Issue date: 19 December 2025
Valid until: 28 October 2028

NO: SAMM 178
(Issue 2, 19 December 2025 replacement
of SAMM 178 dated 5 October 2023)

LABORATORY LOCATION:
(PERMANENT LABORATORY)

UNION LABORATORIES SDN. BHD.
14, JALAN KURAU, CHAI LENG PARK
13700 PRAI
PULAU PINANG
MALAYSIA

FIELDS OF TESTING: **MICROBIOLOGY, CHEMICAL AND MOLECULAR**

This laboratory has demonstrated its technical competence to operate in accordance with MS ISO/IEC 17025:2017 (ISO/IEC 17025:2017).

This laboratory's fulfillment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001 (see Joint ISO-ILAC-IAF Communiqué dated April 2017).

SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Food & Feed Cereal Products, Fish & Fish Product, Frozen Cooked & Peeled Prawn, Meat & Poultry Products, Dairy Products, Animal Feed, Frozen Raw Seafood, Canned Seafood, Processed Food, Dried Food & Cereals, Snack Foods, Fruit Drinks & Juices, Herbs & Spices, Mixed Food	Aerobic Plate Count by Pour Plate Method Aerobic Plate Count by Pour Plate Method Aerobic Plate Count by Spread Plate Method by Pour Plate Method Total Colony Count by Pour Plate Method Aerobic Plate Count by Petrifilm Method	Bacteriological Analytical Manual FDA, Chapter 3; 2001 GB 4789-2:2010 Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001 Chapter 7 ISO 4833 3rd Edition (2003) AOAC 990.12 (2012)

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SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Food & Feed Cereal Products, Fish & Fish Product, Frozen Cooked & Peeled Prawn, Meat & Poultry Products, Dairy Products, Animal Feed, Frozen Raw Seafood, Canned Seafood, Processed Food, Dried Food & Cereals, Snack Foods, Fruit Drinks & Juices, Herbs & Spices, Mixed Food, Additive to Food & seasoning	Total Coliform Count by Pour Plate Method & MPN Enumeration of Coliforms by Pour Plate Method & MPN Coliform Count by Pour Plate Method & MPN Total Coliform Count by Pour Plate Method by MPN Method	Bacteriological Analytical Manual FDA, Chapter 4; 2013 GB 4789.3:2010 Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001. Chapter 8 ISO 4832 (2006) ISO 4831.2 (2006)
	Escherichia coli Count by MPN Method / Pour Plate Method *E. Coli* Count by MPN by Pour Plate Method *Escherichia coli* count by MPN Method	Bacteriological Analytical Manual FDA, Chapter 4; 2013 Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001. Chapter 8 ISO 7251 (2005)
	Staphylococcus aureus Count by Spread Plate Method by Enrichment Method Enumeration and Detection of *Staphylococcus aureus* by Enrichment by Spread Plate Method by MPN Method Coagulase Positive *Staphylococcus aureus* and other species by Spread Plate Method	Bacteriological Analytical Manual FDA, Chapter 12; 2001 GB 4789.10:2010 ISO 6888-1 (2003)

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SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Food & Feed Cereal Products, Fish & Fish Product, Frozen Cooked & Peeled Prawn, Meat & Poultry Products, Dairy Products, Animal Feed, Frozen Raw Seafood, Canned Seafood, Processed Food, Dried Food & Cereals, Snack Foods, Fruit Drinks & Juices, Herbs & Spices, Mixed Food, Additive to Food & seasoning	Isolation & Detection of *Salmonella spp.* Detection of *Salmonella spp.*	Bacteriological Analytical Manual FDA, Chapter 5, 2014 GB 4789.4:2010 ISO 6579 (2002)
	Isolation & Detection of *Vibrio cholerae* & *Vibrio parahaemolyticus* Detection of *Vibrio cholera* and *Vibrio parahaemolyticus*	Bacteriological Analytical Manual FDA, Chapter 9; 2004 ISO/TS 21872-1 (2007)
	Yeast and Mold Count Yeast & Mold Count by Spread Plate Method by Pour Plate Method Enumeration of Yeast and Mold by Pour Plate Method	Compendium of Method for the Microbiological Examination of Food, 4th Ed, 2001. Chapter 20 Bacteriological Analytical Manual FDA, Chapter 18; 2001 GB 4789.15:2010
	Total Yeast & Mould count- Water activity more than 0.95 by Spread Plate Method Total Yeast & Mould count- Water activity less than 0.95 by Spread Plate Method	ISO 21527-1 (2008) ISO 21527-2 (2009)
	Isolation & Detection of *Listeria* Detection and Enumeration of *Listeria monocytogenes*	Compendium of Method for the Microbiological Examination of Food, 4th Ed, 2001. Chapter 36 Bacteriological Analytical Manual FDA, Chapter 10; 2011

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SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Food & Feed Cereal Products, Fish & Fish Product, Frozen Cooked & Peeled Prawn, Meat & Poultry Products, Dairy Products, Animal Feed, Frozen Raw Seafood, Canned Seafood, Processed Food, Dried Food & Cereals, Snack Foods, Fruit Drinks & Juices, Herbs & Spices, Mixed Food, Additive to Food & seasoning	*Bacillus cereus* Count Enumeration of presumptive *Bacillus cereus* by Spread Plate Method	Bacteriological Analytical Manual FDA, Chapter 14; 2002 ISO 7932 (2004)
	Detection & Enumeration of *Enterobactericeae* by Enrichment Method by Pour Plate Method by Petrifilm Method Detection and Enumeration of Enterobacteriaceae by Pour Plate Method with pre-enrichment & by MPN	Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001. Chapter 8 AOAC 2003.01 (2012) ISO 21528-2 (2004) ISO 21528-1 (2004)
	Sulfide Spoilage bacteria and *Sporeformers* (Anaerobic Sulfide Reducing Bacteria) Count	Compendium of Method for the Microbiological Examination of Food, 4th Ed, 2001. Chapter 27
	Staphylococcal Enterotoxin (Qualitative & Quantitative)	Staphylococcal Enterotoxin Visual Immunoassay
	Enumeration of sulphite- reducing bacteria growing under anaerobic conditions.	BS ISO 15213:2003
Milk & Milk Powder, Milk Base Food & Feed Products	Isolation & Detection of *Chronobacter sakazakii (Enterobactor sakazakii)*	ISO/TS 22964:2006
Processed Food, Dried Foods & Cereals Snack Foods, Fruit Drinks & Juices	Lactic acid bacteria/ *Lactobacillus* Counts/ Acid Producing microorganism	Compendium Methods for Microbiological Examination of Foods, 4th Ed, 2001. Chapter 19

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SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Processed Foods, Preserved Foods, Syrup	Halophilic & Osmophilic microorganism Count	Compendium Methods for Microbiological Examination of Foods, 4th Ed, 2001, Chapter 17
Canned Food	Isolation, Detection & Enumeration of: 1. Mesophilic & Thermophilic Anaerobic Bacteria Sporeformer 2. Mesophilic & Thermophilic Flat Sour Bacteria/ Sporeformers 3. Leakage Bacteria Count (Aerobic Plate Count) 4. Anaerobic Plate Count	Bacteriological Analytical Manual FDA, Chapter 21A; 2001
	Detection & Enumeration of: 1. Mesophilic & Thermophilic Anaerobic Bacteria Sporeformer 2. Mesophilic & Thermophilic Flat Sour Bacteria/ Sporeformers 3. Leakage Bacteria Count (Aerobic Plate Count) 4. Anaerobic Plate Count	Compendium of Method for the Microbiological Examination of Food, 4th Ed. 2001. Chapter 26/ Chapter 23 Compendium of Method for the Microbiological Examination of Food, 4th Ed. 2001. Chapter 5/ Chapter 24/ Chapter 25
Canned Food	Isolation & Detection of *Clostridium perfringens* / *Clostridium perfringens* Count Isolation & Detection of *Clostridium botulinum*	Bacteriological Analytical Manual FDA, Chapter 16; 2001 Bacteriological Analytical Manual FDA, Chapter 17; 2001)
Microbiological Monitoring of Environment	Air sampling: by sedimentation method, by filtration method. by Impaction method. Equipment & contact surfaces: by swab contact method, by sponge contact method, by rinse solution method. by Rodac Plate method.	Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001, Chapter 3

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SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental Swabs	Aerobic Plate Count by Spread Plate Method by Pour Plate Method by Petrifilm Method	 Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001 Chapter 7 AOAC 990.12 (2012)
	Isolation & Detection of *Salmonella spp.* Detection of *Salmonella*	Bacteriological Analytical Manual FDA, Chapter 5, 2014 3M™ Molecular Detection System (MDS) *Salmonella*
	Detection & Enumeration of *Enterobactericeae* by Enrichment Method by Pour Plate Method by Petrifilm Method	Compendium of Methods for Microbiological Examination of Foods, Chapter 8; by APHA, 4th Ed. 2001 AOAC 2003.01
	Coliform & *E. Coli* Count by Pour Plate Method by MPN Method by Petrifilm Method	Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001. Chapter 8 AOAC 991.14
	Isolation & Detection of *Listeria* Detection & Enumeration of Listeria monocytogenes Isolation & Detection of *Shigella* Isolation & Detection of *Chronobacter sakazakii (Enterobactor sakazakii)*	Compendium of Method for the Microbiological Examination of Food, Chapter 36; by APHA, 4th Ed. 2001 Bacteriological Analytical Manual FDA, Chapter 10; 2011 Compendium of Methods for Microbiological Examination of Foods, Chapter 38; by APHA, 4th Ed. 2001 ISO/TS 22964:2006

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SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Water		
Mineral & Drinking Water, Recreational Water, Cooling Water, Potable Water, Portable Water and Effluent	Total Viable Count by Pour Plate Method by Spread Plate Method by Membrane Filtration Method	APHA 9215 B, C & D (2005)
	Coliform Count by Membrane Filtration Method by Multiple-tube technique	APHA 9222 B/ 9221 B (2005)
	Fecal Coliform Count/ *E. Coli* by Membrane Filtration Method by Multiple-tube technique	APHA 9222 D/ 9221 E (2005)
	Pseudomonas aeruginosa Count by Membrane Filtration Method	APHA 9213 E (2005)
	Isolation & Detection of *Salmonella spp.*	APHA 9260 B (2005)
	Staphylococcus aureus Count	APHA 9213 B (6) (2005)
	Legionellae Count	APHA 9260 J (2005)
	Isolation & Detection of *Leptospira*	APHA 9260 I (2005)
	Fecal Streptococci & Enterococci Count by Membrane Filtration Method	APHA 9230 C (2005)
	Detection and Enumeration Spores of Sulphite Reducing Anaerobes by Membrane Filtration Method	ISO 6461/2 (2003)
	Detection of Yeast & Mold by Pour Plate Method by Spread Plate Method by Membrane Filtration Method by Enrichment Method	APHA 9610 B, C, D, E (2005)
	Enumeration of *Clostridium perfringens* by Membrane Filtration Method	ISO 14189:2013

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SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Cosmetics Cosmetic and Toiletries **Pharmaceuticals** Swab **Medical Devices** Medical Gloves, Drainage Bags, Medical Tubings, Medical Filters & Catheters	Total Aerobic Plate Count Yeast and Mold Count Anaerobic Count *Enterobactericeae* Count Isolation & Detection of *Escherichia coli* Isolation & Detection of *Salmonella* Isolation & Detection of *Staphylococcus aureus* Isolation & Detection of *Pseudomonas aeruginosa*	The United States Pharmacopoeia, 2013 British Pharmacopoeia, Appendix XVI B, 2015
Pharmaceuticals Medicinal Plant Preparations - Water soluble product/liquid - non fatty product - fatty product	<u>Microbial Enumeration Test:</u> a) Total Aerobic Microbial Count. - by pour plate method b) Total Yeast & Mold Count - by pour plate method.	U.S. Pharmacopoeia, Chapter <61>, 2015 British Pharmacopoeia, Appendix XVI B, 2013
	<u>Isolation, Detection & Enumeration of Specified Microorganism Test:</u> a) Bile-tolerant gram-negative bacteria *b) Escherichia coli*	U.S. Pharmacopoeia, Chapter <62>, 2015 British Pharmacopoeia, Appendix XVI B & F, 2013
	<u>Isolation & Detection of Specified Microorganism Test:</u> *a) Salmonella* *b) Pseudomonas aeruginosa* *c) Staphylococcus aureus* *d) Clostridia* *e) Candida albicans*	U.S. Pharmacopoeia, Chapter <62>, 2015 British Pharmacopoeia, Appendix XVI B & F, 2013

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SCOPE OF TESTING: MICROBIOLOGY

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Miscellaneous Material & products		
Disinfectant Sanitizer	Antimicrobial Effectiveness Test	USP 51, 24th Edition, 2000
Cosmetics	Microbial Limit Test	Asean Guidelines version 3.0 (2017) based on ACM THA 06 Asean Cosmetics Harmonized testing method (2006)
	Preservative Efficacy test	Asean Guidelines version 1.0 (2005) based on ACM MAL 08 Asean Cosmetics Harmonized testing method (2005)

Notes:

GB	:	Guo Biao National Standard of the People's Republic of China
APHA	:	American Public Health Association (21st Edition) 2005
AOAC	:	Association of Official Analytical Chemist
BS	:	British Standard
ISO	:	International Standards Organization
USP	:	United States Pharmacopoeia

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods & Traditional Medicine	Lead, Cadmium, Copper, Iron, Zinc, Manganese, Calcium, Nickel, Chromium, Magnesium, Selenium, Antimony, Arsenic, Sodium, Potassium & Tin	In-house method TPCD-ICP/FA-001 by ICP-OES based on AOAC 999.11 and APHA 3120B
Cosmetic and detergent **Plant**	pH Moisture	BS EN 1262 In-house method TPCD-GV/F&S-002 based on Handbook of Reference Methods for Plant Analysis, Soil and Plant Analysis Council Inc.
Soil	pH Moisture	Determination of soil reaction (pH), Manual of Laboratory Methods of Chemical Soil Analysis, Rubber Research Institute Malaysia, 1980, Page 10 Procedure for soil analysis, FAO, UN
Plastics **Child Drinking Equipment** **Raw Chemical Material**	Ash Volatile Matter Ethanol	Method A, BS EN ISO 3451-1 5.6: Determination of Volatile Compounds Content, BS EN 14350-2 AOAC 984.14
Fertilizers	Magnesium and Calcium by titration (inorganic fertilizer) Potassium (inorganic fertilizer) Total Phosphorus Organic Matter (organic fertilizer) Moisture Organic Carbon	AOAC 964.01 AOAC 958.02 AOAC 958.01 AOAC 967.05 In-house method TPCD-GV/F&S-003 based on Testing Methods For Fertilizer, FAMIC In-house method TPCD-TV/F&S-003 based on BS 1377-3

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Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Pharmaceuticals Raw Material & Dietary Supplement	CoQ10	AOAC 2008.07
Pharmaceuticals Drug	Amlodipine Besylate	EP 5.0: 01/2005:1491
	Menthol Camphor Methyl salicylate	AOAC 972.55
	Loss on Drying (Moisture)	Chapter <731>, USP 24, NF 19
Pharmaceuticals/ Traditional Medicine Plant Material	Mercury Arsenic Lead Cadmium	In-house method TPCD-ICP/MP-002-R0 based on EPA 3052 and AOAC 986.15 using ICP-OES

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods		
(eg: Frozen Seafood, Oil, Foodstuff)	Antimony	In-house method TPCD-AA/FA001 by AAS based on AOAC 964.16 and APHA3500-Sb B
	Arsenic	In-house method TPCD-AASP/FA001 by Microwave Digestion based on EPA 3052 and TPCD-AA/FA-002 by FIHS-AAS based on AOAC 963.21C
	Cadmium	In-house method TPCD-AA/FA-003 by AAS based on AOAC 973.34
	Lead	In-house method TPCD-AA/FA-006 by AAS based on AOAC 972.23
	Ethanol content (Qualitative)	In-house method TPED-QL/FA-001 by GC based on AOAC 973.23
	Ethanol content (Quantitative)	AOAC 984.14

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods (continued)		
(eg: Frozen Seafood, Oil, Foodstuff)	pH	BS EN 1132
	Mercury	In-house method TPCD-AASP/FA-001 by Microwave Digestion based on EPA 3052 and TPCD-AA/FA-007 by FIMS
	Copper	In-house method TPCD-AA/FA-005 by AAS based on AOAC 968.08 & 965.09D-E
	Zinc	In-house method TPCD-AA/FA-008 by AAS based on AOAC 969.32
	Chromium	In-house method TPCD-AA/FA-004 by AAS based on AOAC 974.27
	Total Calories (Energy Value)	In-house method TPCD-CAL/FA-001 based on Methods of Analysis For Nutrition Labeling (AOAC) Page 106
	Protein Content/ Total Kjeldahl Nitrogen	In-house method TPCD-TV/FA-001 based on Methods of Analysis For Nutrition Labeling (AOAC), 28 14 (AOAC 991.20-Kjeldahl)
	Ash Content	In-house method TPCD-GV/FA-001 based on Methods of Analysis For Nutrition Labeling (AOAC), 10.1 (AOAC 940.26 - Drinks & Juices) & 10.20 (AOAC 923.03 - Dry Sample)
	Total Fat	In-house method TPCD-GV/FA-002 based on Methods of Analysis For Nutrition Labeling (AOAC), 18.9 (AOAC 989.05 - Modified Mojonnier)

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods (Solid Foods, Liquid Foods & Drinks)	Total Fat	In-house method TPCD-GV/FA-009 based on Methods of Analysis For Nutrition Labeling (AOAC), 18.22 (AOAC 963.15 - Soxhlet)
Edible oil Foods (Solid Foods, Liquid Foods & Drinks)	Crude Fibre	In-house method TPCD-GV/FA-003 based on Pearson's Chemical Analysis of Food
	Moisture Content	In-house method TPCD-GV/FA-004 based on Methods of Analysis For Nutrition Labeling (AOAC), 23.15 (AOAC 984.25 - Convection Oven)
	Moisture Content	In-house method TPCD-TV/FA-002 based on Methods of Analysis For Nutrition Labeling (AOAC), 23.4 (AOAC 977.10 - Karl Fischer)
	Total Carbohydrate	In-house method TPCD-CAL/FA-002 based on Methods of Analysis For Nutrition Labeling (AOAC), Page 106
	Total Sugar	In-house method TPCD-TV/FA-003 based on Methods of Analysis For Nutrition Labeling, 33.64 (AOAC 968.28 – Lane-Leynon)
	Benzoic Acid & its salt Sorbic Acid & its salt	In-house method TPCD-LC/FA-001 by HPLC based on BS ISO 9231
	Salt (as sodium chloride)	In-house method TPCD-TV/FA-006 based on MS 1120
	Total Aflatoxin	In-house method TP/BD-004 based on Total Aflatoxin ELISA Test Kit Manual

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods (continued)		
Edible oil Foods (Solid Foods, Liquid Foods & Drinks)	Brix	AOAC 932.14
	Sudan I, II, III, IV & Red G Para Red	In-house method TPCD-LC/FA-008 based on Government Chemist Publication Analytical Method: LGC/GC/2007/005
	Histamine	In-house method TP/BD-005 based on Histamine ELISA Test Kit Manual
	Rhodamine B	In-house method TPCD-LC/FA-010 based on Government Chemist Publication LGC/GC/2007/005
	Borax	In-house method TPCD-ICP-FA-005 based on GB/T 21918
	Fomaldehyde	In-house method TPCD-UV/FA-001 based on AOAC 964.21
	Salicylic Acid	USP monographs: Salicylic Acid
Foods (Solid Foods, Liquid Foods, Paste, Pickle, Syrup, Meat, Jam, Jelly, Sauce, Pulp, Puree, Vegetables and Vegetable Product, Vinegar, Wines, Drinks, Essence and Flavoured Drink, Flour, Sugar Concentrate)	Sulphur Dioxide/ Sulphites	In-house method TPCD-TV/FA-007 based on AOAC 975.32 (Qualitative Test) & AOAC 990.28 (Monier-William Quantitative Test)
Spices	Moisture by distillation	AOAC 986.21
Herbs, spices and condiments, flour and confectionary	pH	AOAC 943.02
Eggs, fish products, flour and confectionary, beverages, nuts, sauces, coffee mixtures	Mercury	In-house method TPCD-ICP/FA-006-R0 based on EPA 3052 using ICP-OES

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Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods Meat, poultry and derived products	Nitrate and Nitrite	In-house method TPCD-LC/FA-012-R0 based on BS 12014-4 (sample preparation) and Waters Innovative Method Book; Method A-119
Food (Milk, Juice, Sauce)	Vitamin D	In-house method TPCD-LC/FA-011 based on AOAC 995.05
Food (Meat, canned meat products)	Phosphorus	In-house method TPCD-UV/FA-001 based on AOAC 969.31 and AOAC 958.01
Bird Nest	Nitrate and Nitrite	In-house method TPCD-LC/FA-013-R0 by HPLC based on MS 2509 (sample preparation) and Waters Innovative Method Book; Method A-119
Foods (Solid Foods, Liquid Foods & Drinks)	Vitamin C (Ascorbic Acid) Maleic Acid	In-house method TPCD-LC/FA-002 by HPLC based on BS EN 14130 In-house method TPCD-LC/FA-004 by HPLC based on Method of Test for Total Amount of Maleic Acid and Maleic Anhydride in Foods, Department of Health, Taiwan

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods Seafood, fish, fish product, meat, feed and honey	Chloramphenicol	In-house method TPBD-002 by ELISA based on MaxSignal ELISA test kit – 1013
Coffee & Coffee Products	Caffeine	In-house method TPCD-LC/FA-003 by HPLC based on BS ISO 20481
Tea & Tea Products	Caffeine	In-house method TPCD-LC/FA-003 by HPLC based on BS ISO 10727
Edible Oil and Fats Crude & Refined Palm Oil	Peroxide Value Iodine Value Free Fatty Acid Moisture and Volatile Matter Insoluble Impurity DOBI Total Fatty Matter	AOAC 965.33, 2023 / MPOB p2.3 AOAC 993.20, 2023 / MPOB p3.2 AOCS Ca 5a-40, 2017 / MPOB p2.5 AOCS Ca 2d-25, 2017/MPOB p2.1/Part 1 MPOB p2.2 MPOB p2.9 MPOB p3.7
Edible Oil Foods (Solid Foods, Liquid Foods & Drinks)	Fatty acid composition Saturated fat Unsaturated fat Trans- fat	In-house method TPED-GC/FA-001 by GC based on AOAC 963.22 & 969.33 & 985.21

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods		
Feed	Crude protein	In-house method by Kjeldahl, TPCD-TV/FA-005 based on AOAC 984.13
	Ash Content	MS ISO 5984
	Crude Fat	MS 1416
	Crude Fiber	In-house method TPCD-GV/FA-007 based on MS 1414
	Crude Protein	In-house method TPCD-TV/FA-004 by Kjeldahl based on MS ISO 5983-2
	Moisture Content	In-house method TPCD-GV/FA-008 based on MS ISO 6496
	Total Phosphorus	In-house method TPCD-UV/FS-001 based on AOAC 965.17
	Histamine	In-house method TP/BD-005 based on Histamine ELISA Test Kit Manual
	Lead, Cadmium, Copper, Iron, Zinc, Manganese, Calcium, Nickel, Chromium, Magnesium, Selenium, Antimony, Arsenic, Sodium, Potassium & Tin	In-house method TPCD-ICP/FS-001 by ICP-OES based on AOAC 968.08 and APHA 3120B

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods (continued) Feed	Total Carbohydrates Nitrogen Free Extract Total Volatile base Nitrogen	In-house method TPCD-CAL/FS-001 based on BS EN 16967 In-house method TPCD-TV/FS-001 based on AOAC 920.03 and Pearson: Laboratory Techniques in Food
	Acid Value Free Fatty Acid	In-house method TPCD-TV/FS-003 based on AOCS Ca 5a-40
	Pepsin Digestability Pepsin Indigestible Protein Pepsin Indigestibility	In-house method TPCD-TV/FS-002 based on AOAC 971.09 & MS ISO 5983-2
	Salt (as sodium chloride)	In-house method TPCD-TV/FS-004 based on MS 1120

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental Monitoring		
Effluent, Industrial Waste & Waste Water	Digestion Method	APHA 3030 E, F, K & J
	Temperature (on-site)	APHA 2550 B
	pH Value	APHA 4500-H^+B
	Colour	HACH 8025
	Turbidity	HACH 8237
	BOD_5	APHA 5210 B & APHA 4500-O G,
	COD	APHA 5220 B
	Suspended Solids	APHA 2540 D
	Oil & Grease	APHA 5520 B
	Ammonical Nitrogen	APHA 4500-NH_3 B & C
	Total Nitrogen	APHA 4500-N_{org} B
	Anionic Detergent	APHA 5540 C
	Arsenic	APHA 3114
	Chloride	APHA 4500 Cl^- B
	Chlorine, Total	HACH 8167
	Chlorine, Free	APHA 4500-Cl B/HACH 8021
	Chromium, Hexavalent	APHA 3500-Cr B
	Chromium, Trivalent	In-house method TPED-UV/WA-004 based on APHA 3500-Cr D (1990) and APHA 3120B (By Calculation)
	DO	APHA 4500-OG

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental Monitoring (continued) Effluent, Industrial Waste & Waste Water	Chromium, Cadmium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Sodium, Zinc	APHA 3111 B
	Fluoride	APHA 4500-F^- C
	Mercury	APHA 3112 B
	Nitrate	APHA 4500-NO_3^- E HACH 8039
	Nitrite	APHA 4500-NO_2^- B HACH 8153
	Phenol	APHA 5530 B & C HACH 8047
	Phosphorus	APHA 4500-P B & C
	Selenium	APHA 3500-Se B
	Sulfate	APHA 4500-SO_4^{2-} E
	Sulfide	APHA 4500-S^{2-} C & D HACH 8131
	Heavy Metal (As, Be, Ca, Cd, Co, Cr, Cu, Fe, Li, Mg, Mn, Ni, Pb, Sb, Se, Sr, Ti, Tl, V, Zn, K, Si, Al, B, Ba, Na, Ag, Sn, Mo)	APHA 3120 B (ICP-OES)
	Colour (ADMI)	APHA 2120 F (Manual & Automated)
	Formaldehyde	HACH 8110
	Cyanide	HACH 8027
	Total solids	APHA 2540 B
	Total dissolved solids	APHA 2540 C

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental Monitoring (continued)		
Effluent, Industrial Waste & Waste Water	Fixed and volatile solids (MLVSS)	APHA 2540 E
	Alkalinity	APHA 2320 B
	Hardness	APHA 2340 C
	Mixed liquor suspended solids (MLSS)	In-house method TPED-GV/WA-007 based on APHA 2540 D
	Conductivity	APHA 2510 B
Solid Waste and Liquid Waste	Heavy Metal (Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, Mo, Mn, Ni, Pb, Sb, Se, Sn, Ti, Tl, Zn)	USEPA 3051A & 6010D
Solid Waste and Sludge	Chloride	APHA 4500 Cl- B
	Oil & Grease	APHA 5520 E
	Toxicity Characteristic Leaching Procedures (TCLP)	USEPA 1311
	Determination for TCLP Leachates :-	
	Leachable Arsenic	APHA 3114 B
	Leachable Boron	APHA 3120 B (ICP-OES)
	Leachable Cadmium, Chromium, Copper, Lead, Nickel & Zinc	APHA 3111 B
	Leachable Mercury	APHA 3112 B
	Water Content	In-house method TPCD-TV/WE-001 based on ASTM D95
	pH	USEPA 9045 D

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental Monitoring		
Liquid Waste	Specific Gravity	ASTM D 891, 2018
	Boiling Point	In-house method TPCD-TH/WE-001 based on ASTM D 1120
	pH	APHA 4500-H^+ B
Oil Waste	Sediment	In-house method TPCD-GV/WE-001 based on ASTM D 4807
	Water Content	In-house method TPCD-TV/WE-001 based on ASTM D95
Rubber & Palm Oil Mill Effluent	BOD_3	DOE Alt. Method (Malaysia) 2019
	COD	DOE Ref. Method (Malaysia) 2019
	Suspended Solids	DOE Ref. Method (Malaysia) 2019
	Oil & Grease	DOE Ref. Method (Malaysia) 2019
	Ammonical Nitrogen	DOE Ref. Method (Malaysia) 2019
	Total Nitrogen	DOE Alt. Method (Malaysia) 2019

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Water Potable & Domestic Water, Packed Drinking Water, Natural Mineral Water & Underground Water	Digestion Method Temperature (on-site) pH Value Colour Turbidity BOD_5 COD Suspended Solids Oil & Grease Ammonical Nitrogen Total Nitrogen	APHA 3030 E, F, K & J APHA 2550 B APHA 4500-H^+ B HACH 8025 HACH 8237 APHA 5210 B & APHA 4500-O G APHA 5220 B APHA 2540 D APHA 5520 B APHA 4500-NH_3 B & C APHA 4500-N_{org} B
	Anionic Detergent	APHA 5540 C
	Arsenic Chloride Chlorine, Total	APHA 3114 APHA 4500 Cl^- B HACH 8167
	Chlorine, Free	APHA 4500-Cl B HACH 8021
	Chromium, Hexavalent	APHA 3500-Cr B
Water, Drinking Water & Vended Water	DO	APHA 4500-OG

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Water (continued) Potable & Domestic Water, Packed Drinking Water, Natural Mineral Water & Underground Water	Chromium, Cadmium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Sodium, Zinc	APHA 3111 B
	Fluoride	APHA 4500-F^- C
	Mercury	APHA 3112 B
	Nitrate	APHA 4500-NO_3^- E HACH 8039
	Nitrite	APHA 4500-NO_2^- B HACH 8153
	Phenol	APHA 5530 B & C HACH 8047
	Phosphorus	APHA 4500-P B & C
	Sulfate	APHA 4500-SO_4^{2-} E
	Sulfide	APHA 4500-S^{2-} C & D HACH 8131
	Heavy Metal (As, Be, Ca, Cd, Co, Cr, Cu, Fe, Li, Mg, Mn, Ni, Pb, Sb, Se, Sr, Ti, Tl, V, Zn, K, Si, Al, B, Ba, Na, Ag, Sn, Mo)	APHA 3120 B (ICP-OES)
	Colour (ADMI)	APHA 2120 F (Manual & Automated)
	Formaldehyde	HACH 8110
	Cyanide	HACH 8027
	Total solids	APHA 2540 B
	Total dissolved solids	APHA 2540 C
	Fixed and volatile solids (MLVSS)	APHA 2540 E
	Alkalinity	APHA 2320 B

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Water (continued) Potable & Domestic Water, Packed Drinking Water, Natural Mineral Water & Underground Water	Hardness Turbidity	APHA 2340 C APHA 2130 B
	Chlorine, Total Chlorine, Free	APHA 4500-Cl G
	Ammonia	APHA 4500-NH_3 D
	Conductivity	APHA 2510 B

Notes:

FDA	:	Food and Drug Administration
APHA	:	American Public Health Association, "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005
ASTM	:	American Society for Testing and Materials
USP	:	United States Pharmacopoeia
AOAC	:	Association of Official Analytical Chemist, 19th Edition
DOE	:	Department of Environment, Malaysia
USEPA	:	United States Environmental Protection Agency
BS EN	:	British Standard European Standard
3M™ MDS	:	The system is register under brand name of 3M
MPOB	:	Malaysian Palm Oil Board
AOCS	:	American Oil Chemist Society
MS	:	Malaysian Standard
EP	:	European Pharmacopeia
FAO	:	Food and Agriculture Organization
FAMIC	:	Food and Agricultural Materials Inspection Center
UN	:	United Nation
GB	:	Guo Biao National Standard of the People's Republic of China
BP	:	British Pharmacopoeia

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SCOPE OF TESTING: MOLECULAR

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Foods Meat & meat products, processed meat, Fish & fish products, Processed food, & Fishmeal.	Porcine DNA	In-house method TPBD-001 based on MaxDetect Porcine PCR Detection Kit

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