JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEX ALIMENTARIUS COMMISSION
Twenty-eighth Session
Rome, Italy, 4 - 9 July 2005
REPORT OF THE TWENTY-SECOND SESSION OF THE
CODEX COMMITTEE ON PROCESSED FRUITS AND VEGETABLES
Washington D.C., U.S.A., 27 September - 1 October 2004

CONSIDERATION OF PROPOSED CODEX STANDARDS AT STEP 4

PROPOSED DRAFT CODEX STANDARD FOR PROCESSED TOMATO CONCENTRATES (Agenda Item 4a)[8]

23. The Committee revised the proposed draft Standard section by section and agreed on the following amendments:

Section 1 - Scope

24. The Committee included a reference to cover processed tomato concentrates for catering purposes and for repacking, as well as for consistency with other Codex standards for processed fruits and vegetables. It deleted "(excluding the Section 3.2.8 and the Section 7)" as it was more appropriate to refer to these exclusions under relevant sections (see paras. 36 and 40).

Section 2.1 - Product Definition

25. The Committee deleted the numbering of Section 2.1.1 for consistency with the format of other Codex standards for processed fruits and vegetables. It agreed that it was more appropriate to refer to "juice or pulp" instead of "liquid". In addition, it noted that both *Lycopersicum esculentum* P. Mill and *Lycopersicon esculentum* P. Mill applied as scientific names for tomato.

26. The Committee reorganized the text in Section 2.1 into two sections as follows:

i. Section 2.1 Product Definition, to include points (a) and (b) and the sentence in Section 2.1.4
ii. Section 2.2 Product Designation, to include the sentence "Tomato concentrate may be considered 'Tomato Puree' or 'Tomato Paste' when the concentrate meets these requirements" and the description related to Tomato Puree and Tomato Paste.

27. The Committee put in square brackets all concentration values of tomato soluble solids for further discussion at its next Session with the understanding that proposals for changing these values should be justified. It also inserted a footnote to clarify that the all concentrations of soluble solids were measured on the product without added salt.

Section 3.1.1 - Optional Ingredients

28. The Committee agreed to refer to “edible aromatic plants” for consistency with other Codex standards for processed fruits and vegetables. For clarity, it agreed to refer to water only and the wording related to the modality of water use was deleted. Other delegations proposed the addition of sugars under this Section.

Section 3.2 - Quality Criteria

29. The Committee amended the first sentence to specify that processed tomato concentrate should have “good flavour and odour, fairly good red colour” and should posses “a homogeneous (evenly divided) texture characteristic of the product”. It noted the concern of some delegations that the flavour could be altered by the addition of spices and edible aromatic plants. The sections on colour, texture and flavour were deleted as redundant and the other sections were renumbered accordingly.

30. The Committee agreed to reorganize the texts in sections 3.2.4 “Defects”, 3.2.5 “Lactic Acid”, 3.2.6 “Mould Count” in two new sections: 3.2.1 “Definition of Defects” and 3.2.2 “Defects and Allowances” for consistency with the format of other Codex standards for processed fruits and vegetables.

31. In Section 3.2.1 “Definition of Defects”, the Committee clarified that: i) processed tomato concentrate should be prepared in accordance to Good Manufacturing Practices; and, ii) the product should be practically free of objectionable tomato peel and practically free of seeds or particles of seeds.

32. In Section 3.2.2 “Defects and Allowances”, the Committee included all measurable defects for which tolerances could be set, namely: 3.2.2.1 “Mineral Impurities”; 3.2.2.2 “Lactic Acid”; and, 3.2.2.3 “Mould Count”. The Committee added a new Section 3.2.2.4 “pH” in which a pH value of 4.6 was put in square brackets for further discussion at its next Session. The Committee

also added a footnote to clarify that mineral impurities referred to sand, soil, and other similar materials no covered by the Section on Contaminants.

33. The Committee noted that lactic acid was the most important parameter to measure the quality of the raw material and of the processing of tomato concentrate.

34. With regard to mould count, the Committee noted that tolerance for mould count differed among various country legislations and that it would be difficult to compromise on a value. It agreed to replace the current text with a new sentence allowing for the mould count to be set according to the national legislation of importing countries. In noting the concern of some countries that a value for mould count would ensure transparency and harmonization and would assist in particular those countries which did not have provisions for mould count in their legislation, the Committee put the entire new sentence in square brackets for further discussion at its next Session.

Section 3.2.8 - Lot Acceptance

35. The Committee noted that the 27th Session of the Codex Alimentarius Commission had adopted the Codex General Guidelines on Sampling (CAC/GL 50-2004) and that the Codex Standard on Sampling Plans for Prepackaged Foods (AQL 6.5) (CODEX STAN 233-1969) had been withdrawn. In view of this, the Committee agreed to refer the Codex General Guidelines for Sampling and to keep the Acceptable Quality Level (AQL) = 6.5 as widely used and proved valid. The Committee noted that the Codex General Guidelines did not provide for specific sampling plans and therefore, agreed to retain the Sampling Plans 1 (Inspection Level I, AQL = 6.5) and 2 (Inspection Level II, AQL = 6.5) of the revoked Sampling Plans (CODEX STAN 233-1969) and to annex them to the proposed draft Standard. The Committee agreed to apply this decision to Codex standards for processed fruits and vegetables when appropriate (see para. 102).

36. In accordance to its previous decision (see para. 24), the Committee clarified that the acceptance criteria did not apply to non-retail containers.

Section 4 - Additive (4.1 Acidity Regulators)

37. In accordance with its previous decision (see para. 18), the Committee agreed to list individual provisions for food additives and to include citric acid and citrates at a maximum

level limited by GMP. The Committee did not retain the other acidity regulators included in the Codex Standard for Processed Tomato Concentrates (CODEX STAN 57-1981) because: i) malic acid and L-tartaric acid were no longer used in the tomato concentrate industry, the first due to its low buffering capacity and high cost and the second because its taste was not compatible with tomato flavour; ii) lactic acid was not included as it was a quality parameter (see para. 30).

38. The Delegation of Sudan indicated that salt should be added in this Section. The Committee noted that within Codex salt (sodium chloride) was not considered as a food additive but as a food ingredient and therefore it could not be listed under this Section.

Section 5 - Contaminants

39. The Committee organized the Section into two sections to refer specifically to Pesticide Residues (Section 5.1) and Other Contaminants (Section 5.2) which included heavy metals and other contaminants such as mycotoxins. It considered necessary to take into account the concentration factor in the maximum level of residues as tomato concentrate was re-diluted when consumed in sauce. Therefore, the following sentence was added in the two sections “The value of maximum levels must comply with NTSS (Natural Tomato Soluble Solids) content, with a reference value of 4.5 for fresh tomato”. The Committee agreed to ask the advice of the Codex Committee on Pesticide Residues and on Food Additives and Contaminants with regard to the concentration effect when setting maximum levels for residue of pesticides and contaminants.

Section 7 - Weight and Measures

40. In accordance with its previous decision (see para. 24), the Committee added a footnote to clarify that the provisions of Section 7 did not apply to non-retail containers.

Section 7.1 - Fill of Containers

41. The Committee clarified the first sentence of section 7.1.1 “Minimum Fill” to refer to flexible containers and, section 7.1.2 “Classification of ‘Defectives” to refer to rigid containers only.

42. The Committee rectified the first sentence of Section 7.1.1 “Minimum fill” to introduce

reference to rigid and flexible containers, associating the 90% level with rigid containers and specifying that the fill of flexible containers should not be prejudicial to the quality or presentation of the product nor to the required volume. The Committee decided to adapt Section 7.1.2 in the same manner.

Section 7.1.3 - Lot Acceptance

43. This Section was aligned with the text in Section 3.2.8 (see para. 35).

Section 8 - Labelling

44. For consistency with other Codex standards for processed fruits and vegetables, the numbering of Section 8.1 was deleted and the other sections renumbered accordingly.

Section 8.2 - Name of the Product

45. For consistency with the decision concerning product designations (see para. 26), the Committee deleted the text in point (c) and added a sentence to indicate that other denominations, usually employed in the country, accompanied by the declaration of the percentage of the natural tomato soluble solids could be used. In accordance with its previous decision (see para. 27), the Committee agreed to put in square brackets all the concentration values of tomato soluble solids.

Section 8.4 - Labelling of Non-Retail Container

46. The Committee revised the section for consistency with standardized language of other Codex texts.

Section 9 - Methods of Analysis and Sampling

47. See paras. 100 - 104.

<u>Status of the proposed draft Codex Standard for Processed Tomato Concentrates</u>

48. The Committee forwarded the proposed draft Codex Standard for Processed Tomato Concentrates to the Codex Alimentarius Commission for preliminary adoption at Step 5 (see

Appendix II).

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[8] CX/PFV 04/22/4 and comments submitted by Egypt, France, Iran, Malaysia, United States, Venezuela, the World Processing Tomato Council (CX/PFV 04/22/4-Add.1); Australia (CRD 2); Uruguay (CRD 4); Nigeria (CRD 5); Canada (CRD 7); EC (CRD 10); Thailand (CRD 11); and Cuba (CRD 20).

PROPOSED DRAFT REVISEDCODEX STANDARD FOR PROCESSED TOMATO CONCENTRATES

(AT STEP 5)

1. SCOPE

This Standard applies to the product as defined in Section 2 below and offered for direct consumption including for catering purposes or for repacking if required. This Standard also applies to the product when indicated as being intended for further processing. The Standard does not include the products commonly known as tomato sauce, chilli sauce, and ketchup, or similar products which are highly seasoned products of varying concentrations containing characterising ingredients such as pepper, onions, vinegar, etc, in quantity that materially alter the flavour, aroma and taste of the tomato components.

2. DESCRIPTION

2.1 PRODUCT DEFINITION

Processed tomato concentrate is the product:

(a) Prepared by concentrating the juice[1] or pulp obtained from substantially sound, mature red tomatoes (*Lycopersicon/Lycopersicum esculentum* P. Mill) strained or otherwise prepared to exclude the majority of skins, seeds and other coarse or hard substances in the finished product; and

(b) Preserved by physical means.

The tomato concentration shall be **[**7%**]** or more natural tomato soluble solids[2], but not dehydrated to a dry powder or flake form.

2.2 PRODUCT DESIGNATION

Tomato concentrate may be considered "Tomato Puree" or "Tomato Paste" when the concentrate meets these requirements:

2.2.1 "Tomato Puree" – Tomato concentrate that contains no less than **[**7%**]**, but less than **[**24%**]** of natural tomato soluble solids.

2.2.2 "Tomato Paste" – Tomato concentrate that contains at least **[**24%**]** of natural tomato soluble solids.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 COMPOSITION

3.1.1 Basic Ingredients

Processed tomato concentrate as defined in Section 2.1.

3.1.2 Optional Ingredients

(a) Salt (sodium chloride);

(b) Spices and edible aromatic plants (such as basil leaf, etc.) and their natural extracts;

(c) Lemon juice (single strength or concentrated) used as an acidulant; and

(d) Water.

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1 In this Standard, "juice" must not be intended as the fruit juice (including tomato juice) as defined in Codex General Standard for Fruit Juices and Nectars (under development).

2 The concentrations are measured on the product without added salt.

3.2 QUALITY CRITERIA

Processed tomato concentrates shall have good flavour and odour, fairly good red colour, and shall possess a homogeneous (evenly divided) texture, characteristic of the product.

3.2.1 Definition of Defects

Processed tomato concentrates shall be prepared in accordance with GMP, from such materials and under such practices that the product is substantially free of extraneous plant materials, this including other objectionable material and shall be practically free of mineral impurities.

Consistent with its intended use, these conditions are fulfilled when:

(a) the product is practically free of objectionable tomato peel;

(b) the product is practically free of seeds or particles of seeds;

(c) the presence of any extraneous plant material other than seed and peel and other than those used as seasonings cannot be detected by the naked eye, and can only be seen under microscope; and

(d) the product is practically free of dark specks or scale-like particles.

3.2.2 Defects and Allowances[3]

3.2.2.1 *Mineral impurities*

The mineral impurity content does not exceed 0,1% of the natural soluble solids content.

3.2.2.2 *Lactic Acid*

The content of lactic acid (total) does not exceed 1% of the natural tomato soluble solids content.

[3.2.2.3 *Mould Count*

Mould count for processed tomato concentrates to be set according to the national legislation of importing countries.]

3.2.2.4 *pH*

The pH must be [below 4.6.].

3.2.3 Classification of "Defectives"

A container that fails to meet the natural tomato soluble solids requirements, as set out in Sections 2.1.2 - 2.1.4, and/or one or more of the applicable quality requirements, as set out in Sections 3.2.1 through 3.2.5 should be considered a "defective".

3.2.4 Lot Acceptance

In accordance with the Codex General Guidelines on Sampling (CAC/GL 50-2004), a lot should be considered as meeting the applicable quality requirements referred to in Section 3.2 when:

(a) the number of "defectives", as defined in Section 3.2.7 does not exceed the acceptance number (c) of the appropriate sampling plan with a AQL of 6.5 (see Annex); and

(b) maximum allowance for mould count is not exceeded (see Section 3.2.6).

These acceptance criteria do not apply to non-retail containers.

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[3] Sand, soil and any other impurities insoluble in hidrocloric acid.

4. FOOD ADDITIVES

4.1 ACIDITY REGULATORS

INS No	Name of Food Additive	Maximum Level
330	Citric acid	Limited by GMP
331i	Sodium dihydrogen citrate	
331iii	Trisodium citrate	
332i	Potassium dihydrogen citrate	
332ii	Tripotassium citrate	
333	Calcium citrates	
380	Ammonium citrates	
380	Triammonium citrate	

5. CONTAMINANTS

5.1 PESTICIDE RESIDUES

5.1.1 The product covered by the provisions of this Standard shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this product.

5.1.2 The value of maximum levels must comply with natural total tomato solids content, with a reference value of 4.5 for fresh fruit.

5.2 OTHER CONTAMINANTS

5.2.1 The product covered by the provisions of this Standard shall comply with those maximum levels for contaminants established by the Codex Alimentarius Commission for this product.

5.2.2 The value of maximum levels must comply with natural total tomato solids content, with a reference value of 4.5 for fresh fruit.

6. HYGIENE

6.1 It is recommended that the product covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 4-2003), and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

6.2 The product should comply with any microbiological criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997).

7. WEIGHTS AND MEASURES[4]

7.1. FILL OF CONTAINER

7.1.1 Minimum fill

Flexible containers shall be filled as full as commercially practicable having regard for the concentration of the product. When packed in rigid containers, the product shall occupy not less than 90% of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20°C which the sealed container will hold when completely filled.

7.1.2 Classification of "Defectives"

A rigid container that fails to meet the requirement for minimum fill (90% container capacity) of Section 7.1.1 shall be considered a "defective".

7.1.3 Lot Acceptance

In accordance with the Codex General Guidelines on Sampling (CAC/GL 50-2004), a lot should be considered as meeting the requirements of Section 7.1.1 when the number of "defectives", as defined in Section 7.1.2, does not exceed the acceptance number (c) of the appropriate sampling plan with a AQL of 6.5 (see Annex).

8. LABELLING

The product covered by the provisions of this Standard shall be labelled in accordance with the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985, Rev. 1-1991). In addition, the following specific provisions apply:

8.1 NAME OF THE PRODUCT

The name of the product shall be:

(a) "Tomato Puree" if the food contains not less than **[**7%**]** but less than **[**24%**]** natural tomato soluble solids;

(b) "Tomato Paste" if the food contains not less than **[**24%**]** natural tomato soluble solids; or

(c) another denomination usually employed in the country accompanied by the declaration of the percentage of the natural tomato soluble solids.

8.2 DECLARATION OF THE PERCENTAGE OF NATURAL TOMATO SOLUBLE SOLIDS

The percentage solids may be included on the label in either of the following manners:

(a) The minimum percentage of natural tomato soluble solids (example: "Minimum Solids - 20%").

(b) A range within 2% of the natural tomato soluble solids (example: "Solids - 20% to 22%").

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[4] The provisions in this Section do not apply to non-retail containers.

8.3 LABELLING OF NON-RETAIL CONTAINERS

Information for non-retail containers shall be given on the container or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer, packer, distributor, or importer as well as storage instructions, shall appear on the container. However, lot identification, and the name and address of the manufacturer, packer, distributor, or importer may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

9. METHODS OF ANALYSIS AND SAMPLING

Provision	Level	Method	Principle	Type	Status	Recommendation	Note
Lactic acid (Section 3.2.5)	≤ 1% of the natural tomato soluble solids	To be determined					
Mineral impurities	< 60 mg/kg based on diluted product of 8% solids	AOAC 971.33	Ashing	IV	E		AOAC 971.33 is already contained in CX/STAN 234/1999[5] for the determination of mineral impurities in jams, jellies, and marmalades and processed tomato concentrates (Type I and IV respectively). The 22nd CCPFV agreed to recommend CCMAS to replace CAC/RM 49-1972 with AOAC 971.33 for the determination of mineral impurities (sand) (see Appendix VIII-Part I of this Report).
Mould count	National Legislation	965.41	Howard mould count	I			**ADDITION**: The 22nd CCPFV noted that this method better suited to processed tomato concentrates.

[5] Codex Standards and related texts are available for downloading at: http://www.codexalimentarius.net/search/advancedsearch.do.

Provision	Level	Method	Principle	Type	Status	Recommendation	Note
pH		ISO 1842:1991 (proposed as Codex General Method for processed fruits and vegetables)	Potentiometry	IV			See Appendix VIII-Part I of this Report.
Sodium chloride		ISO 3634:1979 - chloride expressed as sodium chloride - (Codex General Method for processed fruits and vegetables)	Potentiometry	III	E		AOAC 971.27 (Codex General Method) is already contained in CX/STAN 234/1999[5] for processed tomato concentrates (Potentiometry, Type II). The 24th CCMAS[6] endorsed ISO 3634:1979 (Potentiometry, Type III) as a general method for the determination of sodium chloride in processed fruits and vegetables. **REPLACE/UPDATE:** The 22nd CCPFV suggested to replace AOAC 971.27 with ISO 3634:1979.

[6] 24th CCMAS (November 2002), ALINORM 03/23, App. VI/H1.

Provision	Level	Method	Principle	Type	Status	Recommendation	Note
Tomato soluble solids	≥ 7	AOAC 970.59	Refractometry	I	E		AOAC 970.59 is already contained in CX/STAN 234/1999[5] for processed tomato concentrates.
Fill of containers		CAC/RM 46-1972 (Codex General Method for processed fruits and vegetables)	Weighing	I	E		See CX/STAN 234/1999[5]

ANNEX

SAMPLING PLAN 1

(Inspection Level I, AQL = 6.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1 KG (2.2 LB)		
Lot Size (N)	**Sample Size (n)**	**Acceptance Number (c)**
4,800 or less	6	1
4,801 - 24,000	13	2
24,001 - 48,000	21	3
48,001 - 84,000	29	4
84,001 - 144,000	38	5
144,001 - 240,000	48	6
more than 240,000	60	7
NET WEIGHT IS GREATER THAN 1 KG (2.2 LB) BUT NOT MORE THAN 4.5 KG (10 LB)		
Lot Size (N)	**Sample Size (n)**	**Acceptance Number (c)**
2,400 or less	6	1
2,401 - 15,000	13	2
15,001 - 24,000	21	3
24,001 - 42,000	29	4
42,001 - 72,000	38	5
72,001 - 120,000	48	6
more than 120,000	60	7
NET WEIGHT GREATER THAN 4.5 KG (10 LB)		
Lot Size (N)	**Sample Size (n)**	**Acceptance Number (c)**
600 or less	6	1
601 - 2,000	13	2
2,001 - 7,200	21	3
7,201 - 15,000	29	4
15,001 - 24,000	38	5
24,001 - 42,000	48	6
more than 42,000	60	7

SAMPLING PLAN 2

(Inspection Level II, AQL = 6.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1 KG (2.2 LB)		
Lot Size (N)	**Sample Size (n)**	**Acceptance Number (c)**
4,800 or less	13	2
4,801 - 24,000	21	3
24,001 - 48,000	29	4
48,001 - 84,000	38	5
84,001 - 144,000	48	6
144,001 - 240,000	60	7
more than 240,000	72	8
NET WEGHT IS GREATER THAN 1 KG (2.2 LB) BUT NOT MORE THAN 4.5 KG (10 LB)		
Lot Size (N)	**Sample Size (n)**	**Acceptance Number (c)**
2,400 or less	13	2
2,401 - 15,000	21	3
15,001 - 24,000	29	4
24,001 - 42,000	38	5
42,001 - 72,000	48	6
72,001 - 120,000	60	7
more than 120,000	72	8
NET WEIGHT GREATER THAN 4.5 KG (10 LB)		
Lot Size (N)	**Sample Size (n)**	**Acceptance Number (c)**
600 or less	13	2
601 - 2,000	21	3
2,001 - 7,200	29	4
7,201 - 15,000	38	5
15,001 - 24,000	48	6
24,001 - 42,000	60	7
more than 42,000	72	8