

**PART 1. METHODS OF ANALYSIS FOR ADOPTION BY THE 40<sup>TH</sup> CODEX ALIMENTARIUS COMMISSION**

- A. Committee on Processed Fruits And Vegetables
- B. Coordinating Committee For Asia
- C. Committee on Nutrition And Foods For Special Dietary Uses
- D. Coordinating Committee For Africa
- E. Committee on Spices And Culinary Herbs
- F. Committee on Fats And Oils

**PART 2. METHODS OF ANALYSIS FOR REVOCATION BY THE 40<sup>TH</sup> CODEX ALIMENTARIUS COMMISSION**

**PART 3. METHODS OF ANALYSIS ON TRANS FATTY ACIDS FOR CCNFSDU**

**PART 1. METHODS OF ANALYSIS FOR ADOPTION BY THE 40<sup>TH</sup> CODEX ALIMENTARIUS COMMISSION**

**A. COMMITTEE ON PROCESSED FRUITS AND VEGETABLES**

***Methods of analysis for quick frozen vegetables***

<b>Product</b>	<b>Provision</b>	<b>Method</b>	<b>Principle</b>	<b>Type</b>
Quick frozen fruits and vegetables	Thawing procedure	Method CAC/RM 32 to be placed in STAN 234	Thawing	I
Quick frozen fruits and vegetables: Vegetables	Cooking procedure	Method CAC/RM 33 to be placed in CODEX STAN 234	Cooking	I
Quick frozen fruits and vegetables (non-glazed)	Net weight	AOAC 963.26	Weighing	I
Quick frozen peas	Solids, alcohol insoluble	Method CAC/RM 35 to be placed in STAN 234	Gravimetry	I
Quick frozen green and wax beans	Tough strings	Method CAC/RM 39 to be placed in STAN 234	Stretching	I
Quick frozen fruits and vegetables: Berries, Whole kernel corn and Corn- on-the-cob	Soluble solids, total	AOAC 932.12	Refractometry	I
Quick frozen fruits and vegetables: Berries, leek and carrot	Mineral impurities	AOAC 971.33	Gravimetry	I
Quick frozen fruits and vegetables: Peaches and berries	Drained fruit/drained berries	AOAC 953.15	Draining	I
Quick frozen spinach	Dry matter, Sodium chloride-free	Method described in CODEX STAN 77-1981 is to be moved to STAN 234	Weighing	I
Quick frozen French fried potatoes	Moisture	AOAC 984.25	Gravimetry (convection oven)	I

**B. COORDINATING COMMITTEE FOR ASIA*****Methods of analysis for laver products***

<b>Provision</b>	<b>Method</b>	<b>Principle</b>	<b>Type</b>
Moisture content	AOAC 925.45B	Gravimetry, drying at atmospheric pressure	IV

***Method of analysis for Tempe***

<b>Provisions</b>	<b>Method</b>	<b>Principle</b>	<b>Type</b>
Lipid Content	<del>AOAC 983.23</del> AOAC 963.15	Gravimetry (Soxhlet Extraction)	I

**C. COMMITTEE ON NUTRITION AND FOODS FOR SPECIAL DIETARY USES*****Methods of analysis for infant formula***

<b>Provisions</b>	<b>Method</b>	<b>Principle</b>	<b>Type</b>
Vitamin C	AOAC 2012.22   ISO/DIS 20635	HPLC-UV	II
Chromium, selenium, molybdenum	AOAC 2011.19   ISO 20649   IDF 235	ICP-MS	II
Chromium (Section B of CODEX STAN 72-1981 only)	AOAC 2011.19   ISO 20649   IDF 235	ICP-MS	II
Chromium (Section B of CODEX STAN 72-1981 only)	EN 14082	Graphite furnace atomic absorption after dry ashing	III
Chromium (Section B of CODEX STAN 72-1981 only)	EN 14083	Graphite furnace AAS after pressure digestion	III
Chromium (Section B of CODEX STAN 72-1981 only)	AOAC 2006.03	ICP emission spectroscopy	III
Molybdenum (Section B of CODEX STAN 72-1981 only)	AOAC 2011.19   ISO 20649   IDF 235	ICP-MS	II
Molybdenum (Section B of CODEX STAN 72-1981 only)	EN 14083	Graphite furnace AAS after pressure digestion	III
Molybdenum (Section B of CODEX STAN 72-1981 only)	AOAC 2006.03	ICP emission spectroscopy	III
Selenium	AOAC 2011.19   ISO 20649   IDF 235	ICP-MS	II
Selenium	AOAC 996.16 or AOAC 996.17	Continuous hydride generation Flame atomic absorption spectrometry (HGAAS)	III

Provisions	Method	Principle	Type
Selenium	EN 14627	Hydride generation atomic absorption spectrometry (HGAAS)	III
Selenium	AOAC 2006.03	ICP emission spectroscopy	III
Vitamin B12	AOAC 986.23	Turbidimetric	III
Myo-Inositol	AOAC 2011.18 IISO 20637	LC-pulsed amperometry	II
Vitamin E	AOAC 992.03 Measures all rac-vitamin E (both natural + supplemental ester forms) aggregated and quantified as $\alpha$ -congeners	HPLC	III
Vitamin E	EN 12822 (Measures Vitamin E (both natural + supplemental ester forms) aggregated and quantified as individual tocopherol congeners ( $\alpha$ , $\beta$ , $\gamma$ , $\delta$ ).	HPLC	III
Total fatty acid profile	AOAC 996.06	Gas chromatography	III
Total fatty acid profile	AOCS Ce 1i-07	Gas chromatography	III

**D. COORDINATING COMMITTEE FOR AFRICA*****Methods of analysis for unrefined shea butter***

Provision	Method	Principle	Type
Moisture content	<del>AOAC 920.116 for dairy butter</del> <del>IUPAC 2.60</del> <del>ISO 662:1998</del>	Gravimetry	I
Free fatty acid content: acid value and acidity	<del>ISO 660:1996/</del> <del>IUPAC 2.204</del> AOCS Cd 3d-63	Titrimetry	I
Relative density	<del>IUPAC 2.104</del> AOCS Cc 10c-95, ISO 6883	Pycnometry	I
Saponification value	<del>ISO 3657:1998 (revised 1992)/</del> <del>IUPAC 2.202</del> AOCS Cd 3d-25	Titrimetry	I
Iodine value	AOAC 993.20, <del>ISO 3961:1999/</del> AOCS Cd 1d-92/ NMKL 39	WijsTitrimetry	I
Peroxide value	AOCS Cd 8b-90/ <del>IUPAC 2504</del> ISO 3960: 2005 NMKL 158	Titrimetry	I
Unsaponifiable matter	<del>ISO 3596-1: 1996/</del> <del>IUPAC 2.404</del> AOCS Ca 6a-40	Gravimetry	I
Insoluble impurities content	ISO 663/ <del>IUPAC 2604</del> AOCS Ca 3a-46	Gravimetry	I
Melting point	<del>ISO 6321:2002/</del> AOCS Cc 3b-92	Open ended capillary tube	I

**E. COMMITTEE ON SPICES AND CULINARY HERBS*****Methods of analysis and sampling plans for cumin***

Provision	Method	Principle	Type
Moisture	ISO 939: <del>1980</del> ISO 760: <del>1978</del> /ISO AOAC 2001.12	Distillation	I
Total ash	ISO 928: <del>1997</del>	Gravimetry	I
Acid-insoluble ash	ISO 930: <del>1997</del>	Gravimetry	I
Volatile oils	ISO 6571: <del>2008</del>	Distillation / Volumetric	I
Extraneous vegetable matter <del>material</del>	ISO 927: <del>2009</del>	Visual examination / Gravimetry	I
Foreign matter	ISO 927: <del>2009</del>	Visual examination / Gravimetry	I
Insect damage	Method V-8 Spices, Condiments, Flavors and Crude Drugs (Macroanalytical Procedure Manual, FDA Technical Bulletin Number 5) <a href="http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm084394.htm#v-32">http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm084394.htm#v-32</a>	Visual examination	IV
Mammalian excreta	Macroanalytical procedure manual USFDA technical bulletin V.39 B (for whole)	Visual examination	IV
	AOAC 993.27 (for ground)	Enzymatic Detection method	IV
Mould damage	Method V-8 Spices, Condiments, Flavors and Crude Drugs (Macroanalytical Procedure Manual, FDA Technical Bulletin Number 5) <a href="http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm084394.htm#v-32">http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm084394.htm#v-32</a>	Visual examination	IV

**Methods of analysis and sampling plans for thyme**

Provision	Method	Principle	Type
Moisture	<del>ISO 939:1980</del> ISO 760:1978/ISO AOAC 2001.12	Distillation	I
Total ash	ISO 928:1997	Gravimetry	I
Acid-insoluble ash	ISO 930:1997	Gravimetry	I
Volatile oils	ISO 6571:2008	Distillation / Volumetric	I
Extraneous vegetable matter material	ISO 927:2009	Visual examination / Gravimetry	I
Foreign matter	ISO 927:2009	Visual examination / Gravimetry	I
Insect damage	Method V-8 Spices, Condiments, Flavors and Crude Drugs (Macroanalytical Procedure Manual, FDA Technical Bulletin Number 5) <a href="http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm084394.htm#v-32">http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm084394.htm#v-32</a>	Visual examination	IV
Mammalian excreta	Macroanalytical procedure manual USFDA technical bulletin V.39 B (for whole)	Visual examination	IV
	AOAC 993.27 (for ground)	Enzymatic Detection method	IV
Mould damage	Method V-8 Spices, Condiments, Flavors and Crude Drugs (Macroanalytical Procedure Manual, FDA Technical Bulletin Number 5) <a href="http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm084394.htm#v-32">http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm084394.htm#v-32</a>	Visual examination	IV



**Methods of analysis and sampling plans for black, white and green pepper**

Provision	Method	Principle	Type
Bulk density	ISO 959-1 Annex B: <del>1998</del> (black) ISO 959-2 Annex A: <del>1998</del> (white)	Gravimetry	IV
Light berries	ISO 959-1 Annex A (black)	Flotation	IV
Extraneous vegetable matter	ISO 927: <del>2009</del>	Visual examination / Gravimetry	I
Foreign matter	ISO 927: <del>2009</del>	Visual examination / Gravimetry	I
Black berries	Physical separation and weighing ISO 959-2: <del>1998</del>	Visual examination	IV
Broken berries	Physical separation and weighing ISO 959-2: <del>1998</del>	Visual examination	IV
Mouldy berries	Macroanalytical procedure manual USFDA technical bulletin V.39 B	Visual examination	IV
Insect <del>defiled berries</del> damage	Macroanalytical procedure manual USFDA technical bulletin V.39 B	Visual examination	IV
Pinheads or broken berries	Physical separation and weighing ISO959-1: <del>1998</del>	Visual examination	IV
Mammalian <del>and/or</del> <del>other</del> excreta	Macroanalytical procedure manual USFDA technical bulletin V.39 B (For Pepper Whole)	Visual examination(For whole pepper)	IV
Mammalian <del>and/or</del> <del>other</del> excreta	AOAC 993.27 (for ground pepper)	Enzymatic Detection method (For ground pepper)	I
Moisture content	AOAC <del>986.21</del> ISO 939: <del>1980</del>	Distillation	I
Total ash	AOAC <del>941.12</del> ISO 928: <del>1997</del>	Gravimetry	I
Non-volatile ether extract	AOAC <del>940.29</del> ISO 1108	Soxhlet extraction	I
Volatile oils	AOAC <del>962.17</del> ISO 6571: <del>2008</del>	Distillation	I
Piperine content	AOAC <del>987.07</del> ISO 5564	Spectrophotometry	I
Acid- Insoluble ash	ISO 930: <del>1997</del>	Gravimetry	I
Crude Fibre	ISO 5498	Gravimetry	I

**F. COMMITTEE ON FATS AND OILS*****Methods of analysis for fish oils***

Provisions	Method	Principle	Type
P-Anisidine value	European Pharmacopeia 2.5.36 / AOCS Cd 18-90 / ISO 6885	Spectrophotometry	I
Phospholipids	USP-FCC10 2S (Krill oil): Phospholipids, Nuclear Magnetic Resonance, Appendix IIC	NMR Spectroscopy	IV
Triglycerides	USP 40-NF35 (Omega-3 Acid Triglycerides): Content of oligomers and partial glyceride;	HPLC-RI	III
	European Pharmacopoeia 01/2008/1352 (Omega3 acid triglycerides): Oligomers and partial glycerides	HPLC-RI	III
	AOCS Cd 11d-96	HPLC-ELSD	III

**Reference to be confirmed**

**PART 2. METHODS OF ANALYSIS FOR REVOCATION BY THE 40<sup>TH</sup> CODEX ALIMENTARIUS COMMISSION**Methods of analysis for quick frozen vegetables

CAC/RM 34 (Determination of net weight in quick frozen fruits and vegetables (non-glazed))

CAC/RM 43 (Determination of soluble solids, total in whole kernel corn and Corn- on-the-cob)

CAC/RM 54 (Determination of mineral impurities in quick frozen fruits and vegetables: Berries, leek and carrot)

### PART 3. METHODS OF ANALYSIS ON TRANS FATTY ACIDS FOR COMMITTEE ON NUTRITION AND FOODS FOR SPECIAL DIETARY USES

#### Additional Information: Determination of TFA in Collaborative Studies for each method/matrix

Product	Method		
	ISO 16958/IDF 231/ AOAC 2012.13 (g/100g of product)	AOCS Ce 1h-05 and AOAC 996.06	AOCS Ce 1j-07 and Ce 2b-11/Ce 2c-11 (g/100g of sample)
Dairy and ruminant products/fats	<b>TFA Range: 0.17–5.06 g/100 g (n=5):</b> <ul style="list-style-type: none"> <li>Cheese (extracted fat), 5.06 g/100 g</li> <li>Butter, 4.24 g/100 g</li> <li>Cream, 1.62 g/100 g</li> <li>Milk powder, 1.03 g/100 g</li> <li>Liquid milk, 0.17 g/100 g</li> </ul>	Not validated	<b>TFA Range: 0.32–7.27% of total fatty acids (n=5):</b> <ul style="list-style-type: none"> <li>Cheese powder, 7.27%</li> <li>Anhydrous milk fat, 5.11%</li> <li>Butter, 2.49%</li> <li>Evaporated milk, 0.33%</li> <li>Yogurt, 0.32%</li> </ul>
Adult nutritionals	<b>TFA Range: 0.006–0.010 g/100 g (n=3):</b> <ul style="list-style-type: none"> <li>High protein RTF, 0.009 g/100 g</li> <li>High fat RTF, 0.010 g/100 g</li> <li>Milk-based powder, 0.006 g/100 g</li> </ul>	Not validated	Not validated
Infant formula	<b>TFA Range: 0.010–0.073 g/100 g (n=4):</b> <ul style="list-style-type: none"> <li>Milk-based powder, 0.073 g/100 g</li> <li>Milk-based RTF, 0.027 g/100 g</li> <li>Milk-based powder, 0.012 g/100 g</li> <li>Soy-based powder, 0.010 g/100 g</li> </ul>	Samples unknown	<b>TFA Range: 0.15% of total fatty acids (n=1)</b> <ul style="list-style-type: none"> <li>DHA/EPA-fortified infant formula, 0.15%</li> </ul>
Samples containing vegetable oils	Not validated	<b>TFA Range: 0.06–45.01% of total fatty acids (n=10):</b> <ul style="list-style-type: none"> <li>Vegetable shortening, 45.01%</li> <li>Canola oil, 26.27% and 26.55%</li> <li>Margarine, 11.62%</li> <li>Hydrogenated lard, 1.00%</li> <li>Lard, 0.90%</li> <li>Sunflower oil, 0.17%</li> <li>Coconut oil, 0.10% and 0.11%</li> <li>Cocoa butter, 0.06%</li> </ul>	Not validated
Samples containing marine oils or other oils with long chain polyunsaturated fatty acids	Not validated	Not validated	<b>TFA Range: 0.00–0.68% of total fatty acids (n=2):</b> <ul style="list-style-type: none"> <li>Encapsulated DHA/EPA, 0.68%</li> <li>DHA/EPA-fortified orange juice, 0.00%</li> </ul>
Samples with unknown fat sources		Not validated	<b>TFA Range: 0.00–0.68% of total fatty acids (n=14):</b> <ul style="list-style-type: none"> <li>Tallow, 7.14%</li> <li>Chocolate-cake mix, 0.90%</li> <li>Whole-egg powder, 0.43%</li> <li>Frozen cheese pizza, 0.37%</li> <li>Extruded dog food, 0.31%</li> <li>Creamy ranch-dressing, 0.24%</li> <li>Potato chips, 0.22%</li> <li>Peanut butter, 0.06%</li> <li>Oatmeal cookie, 0.05%</li> <li>Canned cat food, 0.05%</li> <li>Full-fat soy flour flakes, 0.02%</li> <li>Dry cereal fortified with flax, 0.00%</li> <li>Horse feed, 0.00%</li> <li>Gamebird feed, 0.00%</li> </ul>