposed limit of [31%] within square brackets, and the delegation of the United Kingdom undertook to circulate to all delegations before the next session of the Committee a paper indicating the technological reasons for not requiring a minimum

cocoa butter content as high as 31%. The text of the Standard is contained in Appendix 2 to the Report.

25. Milk Couverture Chocolate – Standard 17

The Committee agreed that this Standard required consequential amendment in the light of the Committee's decisions concerning Milk Chocolate and Couverture Chocolate. The revised text of the Standard is contained in Appendix 2 to the Report.

26. Chocolate Vermicelli and Chocolate Flakes – Standard No.18, and Milk Chocolate. Vermicelli and Milk Chocolate Flakes- Standard No.19

The Committee agreed to leave the texts of these Standards unchanged and they are contained in Appendix 2 to the Report. The delegations of Austria and the U.S.A. considered that the composition of these products should be the same as for Chocolate and Milk Chocolate.

27. Composite Chocolate Products – Standard No. 20

The Committee decided that requirements of this Standard should be confined in respect of the replacement of cocoa constituents to the provision of Standards 12 to 17. The revised text of the Standard is contained in Appendix 2 to the Report.

28. Flavoured Chocolate Products – Standard No. 20A

The Committee re-affirmed that this Standard should refer to the requirements of Standards 12 to 19. The Committee also agreed that this Standard did not refer to the use of flavours such as vanilla which are traditionally used in the industry to produce what is commonly regarded as chocolate flavour, except when such large amounts were used that the character of the product was greatly altered. The revised text of the Standard is contained in Appendix 2 to the Report.

29. Filled Blocks – Standard No.21

Delegates were requested to bring to the next session of the Committee samples of the products which they produce and consider to be within the scope of such a Standard, as proposed in Standard No.21. Delegates were also requested to submit written proposals as to the definition of their products so that a full consideration of this subject could be undertaken at the next session.

Edible Fats (other than Cocoa Butter)

30. The Committee had before it a paper prepared by the U.K. delegation on this subject. The Committee agreed to defer consideration of this matter. In particular the delegates of cocoa bean producing countries wished to study further the possible economic consequence of such a proposal to use edible fats other than cocoa butter. The views of countries were to be sought upon the U.K. paper by the Secretariat in advance of the next session.

Format of Codex Standards

31. The FAO Secretariat was authorised to present the Standards for Chocolate and Cocoa Products in a Codex Format to be drawn up by the Executive Committee of the Codex Alimentarius Commission. This would not entail any change of substance of the Standards agreed upon by the Committee during its deliberations at its fifth session in Lugano.

### Re-work of Chocolate and Cocoa Products

32. The delegation of the U.K. drew the attention of the Committee that their paper on this subject had not yet been considered although it had been presented to the Committee at its fourth session. It was agreed to take up this subject at the next session and the U.K. delegation would circulate to all delegations a revised paper.

### Scope of the Committee's activities

33. The delegation of the U.K. proposed that the Committee should not include within its scope of work the products of the biscuit, flour confectionery or ice-cream industries or dietetic products. It was agreed to discuss this subject at the next session, taking into account the application to these products of the General Standard for Food Labelling.

Codex Committee on Cocoa Products and ChocolateFifth Session, Lugano. 9-12 May 1967List of Participants

- Chairman: Prof. Dr. O. Högl, Codex Alimentarius, Taubenstrasse 18, Berne.
- Delegates:
- Austria: Dipl. Ing. O. Riedl, Verband der Süswarenindustrie Oesterreichs, Felix Mottistrasse 50, Vienna.
- Canada: Mr. D.H. Burns, Department of Trade and Commerce, Ottawa  
Mr. G.R. Maybee, Fry-Cadbury Ltd. Montreal 34, Quebec.
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Ms. A. Renault, Chambre syndicale nationale des Chocolatiers, 194, rue de Rivoli, Paris 1er.  
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- Germany:  
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Sweden:

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Mr. A. Massarotti, chimiste cantonal, Via Ospedale 6, Lugano.

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Dr. J. Kleinert, Chocolats Lindt & Sprungli SA, Kilchberg/ZH.

Dr. O. Schetty, Chocolat Suchard SA, Neuchâtel-Serrières.

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Mr. H.F. Bamford, John Mackintosh & Sons Ltd., Chapel Field, Norwich, Nor. 43A.

Mr. K.J. Gardner, Mars Ltd., Dundee Road, Trading Estate, Slough, Bucks.

Dr. G.R. Howat, Cadbury Bros. Ltd., Bournville, Birmingham 30.

Mr. D.M. Lacy, Cocoa Chocolate and Confectionery Alliance, 11 Green Street, London, W. I.

United States:

Mr. L.M. Beacham, Director Division of Food Standards and Additives, Bureau of Science, Food and Drug Administration, Washington, D.C. 20204

Mr. B. Mintener, Executive Director, Chocolate Manufacturers Association of the USA, Washington, D.C. 20006, 1812 K Street, NW.

Mr. E.W. Meyers, Director Research of the Hershey Chocolate Corporation, Hershey Research Lab. Box Hershey 54, Pa.

Yugoslavia:

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Observers:

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Dr. D.M. Smith, FAO, Via delle Terme Di Caracalla, Rome.

STANDARDS AT STEP 5 OF THE PROCEDURE FOR THE  
ELABORATION OF CODEX STANDARDS

Standard 1 – Cocoa (Cacao) Beans

Cocoa beans are the seeds of the cocoa tree (*Theobroma cacao* L). They shall be fermented, dried, and of merchantable quality\*, in particular practically free from foreign odours or flavours and from any foreign matter. The moisture content of cocoa beans must not exceed 7% at the time of arrival in the importing country or on delivery when used in the country producing the cocoa beans.

\* The Committee understood that 'merchantable quality' in this standard should conform to at least the requirements of Grade 2 of the FAO Draft Model Ordinance and Code of Practice for Cocoa Beans.

Permitted Food Additives

A. The following alkalizing agents may be permitted in the treatment of this product:

Hydroxides or carbonates of ammonium, sodium, potassium or magnesium to an amount equivalent to 5% anhydrous potassium carbonate calculated on the fat-free dry matter.

B. The following neutralizing agents may be permitted in the treatment of this product:

Citric and tartaric acid, up to a level of 0.5%.

Standard 2 – Cocoa (Cacao) Nib

Cocoa nib is the product obtained from roasted or unroasted cocoa beans which have been cleaned and freed from shells as thoroughly as is technically possible. In any case, it shall contain, calculated on the fat-free dry matter, not more than: 4% cocoa shell, 10% ash, or 14% when treated with alkalizing agents, 0.3% ash insoluble in hydrochloric acid.

Permitted Food Additives

A. The following alkalizing agents may be permitted in the treatment of this product:

Hydroxides or carbonates of ammonium, sodium, potassium or magnesium to an amount equivalent to 5% anhydrous potassium Carbonate calculated on the fat-free dry matter.

B. The following neutralizing agents may be permitted in the treatment of this products:

Citron and tartaric acid, up to a level of 0.5%.

Standard 3 – Cocoa (Cacao) Mass

Cocoa mass is the product obtained by mechanical disintegration of cocoa nib without abstraction or addition of any of its constituents.

Permitted Food Additives

A. The following alkalizing agents may be permitted in the treatment of this product:

Hydroxides or carbonates of ammonium, sodium, potassium or magnesium to an amount equivalent to 05%

anhydrous potassium carbonate calculated on the fat-free dry matter.

B. The following neutralizing agents may be permitted in the treatment of this product:

Citric and tartaric acid, up to a level of 0.5%.

Standard 4 – Cocoa Butter

I. Scope: This standard covers cocoa butter as defined specifically below but it shall not include the fat obtained from cocoa material containing more than the natural proportion of shell and/or germ fat.

II. Description:

(1) Press Cocoa Butter is the fat which is obtained by pressure from cocoa nib or cocoa mass (cocoa liquor). It can be separated from suspended matter by filtering and centrifuging. If the fat has been deodorized by steam and/or vacuum then the designation of the fat shall include the term 'deodorized'.

(2) Cocoa Butter is the fat obtained from cocoa nib, cocoa mass (cocoa liquor), cocoa press cake or cocoa powder by solvent extraction and/or pressure (solvents to be specified later). The fat may be refined by all the normal processes of fat refining. If the fat has been deodorized by steam and/or vacuum then the designation of the fat must include the term 'deodorized'.

(3) Cocoa Butter is the fat obtained from whole cocoa beans by pressure or by solvent extraction (solvents to be specified later). This fat shall not contain more than the proper percentage of shell and/or germ fat occurring naturally in cocoa beans. The fat may be refined by all the normal processes of fat refining. If the fat has been deodorized by steam and/or vacuum then the designation of the fat must include the term 'deodorized'.

III. Composition and Minimum Quality Requirements

(1) <u>Composition</u>	<u>Range</u>
Relative density (40°C/20°C)	0.898 – 0.904
Refractive Index ( $n_D$ 40°C)	1.453 – 1.459
Melting point	31 – 35°
Titre (°C) (Solidification range of the fatty acid)	45 – 50
Saponification value (mg. KOH per g. fat)	188 – 195
Unsaponifiable matter (%)	1% max.
Iodine value (Wijs)	35 – 43

(2) Quality Requirements

Colour: White to pale yellow

Odour and taste: Characteristic and free from foreign odours and tastes

Acid value (mg. KOH per g. fat): 4.0 max.

Peroxide value: (to be specified)

IV. Food Additives: None.

V. Contaminants – Maximum Limits:

(1) Pesticide residues

Tolerances to be established by the Codex Committee on Pesticide Residues, particularly for chlorinated pesticides in fats and oils generally and specifically.

(2) Solvent residues

Tolerances to be established by the Codex Committee on food Additives - permitted solvents to be specified.

(3) Other contaminants [as for other fats]

The following maximum limits, by weight, shall apply:

Matter volatile at 105°C	0.2 per cent
Impurities insoluble in hexane	0.05 per cent
Iron	0.5 p.p.m.
*Copper	0.4 p.p.m.
*Arsenic	0.1 p.p.m.
*Lead	0.1 p.p.m.

\* The limits for Copper Arsenic and Lead should fall within any overall limits specified for all foods by the Codex Committee on Food Additives. The proposed limits are put forward as technologically suitable.

VI. Hygiene ; This product shall be manufactured in accordance with the General Principles of Food Hygiene and any other Code of Hygienic Practices which may be developed for either Cocoa and Chocolate Products or Fats and Oils.

VII. Weights and Measures Requirements; To be measured by weight.

VIII. Labelling; The provisions of the General Standard on Food Labelling apply, and the following specific provisions for this product in respect of food labelling are to be subject to endorsement by the Codex Committee on Food Labelling:

1. The name of the fat, which shall be Cocoa Butter for the product. The product described under II Description (I) may be labelled or described as "press cocoa butter". If the product has been deodorized by steam and/or vacuum, then the designation of the fat shall include the term "deodorized".
2. Country of origin.

IX. Methods of Analysis and Sampling; 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.

Methods of Analysis and Testing; The following methods [to be] recommended by this Committee or their proven equivalents should be used. Here IUPAC indicates Methods of the International Union of Pure and Applied Chemistry, F & O those adopted by the Codex Committee on Fats and Oils and OICC as above.

<u>Criterion</u>	<u>Method</u>
Relative density	F & O
Refractive index	IUPAC II.B.2
Melting point	OICC page 8b – E/1961
Titre (Solidification range of fatty acid)	IUPAC II.B.3.2
Saponification value	IUPAC (1964) II.D.2
Unsaponifiable matter	IUPAC (1964) II.D.5.2

Iodine value (Wijs)	IUPAC II.D.7.3
Organoleptic Examination (Colour, odour, taste)	OICC, page 2 – E/1963
Acid value	IUPAC II.D.1
Peroxide value	F & O
Pesticide residues	Codex Committee on Pesticide Residues
Matters volatile at 105°C	(OICC Determination of moisture 3 - E/1952)
Impurities insoluble in hexane	IUPAC (1964) II.C.2
Iron	F & O
Copper	F & O
Arsenic	F & O
Lead	F & O

Sampling: The Statistical Sampling Scheme and Physical Methods for Taking Samples from Analytical Methods of the Office International du Cacao et Chocolat (OICC), Sampling III, Cocoa Butter, Page 1 – E/1952 or its equivalent should be used.

#### Standard 5 – Cocoa Press Cake

Cocoa press cake is the product obtained by partial removal of fat from cocoa nib, cocoa mass by mechanical means.

#### Permitted Food Additives

A. The following alkalizing agents may be permitted in the treatment of this product:

Hydroxides or carbonates of ammonium, sodium, potassium or magnesium to an amount equivalent to 5% anhydrous potassium carbonate calculated on the fat-free dry matter.

B. The following neutralizing agents may be permitted in the treatment of this product:

Citric and tartaric acid, up to a level of 0.5%.

#### Standard 6 – Cocoa Powder or Cocoa

#### Standard 7 – Low-fat Cocoa Powder or Low-fat Cocoa

##### Standard 6

Cocoa powder or cocoa is the product obtained by mechanical transformation into powder of cocoa press cake. It must contain not less than 20% of cocoa butter, calculated on the dry matter and the moisture content must not exceed 9%.

##### Standard 7

Low-fat cocoa powder or low-fat cocoa is the product obtained by mechanical transformation of cocoa press cake into powder. It must contain not less than 8% but less than 20% of cocoa butter, calculated on the dry matter. The moisture content must not exceed 9%.

### Permitted Food Additives

A. The following alkalizing agents may be permitted in the treatment of this product:

Hydroxides or carbonates of ammonium, sodium, potassium or magnesium to an amount equivalent to 5% anhydrous potassium carbonate calculated on the fat-free dry matter.

B. The following neutralizing agents may be permitted in the treatment of this product:

Citric and tartaric acid, up to a level of 0.5%.

### Standard 8 – Sweetened Cocoa Powder or Sweetened Cocoa

### Standard 9 – Sweetened Low-fat Cocoa Powder or Sweetened Low-fat Cocoa

#### Standard 8

Sweetened cocoa powder or sweetened cocoa is a mixture of cocoa powder and sugar\* only. It must contain at least 32% of cocoa powder. No denomination including the word "chocolate", such as "Chocolate powder" (chocolat en poudre) shall be used for this product except in those countries where it is already being used to describe this type of product.

#### Standard 9

Sweetened low-fat cocoa powder or sweetened low-fat cocoa is a mixture of low-fat cocoa powder and sugar\* only. It must contain at least 32% of low-fat cocoa powder. This product must not be called "chocolate powder" (chocolat en poudre) or by any similar name.

\* Please see paragraph 3 of the Report of the Committee concerning Sugars .

### Permitted Food Additives

A. The following alkalizing agents may be permitted in the treatment of this product:

Hydroxides or carbonates of ammonium, sodium, potassium or magnesium to an amount equivalent to 5% anhydrous potassium carbonate calculated on the fat-free dry matter.

B. The following neutralizing agents may be permitted in the treatment of this product:

Citric and tartaric acid, up to a level of 0.5%.

### Standard 10 – Cocoa Powder Mixtures (including Low-fat Cocoa Powder Mixtures)

Cocoa powder mixtures are products made in powder, granular or agglomerated form, which are characterised by the ease and rapidity of their use. They consist of cocoa products and sugar, and may also include other products or substances.

A cocoa powder mixture consisting of a low-fat cocoa powder mixture cannot be described as "drinking chocolate" and if designated "low-fat" then the total content of fat of any description present shall be declared as a percentage by weight of the moisture-free substance.

They can contain: –

in respect of the cocoa content: cocoa powder, cocoa mass (cocoa liquor), low-fat cocoa powder, chocolate, milk chocolate

in respect of the sugar content: sucrose, dextrose, glucose syrup, invert sugar, lactose, maltose.

The following products or substances may be added: whole milk, skimmed milk, evaporated, condensed or dried whole or skimmed milk, cream, salt, emulsifiers\*, stabilizers\*, free-flowing agents\*.

\* See paragraph 8 of this Report.

The content of cocoa solids shall be not less than 20% by weight calculated on the dry matter.

If the preparation contains milk, or skimmed milk in any of the above- mentioned forms, the content of cocoa solids shall be not less than 10% by weight calculated on the total dry matter, nor less than 20% by weight after deducting the weight of dry milk or skimmed milk solids.

No denomination including the word "chocolate", such as "drinking chocolate", shall be used for these products except in those countries in which the consumer cannot be misled by it.

#### Permitted Food Additives

A. The following alkalizing agents may be permitted in the treatment of this product:

Hydroxides or carbonates of ammonium, sodium, potassium or magnesium to an amount equivalent to 5% anhydrous potassium carbonate calculated on the fat-free dry matter.

B. The following neutralizing agents may be permitted in the treatment of this product:

Citron and tartaric acid, up to a level of 0.5%.

#### Standard 12 – Chocolate

Chocolate is the homogeneous product obtained by an adequate process of manufacture from a mixture of cocoa nib (cocoa mass (cocoa liquor) , cocoa press cake, cocoa powder, low-fat cocoa powder) with sugar, with or without the addition of cocoa butter.

It must contain, calculated on the dry matter: not less than 14% fat-free cocoa solids, not less than 18% cocoa butter, and in total not less than 35% cocoa solids.

#### Standard 13 – Milk Chocolate and Skimmed Milk Chocolate

(A) Milk chocolate is the homogeneous product obtained by an adequate process of manufacture from a mixture of cocoa nib (cocoa mass (cocoa liquor), cocoa press cake, cocoa powder or low-fat cocoa powder) with sugar and milk solids, with or without the addition of cocoa butter.

It must contain, calculated on the dry matter: not less than 2.5% fat-free cocoa solids, in total not less than 25% cocoa solids, further not less than 3.5% milk fat, 10.5% fat-free milk solids in their natural proportion, 25% total fat. It must not contain more than 55% sugar.

(B) Skimmed milk chocolate must comply with the requirements for milk chocolate except insofar as the minima requirements of 3.5% milk fat and 10.5% fat-free milk solids may be replaced by a minimum total of 14% fat-free milk solids.

Chocolate conforming to these provisions must be designated "Skimmed Milk Chocolate".

#### Standard 14 – Cream Chocolate

Cream chocolate is the homogeneous product obtained by an adequate process of manufacture from a mixture of cocoa nib (cocoa mass (cocoa liquor), cocoa press cake, cocoa powder, low-fat cocoa powder) with sugar and cream solids, with or without the addition of cocoa butter and of other milk solids.

It must contain, calculated on the dry matter: not less than 2.5% fat-free cocoa solids, in total not less than 25% cocoa solids, not less than 7% milk fat, not less than 3%, but a maximum of 14% fat-free milk solids in their natural proportion, not less than 25% total fat. It must not contain more than 55% sugar.

#### Standard 15 – Couverture Chocolate (including Dark Couverture Chocolate

Couverture chocolate is the homogeneous product, suitable for covering purposes, obtained by an adequate process of manufacture from a mixture of cocoa nib (cocoa mass (cocoa liquor), cocoa press cake, cocoa powder, low-fat cocoa powder) with sugar, with or without the addition of cocoa butter. It must contain, calculated on the dry matter: not less than 35% cocoa solids, not less than [31%]\* cocoa butter. Couverture chocolate shall contain not less than 2.5% fat-free cocoa solids, and if it contains not less than 16% fat-free cocoa solids it may be designated "Dark Couverture Chocolate".

\* A number of delegations considered that the minimum cocoa butter content of 31% need not be this high in order to achieve a couvertures with a viscosity which would be satisfactory for covering purposes. Please see paragraph 24 of the Report.

#### Standard 17 – Milk Couverture Chocolate

(A) Milk Couverture chocolate is the homogeneous product, suitable for covering purposes, obtained by an adequate process of manufacture from a mixture of cocoa nib (cocoa mass (cocoa liquor), cocoa press cake, cocoa powder, low-fat cocoa powder) with sugar and milk solids, with or without the addition of cocoa butter. It must contain, calculated on the dry matter: not less than 2.5% fat-free cocoa solids, in total not less than 25% cocoa solids, further not less than 3.5%-milk fat, 10.5% fat-free milk solids in their natural proportion, [31%]\* total fat.

\* A number of delegations considered that the minimum total fat content of 31% need not be this high in order to achieve a couvertures with a viscosity which would be satisfactory for covering purposes. Please see paragraph 25 of the Report.

(b) Skimmed milk couverture chocolate must comply with the requirements for milk couverture chocolate insofar as the minima requirements of 3.5% milk fat and 10.5% fat-free milk solids may be replaced "by a minimum total of 14% fat-free milk solids. Chocolate conforming to these provisions must be designated "Skimmed Milk Couverture Chocolate".

#### Standard 18 – Chocolate Vermicelli and Chocolate Flakes

#### Standard 19 – Milk Chocolate Vermicelli and Milk Chocolate Flakes

#### Standard 18

Chocolate vermicelli and chocolate flakes are chocolate products in form of grains or flakes obtained by an adequate process of manufacture from a mixture of cocoa nib (cocoa mass (cocoa liquor), cocoa press cake, cocoa powder, low-fat cocoa powder) with sugar, with or without the addition of cocoa butter. They must contain, calculated on

the dry matter: not less than 12% fat-free cocoa solids, not less than 12% cocoa butter, and in total not less than 32% cocoa solids.

#### Standard 19

Milk chocolate vermicelli and milk chocolate flakes are milk chocolate products in form of grains or flakes obtained by an adequate process of manufacture from a mixture of cocoa nib (cocoa mass (cocoa liquor), cocoa press cake, cocoa powder, low-fat cocoa powder with sugar and milk solids, with or without the addition of cocoa butter.

They must contain, calculated on the dry matter: not less than 2.5% fat-free cocoa solids, in total not less than 20% cocoa solids, further not less than 3.5% milk fat, 10.5% fat-free milk solids in their natural proportion, 12.0% total fat. They must not contain more than 66% sugar.

#### Standard 20 – Composite Chocolate Products

- (a) These products when sold or described as chocolate products must contain not less than 60% by weight of chocolate as defined under Standards 12-17.
- (b) The ingredients named in the declaration must each be present in an amount greater than 5% (but in total must not exceed 40%).
- (c) Additions of one or more foodstuffs may be made without declaration provided that such additions singly or in total do not exceed 5% by weight.
- (d) No substance may be added to these products which would replace the cocoa constituents specified in Standards 12-17.

#### Standard 20A – Flavoured Chocolate Products

- (a) Flavoured chocolate must conform with the definitions of chocolate as provided in Standards 12-19 and must declare the characterizing flavour other than chocolate.
- (b) Foodstuffs which are specially aromatic and alter the character of a product even in small quantities must be declared.

FAO  
MODEL ORDINANCE AND CODE OF PRACTICE  
ON COCOA BEANS

As requested by the Fifth Session of the Codex Committee on Cocoa Products and Chocolate, this Appendix 3 contains for the information of Governments the FAO Draft Model Ordinance and Code of Practice on Cocoa Beans elaborated by the Second Session of the Working Party on Cocoa Grading, Paris 2–6 July, 1963. This Working Party was set up by the FAO Cocoa Study Group in accordance with the wishes of the Committee on Commodity Problems. FAO has received comments on the Model Ordinance from ten importing countries and seven exporting countries. In the light of these comments and the apparent measure of agreement among countries interested in the Ordinance, it has been suggested that a further meeting of the Working Party might be convened to finalize the Ordinance. The views of Members and Observers of the FAO Study Group on Cocoa are being currently sought on this and the best way to conclude this work. Meanwhile, the Draft Ordinance is attached to assist Governments and Members of the Codex Alimentary Commission in their considerations of Standard 1 – Cocoa Beans as contained in Appendix 2 to this Report.

DRAFT INTERNATIONAL COCOA STANDARDS  
MODEL ORDINANCE AND CODES OF PRACTICE

MODEL ORDINANCE

1. Definitions

"Adulteration" Alteration of the composition of graded cocoa by any means whatsoever so that the resulting mixture or combination is not of the grade prescribed, or affects injuriously the quality or flavour, or alters the bulk or weight.

"Flat bean" a cocoa bean from which the cotyledons are absent or are too thin to be out to give a surface of cotyledon.

"Foreign matter" any substance other than cocoa beans.

"Germinated bean" a cocoa bean the testa or seedcoat of which has been pierced, slit or broken by the growth of the seed germ.

"Insect-damaged bean" a cocoa bean, the internal parts of which are found to contain insects at any stage of development, or to show signs of damage caused thereby, which are visible to the naked eye.

"Mouldy bean" a cocoa bean on the internal parts of which mould is visible to the naked eye.

"Slaty bean" a cocoa bean which shows a slaty colour on half or more of the surface exposed by a cut made lengthwise through the centre.

"Smoky (hammy) bean" a cocoa bean which has a smoky smell or taste or which shows signs of contamination by smoke. Badly tainted smoky beans are described as hammy beans.

"Thoroughly dry cocoa" cocoa which has been evenly dried throughout. The moisture content must not exceed 8.0 percent.<sup>1</sup>

<sup>1</sup> This limit takes into consideration unfavourable climatic conditions in some producing countries. It is hoped that within a reasonable time a lower limit will become acceptable by all producing countries as the result of the use of improved drying and storage techniques.

2. Merchantable Quality

Merchantable quality cocoa beans must be fermented, thoroughly dry, uniform in SIZE<sup>2</sup> and free from smoky (hammy) beans and all foreign odours or flavours, foreign matter and any evidence of adulteration.

<sup>2</sup> "Uniform in size", as a guide not more than 10 percent of the beans should be outside the range of plus or minus one-third of the average weight.

3. Grade Standards

Cocoa shall be graded on the basis of the count of defective beans in the cut test. Defective beans shall not exceed the following limits:

- Grade I – (a) mouldy beans, maximum 3 percent by count;  
(b) slaty beans, maximum 3 percent by count);  
(c) insect-damaged, germinated, flat or otherwise defective beans, total maximum 3 percent by count.

- Grade II – (a) mouldy beans, maximum 4 percent by count;  
(b) slaty beans, maximum 8 percent by count;  
(c) insect-damaged, germinated, flat or otherwise defective beans, total maximum 6 percent by count.

Note: When a bean is defective in more than one respect, it shall be recorded in one category only, the most objectionable. After mouldy beans, slaty beans are the most objectionable.

4. Sub-standard cocoa

All dry cocoa which fails to reach the standard of Grade II will be regarded as sub-Standard cocoa and so marked (SS).

5. Marking and Sealing

- (a) All cocoa graded shall be bagged and officially sealed. The bag or seal shall show at least the following information:

Country of origin, grade or "SS" if sub-standard, cocoa year and whether light or mid crop<sup>1</sup> and other necessary identification marks in accordance with established national practice.

<sup>1</sup> Absence of a crop indication means main crop.

- (b) The period of validity of the grade shall be determined by Governments in the light of climatic and storage conditions.

6. Recheck at Port of Shipment

Notwithstanding paragraph 5(b) above, all cocoa so graded shall be rechecked at port within seven days of shipment.

7. Implementation of Model Ordinance

Methods of sampling, analysis, bagging, marking and storage applicable to all cocoa traded under the above International Standards are set out in the attached Code of Practice.

CODE OF PRACTICE

A. Inspection

1. Cocoa shall be examined in lots, not exceeding 25 tons in weight.
2. Every parcel of cocoa shall be grade marked by an inspector, after determining the grade of the cocoa on the basis of the cut test (see paragraph C below).

Grade marks shall be in the form set out in, and shall be affixed according to, Section ..... of.....<sup>1</sup> and shall be placed on bags by means of a stencil or stamp (see also paragraph E below).

<sup>1</sup> i.e. the appropriate reference in national regulations

B. Sampling

1. Samples for inspection and analysis should be obtained:
  - (a) from cocoa in bulk, by taking samples at random from the beans as they enter a hopper or from the top, middle and bottom of beans

spread on tarpaulins or other Clean, dust-free surface, after they have been thoroughly mixed;

- (b) from cocoa in bags by taking samples at random from the top, middle and bottom of sound bags using a suitable stab-sampler to enter closed bags through the meshes of the bags, and to enter unclosed bags from the top.
2. The quantity of samples to be taken should be at the rate of not less than 300 beans for every ton of cocoa or part thereof, provided that in respect of a consignment of one bag or part thereof, a sample of not less than 100 beans should be taken.
3. For bagged cocoa, samples shall be taken from not less than 30 percent of the bags, i.e. from one bag in every three.
4. For cocoa in bulk, not less than five samplings shall be taken for every ton of cocoa or part thereof.
5. In importing countries samples for inspections should be taken from not less than 30 percent of each lot of 200 tons or less, i.e. from 1 bag in 3 . Samples should be taken at random from the top, the middle and the bottom of the bag.

C. The Cut Test

1. The sample of cocoa beans shall be thoroughly mixed and then "quartered" down to leave a heap of slightly more than 300 beans. The first 300 beans shall then be counted off. irrespective of size, shape and condition.
2. The 300 beans shall be out lengthwise' through the 'middle and examined.
3. Separate counts shall be made of the number of beans which are defective in that they are moldy, salty, insect damaged, germinated, flat or other- wise defective. Where a bean is defective in more than one respect. only one defect shall be counted, and the defect to be counted shall be the defect which occurs first in the foregoing list of defeats.
4. The examination for this test shall he carried out in good daylight or equivalent artificial light, and the results for each kind of defect shall be expressed as a percentage of the 300 beans examined.

D. Bagging

1. Bags should be clean, sound and properly sewn. Cocoa should be shipped only in new bags.

E. Sealing and marking

1. After grading, each bag should he sealed with the individual examiner's seal. The grade should he clearly marked on each bag. Bags should also he clearly marked to show the grading station and period of grading (week or month).

For these purposes the following measures shall be carried out

- (a) Suitable precautions will be taken in the distribution and use of examiners' seals to ensure that they cannot be used by any unauthorized person.
- (b) Parcels shall be numbered consecutively by the official examiner with lot numbers from the beginning of each month. The parcel number or lot number will be stencilled on each bag in every parcel examined, in the corner nearest the seal.
- (c) Grade marks will be stencilled near the mouth of the bag.

F. Storage

1. Cocoa shall be stored in premises constructed and operated with the object of keeping the moisture content of the beans as low as possible, consistent with local conditions, and in any case not above 8.0 percent.  
Storage shall be on gratings or deckings which allow at least 7 cm of air space above the floor.
2. Measures shall be taken to prevent infestation by insects, rodents and other pests.
3. Bagged cocoa shall be so stacked that:
  - (a) each grade and shipper's mark is kept separate by clear passages of not less than 60 cm. in width, similar to the passage which must be left between the bags and each wall of the building;
  - (b) disinfestation by fumigation (e.g. with methyl bromide) and/or the careful use of acceptable insecticide sprays (e.g. those based on Pyrethrin) may be carried out where required; and
  - (c) contamination with odours or flavours or dust from other commodities, both foodstuffs and materials such as kerosene, cement or tar, is prevented.
4. Periodically during storage and immediately before shipment, the moisture content of each lot should be checked to ensure that it does not exceed 8.0 percent. The use of a moisture meter is recommended for this purpose <sup>1</sup>.

<sup>1</sup> The operation of moisture meters must be checked at intervals with a laboratory reference method based on loss of weight on drying. Accurate weighing before and after drying enables the percentage of moisture in the beans to be calculated.

G. Infestation

1. Cocoa beans may be infested with insects which have not penetrated the beans and whose presence is not revealed by the cut test which is employed for grading purposes. Such insects may subsequently enter beans or they may be involved in cross infestation of other shipments.
2. Therefore, when the cocoa is rechecked at port before shipment, as provided under paragraph 6 of the Model Ordinance, it should also be inspected for infestation by major insect pests. If it is found to be seriously infested it should, before shipment, be fumigated, or otherwise treated to

kill the pests. Care should be taken to avoid cocoa beans becoming infested in ships and stores from other commodities or with insects remaining from previous shipments.

3. If the use of insecticides or fumigants is necessary to control infestation, the greatest care must be exercised in their choice and in the technique of their application to avoid incurring any risk of tainting or the addition of toxic residues to the cocoa. Governments should prohibit the use of fumigants which affect the flavour of cocoa beans, or the residues of which may have accumulative toxic effects; and should establish the necessary administrative organization to enforce the regulations.
4. Rodents should as far as possible be excluded from cocoa stores by suitable rodent proof construction, and where direct measures are necessary to control rodents the greatest care must be taken to prevent any possibility of contaminating the cocoa with substances which may be poisonous.