

Name of Laboratory	: ALS Laboratory Group (Thailand) Co., Ltd.
Address	: 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan Suan Luang, Bangkok 10250
Accreditation Number	: Testing - 0009
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Initial Issue Date	: 30 th August 2006
Issue Date	: 28 th April 2026
Expired date	: 27 th April 2030
Standard	: ISO/IEC 17025:2017
Reference No.	: 0303/4286

Scope of Testing Laboratory Accreditation

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
1	Food packaging and food contact material	- Aerobic plate count CFU/50 cm ² CFU/unit - Coliforms CFU/50 cm ² CFU/unit Detected or not detected/50 cm ² Detected or not detected/unit - <i>E. coli</i> CFU/50 cm ² CFU/unit Detected or not detected/50 cm ² Detected or not detected/unit	Compendium of Methods for the Microbiological Examination of Foods, 5 th ed., 2015, chapter 3 item 3.81 and chapter 8 Compendium of Methods for the Microbiological Examination of Foods, 5 th ed., 2015, chapter 3 item 3.81 and chapter 9 Compendium of Methods for the Microbiological Examination of Foods, 5 th ed., 2015, chapter 3 item 3.81 and chapter 9

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
1 (Cont.)	Food packaging and food contact material	- Fecal coliform Detected or not detected/50 cm ² Detected or not detected/unit - <i>Salmonella</i> spp. Detected or not detected/50 cm ² Detected or not detected/unit - <i>Staphylococcus aureus</i> CFU/50 cm ² CFU/unit Detected or not detected/50 cm ² Detected or not detected/unit	Compendium of Methods for the Microbiological Examination of Foods, 5 th ed., 2015, chapter 3 item 3.81 and chapter 9 Compendium of Methods for the Microbiological Examination of Foods, 5 th ed., 2015, chapter 3 item 3.81 and chapter 36 Compendium of Methods for the Microbiological Examination of Foods, 5 th ed., 2015, chapter 3 item 3.81 and chapter 39

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
1 (Cont.)	Food packaging and food contact material	- <i>Bacillus cereus</i> CFU/50 cm² CFU/unit Detected or not detected/50 cm² Detected or not detected/unit - <i>Clostridium perfringens</i> CFU/50 cm² CFU/unit Detected or not detected/50 cm² Detected or not detected/unit - <i>Listeria monocytogenes</i> Detected or not detected/50 cm² Detected or not detected/unit	Compendium of Methods for the Microbiological Examination of Foods, 5th ed., 2015, chapter 3 item 3.81 and chapter 31 Compendium of Methods for the Microbiological Examination of Foods, 5th ed., 2015, chapter 3 item 3.81 and chapter 33 Compendium of Methods for the Microbiological Examination of Foods, 5th ed., 2015, chapter 3 item 3.81 and chapter 35

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
1 (Cont.)	Food packaging and food contact material	- <i>Listeria</i> spp. Detected or not detected/50 cm² Detected or not detected/unit - Yeast and molds CFU/50 cm² CFU/unit	Compendium of Methods for the Microbiological Examination of Foods, 5th ed., 2015, chapter 3 item 3.81 and chapter 35 Compendium of Methods for the Microbiological Examination of Foods, 5th ed., 2015, chapter 3 item 3.81 and chapter 21
2	Plastics food packaging	- Overall migration (10% ethanol) 3 mg/dm² to 100 mg/dm² - Overall migration (20% ethanol) 3 mg/dm² to 100 mg/dm² - Overall migration (50% ethanol) 3 mg/dm² to 100 mg/dm² - Overall migration (3% acetic acid) 3 mg/dm² to 100 mg/dm²	The European Standard BS EN 1186-3 : 2022 and Commission Regulations (EU) No.10/2011

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2 (Cont.)	Plastics food packaging	- Overall migration (vegetable oil) 1 mg/dm² to 50 mg/dm² Specific migration : - Aluminium - Barium - Lithium - Manganese 0.20 mg/kg to 3.60 mg/kg - Copper - Zinc 0.30 mg/kg to 7.50 mg/kg	In - house method : STM 04-056 based on The European Standard BS EN 1186-2 : 2022 and Commission Regulations (EU) No.10/2011 In - house method : STM 05-054 based on Commission Regulations (EU) No. 2020/1245, The European Standard BS EN 13130-1 : 2004, and Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 3125 B

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2 (Cont.)	Plastics food packaging	Specific migration : - Antimony - Cobalt - Europium - Gadolinium - Lanthanum - Terbium 0.02 mg/kg to 0.40 mg/kg - Iron 3.00 mg/kg to 81 mg/kg - Nickel 0.005 mg/kg to 0.048 mg/kg - Cadmium 0.002 mg/kg to 0.048 mg/kg - Arsenic - Chromium - Lead 0.01 mg/kg to 0.048 mg/kg	In - house method : STM 05-054 based on Commission Regulations (EU) No. 2020/1245, The European Standard BS EN 13130-1 : 2004, and Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 3125 B

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2 (Cont.)	Plastics food packaging	- Mercury 0.01 mg/kg to 0.075 mg/kg - Calcium - Magnesium - Potassium - Sodium 3.00 mg/kg to 16.2 mg/kg	In - house method : STM 05-052 based on Commission Regulations (EU) No. 2020/1245, The European Standard BS EN 13130-1 : 2004, and United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E In - house method : STM 05-053 based on Commission Regulations (EU) No. 2020/1245, The European Standard BS EN 13130-1 : 2004 and United States Environmental Protection Agency, 1994, EPA Method 200.7, Revision 4.4

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (Cont.)	- Polyethylene - Polypropylene - Polystyrene - Polyvinyl chloride - Polyethylene terephthalate	- Residue after evaporation in 20% ethanol simulant 5 mg/dm^3 to 100 mg/dm^3 - Residue after evaporation in 4% acetic acid simulant 5 mg/dm^3 to 100 mg/dm^3 - Residue after evaporation in n- heptane 5 mg/dm^3 to 500 mg/dm^3 - Residue after evaporation in water 5 mg/dm^3 to 100 mg/dm^3	Specifications, Standards and Testing Methods for Foodstuffs, Implements, Containers and Packaging, Toys, Detergents 2008, Japan External Trade Organization, JETRO, section II, B-5

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2 (Cont.)	Plastics food packaging - Polyethylene - Polypropylene - Polystyrene - Polyvinyl chloride - Polyethylene terephthalate	- Potassium permanganate consumption 0.5 mg/dm^3 to 15.0 mg/dm^3	Specifications, Standards and Testing Methods for Foodstuffs, Implements, Containers and Packaging, Toys, Detergents 2008, Japan External Trade Organization, JETRO, section II, B-1 and C-3

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (Cont.)	Plastics food packaging - Polyethylene - Polypropylene - Polystyrene - Polyvinyl chloride - Polycarbonate - Polyethylene terephthalate - Nylon	- Material test - Arsenic - Cadmium 0.50 mg/kg to 90 mg/kg - Lead 3.0 mg/kg to 90 mg/kg - Total heavy metal (as Pb) Less than 10 mg/kg	In - house method : STM 05-019 based on Specifications, Standards and Testing Methods for Foodstuffs, Implements, Containers and Packaging, Toys, Detergents 2008, Japan External Trade Organization, JETRO, section II, B-9 In - house method : STM 05-016 based on Compendium of Methods for Food Analysis, DMSc & ACFS, 1 st ed., 2003

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2 (Cont.)	Plastics food packaging - Polyethylene - Polypropylene - Polystyrene - Polyvinyl chloride - Polycarbonate - Polyethylene terephthalate - Nylon	- Total heavy metal (as Pb) Less than 0.5 mg/dm ³	In - house method : STM 05-018 based on Specifications, Standards and Testing Methods for Foodstuffs, Implements, Containers and Packaging, Toys, Detergents 2008, Japan External Trade Organization, JETRO, section II, B-4
	- Polyethylene terephthalate	- Material test - Antimony - Germanium 0.01 mg/dm ³ to 4.0 mg/dm ³	In - house method : STM 05-021 based on Specifications, Standards and Testing Methods for Foodstuffs, Implements, Containers and Packaging, Toys, Detergents 2008, Japan External Trade Organization, JETRO, section II, B-9

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2 (Cont.)	Plastics food packaging - Polystyrene	- Volatile substance 500 mg/kg to 25 000 mg/kg - Toluene - Ethylbenzene - Isopropylbenzene - Styrene - n-Propylbenzene 100 mg/kg to 5 000 mg/kg	In - house method : STM 04-058 based on Specifications, Standards and Testing Methods for Foodstuffs, Implements, Containers and Packaging, Toys, Detergents 2008, Japan External Trade Organization, JETRO, section II, D-2

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3	Water	- pH 6.0 to 10.0 - BOD 2 mg/L to 500 mg/L - Cyanide 0.005 mg/L to 5 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 4500 - H ⁺ B Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5210 B, 4500 - O G Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 4500 - CN ⁻ C, E

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	- Nitrate as Nitrogen 0.2 mg/L to 50 mg/L - Nitrate 1.0 mg/L to 250 mg/L - Total kjeldahl nitrogen 1 mg/L to 500 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 4110 B In - house method : STM 04-100 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 4500 – N _{org} D

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	- Oil and Grease 3 mg/L to 200 mg/L - Standard plate count CFU/mL - Total coliform MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5520 B Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9215 B Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	- Total coliform CFU/100 mL - <i>E. coli</i> MPN/100 mL - <i>E. coli</i> CFU/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9222 B Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B, F Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9222 H

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3 (Cont.)	Water	- Fecal coliform MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B, E
		- Fecal coliform CFU/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9222 D
		- <i>Salmonella</i> spp. Detected or not detected/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9274 A, B
		- <i>Salmonella</i> spp. Detected or not detected/100 mL	ISO 19250 : 2010

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3 (Cont.)	Water	- <i>Legionella</i> spp. CFU/L - <i>Staphylococcus aureus</i> Detected or not detected/100 mL - <i>Clostridium perfringens</i> CFU/100 mL - Mercury 0.5 µg/L to 5.0 µg/L	ISO 11731 : 2017 In - house method : STM 01-054 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 9213 B and FDA Bacteriological Analytical Manual online, Chapter 12, 2016 ISO 14189 : 2013 In - house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E

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3 (Cont.)	Water	- Hexavalent chromium 0.01 mg/L to 8 mg/L - Calcium - Magnesium - Phosphorus - Potassium - Sodium - Sulfur 0.05 mg/L to 1 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3500-Cr B In - house method : STM 05-014 based on United State Environmental Protection Agency, 1994, EPA Method 200.7

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3 (Cont.)	Water	- Aluminium - Iron - Zinc 0.005 mg/L to 100 mg/L - Antimony - Arsenic - Beryllium - Cadmium - Molybdenum - Selenium - Silver - Strontium - Tellurium - Thallium 0.0005 mg/L to 3 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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3 (Cont.)	Water	- Tin - Uranium - Vanadium 0.0005 mg/L to 3 mg/L - Barium - Chromium - Cobalt - Copper - Lead - Manganese - Nickel 0.0005 mg/L to 100 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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3 (Cont.)	Water	- Bismuth - Boron - Lithium - Titanium 0.005 mg/L to 3 mg/L - Cerium - Cesium - Dysprosium - Erbium - Europium - Gadolinium - Gallium - Gold - Hafnium - Holmium - Iridium 0.0005 mg/L to 0.4 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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3 (Cont.)	Water	- Lanthanum - Neodymium - Niobium - Palladium - Platinum - Praseodymium - Rhenium - Rubidium - Ruthenium - Samarium - Tantalum - Thorium - Thulium - Tungsten - Ytterbium - Yttrium - Zirconium 0.0005 mg/L to 0.4 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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3 (Cont.)	Water	- Rhodium - Terbium 0.005 mg/L to 0.4 mg/L Volatile organic compounds - 1,1,1-Trichloroethane - 1,1,2-Trichloroethane - 1,1-Dichloroethene (1,1-Dichloroethylene) - 1,2-Dichloroethane - Benzene - Carbon tetrachloride - <i>cis</i> -1,2-Dichloroethene (<i>cis</i> -1,2-Dichloroethylene) - Dichloromethane - Ethylbenzene 0.5 µg/L to 1 000 µg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6200 B

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Volatile organic compounds - Styrene - Tetrachloroethene (Tetrachloroethylene) - Toluene - <i>o</i> -Xylene - <i>trans</i> -1,2-Dichloroethene (<i>trans</i> -1,2-Dichloroethylene) - Trichloroethene (Trichloroethylene) - Vinyl chloride - 2-Butanone 0.5 µg/L to 1 000 µg/L - <i>m,p</i> -Xylene 1.0 µg/L to 2 000 µg/L - Total xylene 0.5 µg/L to 3 000 µg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6200 B

Initial Issue Date 30th August 2006

Issue Number 16

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

Scope of Testing Laboratory Accreditation

Laboratory Name : ALS Laboratory Group (Thailand) Co., Ltd.

Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,
Suan Luang, Bangkok 10250 Thailand

Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Pesticide residues Organochlorine group : - 2,4-DDD - 2,4-DDE - α -BHC - β -BHC - δ -BHC - Endrin - Hexachlorobenzene - γ -BHC - Methoxychlor - Mirex - Endrin aldehyde - Endrin ketone 0.02 $\mu\text{g/L}$ to 5 $\mu\text{g/L}$	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, part 6410 B

Initial Issue Date 30th August 2006

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Suan Luang, Bangkok 10250 Thailand

Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Pesticide residues Organochlorine group : - 2,4-DDT - 4,4-DDD - 4,4-DDE - 4,4-DDT 0.02 µg/L to 5 µg/L - Total DDT 0.02 µg/L to 20 µg/L - <i>cis</i> -Chlordane - <i>trans</i> -Chlordane 0.02 µg/L to 5 µg/L - Chlordane 0.02 µg/L to 10 µg/L	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, part 6410 B

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Suan Luang, Bangkok 10250 Thailand

Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Pesticide residues Organochlorine group : - Aldrin - Dieldrin 0.02 µg/L to 5 µg/L - Aldrin and dieldrin 0.02 µg/L to 10 µg/L	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, part 6410 B

Initial Issue Date 30th August 2006

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Pesticide residues Organochlorine group : - Endosulfan I - Endosulfan II - Endosulfan-sulfate 0.02 µg/L to 5 µg/L - Endosulfan 0.02 µg/L to 15 µg/L - Heptachlor - Heptachlor – epoxide 0.02 µg/L to 5 µg/L - Heptachlor and Heptachlor – epoxide 0.02 µg/L to 10 µg/L	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, part 6410 B

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Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Pesticide residues Triazine group : - Atrazine 0.5 µg/L to 25 µg/L Pesticide residues Pyrethroid group : - Bifenthrin - Cyfluthrin - Cypermethrin - Deltamethrin - Fenvalerate - lambda-Cyhalothrin - Permethrin 0.1 µg/L to 5 µg/L	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, part 6410 B In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, part 6410 B

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Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Pesticide residues Organophosphate group : - Azinphos-ethyl - Chlorpyrifos - Chlorpyrifos-methyl - DDVP - Demeton-S-methyl - Diazinon - Dicrotophos - Dimethoate - EPN - Ethion - Fenitrothion - Malathion - Methidathion - Mevinphos 0.1 µg/L to 5 µg/L	In - house method : STM 04-067 based on United States Environmental Protection Agency, 1996, EPA Method 3510 C and United States Environmental Protection Agency, 1994, EPA, Method 8141 A

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 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Pesticide residues Organophosphate group : - Parathion - Parathion-methyl - Phorate - Phosalone - Pirimiphos-ethyl - Pirimiphos-methyl - Profenofos - Prothiophos - Triazophos 0.1 µg/L to 5 µg/L	In - house method : STM 04-067 based on United States Environmental Protection Agency, 1996, EPA Method 3510 C and United States Environmental Protection Agency, 1994, EPA, Method 8141 A

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Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Polycyclic aromatic hydrocarbons - 1-Methylnaphthalene - 2-Methylnaphthalene - Acenaphthene - Acenaphthylene - Anthracene - Benzo(a)anthracene - Benzo(a)pyrene - Benzo(b)fluoranthene - Benzo(ghi)perylene - Benzo(k)fluoranthene - Chrysene - Dibenzo(a,h)anthracene - Fluoranthene - Fluorene - Indeno(1,2,3-cd)pyrene - Naphthalene 0.01 µg/L to 10 µg/L	In - house method : STM 04-102 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6440 C, 6410 B

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Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (Cont.)	Water	Polycyclic aromatic hydrocarbons - Phenanthrene - Pyrene 0.01 µg/L to 10 µg/L - Benzo(bk)fluoranthene 0.02 µg/L to 20 µg/L Total petroleum hydrocarbons - TPH (C _{>8} - C ₁₆) - TPH (C _{>16} - C ₃₅) - TPH (C ₁₀ - C ₁₄) - TPH (C ₁₅ - C ₂₈) - TPH (C ₂₉ - C ₃₆) 10 µg/L to 5 000 µg/L - Phenol 0.001 mg/L to 5 mg/L	In - house method : STM 04-102 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6440 C, 6410 B In - house method : STM 04-071 based on United States Environmental Protection Agency, 1996, EPA Method 3510 C and United States Environmental Protection Agency, 2007, EPA Method 8015 C Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5530 D

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4	Wastewater	- pH 4.0 to 10.0 - Total kjeldahl nitrogen 1 mg/L to 500 mg/L - Oil and Grease 3 mg/L to 2 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H⁺ B In - house method : STM 04-100 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 – N_{org} D Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5520 B

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 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- BOD 2 mg/L to 10 000 mg/L - COD 25 mg/L to 20 000 mg/L - Cyanide 0.005 mg/L to 5 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5210 B, 4500 – O G Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5220 D Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 4500 - CN ⁻ C, E

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- Total dissolved solids dried at 180 °C 100 mg/L to 20 000 mg/L - Total suspended solids dried from 103 °C to 105 °C 5 mg/L to 5 000 mg/L - Standard plate count CFU/mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 2540 C Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 2540 D Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9215 B

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Scope of Testing Laboratory Accreditation

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 Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,
 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- Total coliform MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B
		- Total coliform CFU/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9222 B
		- <i>E. coli</i> MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B, F

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Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

Scope of Testing Laboratory Accreditation

Laboratory Name : ALS Laboratory Group (Thailand) Co., Ltd.

Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,
Suan Luang, Bangkok 10250 Thailand

Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- <i>E. coli</i> CFU/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9222 H
		- Fecal coliform MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B, E
		- Fecal coliform CFU/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9222 D

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Scope of Testing Laboratory Accreditation

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- <i>Salmonella</i> spp. Detected or not detected/100 mL - <i>Salmonella</i> spp. Detected or not detected/100 mL - <i>Legionella</i> spp. CFU/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9274 A, B ISO 19250 : 2010 ISO 11731 : 2017

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- <i>Staphylococcus aureus</i> Detected or not detected/100 mL - Mercury 0.5 µg/L to 20 µg/L	In - house method : STM 01-054 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9213 B and FDA Bacteriological Analytical Manual online, Chapter 12, 2016 In - house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E

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Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- Hexavalent chromium 0.01 mg/L to 200 mg/L - Calcium - Magnesium - Phosphorus - Potassium - Sodium - Sulfur 0.05 mg/L to 1 000 mg/L - Aluminium - Iron - Zinc 0.005 mg/L to 1 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3500-Cr B In - house method : STM 05-014 based on United State Environmental Protection Agency, 1994, EPA Method 200.7 Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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Scope of Testing Laboratory Accreditation

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Suan Luang, Bangkok 10250 Thailand

Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- Antimony - Arsenic - Beryllium - Cadmium - Molybdenum - Selenium - Silver - Strontium - Tellurium - Thallium - Tin - Uranium - Vanadium 0.0005 mg/L to 15 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- Barium - Chromium - Cobalt - Copper - Lead - Manganese - Nickel 0.0005 mg/L to 1 000 mg/L - Bismuth - Boron - Lithium - Titanium 0.005 mg/L to 15 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- Cerium - Cesium - Dysprosium - Erbium - Europium - Gadolinium - Gallium - Gold - Hafnium - Holmium - Iridium - Lanthanum - Neodymium - Niobium - Palladium - Platinum - Praseodymium 0.0005 mg/L to 0.4 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- Rhenium - Rubidium - Ruthenium - Samarium - Tantalum - Thorium - Thulium - Tungsten - Ytterbium - Yttrium - Zirconium 0.0005 mg/L to 0.4 mg/L - Rhodium - Terbium 0.005 mg/L to 0.4 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3125 B, 3030 F

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Volatile organic compounds - 1,1,1-Trichloroethane - 1,1,2-Trichloroethane - 1,1-Dichloroethene (1,1-Dichloroethylene) - 1,2-Dichloroethane - Benzene - Carbon tetrachloride - <i>cis</i> - 1,2-Dichloroethene (<i>cis</i> -1,2-Dichloroethylene) - <i>trans</i> - 1,2-Dichloroethene (<i>trans</i> -1,2-Dichloroethylene) - Dichloromethane - Ethylbenzene - Styrene 0.5 µg/L to 1 000 µg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6200 B

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Volatile organic compounds - Tetrachloroethene (Tetrachloroethylene) - Toluene - <i>o</i> -Xylene - Trichloroethene (Trichloroethylene) - Vinyl chloride - 2-Butanone 0.5 µg/L to 1 000 µg/L - <i>m,p</i> -Xylene 1.0 µg/L to 2 000 µg/L - Total xylene 0.5 µg/L to 3 000 µg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6200 B

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Pesticide residues Organochlorine group : - 2,4-DDD - 2,4-DDE - α -BHC - β -BHC - δ -BHC - Endrin - Hexachlorobenzene - γ -BHC - Methoxychlor - Mirex - Endrin aldehyde - Endrin ketone 0.02 $\mu\text{g/L}$ to 5 $\mu\text{g/L}$	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, 6410 B

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Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Pesticide residues Organochlorine group : - 2,4-DDT - 4,4-DDD - 4,4-DDE - 4,4-DDT 0.02 µg/L to 5 µg/L - Total DDT 0.02 µg/L to 20 µg/L - <i>cis</i> -Chlordane - <i>trans</i> -Chlordane 0.02 µg/L to 5 µg/L - Chlordane 0.02 µg/L to 10 µg/L	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, 6410 B

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Issue Number 16

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

Scope of Testing Laboratory Accreditation

Laboratory Name : ALS Laboratory Group (Thailand) Co., Ltd.

Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,
Suan Luang, Bangkok 10250 Thailand

Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Pesticide residues Organochlorine group : - Aldrin - Dieldrin 0.02 µg/L to 5 µg/L - Aldrin and Dieldrin 0.02 µg/L to 10 µg/L - Endosulfan I - Endosulfan II - Endosulfan-sulfate 0.02 µg/L to 5 µg/L - Endosulfan 0.02 µg/L to 15 µg/L	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, 6410 B

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Scope of Testing Laboratory Accreditation

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Pesticide residues Organochlorine group : - Heptachlor - Heptachlor – epoxide 0.02 µg/L to 5 µg/L - Heptachlor and Heptachlor – epoxide 0.02 µg/L to 10 µg/L	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, 6410 B

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Pesticide residues Triazine group : - Atrazine 0.5 µg/L to 25 µg/L Pesticide residues Pyrethroid group : - Bifenthrin - Cyfluthrin - Cypermethrin - Deltamethrin - Fenvalerate - lambda-Cyhalothrin - Permethrin 0.1 µg/L to 5 µg/L	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, 6410 B In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6630 D, 6410 B

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 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Pesticide residues Organophosphate group : - Azinphos-ethyl - Chlorpyrifos - Chlorpyrifos-methyl - DDVP - Demeton-S-methyl - Diazinon - Dicrotophos - Dimethoate - EPN - Ethion - Fenitrothion - Malathion - Methidathion 0.1 µg/L to 5 µg/L	In - house method : STM 04-067 based on United States Environmental Protection Agency, 1996, EPA Method 3510 C and United States Environmental Protection Agency, 1994, EPA Method 8141 A

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Suan Luang, Bangkok 10250 Thailand

Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Pesticide residues Organophosphate group : - Mevinphos - Parathion - Parathion-methyl - Phorate - Phosalone - Pirimiphos-ethyl - Pirimiphos-methyl - Profenofos - Prothiophos - Triazophos 0.1 µg/L to 5 µg/L	In - house method : STM 04-067 based on United States Environmental Protection Agency, 1996, EPA Method 3510 C and United States Environmental Protection Agency, 1994, EPA Method 8141 A

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 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Polycyclic aromatic hydrocarbons - 1-Methylnaphthalene - 2-Methylnaphthalene - Acenaphthene - Acenaphthylene - Anthracene - Benzo(a)anthracene - Benzo(a)pyrene - Benzo(b)fluoranthene - Benzo(ghi)perylene - Benzo(k)fluoranthene - Chrysene - Dibenzo(a,h)anthracene 0.01 µg/L to 10 µg/L	In - house method : STM 04-102 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6440 C, 6410 B

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Scope of Testing Laboratory Accreditation

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Polycyclic aromatic hydrocarbons - Fluoranthene - Fluorene - Indeno(1,2,3-cd)pyrene - Naphthalene - Phenanthrene - Pyrene 0.01 µg/L to 10 µg/L - Benzo(bk)fluoranthene 0.02 µg/L to 20 µg/L	In - house method : STM 04-102 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 6440 C, 6410 B

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Scope of Testing Laboratory Accreditation

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	Total petroleum hydrocarbons - TPH (C _{>8} - C ₁₆) - TPH (C _{>16} - C ₃₅) - TPH (C ₁₀ - C ₁₄) - TPH (C ₁₅ - C ₂₈) - TPH (C ₂₉ - C ₃₆) 10 µg/L to 5 000 µg/L - Color 5 ADMI to 1 000 ADMI - Formaldehyde 0.1 mg/L to 10 mg/L	In - house method : STM 04-071 based on United States Environmental Protection Agency, 1996, EPA Method 3510 C and United States Environmental Protection Agency, 2007, EPA Method 8015 C Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 2120 F Wastewater analysis manual, Environmental Engineering Association of Thailand, 4 th ed., 2004

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 Suan Luang, Bangkok 10250 Thailand
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 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (Cont.)	Wastewater	- Phenol 0.001 mg/L to 5 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5530 D
5	Sea water	- Mercury 0.05 µg/L to 5 µg/L - Total coliform MPN/100 mL	In - house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B, C

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 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
5 (Cont.)	Sea water	- Fecal coliform CFU/100 mL - Fecal Streptococcus CFU/100 mL - <i>Enterococcus</i> spp. CFU/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9222 D Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 9230 C
6	Swimming pool water	- Total coliform MPN/100 mL - <i>E. coli</i> Detected or not detected/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B, C Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B, F

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 Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
6 (Cont.)	Swimming pool water	- Fecal coliform Detected or not detected/100 mL - <i>Staphylococcus aureus</i> Detected or not detected/100 mL - <i>Salmonella</i> spp. Detected or not detected/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9221 B, E In - house method : STM 01-054 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9213 B and FDA Bacteriological Analytical Manual online, Chapter 12, 2016 ISO 19250 : 2010

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Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
6 (Cont.)	Swimming pool water	- Standard plate count CFU/mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 9215 B
7	Air - Workplace air	- Aerobic plate count CFU/15 min - Yeast and molds CFU/15 min	Compendium of Methods for the Microbiological Examination of Foods, 5 th ed., 2015, chapter 3 Item 3.71 and chapter 8 (Exclude sampling) Compendium of Methods for the Microbiological Examination of Foods, 5 th ed., 2015, chapter 3 Item 3.71 and chapter 21 (Exclude sampling)

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 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☒ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air - Workplace air	- Benzene 0.01 mg/m^3 to $1\,312 \text{ mg/m}^3$ - Toluene 0.01 mg/m^3 to $1\,303 \text{ mg/m}^3$ - Xylene 0.04 mg/m^3 to $3\,977 \text{ mg/m}^3$ - <i>o</i> -Xylene - <i>m</i> -Xylene - <i>p</i> -Xylene 0.01 mg/m^3 to $1\,321 \text{ mg/m}^3$	In - house method : STM 04-032 based on NIOSH Manual of Analytical Methods, 4 th ed., NMAM, method 1501, Issue 3, 2003 (Include sampling)

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☒ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air - Workplace air	- <i>m,p</i> -Xylene 0.03 mg/m ³ to 2 656 mg/m ³ - Ethylbenzene 0.01 mg/m ³ to 1 309 mg/m ³ - Styrene 0.01 mg/m ³ to 1 327 mg/m ³	In - house method : STM 04-032 based on NIOSH Manual of Analytical Methods, 4 th ed., NMAM, method 1501, Issue 3, 2003 (Include sampling)

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Scope of Testing Laboratory Accreditation

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 Suan Luang, Bangkok 10250 Thailand
 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☒ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air - Workplace air	- Total dust 0.15 mg/filter to 2.0 mg/filter - Total dust 0.15 mg/m ³ to 285 mg/m ³ - Respirable dust 0.15 mg/filter to 2.0 mg/filter	In - house method : STM 04-049 based on NIOSH Manual of Analytical Method, 4 th ed., NMAM, method 0500 Issue 2, 1994 (Exclude sampling) In - house method : STM 04-049 based on NIOSH Manual of Analytical Method, 4 th ed., NMAM, method 0500 Issue 2, 1994 (Include sampling) In - house method : STM 04-050 based on NIOSH Manual of Analytical Method, 4 th ed., NMAM, method 0600 Issue 3, 1998 (Exclude sampling)

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air		
	- Workplace air	- Respirable dust 0.15 mg/m^3 to 100 mg/m^3	In - house method : STM 04-050 based on NIOSH Manual of Analytical Method, 4 th ed., NMAM, method 0600 Issue 3, 1998 (Include sampling)
	- Environmental air	- Total suspended particulate 0.5 mg/filter to 400 mg/filter - Total suspended particulate 0.002 mg/m^3 to 0.25 mg/m^3	In - house method : STM 04-051 based on United State Environmental Protection Agency 40 CFR part 50, Appendix B, revised as of July 1, 2008 (Exclude sampling) In - house method : STM 04-051 based on United State Environmental Protection Agency 40 CFR part 50, Appendix B, revised as of July 1, 2008 (Include sampling)

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air		
	- Environmental air	- Particulate matter (PM-10) 0.5 mg/filter to 200 mg/filter	In - house method : STM 04-052 based on United State Environmental Protection Agency 40 CFR part 50, Appendix J, revised as of July 1, 2008 (Exclude sampling)
		- Particulate matter (PM-10) 0.002 mg/m ³ to 0.25 mg/m ³	In - house method : STM 04-052 based on United State Environmental Protection Agency 40 CFR part 50, Appendix J, revised as of July 1, 2008 (Include sampling)
	- Emission from stationary sources	- Total suspended particulate 0.5 mg/filter to 393 mg/filter	United State Environmental Protection Agency 40 CFR part 60, method 5, Appendix A, 2020 (Exclude sampling)

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air - Emission from stationary sources	- Total suspended particulate at Actual O ₂ : 0.5 mg/m ³ to 488 mg/m ³ at 7% O ₂ : 0.4 mg/m ³ to 1 384 mg/m ³ - Hydrogen chloride at Actual O ₂ : 0.008 mg/m ³ to 250 mg/m ³ at 7% O ₂ : 0.006 mg/m ³ to 709 mg/m ³	United State Environmental Protection Agency 40 CFR part 60, method 1-5, 26, 2023 (Include sampling) United State Environmental Protection Agency 40 CFR part 60, method 1-4, 26, 2023 (Include sampling)

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air - Emission from stationary sources	- Hydrogen fluoride at Actual O ₂ : 0.008 mg/m ³ to 250 mg/m ³ at 7% O ₂ : 0.006 mg/m ³ to 709 mg/m ³ - Chlorine at Actual O ₂ : 0.008 mg/m ³ to 250 mg/m ³ at 7% O ₂ : 0.006 mg/m ³ to 709 mg/m ³	United State Environmental Protection Agency 40 CFR part 60, method 1-4, 26, 2023 (Include sampling)

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 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☒ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air - Emission from stationary sources	- Sulfur dioxide at Actual O ₂ : 0.13 mg/m ³ to 12 965 mg/m ³ at 7% O ₂ : 0.09 mg/m ³ to 36 778 mg/m ³ - Oxide of nitrogen at Actual O ₂ : 0.09 mg/m ³ to 3 644 mg/m ³ at 7% O ₂ : 0.07 mg/m ³ to 10 338 mg/m ³	United State Environmental Protection Agency 40 CFR part 60, method 6C, 2017 (Include sampling) United State Environmental Protection Agency 40 CFR part 60, method 7E, 2020 (Include sampling)

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 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☒ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
7 (Cont.)	Air - Emission from stationary sources	- Carbon monoxide at Actual O ₂ : 0.06 mg/m ³ to 5 789 mg/m ³ at 7% O ₂ : 0.04 mg/m ³ to 16 422 mg/m ³ - Oxygen 2.617 mg/m ³ to 275 mg/m ³ - Carbon dioxide 3.60 mg/m ³ to 540 mg/m ³	United State Environmental Protection Agency 40 CFR part 60, method 10, 2017 (Include sampling) United State Environmental Protection Agency 40 CFR part 60, method 3A, 2017 (Include sampling)

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 Accreditation Number : Testing - 0009
 Accreditation Standard : ISO/IEC 17025 : 2017
 Laboratory Status : ☒ Permanent ☒ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
8	Environmental noise	Sound level - Equivalent sound level $L_{eq,T}$ 30 dB (A) to 130 dB (A) Maximum sound level L_{max} 30 dB (A) to 130 dB (A)	- In - house method : STM 06-001 based on ISO 1996-1 : 2016, ISO 1996-2 : 2017 - Notification of the Department of Industrial Works, Method of measuring nuisance period noise level, 24-hour average sound level and maximum sound level from plant operation, BE2567 (2024)

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Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☒ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
8 (Cont.)	Environmental noise	Noise level - Background noise level L_{A90} 30.0 dB (A) to 130.0 dB (A) Non nuisance period noise level $L_{Aeq,T}$ 30.0 dB (A) to 130.0 dB (A) Nuisance period noise level $L_{Aeq,T}$ 30.0 dB (A) to 130.0 dB (A) Noise level 0.7 dB (A) to 30.0 dB (A)	- Notification of the Department of Industrial Works, Method of measuring nuisance period noise level, 24-hour average sound level and maximum sound level from plant operation, BE2567 (2024) - Notification of the Pollution Control Board, Method of measuring the background noise level, non nuisance period noise level, the measuring and calculation of noise level from nuisance period, the calculation of Nuisance level and record form of nuisance noise measurement, BE2565 (2022)

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Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9	Feeding stuffs	- Moisture 2.0 g/100 g to 30.0 g/100 g - Ash 1.0 g/100 g to 40.0 g/100 g - Protein 5.0 g/100 g to 88.0 g/100 g - Fat 0.3 g/100 g to 52.0 g/100 g	AOAC Official Methods of Analysis, 22 nd ed., 2023, method 930.15 AOAC Official Methods of Analysis, 22 nd ed., 2023, method 942.05 In - house method : STM 03-017 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 981.10 In - house method : STM 03-087 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 954.02

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Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

Scope of Testing Laboratory Accreditation

Laboratory Name : ALS Laboratory Group (Thailand) Co., Ltd.

Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,
Suan Luang, Bangkok 10250 Thailand

Accreditation Number : Testing - 0009

Accreditation Standard : ISO/IEC 17025 : 2017

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (Cont.)	Feeding stuffs	- Carbohydrate - Calories - Crude fiber 0.1 g/100 g to 40 g/100 g - Aerobic plate count CFU/g, CFU/mL - Coliforms MPN/g, MPN/mL - Presumptive <i>E. coli</i> MPN/g, MPN/mL	Method of Analysis for Nutrition Labeling, AOAC, 1993, chapter 6 In - house method : STM 03-197 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 978.10 ISO 4833-1 : 2013/Amd.1 : 2022 ISO 4831 : 2006 ISO 7251 : 2005

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (Cont.)	Feeding stuffs	- <i>Salmonella</i> spp. Detected or not detected/ Sample unit - <i>Salmonella</i> spp. Detected or not detected/ Sample unit - <i>Staphylococcus aureus</i> CFU/g, CFU/mL - Presumptive <i>Bacillus cereus</i> CFU/g, CFU/mL	ISO 6579-1 : 2017 / Amd.1 : 2020 AFNOR Validation, Certificate SOL 37/01-06/13 and ISO 6579-1 : 2017/Amd.1 : 2020 ISO 6888-1 : 2021/Amd.1 : 2023 ISO 7932 : 2004/Amd.1 :2020

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (Cont.)	Feeding stuffs	- Yeast and molds CFU/g, CFU/mL - Enterobacteriaceae CFU/g, CFU/mL - Coliforms CFU/g, CFU/mL - <i>E.coli</i> CFU/g, CFU/mL - <i>Listeria monocytogenes</i> CFU/g	ISO 21527-1 : 2008, ISO 21527-2 : 2008 ISO 21528-2 : 2017 ISO 4832 : 2006 ISO 16649-2 : 2001 ISO 11290-2 : 2017

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (Cont.)	Feeding stuffs	- <i>Listeria</i> spp. CFU/g. - <i>Listeria monocytogenes</i> Detected or not detected/ Sampl unit - <i>Listeria</i> spp. Detected or not detected/ Sampl unit	ISO 11290-2 : 2017 ISO 11290-1 : 2017

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (Cont.)	Feeding stuffs	- <i>Clostridium perfringens</i> CFU/g, CFU/mL - Sulfite-reducing <i>Clostridium</i> spp. CFU/g, CFU/mL - Calcium - Magnesium - Phosphorus - Sodium 20.0 mg/kg to 20 000 mg/kg - Copper - Sulfur 0.20 mg/kg to 240 mg/kg	ISO 15213-2 : 2023 ISO 15213-1 : 2023 In - house method : STM 05-013 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 984.27

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (Cont.)	Feeding stuffs	- Iron 1.00 mg/kg to 250 mg/kg - Manganese 0.30 mg/kg to 40 mg/kg - Potassium 65.0 mg/kg to 20 000 mg/kg - Zinc 0.50 mg/kg to 200 mg/kg - Antimony - Arsenic - Cadmium - Chromium - Lead - Molybdenum - Selenium 0.05 mg/kg to 30 mg/kg	In - house method : STM 05-013 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 984.27 In - house method : STM 05-040 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 2011.19

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (Cont.)	Feeding stuffs	- Tin - Nickel 0.05 mg/kg to 30 mg/kg - Aluminium 0.50 mg/kg to 30 mg/kg - Mercury 0.005 mg/kg to 1.00 mg/kg - Melamine - Ammeline - Ammelide - Cyanuric acid screening 1.00 mg/kg to 50.0 mg/kg	In - house method : STM 05-040 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 2011.19 In – house method : STM 05-045 based on United State Environmental Protection Agency, 2007, EPA Method 7473 In - house method : STM 03-091 based on United State Food and Drug Administration, Laboratory Information Bulletin LIB No.4423, Vol.24 ; 2008

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (Cont.)	Feeding stuffs	- Ochratoxin A 0.30 µg/kg to 120 µg/kg - Total aflatoxins 0.24 µg/kg to 416 µg/kg - Aflatoxins B₁ 0.80 µg/kg to 160 µg/kg B₂ 0.24 µg/kg to 48 µg/kg G₁ 0.80 µg/kg to 160 µg/kg G₂ 0.24 µg/kg to 48 µg/kg	In - house method : STM 03-092 based on AOAC Official Methods of Analysis, 22nd ed., 2023, method 2000.03 In - house method : STM 03-093 based on AOAC Official Methods of Analysis, 22nd ed., 2023, method 991.31 In - house method : STM 03-093 based on AOAC Official Methods of Analysis, 22nd ed., 2023, method 991.31

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
10	Pet food	- Moisture 46.0 g/100 g to 95.0 g/100 g - Ash 0.20 g/100 g to 4.40 g/100 g - Protein 3.0 g/100 g to 31.0 g/100 g - Fat 0.1 g/100 g to 11.0 g/100 g	AOAC Official Methods of Analysis, 22 nd ed., 2023, method 930.15 AOAC Official Methods of Analysis, 22 nd ed., 2023, method 942.05 In – house method : STM 03-017 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 981.10 In – house method : STM 03-087 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 954.02

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
10 (Cont.)	Pet food	- Carbohydrate - Calories - Crude fiber 0.01 g/100 g to 5.80 g/100 g	Method of Analysis for Nutrition Labeling, AOAC, 1993, chapter 6 In – house method : STM 03-197 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 978.10
11	Feather meal	- Total nitrogen (Calculated as N) 11 g/100 g to 14 g/100 g - Protein 70 g/100 g to 88 g/100 g	In - house method : STM 03-017 based on AOAC Official Methods of Analysis, 22 nd ed., 2023, method 981.10

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