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of SAMM 244 dated 28 February 2023)

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LABORATORY LOCATION: (PERMANENT LABORATORY) 	CHEMSIL AIR & WATER SDN. BHD. 33, JALAN KOTA RAJA H27/H TAMAN ALAM MEGAH, SEKSYEN 27 40400 SHAH ALAM, SELANGOR MALAYSIA
ACCREDITED SINCE:	8 APRIL 2003
FIELD(S) OF TESTING:	CHEMICAL, MICROBIOLOGY
BRANCH LABORATORY:	
1. BRANCH LABORATORY LOCATION	CHEMSIL AIR & WATER SDN. BHD. 1ST FLOOR, LOT 24, HSK INDUSTRIAL CENTRE PHASE 2, JALAN BUNDUSAN, 89500 PENAMPANG, SABAH MALAYSIA
FIELD (S) OF TESTING:	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).

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CENTRAL LABORATORY:	CHEMSIL AIR & WATER SDN. BHD. 33, JALAN KOTA RAJA H27/H TAMAN ALAM MEGAH, SEKSYEN 27 40400 SHAH ALAM, SELANGOR MALAYSIA
FIELD OF TESTING:	CHEMICAL, MICROBIOLOGY

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental Monitoring <ul style="list-style-type: none"> Wastewater/ Effluent 	pH	APHA 4500-H ⁺ B
	Temperature	APHA 2550 A, B
	Biochemical Oxygen Demand @ 20 °C for 5 days	APHA 5210 B
	Chemical Oxygen Demand	APHA 5220 C
	Total Suspended Solids (Mixed Liquor Suspended Solids)	APHA 2540 D
	Cyanide	APHA 4500-CN ⁻ C, D.
	Sulfide as S ²⁻	APHA 4500-S ²⁻ F
	Phenol	APHA 5530 B, C
	Free Chlorine	APHA 4500-Cl F
	Oil & Grease	APHA 5520 B
	Ammonia Nitrogen	APHA 4500-NH ₃ B, 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 <ul style="list-style-type: none"> Wastewater/ Effluent 	Formaldehyde	In-house Method C/WTR/012 based on Intersociety Committee, Methods of Air Sampling and Analysis, Third Edition, Method 117
	Color by ADMI	APHA 2120 F
	Fluoride	APHA 4500-F ⁻ C APHA 4500-F ⁻ D
	Mercury	APHA 3112 B
	Acid Digestion Method	APHA 3030 E APHA 3030 F (a & b)
	Chromium, Hexavalent	APHA 3500-Cr B
	Chromium, Trivalent	In-house Method C/WTR/001 based on APHA 3120 B & APHA 3500-Cr B
	Metals by Inductively Coupled Plasma Emission Spectroscopy: Aluminium Antimony Arsenic Barium Boron Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Molybdenum Nickel Potassium Selenium Silica Silver Sodium Thallium Tin	APHA 3120 B

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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 <ul style="list-style-type: none"> Wastewater/ Effluent 	Fixed and Volatile Solids Ignited at 550 °C (Mixed Liquor Volatile Suspended Solids)	APHA 2540 E
	Nitrogen (Organic)	APHA 4500-N _{org} B
	Total Solids Dried at 103 °C – 105 °C	APHA 2540 B
	Turbidity	APHA 2130 B
	Total Dissolved Solids Dried at 180 °C	APHA 2540 C
	Total Dissolved Solids	In-house Method C/WTR/013 based on HANNA HI 8734 N
	Total Alkalinity as CaCO ₃	APHA 2320 B
	Phenolphthalein Alkalinity as CaCO ₃	
	Carbonate Alkalinity as CaCO ₃	
	Bicarbonate Alkalinity as CaCO ₃	
	Hardness by Calculation	APHA 2340 B
	Total Hardness	APHA 2340 C
	Total Chlorine	HACH Method 8167 APHA 4500-Cl F
	Combined Chlorine as Cl ₂ (Monochloroamine and Dichloroamine)	APHA 4500-Cl F
	Conductivity	APHA 2510 B
	Chloride	APHA 4500-Cl ⁻ B
	Nitrate: Low Range	HACH Method 8192
	Nitrite: Low Range	HACH Method 8507
	Sulfate	HACH Method 8051
	Total Phosphorus	USEPA Method 200.7

Schedule

Issue date: 4 April 2024
Valid until: 8 April 2028



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	Total Phosphate	
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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 <ul style="list-style-type: none"> Palm Oil Effluent 	Biochemical Oxygen Demand for 3 days	D.O.E Revised Standard Method, 4 th Edition 2019
	Chemical Oxygen Demand	APHA 5220 C
	Ammoniacal Nitrogen	APHA 4500-NH ₃ B,C
	Total Suspended Solids	APHA 2540 D
	Total Nitrogen	D.O.E Revised Standard Method, 4 th Edition 2019
	Oil & Grease	APHA 5520 B
<ul style="list-style-type: none"> Solid Wastes Industrial Sludges River Sediment Soils 	Aluminium Antimony Arsenic Barium Boron Calcium Cadmium Chromium Copper Iron Lead Magnesium Manganese Molybdenum Nickel Potassium Selenium Silver Sodium Tin	AOAC 990.08

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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 <ul style="list-style-type: none"> Ground Water Cooling Tower Water Well Water River Water Swimming Pool Water Boiler Water Drinking Water Mineral Water Reverse Osmosis Water Dialysis Water 	pH	APHA 4500-H ⁺ B
	Temperature	APHA 2550 A, B
	Biochemical Oxygen Demand @ 20 °C for 5 days	APHA 5210 B
	Chemical Oxygen Demand	APHA 5220 C
	Oxygen (Dissolved)	APHA 4500-O G
	Ammonia Nitrogen	APHA 4500-NH ₃ B,C
	Cyanide	APHA 4500-CN ⁻ C, D
	Fluoride	APHA 4500-F ⁻ D
	Formaldehyde	In-house Method C/WTR/012 based on Intersociety Committee, Methods of Air Sampling and Analysis, Third Edition, Method 117
	Phenol	APHA 5530 B, C
	Hardness by Calculation	APHA 2340 B
	Total Hardness	APHA 2340 C
	Mercury	APHA 3112 B
	Acid Digestion Method	APHA 3030 E APHA 3030 F (a & b)
	Chromium, Hexavalent	APHA 3500-Cr B
	Chromium, Trivalent	In-House Method C/WTR/001 based on APHA 3120 B & APHA 3500-Cr B

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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 <ul style="list-style-type: none"> Ground Water Cooling Tower Water Well Water River Water Swimming Pool Water Boiler Water Drinking Water Mineral Water Reverse Osmosis Water Dialysis Water 	Metals by Inductively Coupled Plasma Emission Spectroscopy:	APHA 3120 B
	Aluminium	
	Antimony	
	Arsenic	
	Barium	
	Beryllium	
	Boron	
	Cadmium	
	Calcium	
	Chromium	
	Cobalt	
	Copper	
	Iron	
	Lead	
	Magnesium	
	Manganese	
	Molybdenum	
	Nickel	
	Potassium	
	Selenium	
	Silica	
	Silver	
	Sodium	
	Thallium	
	Tin	
	Zinc	
	Sulfide as S ²⁻	APHA 4500-S ²⁻ F
	Total Solids Dried at 103 °C – 105 °C	APHA 2540 B
	Total Dissolved Solids Dried at 180 °C	APHA 2540 C
	Total Dissolved Solids	In-house Method C/WTR/013 based on HANNA HI 8734 N
	Total Suspended Solids	APHA 2540 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
Water <ul style="list-style-type: none"> Ground Water Cooling Tower Water Well Water River Water Swimming Pool Water Boiler Water Drinking Water Mineral Water Reverse Osmosis Water Dialysis Water 	Fixed and Volatile Solids Ignited at 550 °C (Mixed Liquor Volatile Suspended Solids)	APHA 2540 E
	Turbidity	APHA 2130 B
	Nitrogen (Organic)	APHA 4500-N _{org} B
	Oil & Grease	APHA 5520 B
	Total Alkalinity as CaCO ₃	APHA 2320 B
	Phenolphthalein Alkalinity as CaCO ₃	
	Carbonate Alkalinity as CaCO ₃	
	Bicarbonate Alkalinity as CaCO ₃	
	Free Chlorine	APHA 4500-Cl F
	Total Chlorine	HACH Method 8167
		APHA 4500-Cl F
	Combined Chlorine as Cl ₂ (Monochloroamine and Dichloroamine)	APHA 4500-Cl F
	Chloride	APHA 4500-Cl ⁻ B
	Conductivity	APHA 2510 B
	Nitrate: Low Range	HACH Method 8192
	Nitrite: Low Range	HACH Method 8507
	Sulfate	HACH Method 8051
<ul style="list-style-type: none"> Drinking Water 	Mineral Oil	APHA 5520 F
<ul style="list-style-type: none"> Drinking Water Dialysis Water Ground Water Pond Water Raw Water River Water Swimming Pool Water 	Fluoride	APHA 4500-F ⁻ C
	Colour	HACH Method 8025
	Free Chlorine	HACH Method 8021

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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 <ul style="list-style-type: none"> Drinking Water Ground Water Raw Water Dialysis Water Mineral Water 	Chloride Fluoride Nitrate Nitrite Sulfate	APHA 4110 B
<ul style="list-style-type: none"> River Water 	Total Phosphorus Total Phosphate	USEPA Method 200.7
<ul style="list-style-type: none"> Drinking Water River Water 	Anionic Surfactants as MBAS	APHA 5540 C
<ul style="list-style-type: none"> Marine Water 	Total Suspended Solids	APHA 2540 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
Food <ul style="list-style-type: none"> Animal Feed Forage Grain Oil Seed 	Protein (Crude)	AOAC 2001.11
<ul style="list-style-type: none"> Beverages Confectionary Products Chocolate and Cocoa Products Cereal Products Dairy Products (Solid) Food Supplement Honey Powdered Food Sandwiches/Pastries Sauces Paste and Jam Meat & Meat Products Fish & Fish Products Ready Meals Fruit & Fruit Products 	Moisture	In-house Method C/FOD/014 based on AOAC 925.45
	Ash	In-house Method C/FOD/015 based on AOAC 920.153
	Protein (Crude)	In-house Method C/FOD/016 based on AOAC 2001.11
	Total Fat	In-house Method C/FOD/017 based on AOAC 922.06 & 932.06
<ul style="list-style-type: none"> Beverages Confectionary Products Chocolate and Cocoa Products Cereal Products Dairy Products (Solid) Food Supplement Powdered Food Sandwiches/Pastries Sauces Paste and Jam 	Total Dietary Fiber	AOAC 985.29
<ul style="list-style-type: none"> Meat and Meat Products 	Moisture	AOAC 950.46
	Free Fat	ISO 1444:1996
<ul style="list-style-type: none"> Flour 	Ash	AOAC 923.03
<ul style="list-style-type: none"> Meat 		AOAC 920.153
<ul style="list-style-type: none"> Spices and Condiment 		MS 81 : Part 2 : 1993

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Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Food		
• Flour	pH	AOAC 943.02
• Bread	pH	AOAC 945.42
• Vegetable	Heavy Metal (As,Cd, Pb, Sb)	In-house Method C/FOD/018 based on AOAC 969.32 & APHA 3120 B
	Mercury (Hg)	In-house Method C/FOD/008 based on International Food Research Journal 19(1):135 – 140 (2012)
• Food	Tin (Sn)	In-house Method C/FOD/029 based on AOAC 985.16 & USEPA 200.7
• Alcoholic Beverages	Ethanol	In-house Method C/FOD/030 based on Journal of Food and Drug Analysis 11(2):133-140 (2003)
• Meat & Meat Products	Nitrite	In-house Method C/FOD/032 based on AOAC 973.31

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Food <ul style="list-style-type: none"> Food and Food Supplements 	Sample Preparation Using Dry Ashing Method for Food	In-house Method C/FOD/011 based on AOAC 999.11
	Metals and Minerals by Inductively Coupled Plasma Emission Spectroscopy: Calcium Iron Potassium Sodium	APHA 3120 B
<ul style="list-style-type: none"> Vegetables Fats Animal Fats 	Cholesterol	AOAC 970.51
<ul style="list-style-type: none"> Soft Drinks 	Benzoic Acid	In-house Method C/FOD/004 based on AOAC 999.11
<ul style="list-style-type: none"> Food Food Products 	Ascorbic Acid (Vitamin C)	In-house Method C/FOD/003 based on USP 27
	Benzoic Acid Sorbic Acid Methyl Paraben Ethyl Paraben Propyl Paraben Butyl Paraben	In-house Method C/FOD/002 Based on USDA Food Safety and Inspection Service Method CLG-BSP.01
<ul style="list-style-type: none"> Milk Milk Products 	Fat	AOAC 989.05
<ul style="list-style-type: none"> Whey Cheese 		AOAC 974.09 & 989.05
<ul style="list-style-type: none"> Malted Milk 		AOAC 922.09 & 989.05
<ul style="list-style-type: none"> Sugars Syrups Molasses Food Food Supplements 	Total Sugars as Invert Sugars	AOAC 968.28
<ul style="list-style-type: none"> Breads Cakes Flour Confectionery 	Propionic Acid	In-house Method C/FOD/005 based on AOAC 950.35 and HKSARG Government Laboratory Method
<ul style="list-style-type: none"> Food Dressings 	Total Acidity	AOAC 935.57

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Food <ul style="list-style-type: none"> Food 	Carbohydrate (By Calculation)	AOAC 986.25E
	Energy (By Calculation)	MOH Guide to Nutrition Labelling and Claim 2010
	Vitamin A (β -Carotene)	In-house Method C/FOD/006 based on Laboratory Procedure in Nutrient Analysis of Food IMR 1996
<ul style="list-style-type: none"> Milk Milk Products 	Acidity	AOAC 947.05
<ul style="list-style-type: none"> Cordials Liqueurs 	Total Acidity	AOAC 940.15
<ul style="list-style-type: none"> Beverages Food Supplement Confectionary Products Herbal Product Seafood Raw Meat Spices Cereal Products Food Paste 	Mercury	In-house Method C/FOD/008 based on International Food Research Journal 19(1): 135-140 (2012)
	Heavy Metal (As, Fe, Sb, Cd, Cr, Cu, Pb, Zn)	In-house Method C/FOD/018 based on AOAC 969.32 & APHA 3120 B
<ul style="list-style-type: none"> Beverages Spices Food Paste Sauces Egg 	Sudan I	In-house Method C/FOD/019 based on Government Chemist Programme LGC/GC/2007/005
	Sudan II	
	Sudan III	
	Sudan IV	
	Para Red	
	Rhodamine B	
Oils & Fats	FAME: Saturated fat Monounsaturated fat Polyunsaturated fat Trans fat	In-house Method C/FOD/009 based on Agilent Technologies Application Notes
Plastic Packages, Appliances and Containers	Specific Migration of Heavy Metals (As, Sb, Cd, Cr, Cu, Pb, Zn)	In-house Method C/FOD/010 based on Malaysia Food Act Thirteenth Schedule (Regulation 28) and APHA 3120 B

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SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Cosmetics and Essential Oils		
Cosmetics	Methyl Paraben	In-house Method C/COS/007 based on MPOB Information Series ISSN 1511-7871 and Merck HPLC Application Notes 900166
Personal Care Products	Propyl Paraben	
Cosmetics and Products		
<ul style="list-style-type: none"> Facial Care Products Toiletries 	Mercury	In-house Method C/COS/022 based on International Food Research Journal 19(1): 135-140 (2012)
<ul style="list-style-type: none"> Cosmetics 	Heavy Metals (As, Pb, Co, Cr, Sb, Cd, Ni, Cu, Zn)	In-house Method C/COS/023 based on ISO/TR 17276
		In-house Method C/COS/033 ISO/TR 17276
Pharmaceuticals		
<ul style="list-style-type: none"> Oral Rinses Mouth Rinses Mouthwash 	Fluoride	In-house Method C/PHA/025 based on ISO 16408:2015 Annex A
<ul style="list-style-type: none"> Toothpaste 	Total Fluoride	In-house Method C/PHA/024 based on ISO 11609: 2010 Annex C.2.2
<ul style="list-style-type: none"> Hand Sanitizer 	Ethanol	In-house Method C/PHA/031 based on USP 37 th Edition <611> (Method IIb)

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1. AOAC : Official Methods of Analysis of AOAC International, 18th Edition, 2005
2. APHA : American Public Health Association, Standard Methods for The Examination of Water & Wastewater, 21st Edition (2005) & 23rd Edition (2017)
3. ASTM : American Society for Testing and Materials
4. DOE : Department of Environment (D.O.E) Reference Method for Analysis of Rubber and Palm Oil Effluents
5. HACH : Portable Data Logging Colorimeter Instrument Manual
6. ISO : International Organization for Standardization

Signatories:

- | | | |
|----|--|-----------------------------------|
| 1. | Siti Haslina binti Ahmad Rusmili | IKM No.: M/6255/7178/15/22 |
| 2. | Mohamad Rosdi bin Mohamad Razali | IKM No.: M/6252/7207/15/22 |
| 3. | Nur Syuhada binti Ahmad Taufik | IKM No.: L/3060/9081/21 |
| 4. | Awangku Muhammad Haziq bin Awang Kamaruddin | IKM No.: M/6186/9912/22 |
| 5. | Nik Athila binti Nik Ma | IKM No.: M/6192/9919/22 |

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SCOPE OF TESTING: CHEMICAL**SITE: CATEGORY I**

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental/ Work Place Monitoring <ul style="list-style-type: none"> Compressed Air 	Measurement of Humidity (Dew Point)	ISO 8573-3:1999
	Solid Particle Content	In-house Method E/ENV/003 based on ISO 8573-4:2001
	Oil Vapor	In-house Method E/ENV/004 based on S120 Oil Vapor Sensor
<ul style="list-style-type: none"> Noise 	Sound Pressure Level	DOE Guidelines for Environmental Noise Limits and Control, Third Edition, 2019, Annex B
<ul style="list-style-type: none"> Effluent 	pH	APHA 4500-H ⁺ B
	Temperature	APHA 2550 A, B
	Oxygen (Dissolved)	APHA 4500-O G
<ul style="list-style-type: none"> Effluent Drinking Water Dialysis Water Ground Water Raw Water Pond Water River Water Swimming Pool Water 	Free Chlorine	HACH Method 8021
<ul style="list-style-type: none"> Dialysis Water 	Sampling procedure	ANSI/AAMI/ISO 23500-1:2019, Section 8.3.2
<ul style="list-style-type: none"> Ambient Air Air Emission 	Total Volatile Organic Compound	In-house method E/ENV/001 based on MiniRAE 3000 VOC Meter
<ul style="list-style-type: none"> Ambient Air 	Dust Particulate (PM ₁₀ , PM _{2.5})	In-house Method E/ENV/005 based on MiniVol TAS Instrument

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SCOPE OF TESTING: CHEMICAL**SITE: CATEGORY**

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental Monitoring <ul style="list-style-type: none"> Chimney Stack Emission 	Sample Velocity and Traverses for Stationary Sources	USEPA METHOD 1:1996
	Stack Gas Velocity and Volumetric Flow rate (Type S Pitot Tube)	USEPA METHOD 2:1996
	Dry Gas Molecular Weight & Percent Excess Air	USEPA METHOD 3:1996
	Moisture Content	USEPA METHOD 4:1995
	Particulate Matter	USEPA METHOD 5:1996
	Sampling of Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofuran Emissions from Stationary Sources	USEPA METHOD 23:1996
	Sulphur Dioxide (SO ₂)	USEPA 40 CFR 60, Appendix A Method 6C
	Oxides of Nitrogen (NO _x)	USEPA 40 CFR 60, Appendix A Method 7E
	Dark Smoke	BS 2742:2009
Environmental/ Work Place Monitoring <ul style="list-style-type: none"> Cleanroom & Associated Controlled Environments 	Airborne Particle Count	In-house Method E/ENV/002 based on ISO 14644-1:2015
	Airflow Rate	ISO 14644-3: 2019 Annex B.2
	Air Pressure Difference	ISO 14644-3: 2019 Annex B.1
	HEPA Filter Leak Test	ISO 14644-3: 2019 Annex B.7
	Temperature	ISO 14644-3: 2019 Annex B.5
	Humidity	ISO 14644-3: 2019 Annex B.6

Notes:

- ISO : International Organization for Standardization
- USEPA : U.S. Environmental Protection Agency

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- | | | |
|----|----------------------------------|----------------------------|
| 1. | Siti Haslina binti Ahmad Rusmili | IKM No.: M/6255/7178/15/22 |
| 2. | Mohamad Rosdi bin Mohamad Razali | IKM No.: M/6252/7207/15/22 |
| 3. | Nurul Salma binti Ab. Ghani | IKM No.: M/6253/7621/17/22 |
| 4. | Ramesh Subramaniam | IKM No.: M/6254/8013/18/22 |
| 5. | Muhamad Afiq bin Md Zin | IKM No.: L/3061/9082/21 |

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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 <ul style="list-style-type: none"> Food Processed Food Prepared Food 	Yeast and Mould Counts	AOAC 997.02
	Enumeration of <i>Staphylococcus aureus</i>	AOAC 2003.07
<ul style="list-style-type: none"> Dairy Foods 	Enumeration of <i>Staphylococcus aureus</i>	AOAC 2003.08
<ul style="list-style-type: none"> Meat Seafood Poultry 	Enumeration of <i>Staphylococcus aureus</i>	AOAC 2003.11
	Confirmed <i>Escherichia coli</i> Counts	AOAC 998.08
<ul style="list-style-type: none"> Cheddar Cheese Milk Flour Frozen Prepared Meals Frozen Broccoli Nut Pieces 	Enumeration of <i>Enterobacteriaceae</i>	AOAC 2003.01
<ul style="list-style-type: none"> Food 	<i>Staphylococcus aureus</i> – Most Probable Number	AOAC 987.09
	Enumeration of Mesophilic Lactic Acid Bacteria	ISO 15214: 1998
<ul style="list-style-type: none"> Food Perishable Food Frozen Food Canned Food 	Coagulase Positive Staphylococci	AS 5013.12.1 – 2004
	Standard Plate Count	AS 5013.1 – 2004
<ul style="list-style-type: none"> Ready Meals Milk & Milk products Meat & Meat products Fish & Fish products Vegetable & Vegetable products Seafood (Crustacean & Mollusc) 	Detection of <i>Campylobacter</i> spp.	ISO 10272-1: 2017

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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 Food	Detection & Enumeration of Coliform	AS 5013.3 - 2022
	Enumeration of Coliform	FDA-BAM Chapter 4 (I.G)
	Detection & Enumeration of <i>Escherichia coli</i>	AS 5013.15 – 2006
	Enumeration of <i>Escherichia coli</i>	FDA-BAM Chapter 4 (I.G)
	Detection of <i>Salmonella</i> spp.	AS 5013.10 - 2009
	Enumeration of Yeast and Molds	FDA – BAM Chapter: 18
	Detection of <i>Listeria monocytogenes</i>	In-house Method M/FOD/010 based on FDA – BAM Chapter 10:2011
	Enumeration of <i>Bacillus cereus</i>	In-house Method M/FOD/011 based on FDA – BAM Chapter 14:2012
	Enumeration of Fecal Coliform	CMME of Foods - Chapter 8.8
	<i>Clostridium perfringens</i> Count	ISO 7937:2004

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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		
<ul style="list-style-type: none"> Dialysis Water 	Bacterial Endotoxins Test	USP 36 TH Edition <85> LAL Gel Clot Method.
<ul style="list-style-type: none"> Ground Water Cooling Tower Water Well Water Marine Water River Water Swimming Pool Water Boiler Water Drinking Water Mineral Water Reverse Osmosis Water Effluent/ Wastewater 	Standard Total Coliform Fermentation Technique	APHA 9221 B
	Enumeration of <i>Escherichia coli</i>	APHA 9221 G
	Heterotrophic Plate Count (Pour Plate Method)	APHA 9215 B
<ul style="list-style-type: none"> River Water 	Standard Total Coliform	APHA 9222 B
<ul style="list-style-type: none"> Drinking Water 	Heterotrophic Plate Count	APHA 9215 D
<ul style="list-style-type: none"> Ground Water 	Faecal Coliform	APHA 9222 D
<ul style="list-style-type: none"> Reverse Osmosis Water Dialysis Water Drinking Water 	Aerobic Endospores	APHA 9218 B
<ul style="list-style-type: none"> Drinking Water Swimming Pool Water Cooling Tower Water 	Enumeration of <i>Legionella</i>	ISO 11731: 2017

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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 <ul style="list-style-type: none"> Drinking Water Portable Water Swimming Pool Water 	Fecal <i>Streptococcus</i> Count	APHA 9230 C
	<i>Pseudomonas aeruginosa</i> Count	APHA 9213 E
	Enumeration of Sulphite-reducing Clostridia (Sulphite Reducing Anaerobe)	The Microbiology of Drinking Water (2010) - Methods for the Examination of Waters and Associated Materials - Environment Agency UK - Part 6A
	Enumeration of <i>Clostridium perfringens</i>	The Microbiology of Drinking Water (2010) - Methods for the Examination of Waters and Associated Materials – Environment Agency UK - Part 6B
	Enumeration of <i>Escherichia coli</i> and coliform	ISO 9308-1: 2014
Medical Devices and Products	Method Suitability Test	ISO 11737-1:2006 & ISO 11737-2:2009
	Bioburden Estimation	ISO 11737-1:2006
	Sterility Test	ISO 11737-2:2009
	Endotoxin in Medical Devices	USP 29 th Edition (LAL Gel Clot Method) <85> & <161>
<ul style="list-style-type: none"> Medical Devices Liquid & Culture Medium Sterile Product 	Sterility Test	BP 2013 (Appendix XVI A)
		USP 35 th Edition <71>
Pharmaceutical <ul style="list-style-type: none"> Toiletries Cosmetics Herbal Product & Health Supplement Raw Materials Finished Products 	Tests for Specified Microorganisms (<i>Escherichia coli</i> , <i>Pseudomonas aeruginosa</i> , <i>Staphylococcus aureus</i> , <i>Salmonella</i> spp., Bile-Tolerant Gram-Negative Bacteria, <i>Candida albicans</i>)	USP 40 th Edition <62>, BP 2013 Edition Appendix XVI B.1
	Enumeration of Bile-tolerant Gram-Negative Bacteria	USP 40 th Edition <62>, BP 2013 Edition Appendix XVI B.1
	Microbial Enumeration Tests (Total Aerobic Microbial Count, Total Combined Yeasts and Molds Count)	USP 40 th Edition <61>, BP 2013 Edition Appendix XVI B.2

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Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Pharmaceutical <ul style="list-style-type: none"> Toiletries Cosmetics Herbal Product & Health Supplement Raw Materials Finished Products 	Efficacy of Antimicrobial Preservation	BP 2013 Edition (Appendix XVI C)
	Efficacy of Antimicrobial Preservation (<i>Burkholderia cepacia</i>)	
	Detection of <i>Burkholderia cepacia</i>	In-house Method M/COS/012 based on Journal of AOAC International, Vol. 83, No. 4, 2000
Herbal Medicinal Products for Oral Use	Detection and Enumeration of <i>Escherichia coli</i>	BP 2013 Edition (Appendix XVI F)
	Detection of <i>Salmonella</i> spp.	
	Enumeration of Bile-tolerant Gram-Negative Bacteria	
	Total Aerobic Microbial Count	
	Total Combined Yeast and Mould Count	
Environmental Monitoring (Site Sampling & Laboratory Testing) <ul style="list-style-type: none"> Contact Plate 	Total Viable Aerobic Count	In-house Method M/ENV/002 based on ISO 14698-1:2003 and USP 40 th Edition <61> & <62>
	Total Mould and Yeast Count	
	Total <i>Staphylococcus aureus</i>	
<ul style="list-style-type: none"> Swab 	Total Viable Aerobic Count	In-house Method M/ENV/003 based on ISO 14698-1:2003 and USP 40 th Edition <61>
	Total Mould and Yeast Count	In-house Method M/ENV/004 based on ISO 14698-1:2003 and USP 40 th Edition <61>
	Total Coliform Count	In-house Method M/ENV/005 based on ISO 14698-1:2003 and AS 1766.2.3
	Detection of <i>Escherichia coli</i>	In-house Method M/ENV/006 based on ISO 14698-1:2003 and USP 29 th Edition <61>
	<i>Staphylococcus aureus</i> count	In-house Method M/ENV/007 based on ISO 14698-1:2003 and AOAC

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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 Monitoring (Site Sampling & Laboratory Testing) • Bioaerosol	Total Viable Aerobic Count	In-house Method M/ENV/001 based on ISO 8573-7:2003 and USP 40 th Edition <61>
	Total Mould and Yeast Count	
• Compressed Air	Total Viable Aerobic Count	In-house Method M/ENV/008 based on ISO 8573-7:2003 and USP 40 th Edition <61>
	Total Mould and Yeast Count	
	Viable Microbiological Contaminant Content	ISO 8573-7:2003
• Airborne Viable Particles – Settle Plate	Total Aerobic Microbial Count	In-house Method M/ENV/009 based on ISO 14698-1:2003 & USP 40 th Edition <61>
	Total Mould and Yeast Count	
Gram Staining • Bacteria Colonies	Gram Negative/ Gram Positive	AS 5013.14.1 – 2010

Notes:

1. CMME- Compendium of Methods for the Microbiological Examination of Foods 4th Edition 2001
2. FDA-BAM - Food and Drug Administration – Bacteriological Analytical Manual
3. AOAC - Official Methods of Analysis of AOAC International, 18th Edition, 2005
4. APHA - American Public Health Association, Standard Methods for the Examination of Water & Wastewater, 21st Edition (2005) & 23rd Edition (2017)
5. AS - Australian Standard
6. BP - British Pharmacopeia
7. ISO - International Organization for Standardization
8. USP - United States Pharmacopeia

Signatories:

- | | |
|------------------------|----------------|
| 1. Ramesh Subramaniam | MJMM No.: 0325 |
| 2. Ganesan Gunasegaran | MJMM No.: 0326 |

Schedule

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BRANCH LOCATION:	CHEMSIL AIR & WATER SDN. BHD. 1st FLOOR, LOT 24, HSK INDUSTRIAL CENTRE PHASE 2, JALAN BUNDUSAN, 89500 PENAMPANG, SABAH
FIELD OF TESTING:	CHEMICAL

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Environmental Monitoring <ul style="list-style-type: none"> Wastewater/ Effluent 	pH	APHA 4500-H ⁺ B
	Temperature	APHA 2550 A, B
	Biochemical Oxygen Demand @ 20 °C for 5 days	APHA 5210 B
	Chemical Oxygen Demand	APHA 5220 C
	Total Suspended Solids (Mixed Liquor Suspended Solids)	APHA 2540 D
	Oil & Grease	APHA 5520 B
	Ammonia Nitrogen	APHA 4500-NH ₃ B, C
	Nitrate Nitrate Nitrogen	HACH Method 8192
	Free Chlorine	HACH Method 8021
	Fixed and Volatile Solids Ignited at 550 °C (Mixed Liquor Volatile Suspended Solids)	APHA 2540 E
	Total Solids Dried at 103 – 105 °C	APHA 2540 B
	Total Dissolved Solids Dried at 180 °C	APHA 2540 C
	Turbidity	APHA 2130 B
	Conductivity	APHA 2510 B
	Dissolved Oxygen	APHA 4500-O G

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	Oxidation Reduction Potential (ORP)	APHA 2580 B
	Setting Test (SV30)	In-house Method C/WTR/034 based on APHA 2540 F
	Hardness by Calculation	APHA 2340 B
	Acid Digestion Method	APHA 3030 F
	Mercury, Hg	APHA 3112 B

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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 • Wastewater/ Effluent	Antimony, Sb Bismuth, Bi Cadmium, Cd Calcium, Ca Chromium, Cr Cobalt, Co Copper, Cu Iron, Fe Lead, Pb Magnesium, Mg Manganese, Mn Nickel, Ni Potassium, K Silver, Ag Sodium, Na	APHA 3111 B
	Arsenic, As Selenium, Se	APHA 3114 C
	Aluminium, Al	APHA 3111 D
Marine/ Saline Water	pH	APHA 4500-H+ B
	Temperature	APHA 2550 A, B
	Oil & Grease	APHA 5520 B
	Total Suspended Solids	APHA 2540 D
	Turbidity	APHA 2130 B
	Total Solids Dried at 103 – 105 °C	APHA 2540 B
	Total Dissolved Solids Dried at 180 °C	APHA 2540 C
	Fixed and Volatile Solids Ignited at 550 °C (Mixed Liquor Volatile Suspended Solids)	APHA 2540 E

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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 <ul style="list-style-type: none"> Dialysis Water Ground Water Mineral Water Portable / Drinking Water Surface Water Reverse Osmosis Water Dialysis Water Swimming Pool Water 	pH	APHA 4500-H ⁺ B
	Temperature	APHA 2550 A, B
	Biochemical Oxygen Demand @ 20 °C for 5 days	APHA 5210 B
	Chemical Oxygen Demand	APHA 5220 C
	Total Suspended Solids (Mixed Liquor Suspended Solids)	APHA 2540 D
	Oil & Grease	APHA 5520 B
	Ammonia Nitrogen	APHA 4500-NH ₃ B,C
	Nitrate Nitrate Nitrogen	HACH Method 8192
	Free Chlorine	HACH Method 8021
	Total Chlorine	HACH Method 8167
	Fixed and Volatile Solids Ignited at 550 °C (Mixed Liquor Volatile Suspended Solids)	APHA 2540 E
	Total Solids Dried at 103 – 105 °C	APHA 2540 B
	Total Dissolved Solids Dried at 180 °C	APHA 2540 C
	Turbidity	APHA 2130 B
	Conductivity	APHA 2510 B
	Colour	HACH Method 8025
	Mineral Oil	APHA 5520 F
	Dissolved Oxygen	APHA 4500-O G
	Hardness by Calculation	APHA 2340 B
	Acid Digestion Method	APHA 3030 E APHA 3030 F (a & b)
	Mercury, Hg	APHA 3112 B

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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 <ul style="list-style-type: none"> Dialysis Water Ground Water Mineral Water Potable / Drinking Water Surface Water Reverse Osmosis Water Dialysis Water Swimming Pool Water 	Antimony, Sb Bismuth, Bi Cadmium, Cd Calcium, Ca Chromium, Cr Cobalt, Co Copper, Cu Iron, Fe Lead, Pb Magnesium, Mg Manganese, Mn Nickel, Ni Potassium, K Silver, Ag Sodium, Na	APHA 3111 B
Water <ul style="list-style-type: none"> Dialysis Water Ground Water Mineral Water Potable / Drinking Water Surface Water Reverse Osmosis Water Dialysis Water Swimming Pool Water 	Arsenic, As Selenium, Se	APHA 3114 C
	Aluminium, Al	APHA 3111 D
Food <ul style="list-style-type: none"> Beverages Ready to Eat Fish & Fish Products Meat & Meat Products Fruit & Fruit Products Confectionary Products Cereal Products Dairy products Food supplement Sandwiches / Pastries Paste & Sauce 	Moisture	In-house Method C/FOD/014 based on AOAC 925.45
	Ash	In-house Method C/FOD/015 based on AOAC 925.153
	Protein (Crude)	In-house Method C/FOD/016 based on AOAC 2001.11
	Total Fat	In-house Method C/FOD/017 based on AOAC 922.06 & 932.06
	Carbohydrate (By Calculation)	AOAC 986.25E
	Energy (By Calculation)	MOH Guide to Nutrition Labelling and Claim 2010
	Total Sugar as Invert Sugars	AOAC 968.28

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SCOPE OF TESTING: CHEMICAL**SITE: CATEGORY**

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Water <ul style="list-style-type: none"> Ground Water Cooling Tower Water Well Water Marine Water Swimming Pool Water Boiler Water Drinking Water Mineral Water Reverse Osmosis Water Effluent / Wastewater 	pH	APHA 4500-H+B
	Temperature	APHA 2550 A, B
	Free Chlorine	HACH Method 8021
	Total Chlorine	HACH Method 8167
	Turbidity	APHA 2130 B
	Oxygen (Dissolved)	APHA 4500-O G

Notes:

1. AOAC : Official Methods of Analysis of AOAC International, 18th Edition, 2005
2. APHA : American Public Health Association, Standard Methods for The Examination of Water & Wastewater, 21st Edition (2005) & 23rd Edition (2017)
3. HACH : Portable Data Logging Colorimeter Instrument Manual