



**JOINT FAO/WHO FOOD STANDARDS PROGRAMME  
CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING**

**43rd Session**

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**ENDORSEMENT OF METHODS OF ANALYSIS AND SAMPLING PLANS  
FOR PROVISIONS IN CODEX STANDARDS –**

**PERFORMANCE CRITERIA FOR SELECTED PROCESSED FRUITS AND VEGETABLES**

*(Prepared by the United States of America)*

1. During the 42nd Session of CCMAS, and during the review of the processed fruits and vegetables workable package, several commodity and provision pairs were identified that would be suitable to be converted from typed methods into numeric performance criteria.<sup>1</sup> The commodity and provision pairs identified are listed, along with the proposed performance criteria tables in Appendix I. The applicable Codex standards are included in the table for ease of reference but should be removed from the final work.

2. Some commodity standards make general reference to the *General Standard for Food Additives* (GSFA, CXS 192-1995). Many of the calcium containing food additives (often measured as calcium) permitted in these commodity standards have a JECFA acceptable daily intake (ADI) of “not specified” and are therefore included in Table 3 of the GSFA. Table 3 food additives are typically permitted for use at GMP levels. This is the case for calcium containing additives in preserved tomatoes (CXS 13-1981, GFSA category 04.2.2.4), canned citrus fruits (CXS 254-2007, GFSA category 04.1.2.4), certain canned vegetables (CXS 297-2009, GFSA category 04.2.2.4), and citrus marmalade (CXS 296-2009, GFSA category 04.1.2.5). GMP use levels should be the lowest concentration needed for the additive to achieve its intended technical effect, and may differ for each application of an additive. Because the GMP use level is not a set concentration, numeric performance criteria cannot be set for these provisions. As such, CCMAS may consider whether to retain method typing for calcium in these commodities.

**RECOMMENDATIONS**

3. CCMAS is invited to:
- a) consider whether to retain the method typing for calcium in these commodities (see para 2);
  - b) endorse the performance criteria in Appendix I.

<sup>1</sup> [REP23/MAS](#) paragraph 64

## APPENDIX I

## Performance criteria for selected processed fruits and vegetables

Commodity	Provision	Codex Std. <sup>2</sup> CXS-	ML (mg/kg)	Method performance criteria					
				Minimum applicable range (mg/kg)	Limit of Detection (LOD) (mg/kg)	Limit of Quantification (LOQ) (mg/kg)	Precision (RSD <sub>R</sub> ) (%) No more than	Recovery (%)	Example of applicable methods that meet the criteria
Jams, jellies, and marmalades	Benzoic Acid	192	1000	830 – 1169	100	200	11.3%	95 – 105	
Pickled cucumbers	Benzoic Acid	115	1000	830 – 1169	100	200	11.3%	95 – 105	
Mango chutney	Benzoic Acid	160	250	197 – 302	25	50	13.9%	90 – 107	
Coconut milk and coconut cream	Benzoic Acid	240	1000	830 – 1169	100	200	11.3%	95 – 105	
Canned strawberries	Calcium	062	350	280 – 420	35	70	13.2%	90 – 107	
Pickled cucumbers	Calcium	115	250	197 – 302	25	50	13.9%	90 – 107	
Preserved tomatoes	Calcium	013							
Canned citrus fruits	Calcium	254							
Certain canned vegetables	Calcium	297							
Citrus Marmalade	Calcium	296							
Jams, Jellies, and Marmalades	Sorbates	296	1000	830 – 1169	100	200	11.3%	95 – 105	
Pickled Cucumbers	Sorbates	115	1000	830 – 1169	100	200	11.3%	95 – 105	
Processed Fruits and Vegetables	Tin	193	250	197 – 302	25	50	13.9%	90 – 107	
Table Olives	Tin	066	250	197 – 302	25	50	13.9%	90 – 107	

<sup>2</sup> Codex Standard listed to facilitate review and should be removed from the final numeric performance criteria table.

**List of standards developed by CCPFV (for reference purposes)**

CXS 13-1981	Standard for Preserved Tomatoes
CXS 17-1981	Standard for Canned Applesauce
CXS 38-1981	Standard for Edible Fungi and Fungus Products
CXS 39-1981	Standard for Dried Edible Fungi
CXS 52-1981	Standard for Quick Frozen Strawberries
CXS 57-1981	Standard for Processed Tomato Concentrates
CXS 60-1981	Standard for Canned Raspberries
CXS 62-1981	Standard for Canned Strawberries
CXS 66-1981	Standard for Table Olives
CXS 67-1981	Standard for Raisins
CXS 69-1981	Standard for Quick Frozen Raspberries
CXS 75-1981	Standard for Quick Frozen Peaches
CXS 76-1981	Standard for Quick Frozen Bilberries
CXS 78-1981	Standard for Canned Fruit Cocktail
CXS 99-1981	Standard for Canned Tropical Fruit Salad
CXS 103-1981	Standard for Quick Frozen Blueberries
CXS 115-1981	Standard for Pickled Cucumbers (Cucumber Pickles)
CXS 130-1981	Standard for Dried Apricots
CXS 131-1981	Standard for Unshelled Pistachio Nuts
CXS 143-1985	Standard for Dates
CXS 145-1985	Standard for Canned Chestnuts and Canned Chestnut Purée
CXS 160-1987	Standard for Mango Chutney
CXS 177-1991	Standard for Desiccated Coconut
CXS 223-2001	Standard for Kimchi
CXS 240-2003	Standard for Aqueous Coconut Products - Coconut Milk and Coconut Cream
CXS 241-2003	Standard for Canned Bamboo Shoots
CXS 242-2003	Standard for Canned Stone Fruits
CXS 247-2005	General Standard for Fruit Juices and Nectars
CXS 254-2007	Standard for Certain Canned Citrus Fruits
CXS 260-2007	Standard for Pickled Fruits and Vegetables
CXS 296-2009	Standard for Jams, Jellies and Marmalades
CXS 297-2009	Standard for Certain Canned Vegetables
CXS 319-2015	Standard for Certain Canned Fruits
CXS 320-2015	Standard for Quick Frozen Vegetables
CXS 321-2015	Standard for Ginseng Products