

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  
Contact Person : Mrs. Tasanee Lakhakulporn  
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Initial Issue Date : 30<sup>th</sup> August 2006  
Issue Date : 25<sup>th</sup> July 2022  
Expired date : 24<sup>th</sup> July 2026  
Standard : ISO/IEC 17025:2017  
Reference No. : 0303/11109

## 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 <sup>2</sup> cfu/unit  - Coliforms cfu/50 cm <sup>2</sup> cfu/unit Detected or not detected/50 cm <sup>2</sup> Detected or not detected/unit  - <i>E. coli</i> cfu/50 cm <sup>2</sup> cfu/unit Detected or not detected/50 cm <sup>2</sup> Detected or not detected/unit	Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 8  Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 9  Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> 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 <sup>2</sup> Detected or not detected/unit  - <i>Salmonella</i> spp. Detected or not detected/50 cm <sup>2</sup> Detected or not detected/unit  - <i>Staphylococcus aureus</i> cfu/50 cm <sup>2</sup> cfu/unit Detected or not detected/50 cm <sup>2</sup> Detected or not detected/unit	Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 9  Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 36  Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> 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	<p>- <i>Bacillus cereus</i>            cfu/50 cm<sup>2</sup>            cfu/unit            Detected or not detected/50 cm<sup>2</sup>            Detected or not detected/unit</p> <p>- <i>Clostridium perfringens</i>            cfu/50 cm<sup>2</sup>            cfu/unit            Detected or not detected/50 cm<sup>2</sup>            Detected or not detected/unit</p> <p>- <i>Listeria monocytogenes</i>            Detected or not detected/50 cm<sup>2</sup>            Detected or not detected/unit</p>	<p>Compendium of Methods for the Microbiological Examination of Foods, 5<sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 31</p> <p>Compendium of Methods for the Microbiological Examination of Foods, 5<sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 33</p> <p>Compendium of Methods for the Microbiological Examination of Foods, 5<sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 35</p>

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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 cm <sup>2</sup> Detected or not detected/unit  - Yeast and Mold count cfu/50 cm <sup>2</sup> cfu/unit	Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 35  Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> ed., 2015, chapter 3 item 3.81 and chapter 21
2	Plastics food packaging	- Overall migration (10% ethanol) 3 mg/dm <sup>2</sup> to 100 mg/dm <sup>2</sup> - Overall migration (20% ethanol) 3 mg/dm <sup>2</sup> to 100 mg/dm <sup>2</sup> - Overall migration (50% ethanol) 3 mg/dm <sup>2</sup> to 100 mg/dm <sup>2</sup> - Overall migration (3% acetic acid) 3 mg/dm <sup>2</sup> to 100 mg/dm <sup>2</sup>	The European Standard BS EN 1186-3,5 : 2002 and Commission Regulations (EU) No.10/2011

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (cont.)	Plastics food packaging	- Overall migration (vegetable oil) 1 mg/dm <sup>2</sup> to 50 mg/dm <sup>2</sup>  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 1186-2,4 : 2002 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, 23 <sup>rd</sup> ed., 2017, part 3125 B

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
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, 23 <sup>rd</sup> ed., 2017, part 3125 B

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
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.)	<ul style="list-style-type: none"> <li>- Polyethylene</li> <li>- Polypropylene</li> <li>- Polystyrene</li> <li>- Polyvinyl chloride</li> <li>- Polyethylene terephthalate</li> </ul>	<ul style="list-style-type: none"> <li>- Residue after evaporation in 20% ethanol simulant 5 mg/dm<sup>3</sup> to 100 mg/dm<sup>3</sup></li> <li>- Residue after evaporation in 4% acetic acid simulant 5 mg/dm<sup>3</sup> to 100 mg/dm<sup>3</sup></li> <li>- Residue after evaporation in n- heptane 5 mg/dm<sup>3</sup> to 500 mg/dm<sup>3</sup></li> <li>- Residue after evaporation in water 5 mg/dm<sup>3</sup> to 100 mg/dm<sup>3</sup></li> </ul>	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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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (cont.)	Plastics food packaging - Polyethylene - Polypropylene - Polystyrene - Polyvinyl chloride - Polyethylene terephthalate	- Potassium permanganate consumption 0.5 mg/dm <sup>3</sup> to 15.0 mg/dm <sup>3</sup>	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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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 <sup>st</sup> ed., 2003

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2 (cont.)	Plastics food packaging - Polyethylene - Polypropylene - Polystyrene - Polyvinyl chloride - Polycarbonate - Polyethylene terephthalate - Nylon	- Migration test - Antimony - Germanium 0.01 mg/dm <sup>3</sup> to 4.0 mg/dm <sup>3</sup>  - Total heavy metal (as Pb) Less than 0.5 mg/dm <sup>3</sup>	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  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

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2 (cont.)	Plastics food packaging - Polystyrene  - Polyethylene - Polypropylene	- Volatile substance 500 mg/kg to 25 000 mg/kg  - Toluene - Ethylbenzene - Isopropyl benzene - Styrene - n-Propyl benzene 100 mg/kg to 5 000 mg/kg  - Substance soluble in n-Hexane 500 mg/kg to 50 000 mg/kg  - Substances soluble in xylene at 25 °C 800 mg/kg to 100 000 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  TIS 656 : 2013

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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	In - house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 4500 - H <sup>+</sup> B  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 4500 - O G  In - house method : STM 04-007 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 4500 - CN <sup>-</sup> C, E

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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	In - house method : STM 04-004 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 4110 B  In - house method : STM 04-100 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 4500 – N <sub>org</sub> D

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Water	- Oil & Grease 3 mg/L to 200 mg/L  - Standard plate count cfu/mL  - Total coliform MPN/100 mL	In - house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 5520 B  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9215 B  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, 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	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9222 B
		- <i>E. coli</i> MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9221 B, F
		- <i>E. coli</i> cfu/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9222 H

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Water	- Fecal coliform MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9221 B, E
		- Fecal coliform cfu/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9222 D
		- <i>Salmonella</i> spp. Detected or not detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9260 B
		- <i>Salmonella</i> spp. Detected or not detected	ISO 19250 : 2010

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Water	<p>- <i>Legionella</i> spp. cfu/L</p> <p>- <i>Staphylococcus aureus</i> Detected or not detected</p> <p>- <i>Clostridium perfringens</i> cfu/100 mL</p> <p>- Mercury 0.5 µg/L to 5.0 µg/L</p>	<p>ISO 11731 : 2017</p> <p>In - house method : STM 01-054 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA &amp; WEF, 23<sup>rd</sup> ed., 2017, part 9213 B and FDA Bacteriological Analytical Manual online, Chapter 12, 2016</p> <p>ISO 14189 : 2013</p> <p>In - house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E</p>

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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, 23 <sup>rd</sup> ed., 2017, 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, 23 <sup>rd</sup> ed., 2017, 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, 23 <sup>rd</sup> ed., 2017, 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, 23 <sup>rd</sup> ed., 2017, 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, 23 <sup>rd</sup> ed., 2017, part 3125 B, 3030 F

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 Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,  
 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 Laboratory Status :  Permanent  Site  Temporary  Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
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-Dichloroethylene - 1,2-Dichloroethane - Benzene - Carbon tetrachloride - <i>cis</i> - 1,2-Dichloroethane - Dichloromethane - Ethylbenzene - Styrene - Tetrachloroethylene 0.5 µg/L to 1 000 µg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 3125 B, 3030 F  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6200 B

Initial Issue Date 30<sup>th</sup> August 2006

Issue Number 14

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Water	Volatile Organic Compounds - Toluene - <i>o</i> -Xylene - trans-1,2-Dichloroethene - 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 1.5 µg/L to 3 000 µg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6200 B

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 Accreditation Number : Testing - 0009  
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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 - 2,4-DDT - 4,4-DDD - 4,4-DDE - 4,4-DDT - Aldrin - $\alpha$ -BHC - $\beta$ -BHC - $\delta$ -BHC - <i>trans</i> -Chlordane - Dieldrin - Endosulfan I - Endosulfan II 0.02 $\mu$ g/L to 200 $\mu$ g/L	In - house method : STM 04-036 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6630 C

Initial Issue Date 30<sup>th</sup> August 2006

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 Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,  
 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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-sulfate - Endrin - Heptachlor - Heptachlor – epoxide - Hexachlorobenzene - $\gamma$ -BHC - Methoxychlor 0.02 $\mu\text{g/L}$ to 200 $\mu\text{g/L}$	In - house method : STM 04-036 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6630 C
		Pesticide residues Organochlorine group : - 2,4-DDD - 2,4-DDE - 2,4-DDT 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, 23 <sup>rd</sup> ed., 2017, part 6630 D, part 6410 B

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 Accreditation Number : Testing - 0009  
 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 : - 4,4-DDD - 4,4-DDE - 4,4-DDT - Aldrin - $\alpha$ -BHC - $\beta$ -BHC - $\delta$ -BHC - <i>cis</i> -Chlordane - Dieldrin - Endosulfan I - Endosulfan II - Endosulfan-sulfate - Endrin - Heptachlor - Heptachlor – epoxide 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, 23 <sup>rd</sup> ed., 2017, part 6630 D, part 6410 B

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Water	Pesticide residues Organochlorine group : - Hexachlorobenzene - $\gamma$ -BHC - Methoxychlor - <i>trans</i> -Chlordane - Mirex - Endrin aldehyde - Endrin Ketone 0.02 $\mu\text{g/L}$ to 5 $\mu\text{g/L}$  - Chlordane 0.04 $\mu\text{g/L}$ to 10 $\mu\text{g/L}$	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6630 D, part 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
3 (cont.)	Water	Pesticide residues Organochlorine group : - Atrazine 0.5 µg/L to 25 µg/L - Total DDT 0.12 µg/L to 30 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, 23 <sup>rd</sup> ed., 2017, 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, 23 <sup>rd</sup> ed., 2017, part 6630 D, part 6410 B

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Accreditation Number : Testing - 0009

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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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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-ethyl - 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  
 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, 23 <sup>rd</sup> ed., 2017, part 6440 C, part 6410 B

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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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 <sub>&gt;8</sub> - C <sub>16</sub> ) - TPH (C <sub>&gt;16</sub> - C <sub>35</sub> ) - TPH (C <sub>10</sub> - C <sub>14</sub> ) - TPH (C <sub>15</sub> - C <sub>28</sub> ) - TPH (C <sub>29</sub> - C <sub>36</sub> ) 10 µg/L to 5 000 µg/L	In-house method : STM 04-102 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6440 C, part 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

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 Accreditation Number : Testing - 0009  
 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 & Grease 3 mg/L to 2 000 mg/L	In - house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 4500 - H <sup>+</sup> B  In - house method : STM 04-100 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 4500 – N <sub>org</sub> D  In - house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 5520 B

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 Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,  
 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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 5 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, 23 <sup>rd</sup> ed., 2017, part 5210 B and part 4500 – O G  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 5220 D  In - house method : STM 04-007 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 4500 - CN <sup>-</sup> C, E

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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	- Total dissolved solids at 103 °C to 105 °C 100 mg/L to 20 000 mg/L  - Total dissolved solids at 180 °C 100 mg/L to 20 000 mg/L  - Total suspended solids at 103 °C to 105 °C 5 mg/L to 5 000 mg/L	In - house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 2540 C  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 2540 C  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 2540 D

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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	- Standard plate count cfu/mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9215 B
		- Total coliform MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9221 B
		- Total coliform cfu/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9222 B

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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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> MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9221 B, F
		- <i>E. coli</i> cfu/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9222 H
		- Fecal coliform MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9221 B, E

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (cont.)	Wastewater	- Fecal coliform cfu/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9222 D
		- <i>Salmonella</i> spp. Detected or not detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9260 B
		- <i>Salmonella</i> spp. Detected or not detected	ISO 19250 : 2010
		- <i>Legionella</i> spp. cfu/L	ISO 11731 : 2017

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (cont.)	Wastewater	<p>- <i>Staphylococcus aureus</i> Detected or not detected</p> <p>- Mercury 0.5 µg/L to 20 µg/L</p>	<p>In - house method : STM 01-054 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA &amp; WEF, 23<sup>rd</sup> ed., 2017, part 9213 B and FDA Bacteriological Analytical Manual online, Chapter 12, 2016</p> <p>In - house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E</p>

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4 (cont.)	Wastewater	- Hexavalent chromium 0.01 mg/L ถึง 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, 23 <sup>rd</sup> ed., 2017, 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, 23 <sup>rd</sup> ed., 2017, 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	- 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, 23 <sup>rd</sup> ed., 2017, 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	- 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, 23 <sup>rd</sup> ed., 2017, 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, 23 <sup>rd</sup> ed., 2017, 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, 23 <sup>rd</sup> ed., 2017, 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-Dichloroethylene - 1,2-Dichloroethane - Benzene - Carbon tetrachloride - <i>cis</i> -1,2-Dichloroethene - <i>trans</i> -1,2-Dichloroethene - Dichloromethane - Ethylbenzene - Styrene  0.5 µg/L to 1 000 µg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, 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 - Tetrachloroethylene - Toluene - o-Xylene - Trichloroethylene - Vinyl chloride - 2-Butanone 0.5 µg/L to 1 000 µg/L  - m,p-Xylene 1.0 µg/L to 2 000 µg/L - Total xylene 1.5 µg/L to 3 000 µg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6200 B

Initial Issue Date 30<sup>th</sup> August 2006

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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  
 Accreditation Number : Testing - 0009  
 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-DDD - 2,4-DDE - 2,4-DDT - 4,4-DDD - 4,4-DDE - 4,4-DDT - Aldrin - $\alpha$ -BHC - $\beta$ -BHC - $\delta$ -BHC - Chlordane - Dieldrin - Endosulfan I - Endosulfan II 0.02 $\mu$ g/L to 200 $\mu$ g/L	In - house method : STM 04-036 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6630 C

Initial Issue Date 30<sup>th</sup> August 2006

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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

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 Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,  
 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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 : - Endosulfan-sulfate - Endrin - Heptachlor - Heptachlor – epoxide - Hexachlorobenzene - $\gamma$ -BHC - Methoxychlor 0.02 $\mu\text{g/L}$ to 200 $\mu\text{g/L}$	In - house method : STM 04-036 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6630
		Pesticide residues Organochlorine group : - 2,4-DDD - 2,4-DDE - 2,4-DDT - 4,4-DDD 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, 23 <sup>rd</sup> ed., 2017, part 6630 D, part 6410 B

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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

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 Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,  
 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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 : - 4,4-DDE - 4,4-DDT - Aldrin - $\alpha$ -BHC - $\beta$ -BHC - $\delta$ -BHC - <i>cis</i> -Chlordane - Dieldrin - Endosulfan I - Endosulfan II - Endosulfan-sulfate - Endrin 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, 23 <sup>rd</sup> ed., 2017, part 6630 D, part 6410 B

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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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 - Hexachlorobenzene - $\gamma$ -BHC - Methoxychlor - <i>trans</i> -Chlordane - Mirex - Endrin aldehyde - Endrin Ketone 0.02 $\mu\text{g/L}$ to 5 $\mu\text{g/L}$ - Chlordane 0.04 $\mu\text{g/L}$ to 10 $\mu\text{g/L}$ - Atrazine 0.5 $\mu\text{g/L}$ to 25 $\mu\text{g/L}$	In - house method : STM 04-101 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6630 D, part 6410 B

Initial Issue Date 30<sup>th</sup> August 2006

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 Accreditation Number : Testing - 0009  
 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 Pyrethroid group : - Bifenthrin - Cyfluthrin - Cypermethrin - Deltamethrin - Fenvalerate - lambda-Cyhalothrin - Permethrin 0.1 µg/L to 5 µg/L  Pesticide residues Organophosphate group : - Azinphos-ethyl - Chlorpyrifos - Chlorpyrifos-methyl - DDVP 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, 23 <sup>rd</sup> ed., 2017, part 6630 D, part 6410 B  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

Initial Issue Date 30<sup>th</sup> August 2006

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 Accreditation Number : Testing - 0009  
 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 : - Demeton-S-methyl - Diazinon - Dicrotophos - Dimethoate - EPN - Ethion - Fenitrothion - Malathion - Methidathion - Mevinphos - Parathion-ethyl - Parathion-methyl - Phorate - Phosalone 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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 Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,  
 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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 : - Pirimiphos-ethyl - Pirimiphos-methyl - Profenofos - Prothiophos - Triazophos 0.1 µg/L to 5 µg/L  Polycyclic Aromatic Hydrocarbons - 1-Methylnaphthalene - 2-Methylnaphthalene - Acenaphthene - Acenaphthylene - Anthracene 0.01 µg/L to 10 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  In - house method : STM 04-102 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 6440 C, part 6410 B

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 Accreditation Number : Testing - 0009  
 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 - 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 - 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, 23 <sup>rd</sup> ed., 2017, part 6440 C, part 6410 B

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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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 <sub>&gt;8</sub> - C <sub>16</sub> ) - TPH (C <sub>&gt;16</sub> - C <sub>35</sub> ) - TPH (C <sub>10</sub> - C <sub>14</sub> ) - TPH (C <sub>15</sub> - C <sub>28</sub> ) - TPH (C <sub>29</sub> - C <sub>36</sub> ) 10 µg/L to 5 000 µg/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
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, 23 <sup>rd</sup> ed., 2017, part 9221 B

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 Accreditation Number : Testing - 0009  
 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	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9222 D
		- Fecal <i>Streptococcus</i> cfu/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9230 C
		- <i>Enterococcus</i> spp. cfu/100 mL	
6	Swimming pool water	- Total coliform MPN/100 mL	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9221 B
		- <i>E. coli</i> Detected or not detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9221 B, F

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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  - <i>Staphylococcus aureus</i> Detected or not detected  - <i>Salmonella</i> spp. Detected or not detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9221 B, E  In - house method : STM 01-054 base on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 <sup>rd</sup> ed., 2017, part 9213 B and FDA Bacteriological Analytical Manual online, Chapter 12, 2016  ISO 19250 : 2010

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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, 23 <sup>rd</sup> ed., 2017, part 9215 B
7	Air  - Workplace air	- Aerobic plate count  cfu/15 min    - Yeast and Mold count  cfu/15 min	Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> ed., 2015, chapter 3 Item 3.71 and chapter 8 (Exclude sampling)    Compendium of Methods for the Microbiological Examination of Foods, 5 <sup>th</sup> ed., 2015, chapter 3 Item 3.71 and chapter 21 (Exclude sampling)

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 Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Phatthanakan,  
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 Accreditation Number : Testing - 0009  
 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 0.04 mg/m <sup>3</sup> to 1 000 mg/m <sup>3</sup> (0.01 ppm to 313 ppm)  - Toluene 0.04 mg/m <sup>3</sup> to 1 000 mg/m <sup>3</sup> (0.01 ppm to 265 ppm)  - Total - Xylene 0.15 mg/m <sup>3</sup> to 3 000 mg/m <sup>3</sup> (0.03 ppm to 691 ppm)  - o-Xylene - m-Xylene - p-Xylene 0.05 mg/m <sup>3</sup> to 1 000 mg/m <sup>3</sup> (0.01 ppm to 230 ppm)	In - house method : STM 04-032 based on NIOSH Manual of Analytical Methods, 4 <sup>th</sup> ed., NMAM, method 1501, Issue 3, 2003 (Include sampling)

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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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	In - house method : STM 04-049 based on NIOSH Manual of Analytical Method, 4 <sup>th</sup> ed., NMAM, method 0500 Issue 2, 1994 (Exclude sampling)
		- Total dust 0.15 mg/m <sup>3</sup> to 285 mg/m <sup>3</sup>	In - house method : STM 04-049 based on NIOSH Manual of Analytical Method, 4 <sup>th</sup> ed., NMAM, method 0500 Issue 2, 1994 (Include sampling)
		- Respirable dust 0.15 mg/filter to 2.0 mg/filter	In - house method : STM 04-050 based on NIOSH Manual of Analytical Method, 4 <sup>th</sup> ed., NMAM, method 0600 Issue 3, 1998 (Exclude sampling)

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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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	- Respirable dust $0.15 \text{ mg/m}^3$ to $100 \text{ mg/m}^3$	In - house method : STM 04-050 based on NIOSH Manual of Analytical Method, 4 <sup>th</sup> ed., NMAM, method 0600 Issue 3, 1998 (Include sampling)
	- Environmental air	- Total suspended particulate $0.5 \text{ mg/filter}$ to $400 \text{ mg/filter}$	In - house method : STM 04-051 based on U.S. Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008 (Exclude sampling)
		- Total suspended particulate $0.002 \text{ mg/m}^3$ to $0.25 \text{ mg/m}^3$	In - house method : STM 04-051 based on U.S. Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008 (Include sampling)

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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 Laboratory Status :  Permanent  Site  Temporary  Mobile

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 U.S. Environmental Protection Agency 40 CFR, method 50, Appendix J, revised as of July 1, 2008 (Exclude sampling)
		- Particulate matter (PM-10) 0.002 mg/m <sup>3</sup> to 0.25 mg/m <sup>3</sup>	In - house method : STM 04-052 based on U.S. Environmental Protection Agency 40 CFR, method 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	In - house method : STM 04-053 based on U.S. Environmental Protection Agency 40 CFR method 5, Appendix A, 2020 (Exclude sampling)

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 Suan Luang, Bangkok 10250  
 Accreditation Number : Testing - 0009  
 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	- Total suspended particulate At Actual O <sub>2</sub> : 0.5 mg/m <sup>3</sup> to 488 mg/m <sup>3</sup> At 7% O <sub>2</sub> : 0.4 mg/m <sup>3</sup> to 1 384 mg/m <sup>3</sup>  - Hydrogen chloride At Actual O <sub>2</sub> : 0.008 mg/m <sup>3</sup> to 250 mg/m <sup>3</sup> (0.005 ppm to 167 ppm) At 7% O <sub>2</sub> : 0.006 mg/m <sup>3</sup> to 709 mg/m <sup>3</sup> (0.004 ppm to 475 ppm)	In - house method : STM 04-053 based on U.S. Environmental Protection Agency 40 CFR method 1-5, Appendix A, 2020 (Include sampling)  In - house method : STM 04-054 based on U.S. Environmental Protection Agency 40 CFR, method 1-4, 26, 2020 (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 <sub>2</sub> : 0.008 mg/m <sup>3</sup> to 250 mg/m <sup>3</sup> (0.010 ppm to 305 ppm) At 7% O <sub>2</sub> : 0.006 mg/m <sup>3</sup> to 709 mg/m <sup>3</sup> (0.007 ppm to 866 ppm)  - Chlorine At Actual O <sub>2</sub> : 0.008 mg/m <sup>3</sup> to 250 mg/m <sup>3</sup> (0.005 ppm to 172 ppm) At 7% O <sub>2</sub> : 0.006 mg/m <sup>3</sup> to 709 mg/m <sup>3</sup> (0.004 ppm to 489 ppm)	In - house method : STM 04-054 based on U.S. Environmental Protection Agency 40 CFR, method 1-4, 26, 2020 (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	<p>- Sulfur dioxide</p> <p>At Actual O<sub>2</sub> :</p> <p>0.26 mg/m<sup>3</sup> to 1 675 mg/m<sup>3</sup> (0.10 ppm to 639 ppm)</p> <p>At 7% O<sub>2</sub> :</p> <p>0.191 mg/m<sup>3</sup> to 4 752 mg/m<sup>3</sup> (0.07 ppm to 1 813 ppm)</p> <p>- Oxide of nitrogen</p> <p>At Actual O<sub>2</sub> :</p> <p>0.19 mg/m<sup>3</sup> to 752 mg/m<sup>3</sup> (0.10 ppm to 400 ppm)</p> <p>At 7% O<sub>2</sub> :</p> <p>0.14 mg/m<sup>3</sup> to 2 133 mg/m<sup>3</sup> (0.07 ppm to 1 134 ppm)</p>	<p>U.S. Environmental Protection Agency 40 CFR, method 6C, 2017 (Include sampling)</p> <p>U.S. Environmental Protection Agency 40 CFR, method 7E, 2020 (Include sampling)</p>

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Accreditation Number : Testing - 0009

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 <sub>2</sub> : 0.11 mg/m <sup>3</sup> to 1 832 mg/m <sup>3</sup> (0.10 ppm to 1 599 ppm) At 7% O <sub>2</sub> : 0.081 mg/m <sup>3</sup> to 5 197 mg/m <sup>3</sup> (0.07 ppm to 4 536 ppm)  - Oxygen 2.617 mg/m <sup>3</sup> to 275 mg/m <sup>3</sup> (0.2 % to 21.0 %)  - Carbon dioxide 3.60 mg/m <sup>3</sup> to 540 mg/m <sup>3</sup> (0.2 % to 30.0 %)	U.S. Environmental Protection Agency 40 CFR, method 10, 2017 (Include sampling)          U.S. Environmental Protection Agency 40 CFR, method 3A, 2017 (Include sampling)

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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)  - Noise level Background noise level $L_{90}$ 30 dB (A) to 130 dB (A) Non nuisance period noise level $L_{eq,T}$ 30 dB (A) to 130 dB (A) Nuisance period noise level $L_{eq,T}$ 30 dB (A) to 130 dB (A) Noise level 0 dB (A) to 30 dB (A)	In - house method : STM 06-001 based on ISO 1996-1 : 2016, 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, 2010, 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, 2007

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 Accreditation Number : Testing - 0009  
 Laboratory Status :  Permanent  Site  Temporary  Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9	Feeding stuffs	- Moisture 2.0 g/100 g to 21.0 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/100g to 45.0 g/100 g	AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019 method 930.15  AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019 method 942.05  In - house method : STM 03-019 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 981.10  In - house method : STM 03-087 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 954.02

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## Scope of Testing Laboratory Accreditation

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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/100g 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 03-105 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 978.10   ISO 4833-1 : 2013   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	ISO 6579-1 : 2017 / Amd.1 : 2020
		- <i>Salmonella</i> spp. Detected or not detected	AFNOR Validation, Certificate SOL 37/01-06/13 and ISO 6579-1 : 2017/Amd1 : 2020
		- <i>Staphylococcus aureus</i> cfu/g, cfu/mL	ISO 6888-1 : 1999/Amd2 : 2018
		- Presumptive <i>Bacillus cereus</i> cfu/g, cfu/mL	ISO 7932 : 2004
		- Yeast and Mold count cfu/g, cfu/mL	ISO 21527-1 : 2008, ISO 21527-2 : 2008
		- <i>Clostridium perfringens</i> cfu/g, cfu/mL	ISO 7937 : 2004
		- Enterobacteriaceae cfu/g, cfu/mL	ISO 21528-2 : 2017

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (cont.)	Feeding stuffs	- Coliforms cfu/g, cfu/mL	ISO 4832 : 2006
		- <i>E.coli</i> cfu/g, cfu/mL	ISO 16649-2 : 2001
		- <i>Listeria monocytogenes</i> cfu/g	ISO 11290-2 : 2017
		- <i>Listeria</i> spp. cfu/g.	
		- <i>Listeria monocytogenes</i> Detected or not detected	ISO 11290-1 : 2017
		- <i>Listeria</i> spp. Detected or not detected	

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (cont.)	Feeding stuffs	- Mercury 0.005 mg/kg to 0.20 mg/kg  - Calcium - Magnesium - Phosphorus - Sodium 20.0 mg/kg to 20 000 mg/kg  - Copper - Sulfur 0.20 mg/kg to 240 mg/kg  - Iron 1.00 mg/kg to 250 mg/kg - Manganese 0.30 mg/kg to 40 mg/kg	In - house method : STM 05-011 based on United State Environmental Protection Agency, 2007, EPA Method 7474  In - house method : STM 05-013 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, 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	- 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 - Tin - Nickel - Aluminium 0.50 mg/kg to 30 mg/kg	In - house method : STM 05-013 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 984.27 In - house method : STM 05-040 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, 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	- Mercury 0.005 mg/kg to 1.00 mg/kg  - Melamine - Ammeline - Ammelide - Cyanuric acid screening 1.00 mg/kg to 100.0 mg/kg  - Ochratoxin A 0.50 µg/kg to 25.00 µg/kg	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 USFDA, Laboratory Information Bulletin LIB No.4423, Vol.24 ; 2008  In - house method : STM 03-092 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 2000.03

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
9 (cont.)	Feeding stuffs	- Total aflatoxins 5.2 µg/kg to 104 µg/kg  - Aflatoxins B <sub>1</sub> 2 µg/kg to 40 µg/kg B <sub>2</sub> 0.6 µg/kg to 12 µg/kg G <sub>1</sub> 2 µg/kg to 40 µg/kg G <sub>2</sub> 0.6 µg/kg to 12 µg/kg	In - house method : STM 03-093 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 991.31  In - house method : STM 03-093 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 991.31
10	Pet food	- Moisture 46.0 g/100 g to 91.0 g/100 g  - Ash 0.20 g/100 g to 4.40 g/100 g	AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019 method 930.15  AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019 method 942.05

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
10 (cont.)	Pet food	- Protein 3.0 g/100 g to 31.0 g/100 g  - Fat 0.1 g/100 g to 11.0 g/100 g  - Carbohydrate  - Calories  - Crude fiber 0.01 g/100 g to 5.80 g/100 g	In – house method : STM 03-019 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 981.10  In – house method : STM 03-087 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 954.02  Method of Analysis for Nutrition Labeling, AOAC, 1993, chapter 6  In – house method : STM 03-105 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 978.10

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Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
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 03-019 based on AOAC Official Methods of Analysis 21 <sup>st</sup> ed., 2019, method 981.10

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