

## 12. Philippine institute of Pure and Applied Chemistry (PIPAC)

Address : Ateneo de Manila University Katipunan Ave., Loyola Heights, Quezon City

Telephone No. : (632) 8426 6072, 8426 6001 loc 4856, 4857

Fax No. : (632) 8426 6073

E-mail : [info@pipac.com.ph](mailto:info@pipac.com.ph),  
[pipac.laboratory@pipac.com.ph](mailto:pipac.laboratory@pipac.com.ph)

Contact Person : Armando Jerome de Jesus, Jr., PhD  
*Quality Assurance Manager*

Field of Testing :: Chemical Testing

### Chemical Testing

Products	Specific Tests	Method Reference
<b>I. Foods</b>		
<b>01.0 Milk and Dairy Products</b>		
01.1 Milk powder and cream powder	Moisture	Gravimetric Method AOAC 927.05/ 934.01/ 920.155, 18 <sup>th</sup> Ed. (PIPAC AP 015)
01.2 Whey and whey products	Ash	Gravimetric Method AOAC 945.46/ 920.153/ 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
01.3 Condensed milk		
01.4 Liquid Milk (evaporated and Cream (UHT/sterilized))	Crude Protein	Modified Kjeldahl Method AOAC 981.10/928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
01.5 Pasteurized milk		
01.6 Pasteurized cream	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry AOAC 932.06/ 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
01.7 Yogurt and other fermented milk		
01.8 Milk and buttermilk		
01.9 Cheese and cheese products (Cottage cheese, soft and semi-soft cheese)	Omega-3 (EPA/DHA)	Gas Chromatography AOAC 991.39/922.06, 18 <sup>th</sup> Ed. (PIPAC 029)
01.10 Processed cheese spread		
01.11 All raw milk cheese		
<b>02.0 Fats and oils, and fat emulsions</b>		
02.1 Fats and oils essentially free from water (vegetable	Moisture	Gravimetric Method AOAC 934.01/ 920.155, 18 <sup>th</sup> Ed. (PIPAC AP 015)

oils and fats, lard, tallow, fish oil and other animal fats) 02.2 Fat emulsions mainly of type water-in-oil (butter, margarine)	Ash	Gravimetric Method AOAC 920.153/ 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 935.58/ 981.10/ 928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry AOAC 950.54/ 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
	Moisture Content by Karl Fischer	Karl Fischer "Water Determination" <921>. USP 37-NF 32 (2014) (PIPAC AP 022)
<b>03.0 Edible ices, including sherbet and sorbet</b>		
03.1 Ice cream and sherbet 03.2 Ice cream with added ingredients 03.3 Flavored Ice	Moisture	Gravimetric Method High-sugar samples: AOAC 925.45/ 934.06. Other samples: AOAC 934.01/920.155, 18 <sup>th</sup> Ed.
	Ash	Gravimetric Method High-sugar samples: AOAC 900.02/940.26. Other samples: AOAC 920.153/923.03, 18 <sup>th</sup> Ed.
	Crude Protein	Modified Kjeldahl Method AOAC 981.10/928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry AOAC 932.06/ 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
<b>4.0 Confectioneries</b>		
04.1 Cocoa powder 04.2 Chocolate products; chocolate confectioneries 04.3 Sugar confectioneries ( hard and soft candy, nougats, etc.) 04.5 Decorations a, toppings (non-fruit), and sweet sauces	Moisture	Vacuum Drying Gravimetric Method AOAC 925.49/ 925.45/ 934.06, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Ash	Gravimetric Method AOAC 925.49/ 900.02/ 940.26, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 920.176/ 981.10/ 928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry

		AOAC 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
<b>05.0 Fruits and vegetables, seaweeds, nuts and seeds</b>		
05.1 Frozen vegetables and fruits 05.2 Fermented fruits and vegetables 05.3 Fruits and vegetable products in hermetically sealed container 05.4 Dried fruits and vegetables, seaweeds, nuts and seeds 05.5 Coconut (desiccated) 05.6 Nut and seed purees and spreads (e.g., peanut butter) 05.7 Jams, jellies, marmalades and fruit fillings for pastries 05.8 Fruit preparations ( pulp, purees, fruit toppings and coconut milk)	Moisture	Gravimetry  High-sugar samples: AOAC 934.06/925.45. Other samples: AOAC 934.01/ 920.155,18 <sup>th</sup> Ed. (PIPAC AP 015)
	Ash	Gravimetry  High-sugar samples: AOAC 940.26/900.02. Other samples: AOAC920.153/ 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 920.152/ 981.10/928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis (if needed) / Ether Extraction/ Gravimetry AOAC 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
	Betacarotene	High-Performance Liquid Chromatography EN 12823-2 ICS 67.040 (2000) (PIPAC AP 018)
	<b>06.0 Egg and egg products</b>	
06.1 Egg products 06.1.1 Liquid egg products 06.1.2 Frozen egg products 06.1.3 Dried and/or heat coagulated egg product 06.2 Preserved eggs, including alkaline, salted, and canned eggs 06.3 Egg-based desserts (e.g. custard)	Moisture	Gravimetry  High-sugar samples: AOAC 934.06/925.45. Other samples: AOAC 934.01/ 920.155,18 <sup>th</sup> Ed. (PIPAC AP 015)
	Ash	Gravimetry  High-sugar samples: AOAC 940.26/900.02. Other samples: AOAC920.153/ 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 935.58/ 981.10/ 928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry

		AOAC 925.32/ 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
	Omega-3 (EPA/DHA)	Gas Chromatography AOAC 991.39/922.06, 18 <sup>th</sup> Ed. (PIPAC 029)
<b>07.0 Cereals and cereal products</b>		
07.1 Breakfast cereals 07.2 Cereal/cereal grains 07.3 Cultured seeds and grains 07.4 Soya flours concentrates and isolates 07.5 Flour, corn meal, corn grits, semolina 07.6 Frozen entrees containing rice or corn flour 07.7 Soy protein 07.8 Tofu 07.9 Pasta products and noodles (e.g. rice paper, rice vermicelli, soybean pastas and noodles) 07.10 Starch 07.11 Cereal and starch based desserts (e.g., rice pudding, tapioca pudding) 07.12 Batters (e.g., for breading or batters for fish or poultry)	Moisture	Gravimetric Method AOAC 926.07/ 934.01/ 920.155, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Ash	Gravimetric Method AOAC 925.11/923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 979.09/ 920.87/ 930.25/ 981.10/928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry AOAC 922.06/ 925.12, 18 <sup>th</sup> Ed. (PIPAC AP 016)
	Betacarotene	High-Performance Liquid Chromatography EN 12823-2 ICS 67.040 (2000) (PIPAC AP 018)
	Dietary Fiber	Enzymatic-Gravimetric Method AOAC 992.16/985.29, 18 <sup>th</sup> Ed. (PIPAC AP 041)
	Minerals (Ca, Mg, Fe, Na, K, Zn)	Inductively Coupled Plasma Spectrometry AOAC 984.27, 18 <sup>th</sup> Ed. (PIPAC AP 055)
	<b>08.0 Bakery Products</b>	
	Moisture	Gravimetric Method AOAC 934.01/ 920.155, 18 <sup>th</sup> Ed. (PIPAC AP 015)

08.1 Frozen bakery products (ready to eat and to be cooked) 08.2 Frozen and refrigerated dough 08.3 Breads and rolls 08.4 Crackers, excluding sweet crackers 08.5 Cakes, cookies and pies, doughnuts 08.6 Other ordinary bakery products (e.g., bagels, pita, English muffins) 08.7 Steamed breads and buns	Ash	Gravimetric Method AOAC 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 935.39/ 920.87/ 981.10/ 928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry AOAC 950.36/ 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
<b>09.0 Ready-to-eat savouries</b>		
09.1 Snacks foods - potato, cereal, flour or starch based	Moisture	Gravimetry  High-sugar samples: AOAC 934.06/925.45. Other samples: AOAC 934.01/ 920.155, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Ash	Gravimetry  High-sugar samples: AOAC 940.26/900.02. Other samples: AOAC 920.153/ 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 981.10/928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry AOAC 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
	Ash	Gravimetric Method AOAC 920.153/ 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 981.10/928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)

	Total Fat	Acid Hydrolysis/ Soxhlet Method ISO 1443: 1973-04-15 (Codex STAN method) (PIPAC 016)
	Omega-3 (EPA/DHA)	Gas Chromatography AOAC 991.39/922.06, 18 <sup>th</sup> Ed. (PIPAC 029)
<b>11.0 Fish and fish products</b>		
11.1 Processed fish and fish products, including molluscs, crustaceans, and echinoderms 11.2 Semi-preserved fish and fish products, including molluscs, crustaceans, and echinoderms 11.3 Fully preserved, including canned or fermented fish and fish products, including molluscs, crustaceans, and echinoderms	Moisture	Gravimetric Method AOAC 920.155/ 934.01 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Ash	Gravimetric Method AOAC 938.08/ 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 940.25/ 955.04/ 981.10/928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry AOAC 948.15/ 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
	Omega-3 (EPA/DHA)	Gas Chromatography AOAC 991.39/922.06, 18 <sup>th</sup> Ed. (PIPAC 029)
	Histamine	Fluorometry <i>Journal of Food Science</i> 41, 1282 (1976) (PIPAC AP 002)
	Mercury	Cold-Vapor Atomic Absorption Spectrophotometry AOAC 977.15, 18 <sup>th</sup> ed. (PIPAC AP 005)
	Heavy Metals (Pb, Cd, Cr, Mn, Mg, Zn, Fe, Cu, Ni)	Inductively Coupled Plasma Spectrometry AOAC 972.23 18 <sup>th</sup> ed./ EN 14082:2003 PIPAC AP 006)
<b>12.0 Salts, spices, soups, sauces, salads and protein products</b>		
12.1 Salt and salt substitutes 12.2 Herbs, spices, seasonings, and condiments (e.g. seasoning for instant noodles)	Moisture	Gravimetry  High-sugar samples: AOAC 934.06/925.45. Other samples: AOAC 934.01/ 920.155, 18 <sup>th</sup> Ed. (PIPAC AP 015)

<p>12.3 Vinegars  12.4 Mustards  12.5 Soups and broths  12.6 Sauces and like products  12.6.1 Emulsified sauces and dips (e.g. mayonnaise, salad dressing, onion dips)  12.6.2 Non-emulsified sauces (e.g. ketchup, cheese sauce, cream sauce, brown gravy)  12.6.3 Mixes for sauces and gravies  12.6.4 Clear sauces (e.g. fish sauce)  12.7 Salads (e.g. macaroni salad, potato salad) and sandwich spreads excluding cocoa-and nut-based preads of food categories  12.8 Yeast and like products  12.9 Soybean-based seasonings and condiments  12.9.1 Fermented soybean paste (e.g. miso)  12.9.2 Soybean sauce  12.9.2.1 Fermented soybean sauce  12.9.2.2 Non-fermented soybean sauce  12.9.2.3 Other soybean sauces  12.10 Protein products other than from soybeans</p>	<p>Ash</p>	<p>Gravimetry   High-sugar samples: AOAC 940.26/900.02. Other samples: AOAC920.153/ 923.03, 18<sup>th</sup> Ed. (PIPAC AP 015)</p>
	<p>Crude Protein</p>	<p>Modified Kjeldahl Method  High-fat samples: AOAC 935.58/981.10/928.08. Other samples: AOAC 981.10/928.08, 18<sup>th</sup> Ed. (PIPAC AP 017)</p>
	<p>Total Fat</p>	<p>Acid Hydrolysis (if needed) / Ether Extraction/ Gravimetry  AOAC 922.06, 18<sup>th</sup> Ed. (PIPAC AP 016)</p>
	<p>Betacarotene</p>	<p>High-Performance Liquid Chromatography  EN 12823-2 ICS 67.040 (2000) (PIPAC AP 018)</p>

<p>12.9 Soybean-based seasonings and condiments</p> <p>12.9.2 Soybean sauce</p> <p>12.9.2.1 Fermented soybean sauce</p>	<p>3-MCPD (3-Monochloropropane-2-diol)</p>	<p>Gas Chromatography-Mass Spectrometric Detection AOAC 2000.01, 18<sup>th</sup> Ed/ CEN/TC 275 N 396 add (2000) (PIPAC AP 024)</p>
<p><b>13.0 Beverages</b></p>		
<p>13.1 Non-alcoholic beverages (Canned /Bottled Fruit and vegetable juices/nectars, Energy drinks and particulated drinks, Carbonated and Non-carbonated water-based flavoured drinks and concentrates (liquid or solid) for water-based flavoured drinks)</p> <p>13.2 Frozen juice concentrate</p> <p>13.3 Powdered beverages</p> <p>13.4 Coffee, coffee substitutes, tea, herbal infusions, and other hot cereal and grain beverages</p> <p>13.5 Alcoholic beverages ( Beer and malt beverages, cider and perry, grape wines and wines, mead, distilled spirits containing more than 15% alcohol and aromatized alcoholic beverages)</p>	<p>Moisture</p>	<p>Gravimetry</p> <p>High-sugar samples: AOAC 934.06/925.45. Other samples: AOAC 935.29/ 934.01/ 920.155,18<sup>th</sup> Ed. (PIPAC AP 015)</p>
	<p>Ash</p>	<p>Gravimetry</p> <p>High-sugar samples: AOAC 950.14/ 940.26/ 920.54/ 900.02. Other samples: AOAC 920.153/ 923.03, 18<sup>th</sup> Ed. (PIPAC AP 015)</p>
	<p>Crude Protein</p>	<p>Modified Kjeldahl Method AOAC 920.53/ 981.10/928.08, 18<sup>th</sup> Ed. (PIPAC AP 017)</p>
	<p>Total Fat</p>	<p>Ether Extraction/ Gravimetry AOAC 922.06, 18<sup>th</sup> Ed. (PIPAC AP 016).</p>
	<p>Glutathione</p>	<p>High-Performance Liquid Chromatography Official Monographs: Glutathione. USP 37-NF 32 (2014) (PIPAC AP 019)</p>
<p>13.1 Non-alcoholic beverages (Canned /Bottled Fruit and vegetable juices/nectars, Energy drinks and particulated drinks, Carbonated and Non-carbonated water-based flavoured drinks and</p>	<p>Dietary Fiber</p>	<p>Enzymatic-Gravimetric Method AOAC 992.16/985.29, 18<sup>th</sup> Ed. (PIPAC AP 041)</p>



concentrates (liquid or solid) for water-based flavoured drinks) 13.2 Frozen juice concentrate		
13.5 Alcoholic beverages ( Beer and malt beverages, cider and perry, grape wines and wines, mead, distilled spirits containing more than 15% alcohol and aromatized alcoholic beverages)	Moisture Content by Karl Fischer	Karl Fischer USP <921>. USP 37-NF 32 (2014) (PIPAC AP 022)
<b>14.0 Foodstuffs intended for particular nutritional uses</b>		
14.1 Infant formulae, follow-on formulae, and formulae for special medical purposes for infants	Moisture	Gravimetric Method AOAC 927.05/ 934.01/ 920.155, 18 <sup>th</sup> Ed. (PIPAC AP 015)
14.2 Complementary foods for infants and young children	Ash	Gravimetric Method AOAC 945.46/ 920.153/ 923.03, 18 <sup>th</sup> Ed. (PIPAC AP 015)
14.3 Dietetic foods intended for special medical purposes (excluding products of food category 14.1)	Crude Protein	Modified Kjeldahl Method AOAC 981.10/928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
14.4 Dietetic formulae for slimming purposes and weight reduction	Total Fat	Acid Hydrolysis/ Ether Extraction/ Gravimetry AOAC 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016).
14.5 Dietetic foods (e.g. supplementary foods for dietary use) excluding products of food categories 14.1- 14.4 and 14.6		
14.6 Food supplements	Betacarotene	High-Performance Liquid Chromatography EN 12823-2 ICS 67.040 (2000) (PIPAC AP 018)
	Glutathione	High-Performance Liquid Chromatography Official Monographs: Glutathione. USP 37-NF 32 (2014) (PIPAC AP 019)

	Omega-3 (EPA/DHA)	Gas Chromatography AOAC 991.39/922.06, 18 <sup>th</sup> Ed. (PIPAC 029)
	Dietary Fiber	Enzymatic-Gravimetric Method AOAC 992.16/985.29, 18 <sup>th</sup> Ed. (PIPAC AP 041)
	Minerals (Ca, Mg, Fe, Na, K, Zn)	Inductively Coupled Plasma Spectrometry AOAC 984.27, 18 <sup>th</sup> Ed. (PIPAC AP 055)
<b>15.0 Sweeteners, including honey</b>		
15.1 Refined and raw sugars 15.2 Brown sugar 15.3 Honey 15.4 Other sugars and syrups (e.g. xylose, maple syrup, sugar toppings) 15.5 Table-top sweeteners, including those containing high-intensity sweeteners	Moisture	Vacuum Drying Gravimetric Method AOAC 925.45, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Ash	Gravimetric Method AOAC 900.02, 18 <sup>th</sup> Ed. (PIPAC AP 015)
	Crude Protein	Modified Kjeldahl Method AOAC 920.176/ 981.10/ 928.08, 18 <sup>th</sup> Ed. (PIPAC AP 017)
	Total Fat	Ether Extraction/ Gravimetry AOAC 922.06, 18 <sup>th</sup> Ed. (PIPAC AP 016)
<b>IV. WATER</b>		
01.0 Bottled Water	pH	pH meter SMEWW 4500-H <sup>+</sup> B , 22 <sup>nd</sup> Ed./ PNS 23:2002 (PIPAC AP 007)
	Arsenic	Atomic Absorption Spectrophotometry SMEWW 3114B, 22 <sup>nd</sup> Ed. (PIPAC AP 011)
	Conductivity	Conductivity Meter SMEWW 2510B, 22 <sup>nd</sup> Ed. (PIPAC AP 008)
	Total Solids Total Suspended Solids Total Dissolved Solids	Gravimetry SMEWW 2540 B,C, D, 22 <sup>nd</sup> Ed. (PIPAC 013)
	Hexavalent Chromium	UV-Vis Spectrophotometry SMEWW 3500-Cr B, 22 <sup>nd</sup> Ed. (PIPAC 014)
	Heavy Metals (Ca, Cd, Cr, Cu, Fe, K, Mn, Mg, Na, Ni, Pb, Zn)	Inductively-Coupled Spectrometry SMEWW 3030A, E/ 3120B, 22 <sup>nd</sup> Ed. (PIPAC 026)