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LABORATORY LOCATION/ CENTRAL OFFICE:	Union Laboratories Sdn Bhd No. 14 Jalan Kurau Chai Leng Park 13700 Butterworth, Pulau Pinang , 13700, PULAU PINANG MALAYSIA
ACCREDITED SINCE :	05 FEBRUARY 2025
FIELD(S) OF TESTING:	MICROBIOLOGICAL CHEMICAL

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).

CENTRAL LOCATION:	Union Laboratories Sdn Bhd No. 14 Jalan Kurau Chai Leng Park 13700 Butterworth, Pulau Pinang , 13700, Pulau Pinang
FIELD(S) OF TESTING :	MICROBIOLOGICAL, CHEMICAL

SCOPE OF TESTING : MICROBIOLOGICAL

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
Food And 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)
Food And 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	Bacteriological Analytical Manual FDA, Chapter 4; 2013
	Enumeration of Coliforms by Pour Plate Method & MPN	GB 4789.3:2010
	Coliform Count by Pour Plate Method & MPN	Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001. Chapter 8
	Total Coliform Count by Pour Plate Method by MPN Method	ISO 4832 (2006) ISO 4831.2 (2006)
	Escherichia coli Count by MPN Method / Pour Plate Method	Bacteriological Analytical Manual FDA, Chapter 4; 2013
	E. Coli Count by MPN by Pour Plate Method	Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001. Chapter 8
	Escherichia coli count by MPN Method	ISO 7251 (2005)
	Staphylococcus aureus Count by Spread Plate Method by Enrichment Method	Bacteriological Analytical Manual FDA, Chapter 12; 2001
	Enumeration and Detection of Staphylococcus aureus by Enrichment by Spread Plate Method by MPN Method	GB 4789.10:2010
	Coagulase Positive Staphylococcus aureus and other species by Spread Plate Method	ISO 6888-1 (2003)
	Isolation & Detection of Salmonella spp.	Bacteriological Analytical Manual FDA, Chapter 5, 2014

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Detection of Salmonella spp.	GB 4789.4:2010 ISO 6579 (2002)
	Isolation & Detection of Vibrio cholerae & Vibrio parahaemolyticus	Bacteriological Analytical Manual FDA, Chapter 9; 2004
	Detection of Vibrio cholera and Vibrio parahaemolyticus	ISO/TS 21872-1 (2007)
	Yeast and Mold Count	Compendium of Method for the Microbiological Examination of Food, 4 th Ed, 2001. Chapter 20
	Yeast & Mold Count by Spread Plate Method by Pour Plate Method	Bacteriological Analytical Manual FDA, Chapter 18; 2001
	Enumeration of Yeast and Mold by Pour Plate Method	GB 4789.15:2010
	Total Yeast & Mould countWater activity more than 0.95 by Spread Plate Method	ISO 21527-1 (2008)
	Total Yeast & Mould countWater activity less than 0.95 by Spread Plate Method	ISO 21527-2 (2009)
	Isolation & Detection of Listeria	Compendium of Method for the Microbiological Examination of Food, 4 th Ed, 2001. Chapter 36
	Detection and Enumeration of Listeria monocytogenes	Bacteriological Analytical Manual FDA, Chapter 10; 2011
	Bacillus cereus Count	Bacteriological Analytical Manual FDA, Chapter 14; 2002
	Enumeration of presumptive Bacillus cereus by Spread Plate Method	ISO 7932 (2004)
	Detection & Enumeration of Enterobactericeae by Enrichment Method by Pour Plate Method	Compendium of Methods for Microbiological Examination of Foods, 4th Ed. 2001. Chapter 8
	by Petrifilm Method	AOAC 2003.01 (2012)
	Detection and Enumeration of Enterobacteriaceae by Pour Plate Method with pre-enrichment & by MPN	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, 4 th 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

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**
Food And Feed Sauces & Fishmeal	Detection of Genetically modified organism targeting two target sequence which are Cauliflower Mosaic Virus and Agrobacterium tumefaciens	TPBD-007 based on Real Time PCR by qPCR Detection Kit
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
Foods milk & Milk Powder, Milk Base Food & Feed Products	Isolation & Detection of Chronobacter sakazakii (Enterobactor sakazakii)	ISO/TS 22964:2006
Foods processed Food, Dried Foods & Cereals Snack Foods, Fruit Drinks & Juices	Lactic acid bacteria/ Lactobacillus Count/ Acid Producing microorganisms	Compendium Methods for Microbiological Examination of Foods, 4th Ed, 2001. Chapter 19
Foods processed Foods, Preserved Foods, Syrup	Halophilic & Osmophilic microorganism Count	Compendium Methods for Microbiological Examination of Foods, 4th Ed, 2001, Chapter 17
Foods 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, 4 th Ed. 2001. Chapter 26/ Chapter 23 Compendium of Method for the Microbiological Examination of Food, 4 th Ed. 2001. Chapter 5/ Chapter 24/ Chapter 25
	Isolation & Detection of Clostridium perfringens / Clostridium perfringens Count	Bacteriological Analytical Manual FDA, Chapter 16; 2001
	Isolation & Detection of Clostridium botulinum	Bacteriological Analytical Manual FDA, Chapter 17; 2001)

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**
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
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.	Bacteriological Analytical Manual FDA, Chapter 5, 2014
	Detection of Salmonella	3MTM 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	Compendium of Method for the Microbiological Examination of Food, Chapter 36; by APHA, 4th Ed. 2001
	Detection & Enumeration of Listeria monocytogenes	Bacteriological Analytical Manual FDA, Chapter 10; 2011
	Isolation & Detection of Shigella	Compendium of Methods for Microbiological Examination of Foods, Chapter 38; by APHA, 4 th Ed. 2001
	Isolation & Detection of Chronobacter sakazakii (Enterobactor sakazakii)	ISO/TS 22964:2006

Material / Product 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
Cosmetics Cosmetic And Toiletries	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

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**
Pharmaceuticals Swab	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	Microbial Enumeration Test: 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
	Isolation, Detection & Enumeration of Specified Microorganism Test: a) Bile-tolerant gram-negative bacteria b) Escherichia coli	U.S. Pharmacopoeia, Chapter <62>, 2015 British Pharmacopoeia, Appendix XVI B & F, 2013
	Isolation & Detection of Specified Microorganism Test: 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
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
Miscellaneous Material & Products Disinfectant Sanitizer	Antimicrobial Effectiveness Test	USP 51, 24th Edition, 2000
	Microbial Limit Test	Asean Guidelines version 3.0 (2017) based on ACM THA 06 Asean Cosmetics Harmonized testing method (2006)

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Preservative Efficacy test	Asean Guidelines version 1.0 (2005) based on ACM MAL 08 Asean Cosmetics Harmonized testing method (2005)
Miscellaneous Material & Products Cosmetics	Antimicrobial Effectiveness Test	USP 51, 24th Edition, 2000
	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)

SCOPE OF TESTING : CHEMICAL

Material / Product 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 (17th Ed) and APHA 3120B (21st Ed)
Dye & Dye Intermediates (eg: Pigment, Dye)	Cadmium	In-house method TPCD-AA/CIM-001 by AAS based on BS EN 1122
	Antimony, Arsenic, Cadmium, Chromium, Lead & Mercury	In-house method TPCD-AA/CIM-002 by AAS based on EN71 and APHA 3111B
Paper (eg:paper, Packages)	Cadmium	In-house method TPCD-AA/CIM-001 by AAS based on BS EN 1122
	Antimony, Arsenic, Cadmium, Chromium, Lead & Mercury	In-house method TPCD-AA/CIM-002 by AAS based on EN71 and APHA 3111B
Rubber	Cadmium	In-house method TPCD-AA/CIM-001 by AAS based on BS EN 1122
	Antimony, Arsenic, Cadmium, Chromium, Lead & Mercury	In-house method TPCD-AA/CIM-002 by AAS based on EN71 and APHA 3111B
Polymers	Cadmium	In-house method TPCD-AA/CIM-001 by AAS based on BS EN 1122

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Antimony, Arsenic, Cadmium, Chromium, Lead & Mercury	In-house method TPCD-AA/CIM-002 by AAS based on EN71 and APHA 3111B
Metals	Cadmium	In-house method TPCD-AA/CIM-001 by AAS based on BS EN 1122
	Antimony, Arsenic, Cadmium, Chromium, Lead & Mercury	In-house method TPCD-AA/CIM-002 by AAS based on EN71 and APHA 3111B
Cosmetic And Detergent	pH	BS EN 1262:2003
	Moisture	In-house method TPCD-GV/F&S002 based on Handbook of Reference Methods for Plant Analysis, Soil and Plant Analysis Council Inc.
Plant	pH	BS EN 1262:2003
	Moisture	In-house method TPCD-GV/F&S002 based on Handbook of Reference Methods for Plant Analysis, Soil and Plant Analysis Council Inc.
Soil	pH	Determination of soil reaction (pH), Manual of Laboratory Methods of Chemical Soil Analysis, Rubber Research Institute Malaysia, 1980, Page 10
	Moisture	Procedure for soil analysis, 6th edition, FAO, UN
Plastics	Ash	Method A, BS EN ISO 3451-1:2008
	Volatile Matter	5.6: Determination of Volatile Compounds Content, BS EN 14350-2:2004
	Ethanol	AOAC 984.14
Child Drinking Equipment	Ash	Method A, BS EN ISO 3451-1:2008
	Volatile Matter	5.6: Determination of Volatile Compounds Content, BS EN 14350-2:2004
	Ethanol	AOAC 984.14
Raw Chemical Material	Ash	Method A, BS EN ISO 3451-1:2008
	Volatile Matter	5.6: Determination of Volatile Compounds Content, BS EN 14350-2:2004
	Ethanol	AOAC 984.14
Fertilizers	Magnesium and Calcium by titration (inorganic fertilizer)	AOAC 964.01

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Potassium (inorganic fertilizer)	AOAC 958.02
	Total Phosphorus	AOAC 958.01
	Organic Matter (organic fertilizer)	AOAC 967.05
	Moisture	In-house method TPCD-GV/F&S003 based on Testing Methods For Fertilizer, FAMIC, 2013
	Organic Carbon	In-house method TPCD-TV/F&S003 based on BS 1377-3 1990
Pharmaceuticals Raw Material & Dietary Supplement	CoQ10	AOAC 2008.07 (18th Ed)
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, 2000
Pharmaceuticals/ Traditional Medicine Plant Material	Mercury Arsenic Lead Cadmium	In-house method TPCD-ICP/MP002-R0 based on EPA 3052 and AOAC 986.15, 19th Edition using ICP-OES
Tablet	Lovastatin	USP38-NF33 using HPLC
Foods (eg: Frozen Seafood, Oil, Foodstuff)	Antimony	In-house method TPCD-AA/FA001 by AAS based on AOAC 964.16 (17th Ed) and APHA3500-Sb B
	Arsenic	In-house method TPCDAASP/FA001 by Microwave Digestion based on EPA 3052 and TPCD-AA/FA-002 by FIHS-AAS based on AOAC 963.21C (17th Ed)
	Cadmium	In-house method TPCD-AA/FA-003 by AAS based on AOAC 973.34 (17th Ed)
	Lead	In-house method TPCD-AA/FA-006 by AAS based on AOAC 972.23 (17th Ed)
	Ethanol content (Qualitative)	In-house method TPED-QL/FA-001 by GC based on AOAC 973.23
	Ethanol content (Quantitative)	AOAC 984.14
	pH	BS EN 1132:1995

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Mercury	In-house method TPCD-AASP/FA001 by Microwave Digestion based on EPA 3052 and TPCD-AA/FA007 by FIMS
	Copper	In-house method TPCD-AA/FA-005 by AAS based on AOAC 968.08 & 965.09D-E (17th Ed)
	Zinc	In-house method TPCD-AA/FA-008 by AAS based on AOAC 969.32 (17th Ed)
	Chromium	In-house method TPCD-AA/FA-004 by AAS based on AOAC 974.27 (17th Ed)
	Total Calories (Energy Value)	In-house method TPCD-CAL/FA001 based on Methods of Analysis For Nutrition Labeling (AOAC 1993), Page 106
	Protein Content/ Total Kjeldahl Nitrogen	In-house method TPCD-TV/FA-001 based on Methods of Analysis For Nutrition Labeling (AOAC 1993), 28 14 (AOAC 991.20-Kjeldahl)
	Ash Content	In-house method TPCD-GV/FA-001 based on Methods of Analysis For Nutrition Labeling (AOAC 1993), 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 1993), 18.9 (AOAC 989.05 - Modified Mojonnier)
Foods (solid Foods, Liquid Foods & Drinks)	Total Fat	In-house method TPCD-GV/FA-009 based on Methods of Analysis For Nutrition Labeling (AOAC 1993), 18.22 (AOAC 963.15 - Soxhlet)
Foods 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 (8th Ed, 1981)
	Moisture Content	In-house method TPCD-GV/FA-004 based on Methods of Analysis For Nutrition Labeling (AOAC 1993), 23.15 (AOAC 984.25 - Convection Oven)

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Moisture Content	In-house method TPCD-TV/FA-002 based on Methods of Analysis For Nutrition Labeling (AOAC 1993), 23.4 (AOAC 977.10 - Karl Fischer)
	Total Carbohydrate	In-house method TPCD-CAL/FA002 based on Methods of Analysis For Nutrition Labeling (AOAC 1993), Page 106
	Total Sugar	In-house method TPCD-TV/FA-003 based on Methods of Analysis For Nutrition Labeling (1993), 33.64 (AOAC 968.28 – Lane-Leynon)
	Benzoic Acid & its salt	In-house method TPCD-LC/FA-001 by HPLC based on BS ISO 9231: 2008
	Sorbic Acid & its salt	In-house method TPCD-LC/FA-001 by HPLC based on BS ISO 9231: 2008
	Salt (as sodium chloride)	In-house method TPCD-TV/FA-006 based on MS 1120:2012
	Total Aflatoxin	In-house method TP/BD-004 based on Total Aflatoxin ELISA Test Kit Manual
	Brix	AOAC 932.14, 22nd Edition, 2023
	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-FA005 based on GB/T 21918-2008
	Fomaldehyde	In-house method TPCD-UV/FA-001 based on AOAC 964.21
	Salicylic Acid	USP monographs: Salicylic Acid

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
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 (MonierWilliam Quantitative Test)
Foods Meat, Poultry And Derived Products	Nitrate and Nitrite	In-house method TPCD-LC/FA012-R0 based on BS 12014-4:2005 (sample preparation) and Waters Innovative Method Book; Method A119
Foods (milk, Juice, Sauce)	Vitamin D	In-house method TPCD-LC/FA-011 based on AOAC 995.05
Foods (meat, Canned Meat Products)	Phosphorus	In-house method TPCD-UV/FA-001 based on AOAC 969.31 and AOAC 958.01
Foods Bird Nest	Nitrate and Nitrite	In-house method TPCD-LC/FA013-R0 by HPLC based on MS 2509:2012 (sample preparation) and Waters Innovative Method Book; Method A-119
Foods (solid Foods, Liquid Foods & Drinks)	Vitamin C (Ascorbic Acid)	In-house method TPCD-LC/FA-002 by HPLC based on BS EN 14130: 2003
	Maleic Acid	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 (2013)
Foods Seafood, Fish, Fish Product, Meat, Feed And Honey	Chloramphenicol	In-house method TPBD-002 by ELISA based on MaxSignal ELISA test kit – 1013
Foods Feed	Crude protein	In-house method by Kjeldahl, TPCD-TV/FA-005 based on AOAC 984.13
	Ash Content	MS ISO 5984:2022
	Crude Fat	MS 1416:1997
	Crude Fiber	In-house method TPCD-GV/FA-007 based on MS 1414:1997

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Crude Protein	In-house method TPCD-TV/FA-004 by Kjeldahl based on MS ISO 5983- 2:2011
	Moisture Content	In-house method TPCD-GV/FA-008 based on MS ISO 6496:2003
	Total Phosphorus	In-house method TPCD-UV/FS-001 based on AOAC 965.17, 2012
	Histamine	In-house method TP/BD-005 based on Histamine ELISA Test Kit Manua
	Lead, Cadmium, Copper, Iron, Zinc, Manganese, Calcium, Nickel, Chromium, Magnesium, Selenium, Antimony, Arsenic, Sodium, Potassium & Tin	In-house method TPCD-ICP/FS001 by ICP-OES based on AOAC 968.08 (17th Ed) and APHA 3120B (21st Ed)
	Total Carbohydrates Nitrogen Free Extract	In-house method TPCD-CAL/FS001 based on BS EN 16967, 2015
	Total Volatile base Nitrogen	In-house method TPCD-TV/FS-001 based on AOAC 920.03, 2012 and Pearson: Laboratory Techniques in Food
	Acid Value Free Fatty Acid	In-house method TPCD-TV/FS-003 based on AOCS Ca 5a-40, 1972
	Pepsin Digestability Pepsin Indigestible Protein Pepsin Indigestibility	In-house method TPCD-TV/FS-002 based on AOAC 971.09 & MS ISO 5983-2:2011
	Salt (as sodium chloride)	In-house method TPCD-TV/FS-004 based on MS 1120:2012
Foods spices	Moisture by distillation	AOAC 986.21, 22nd Edition, 2023
Foods herbs, Spices And Condiments, Flour And Confectionary	pH	AOAC 943.02, 22nd Edition, 2023
Foods eggs, Fish Products, Flour And Confectionary, Beverages, Nuts, Sauces, Coffee Mixtures	Mercury	In-house method TPCD-ICP/FA006-R0 based on EPA 3052 using ICP-OES
Foods coffee & Coffee Products	Caffeine	In-house method TPCD-LC/FA-003 by HPLC based on BS ISO 20481: 2008
Foods tea & Tea Products	Caffeine	In-house method TPCD-LC/FA-003 by HPLC based on BS ISO 10727: 2002

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**
Edible Oil And Fats Crude & Refined Palm Oil	Peroxide Value	AOAC 965.33, 2023 / MPOB p2.3:2004
	Iodine Value	AOAC 993.20, 2023 / MPOB p3.2:2004
	Free Fatty Acid	AOCS Ca 5a-40, 2017 / MPOB p2.5:2004
	Acid Value	AOCS Cd 3d-63, 2017
	Moisture and Volatile Matter	AOCS Ca 2d-25, 2017/MPOB p2.1/Part 1:2004
	Insoluble Impurity	MPOB p2.2:2004
	DOBI	MPOB p2.9:2004
	Total Fatty Matter	MPOB p3.7:2004
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 (17th Ed)
Environmental Monitoring Effluent, Industrial Waste & Waste Water	Digestion Method	APHA 3030 E, F, K & J, 2005
	Temperature (on-site)	APHA 2550 B, 2005
	pH Value	APHA 4500-H+B, 2005
	Colour	HACH 8025, 2014
	Turbidity	HACH 8237, 2013
	BOD_5	APHA 5210 B & APHA 4500-O G, 2005
	COD	APHA 5220 B, 2005
	Suspended Solids	APHA 2540 D, 2005
	Oil & Grease	APHA 5520 B, 2005
	Ammonical Nitrogen	APHA 4500-NH3 B & C, 2005
	Total Nitrogen	APHA 4500-N_{org} B, 2005
	Anionic Detergent	APHA 5540 C, 2005
	Arsenic	APHA 3114, 2005
	Chloride	APHA 4500 Cl? B, 2005
	Chlorine, Total	HACH 8167, 2022
	Chlorine, Free	APHA 4500-Cl B/HACH 8021, 2005
	Chromium, Hexavalent	APHA 3500-Cr B, 2005
	Chromium, Trivalent	In-house method TPED-UV/WA004 based on APHA 3500-Cr D (1990) and APHA 3120B (2005) (By Calculation)
	DO	APHA 4500-OG, 2005
	Chromium, Cadmium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Sodium, Zinc	APHA 3111 B, 2005
	Fluoride	APHA 4500-F - C, 2005
	Mercury	APHA 3112 B, 2005
	Nitrate	APHA 4500-NO_3 - E, 2005 HACH 8039, 2019

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**
	Nitrite	APHA 4500-NO_2 -B, 2005 HACH 8153, 2014
	Phenol	APHA 5530 B & C, 2005 HACH 8047, 2014
	Phosphorus	APHA 4500-P B & C, 2005
	Selenium	APHA 3500-Se B, 2005
	Sulfate	APHA 4500-SO_4^{2-} E, 2005
	Sulfide	APHA 4500-S^{2-} C & D, 2005 HACH 8131, 2018
	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) , 2005
	Colour (ADMI)	APHA 2120 F, 2005 (Manual & Automated)
	Formaldehyde	HACH 8110, 2020
	Cyanide	HACH 8027, 2014
	Total solids	APHA 2540 B, 2005
	Total dissolved solids	APHA 2540 C, 2005
	Fixed and volatile solids (MLVSS)	APHA 2540 E, 2005
	Alkalinity	APHA 2320 B, 2005
	Mixed liquor suspended solids (MLSS)	In-house method TPED-GV/WA007 based on APHA 2540 D
	Conductivity	APHA 2510 B, 2005
Environmental Monitoring Liquid Waste	Specific Gravity	ASTM D 891, 2018
	Boiling Point	In-house method TPCD-TH/WE001 based on ASTM D 1120
	pH	APHA 4500-H^+ B, 2005
Environmental Monitoring Oil Waste	Sediment	In-house method TPCD-GV/WE001 based on ASTM D 4807
	Water Content	In-house method TPCD-TV/WE001 based on ASTM D95
Environmental Monitoring 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
Environmental Monitoring 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, 2007 & 6010D, 2018
Environmental Monitoring solid Waste And Sludge	Chloride	APHA 4500 Cl- B, 2005
	Oil & Grease	APHA 5520 E, 2005
	Toxicity Characteristic Leaching Procedures (TCLP)	USEPA 1311, 1992

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Determination for TCLP Leachates :- Leachable Arsenic Leachable Boron Leachable Cadmium, Chromium, Copper, Lead, Nickel & Zinc Leachable Mercury	APHA 3114 B, 2005 APHA 3120 B (ICP-OES), 2005 APHA 3111 B, 2005 APHA 3112 B, 2005
	Water Content	In-house method TPCD-TV/WE001 based on ASTM D95
	pH	USEPA 9045 D, 200
Water Potable & Domestic Water, Packed Drinking Water, Natural Mineral Water & Underground Water	Digestion Method	APHA 3030 E, F, K & J, 2005
	Temperature (on-site)	APHA 2550 B, 2005
	pH Value	APHA 4500-H^+ B, 2005
	Colour	HACH 8025, 2014
	Turbidity	HACH 8237, 2013
	BOD_5	APHA 5210 B & APHA 4500-O G, 2005
	COD	APHA 5220 B, 2005
	Suspended Solids	APHA 2540 D, 2005
	Oil & Grease	APHA 5520 B, 2005
	Ammonical Nitrogen	APHA 4500-NH_3 B & C, 2005
	Total Nitrogen	APHA 4500-N_{org} B, 2005
	Anionic Detergent	APHA 5540 C, 2005
	Arsenic	APHA 3114, 2005
	Chloride	APHA 4500 Cl?B, 2005
	Chlorine, Tota	HACH 8167, 2022
	Chlorine, Free	APHA 4500-Cl B, 2005 HACH 8021, 2014
	Chromium, Hexavalent	APHA 3500-Cr B, 2005
	Hardness	APHA 2340 C, 2005
	Turbidity	APHA 2130 B, 2005
	Chlorine, Total Chlorine, Free	APHA 4500-Cl G, 2005
	Ammonia	APHA 4500-NH3 D, 2005
	Conductivity	APHA 2510 B, 2005
Water Water, Drinking Water & Vended Water	DO	APHA 4500-OG, 2005
	Chromium, Cadmium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Sodium, Zinc	APHA 3111 B, 2005
	Fluoride	APHA 4500-F^- C, 2005
	Mercury	APHA 3112 B, 2005
	Nitrate	APHA 4500-NO_3^- E, 2005 HACH 8039, 2019
	Nitrite	APHA 4500-NO_2 –B, 2005 HACH 8153, 2014
	Pheno	APHA 5530 B & C, 2005 HACH 8047, 2014
	Phosphorus	APHA 4500-P B & C, 2005

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Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques
	Sulfate	APHA 4500-SO_4^{2-} E, 2005
	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), 2005
	Colour (ADMI)	APHA 2120 F, 2005 (Manual & Automated)
	Formaldehyde	HACH 8110, 2020
	Cyanide	HACH 8027, 2014
	Total solids	APHA 2540 B, 2005
	Total dissolved solids	APHA 2540 C, 2005
	Fixed and volatile solids (MLVSS)	APHA 2540 E, 2005
	Alkalinity	APHA 2320 B, 2005