

ภาคผนวก ก

ใบรับรองผลการตรวจวิเคราะห์

ภาคผนวก ถ-1

คุณภาพอากาศในบรรยากาศโดยทั่วไป



Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO04327
Project Name : Monitoring EIA
Project Location :

Lot ID: 2358248

Date Received : May 26, 2023

Date Reported : May 31, 2023

Report Number: 2657603-1

Page 1 of 1

Sample Description Air Quality
Location Hotel Indigo Bangkok : บริเวณริมรั้วด้านหลังพื้นที่โครงการ (ทางทิศตะวันออก) (GPS 47P 0667312, 1519502)
Parameter Nitrogen dioxide (ppm)
Measurement Date May 22, 2023 - May 25, 2023
Measurement by Winyou Boontana

	2358248-1	2358248-2	2358248-3	-	-	-	-
Time	May 22, 2023	May 23, 2023	May 24, 2023	-	-	-	-
10:00 AM - 11:00 AM	0.017	0.021	0.020	-	-	-	-
11:00 AM - 12:00 PM	0.008	0.016	0.015	-	-	-	-
12:00 PM - 01:00 PM	0.017	0.017	0.018	-	-	-	-
01:00 PM - 02:00 PM	0.019	0.018	0.032	-	-	-	-
02:00 PM - 03:00 PM	0.015	0.024	0.032	-	-	-	-
03:00 PM - 04:00 PM	0.025	0.030	0.027	-	-	-	-
04:00 PM - 05:00 PM	0.030	0.026	0.033	-	-	-	-
05:00 PM - 06:00 PM	0.030	0.022	0.039	-	-	-	-
06:00 PM - 07:00 PM	0.020	0.022	0.040	-	-	-	-
07:00 PM - 08:00 PM	0.017	0.024	0.028	-	-	-	-
08:00 PM - 09:00 PM	0.016	0.024	0.021	-	-	-	-
09:00 PM - 10:00 PM	0.012	0.029	0.030	-	-	-	-
10:00 PM - 11:00 PM	0.013	0.026	0.020	-	-	-	-
11:00 PM - 12:00 AM	0.012	0.024	0.021	-	-	-	-
12:00 AM - 01:00 AM	0.013	0.020	0.019	-	-	-	-
01:00 AM - 02:00 AM	0.010	0.019	0.012	-	-	-	-
02:00 AM - 03:00 AM	0.010	0.019	0.010	-	-	-	-
03:00 AM - 04:00 AM	0.013	0.016	0.010	-	-	-	-
04:00 AM - 05:00 AM	0.012	0.026	0.009	-	-	-	-
05:00 AM - 06:00 AM	0.013	0.026	0.010	-	-	-	-
06:00 AM - 07:00 AM	0.011	0.032	0.010	-	-	-	-
07:00 AM - 08:00 AM	0.016	0.021	0.011	-	-	-	-
08:00 AM - 09:00 AM	0.017	0.023	0.014	-	-	-	-
09:00 AM - 10:00 AM	0.016	0.022	0.018	-	-	-	-
Average	0.016	0.023	0.021	-	-	-	-
1hr - Maximum	0.030	0.032	0.040	-	-	-	-
Standard 1hr - Average	0.170	0.170	0.170	-	-	-	-

Standard : Notification of the National Environment Board No. 33, 2009 (B.E. 2552).

Reference Method : US EPA Method Part 50 App. F (Chemiluminescence)

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Orawan R.

Orawan Rakyong
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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO04327
Project Name : Monitoring EIA
Project Location :

Lot ID: 2358249
Date Received : May 26, 2023
Date Reported : May 31, 2023
Report Number: 2657609-1

Page 1 of 1

Sample Description Air Quality
Location Hotel Indigo Bangkok : บริเวณริมรั้วด้านหลังพื้นที่โครงการ (ทางทิศตะวันออก) (GPS 47P 0667312, 1519502)
Parameter Sulfur Dioxide (ppm)
Measurement Date May 22, 2023 - May 25, 2023
Measurement by Winyou Boontana

	2358249-1	2358249-2	2358249-3	-	-	-	-
Time	May 22, 2023	May 23, 2023	May 24, 2023	-	-	-	-
10:00 AM - 11:00 AM	<0.001	0.001	0.002	-	-	-	-
11:00 AM - 12:00 PM	<0.001	<0.001	<0.001	-	-	-	-
12:00 PM - 01:00 PM	<0.001	<0.001	<0.001	-	-	-	-
01:00 PM - 02:00 PM	<0.001	0.001	<0.001	-	-	-	-
02:00 PM - 03:00 PM	<0.001	0.001	<0.001	-	-	-	-
03:00 PM - 04:00 PM	<0.001	0.001	<0.001	-	-	-	-
04:00 PM - 05:00 PM	0.001	0.001	0.001	-	-	-	-
05:00 PM - 06:00 PM	<0.001	0.001	0.001	-	-	-	-
06:00 PM - 07:00 PM	<0.001	0.001	0.001	-	-	-	-
07:00 PM - 08:00 PM	<0.001	<0.001	<0.001	-	-	-	-
08:00 PM - 09:00 PM	<0.001	<0.001	<0.001	-	-	-	-
09:00 PM - 10:00 PM	<0.001	<0.001	<0.001	-	-	-	-
10:00 PM - 11:00 PM	<0.001	<0.001	<0.001	-	-	-	-
11:00 PM - 12:00 AM	<0.001	0.001	<0.001	-	-	-	-
12:00 AM - 01:00 AM	<0.001	0.001	<0.001	-	-	-	-
01:00 AM - 02:00 AM	<0.001	0.001	<0.001	-	-	-	-
02:00 AM - 03:00 AM	<0.001	0.002	<0.001	-	-	-	-
03:00 AM - 04:00 AM	<0.001	0.001	0.001	-	-	-	-
04:00 AM - 05:00 AM	<0.001	<0.001	<0.001	-	-	-	-
05:00 AM - 06:00 AM	<0.001	<0.001	<0.001	-	-	-	-
06:00 AM - 07:00 AM	<0.001	<0.001	<0.001	-	-	-	-
07:00 AM - 08:00 AM	<0.001	<0.001	<0.001	-	-	-	-
08:00 AM - 09:00 AM	<0.001	<0.001	<0.001	-	-	-	-
09:00 AM - 10:00 AM	0.001	0.002	<0.001	-	-	-	-
Average	<0.001	0.001	<0.001	-	-	-	-
1hr - Maximum	0.001	0.002	0.002	-	-	-	-
Standard 1hr - Average	0.3	0.3	0.3	-	-	-	-
Standard 24 hrs - Average	0.12	0.12	0.12	-	-	-	-

Standard : Notification of the National Environment Board No.10, 1995 (B.E.2538), No. 21, 2001 (B.E.2544) and No.24, 2004 (B.E.2547).
Reference Method : US EPA Method Part 53 and 58

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Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO04327
Project Name : Monitoring EIA
Project Location :

Lot ID: 2358250

Date Received : May 26, 2023
Date Reported : Jun 02, 2023
Report Number : 2657613-1

Page 1 of 3

Sample Number 2358250-1
Sampled Date May 22, 2023
Sample Description Air Quality
Location Hotel Indigo Bangkok : บริเวณริมรั้วด้านหลังพื้นที่โครงการ (ทางทิศตะวันออก) (GPS 47P 0667312, 1519502)
Date Analysis Commenced May 27, 2023
Condition of Sample Drawn into one quartz filter paper (8x10 inch) placed in plastic bag and one glass filter paper (8x10 inch) placed in plastic bag and one 10-L air sampling bag
Barometric Pressure 757 mmHg
Atmospheric Temperature 36.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Carbon Monoxide *	10:00 AM - 11:00 AM	ppm	-	0.10	<0.10	30	EPA 40 CFR Part 50, Appendix C	NEB No.10 Bangkok	
Particulate matter as PM 10	22/05/23 - 23/05/23	mg/m3	-	0.005	0.030	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Hydrocarbon *	10:00 AM - 11:00 AM	ppm	-	-	3.8	No Standard	EPA 40 CFR Part 50	-	Bangkok
Total Suspended Particulate	22/05/23 - 23/05/23	mg/m3	-	0.005	0.062	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	

Guideline :

NEB No.10 : Notification of the National Environmental Board. No.10, 1995 (B.E.2538); (1) Guideline for 1 month Average value.
NEB No.24 : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Winyou Boontana

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
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Orawan R.

Orawan Rakyong
Scientist (3)



Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO04327
Project Name : Monitoring EIA
Project Location :

Lot ID: 2358250

Date Received : May 26, 2023
Date Reported : Jun 02, 2023
Report Number : 2657613-1

Page 2 of 3

Sample Number	2358250-2
Sampled Date	May 23, 2023
Sample Description	Air Quality
Location	Hotel Indigo Bangkok : บริเวณเริ่มรื้อด้านหลังพื้นที่โครงการ (ทางทิศตะวันออก) (GPS 47P 0667312, 1519502)
Date Analysis Commenced	May 27, 2023
Condition of Sample	Drawn into one quartz filter paper (8x10 inch) placed in plastic bag and one glass filter paper (8x10 inch) placed in plastic bag and one 10-L air sampling bag
Barometric Pressure	757 mmHg
Atmospheric Temperature	36.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Carbon Monoxide *	10:00 AM - 11:00 AM	ppm	-	0.10	<0.10	30	EPA 40 CFR Part 50, Appendix C	NEB No.10 Bangkok	
Particulate matter as PM 10	23/05/23 - 24/05/23	mg/m3	-	0.005	0.032	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Hydrocarbon *	10:00 AM - 11:00 AM	ppm	-	-	3.9	No Standard	EPA 40 CFR Part 50	-	Bangkok
Total Suspended Particulate	23/05/23 - 24/05/23	mg/m3	-	0.005	0.064	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	

Guideline :

NEB No.10 : Notification of the National Environmental Board. No.10, 1995 (B.E.2538); (1) Guideline for 1 month Average value.

NEB No.24 : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Winyou Boontana

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Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO04327
Project Name : Monitoring EIA
Project Location :

Lot ID: 2358250

Date Received : May 26, 2023

Date Reported : Jun 02, 2023

Report Number : 2657613-1

Page 3 of 3

Sample Number 2358250-3
Sampled Date May 24, 2023
Sample Description Air Quality
Location Hotel Indigo Bangkok : บริเวณริมรั้วด้านหลังพื้นที่โครงการ (ทางทิศตะวันออก) (GPS 47P 0667312, 1519502)
Date Analysis Commenced May 27, 2023
Condition of Sample Drawn into one quartz filter paper (8x10 inch) placed in plastic bag and one glass filter paper (8x10 inch) placed in plastic bag and one 10-L air sampling bag
Barometric Pressure 757 mmHg
Atmospheric Temperature 35.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Carbon Monoxide *	10:00 AM - 11:00 AM	ppm	-	0.10	<0.10	30	EPA 40 CFR Part 50, Appendix C	NEB No.10 Bangkok	
Particulate matter as PM 10	24/05/23 - 25/05/23	mg/m3	-	0.005	0.032	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Hydrocarbon *	10:00 AM - 11:00 AM	ppm	-	-	2.7	No Standard	EPA 40 CFR Part 50	-	Bangkok
Total Suspended Particulate	24/05/23 - 25/05/23	mg/m3	-	0.005	0.061	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	

Guideline :

NEB No.10 : Notification of the National Environmental Board. No.10, 1995 (B.E.2538); (1) Guideline for 1 month Average value.

NEB No.24 : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Winyou Boontana

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Orawan Rakyong
Scientist (3)

ภาคผนวก ถ-2

คุณภาพน้ำทิ้ง



Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : 202301-000002
Project Name : Monitoring EIA
Project Location : Hotel Indigo

Lot ID: 231113

Date Received : Jan 11, 2023
Date Reported : Jan 18, 2023
Report Number : 2545963-1

Page 1 of 1

Sample Number	231113-1
Sampled Date	Jan 11, 2023 9:10 AM
Sample Description	Wastewater
Location	บริเวณจุดรวบรวมน้ำเสียก่อนเข้าระบบบำบัดน้ำเสีย
Date Analysis Commenced	Jan 12, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, a lot of odour, solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 degree C) *	mg/L	-	2.0	270	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	18	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.6	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	2.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	5.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	468	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	49.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	118	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Sampling By : Pichai Boonyong

Remark :

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : 202301-000002
Project Name : Monitoring EIA
Project Location: Hotel Indigo

TESTING
No.0009

Lot ID: 231113
Date Received : Jan 11, 2023
Date Reported : Jan 18, 2023
Report Number : 2545964-1

Page 1 of 2

Sample Number	231113-2
Sampled Date	Jan 11, 2023 9:00 AM
Sample Description	Wastewater
Location	บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced	Jan 12, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 degree C) *	mg/L	-	2.0	4.0	≤30	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	3	≤20	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	8.0	5.0-9.0	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	<0.1	≤0.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	0.6	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	264	(1)	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.1	≤35	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

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Siriluk Puengpang
Supervisor

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S:\Reports_All_GL\rpt (2:50PM)



Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : 202301-000002
Project Name : Monitoring EIA
Project Location: Hotel Indigo

Lot ID: 231113
Date Received : Jan 11, 2023
Date Reported : Jan 18, 2023
Report Number : 2545964-1

Page 2 of 2

Sample Number 231113-2
Sampled Date Jan 11, 2023 9:00 AM
Sample Description Wastewater
Location บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced Jan 12, 2023
Condition of Sample Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	6	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Guideline : Notification of Ministry of Natural Resources and Environment November, 7, B.E. 2548 on Effluent Control Standard from Types and Sized of Buildings, Type B.

(1) : The values are in addition to the Total Dissolved Solids of the water used not more than 500 mg/L.

Sampling By :

Remark :

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Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330

P/O :

Project Name : Monitoring EIA

Project Location : Hotel Indigo

Lot ID: 2312277

Date Received : Feb 08, 2023

Date Reported : Feb 15, 2023

Report Number : 2570004-1

Page 1 of 1

Sample Number	2312277-1
Sampled Date	Feb 08, 2023 10:25 AM
Sample Description	Wastewater
Location	บริเวณจุดรวมรวมน้ำเสียก่อนเข้าระบบบำบัดน้ำเสีย
Date Analysis Commenced	Feb 09, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, a lot of odour, solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 degree C) *	mg/L	-	2.0	61.4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	67	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.3	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	5.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	6.8	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	544	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	63.1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	210	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Sampling By : Panupong Homewong

Remark :

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Siriluk Puengpang
Supervisor

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O :
Project Name : Monitoring EIA
Project Location: Hotel Indigo

TESTING
No.0009
Lot ID: 2312277
Date Received : Feb 08, 2023
Date Reported : Feb 15, 2023
Report Number : 2570005-1

Page 1 of 2

Sample Number	2312277-2
Sampled Date	Feb 08, 2023 10:20 AM
Sample Description	Wastewater
Location	บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced	Feb 09, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 degree C) *	mg/L	-	2.0	<2.0	≤30	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	3	≤20	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.8	5.0-9.0	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	<0.1	≤0.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	<0.5	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	256	(1)	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.2	≤35	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

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Siriluk P.

Siriluk Puengpang
Supervisor



Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330

P/O :

Project Name : Monitoring EIA

Project Location: Hotel Indigo

TESTING

No.0009

Lot ID: 2312277

Date Received : Feb 08, 2023

Date Reported : Feb 15, 2023

Report Number : 2570005-1

Page 2 of 2

Sample Number	2312277-2
Sampled Date	Feb 08, 2023 10:20 AM
Sample Description	Wastewater
Location	บริเวณจุดปล่อยน้ำทิ้งจากบ่อกักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced	Feb 09, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	5	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Guideline : Notification of Ministry of Natural Resources and Environment November, 7, B.E. 2548 on Effluent Control Standard from Types and Sized of Buildings, Type B.

(1) : The values are in addition to the Total Dissolved Solids of the water used not more than 500 mg/L.

Remark :

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Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO01427
Project Name : Monitoring EIA
Project Location : Hotel Indigo

Lot ID: 2323853

Date Received : Mar 08, 2023
Date Reported : Mar 24, 2023
Report Number : 2603958-1

Page 1 of 1

Sample Number	2323853-1
Sampled Date	Mar 08, 2023 11:30 AM
Sample Description	Wastewater
Location	บริเวณจุดรวบรวมน้ำเสียก่อนเข้าระบบบำบัดน้ำเสีย
Date Analysis Commenced	Mar 09, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Black, a lot of odour, solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 degree C) *	mg/L	-	2.0	308	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	23	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.4	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	28.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	8.8	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	400	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	99.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	850	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Sampling By : Pichai Boonyong

Remark :

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO01427
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2323853
Date Received : Mar 08, 2023
Date Reported : Mar 24, 2023
Report Number : 2603959-1

Page 1 of 2

Sample Number	2323853-2
Sampled Date	Mar 08, 2023 11:20 AM
Sample Description	Wastewater
Location	บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced	Mar 09, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 degree C) *	mg/L	-	2.0	<2.0	≤30	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	<3	≤20	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.7	5.0-9.0	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	0.1	≤0.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	<0.5	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	220	(1)	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	≤35	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO01427
Project Name : Monitoring EIA
Project Location: Hotel Indigo

TESTING
No.0009
Lot ID: 2323853
Date Received : Mar 08, 2023
Date Reported : Mar 24, 2023
Report Number : 2603959-1

Page 2 of 2

Sample Number	2323853-2
Sampled Date	Mar 08, 2023 11:20 AM
Sample Description	Wastewater
Location	บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced	Mar 09, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Guideline : Notification of Ministry of Natural Resources and Environment November, 7, B.E. 2548 on Effluent Control Standard from Types and Sized of Buildings, Type B.

(1) : The values are in addition to the Total Dissolved Solids of the water used not more than 500 mg/L.

Sampling By : Pichai Boonyong

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Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO02695
Project Name : Monitoring EIA
Project Location : Hotel Indigo

Lot ID: 2340832

Date Received : Apr 12, 2023
Date Reported : Apr 20, 2023
Report Number : 2627870-1

Page 1 of 1

Sample Number	2340832-1
Sampled Date	Apr 12, 2023 9:53 AM
Sample Description	Wastewater
Location	บริเวณจุดรวบรวมน้ำเสียก่อนเข้าระบบบำบัดน้ำเสีย
Date Analysis Commenced	Apr 12, 2023
Condition of Sample	Contained in four plastic bottles and one amber glass bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Black, a lot of odour, solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 degree C) *	mg/L	-	2.0	342	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	69	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.4	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	34.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	8.9	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	456	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	70.6	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	1710	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Sampling By : Chulladet Warin

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO02695
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2340832
Date Received : Apr 12, 2023
Date Reported : Apr 20, 2023
Report Number : 2627871-1

Page 1 of 2

Sample Number 2340832-2
Sampled Date Apr 12, 2023 9:49 AM
Sample Description Wastewater
Location บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced Apr 12, 2023
Condition of Sample Contained in four plastic bottles and one amber glass bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 degree C) *	mg/L	-	2.0	3.5	≤30	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	3	≤20	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.9	5.0-9.0	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	<0.1	≤0.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	0.6	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	224	(1)	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.1	≤35	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

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Narin Saiseng
Supervisor



Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO02695
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2340832
Date Received : Apr 12, 2023
Date Reported : Apr 20, 2023
Report Number : 2627871-1

Page 2 of 2

Sample Number 2340832-2
Sampled Date Apr 12, 2023 9:49 AM
Sample Description Wastewater
Location บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced Apr 12, 2023
Condition of Sample Contained in four plastic bottles and one amber glass bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	5	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Guideline : Notification of Ministry of Natural Resources and Environment November, 7, B.E. 2548 on Effluent Control Standard from Types and Sized of Buildings, Type B.

(1) : The values are in addition to the Total Dissolved Solids of the water used not more than 500 mg/L.

Sampling By : Chulladet Warin

Remark :

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Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO03738
Project Name : Monitoring EIA
Project Location : Hotel Indigo

Lot ID: 2351490

Date Received : May 10, 2023

Date Reported : May 27, 2023

Report Number : 2665885-1

Page 1 of 1

Sample Number	2351490-1
Sampled Date	May 10, 2023 10:40 AM
Sample Description	Wastewater
Location	บริเวณจุดรวบรวมน้ำเสียก่อนเข้าระบบบำบัดน้ำเสีย
Date Analysis Commenced	May 11, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Black, a lot of odour, solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 degree C) *	mg/L	-	2.0	917	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	98	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.0	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	350	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	7.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	292	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	79.4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	5	5700	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Sampling By : Chulladet Warin

Remark :

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO03738
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2351490
Date Received : May 10, 2023
Date Reported : May 27, 2023
Report Number : 2665886-1

Page 1 of 2

Sample Number	2351490-2
Sampled Date	May 10, 2023 10:35 AM
Sample Description	Wastewater
Location	บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced	May 11, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 degree C) *	mg/L	-	2.0	3.8	≤30	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	<3	≤20	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.8	5.0-9.0	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	<0.1	≤0.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	<0.5	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	152	(1)	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.3	≤35	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : P003738
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2351490
Date Received : May 10, 2023
Date Reported : May 27, 2023
Report Number : 2665886-1

Page 2 of 2

Sample Number 2351490-2
Sampled Date May 10, 2023 10:35 AM
Sample Description Wastewater
Location บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced May 11, 2023
Condition of Sample Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Guideline : Notification of Ministry of Natural Resources and Environment November, 7, B.E. 2548 on Effluent Control Standard from Types and Sized of Buildings, Type B.

(1) : The values are in addition to the Total Dissolved Solids of the water used not more than 500 mg/L.

Sampling By : Chulladet Warin

Remark :

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Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO04860
Project Name : Monitoring EIA
Project Location : Hotel Indigo

Lot ID: 2368078

Date Received : Jun 14, 2023
Date Reported : Jun 21, 2023
Report Number : 2692543-1

Page 1 of 1

Sample Number	2368078-1
Sampled Date	Jun 14, 2023 10:00 AM
Sample Description	Wastewater
Location	บริเวณจุดรวมน้ำเสียก่อนเข้าระบบบำบัดน้ำเสีย
Date Analysis Commenced	Jun 15, 2023
Condition of Sample	Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Black, a lot of odour, solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 degree C) *	mg/L	-	2.0	295	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	21	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.2	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	7.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	14.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	368	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	59.8	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	290	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Sampling By : Pichai Boonyong

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P/O : PO04860
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2368078
Date Received : Jun 14, 2023
Date Reported : Jun 21, 2023
Report Number : 2692544-1

Page 1 of 2

Sample Number 2368078-2
Sampled Date Jun 14, 2023 9:55 AM
Sample Description Wastewater
Location บริเวณจุดปล่อยน้ำทิ้งจากบ่อพักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced Jun 15, 2023
Condition of Sample Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 degree C) *	mg/L	-	2.0	13.7	≤30	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, 4500 - O (C)	Bangkok
Oil & Grease	mg/L	-	3	<3	≤20	In-house method : STM 04-014 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Bangkok
pH at 25 degree C		-	-	7.3	5.0-9.0	In-house method : STM 04-003 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Settleable Solid *	mL/L/hr	-	0.1	<0.1	≤0.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 F	Bangkok
Sulfide *	mg/L	-	0.5	<0.5	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S2 (C, F)	Bangkok
Total Dissolved Solids Dried at 103-105 degree C	mg/L	-	5	196	(1)	In-house method : STM 04-010 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	7.0	≤35	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

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Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO04860
Project Name : Monitoring EIA
Project Location: Hotel Indigo

TESTING
No.0009
Lot ID: 2368078
Date Received : Jun 14, 2023
Date Reported : Jun 21, 2023
Report Number : 2692544-1

Page 2 of 2

Sample Number 2368078-2
Sampled Date Jun 14, 2023 9:55 AM
Sample Description Wastewater
Location บริเวณจุดปล่อยน้ำทิ้งจากบ่อกักน้ำทิ้ง (Effluent Tank)
Date Analysis Commenced Jun 15, 2023
Condition of Sample Contained in one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Yellow, some odour, solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	10	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Bangkok

Guideline : Notification of Ministry of Natural Resources and Environment November, 7, B.E. 2548 on Effluent Control Standard from Types and Sized of Buildings, Type B.

(1) : The values are in addition to the Total Dissolved Solids of the water used not more than 500 mg/L.

Sampling By : Pichai Boonyong

Remark :

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ภาคผนวก ถ-3

คุณภาพน้ำสระว่ายนํ้า



Analysis / Test Report

TESTING
No.0009

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : 202301-000002
Project Name : Monitoring EIA
Project Location :

Lot ID: 231116
Date Received : Jan 04, 2023
Date Reported : Jan 14, 2023
Report Number : 2534515-1

Page 1 of 1

Sample Number	231116-1						
Sampled Date	Jan 04, 2023 8:45 AM						
Sample Description	Swimming Pool						
Location	น้ำสระว่ายน้ำ						
Date Analysis Commenced	Jan 04, 2023						
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Physical Property	Colorless, odourless, no solid and turbid						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Residual Free Chlorine *	mg/L	-	0.1	25.0	0.6-1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Cl (F)	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : 202301-000002
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 231118
Date Received : Jan 11, 2023
Date Reported : Jan 21, 2023
Report Number : 2534516-1

Page 1 of 1

Sample Number	231118-1
Sampled Date	Jan 11, 2023 8:55 AM
Sample Description	Swimming Pool
Location	น้ำสระว่ายน้ำ
Date Analysis Commenced	Jan 12, 2023
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	In 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

Remark :

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : 202301-000002
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 231119
Date Received : Jan 18, 2023
Date Reported : Jan 28, 2023
Report Number : 2534517-1

Page 1 of 1

Sample Number 231119-1
Sampled Date Jan 18, 2023 9:40 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Jan 19, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Thanwa Jariya

Remark :

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : 202301-000002
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 231120
Date Received : Jan 25, 2023
Date Reported : Feb 03, 2023
Report Number : 2534518-1

Page 1 of 1

Sample Number 231120-1
Sampled Date Jan 25, 2023 9:52 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Jan 26, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	82	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

Remark :

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330

P/O :

Project Name : Monitoring EIA

Project Location :

TESTING

No.0009

Lot ID: 2311607

Date Received : Feb 01, 2023

Date Reported : Feb 11, 2023

Report Number : 2556074-1

Page 1 of 1

Sample Number	2311607-1
Sampled Date	Feb 01, 2023 10:40 AM
Sample Description	Swimming Pool
Location	น้ำสระว่ายน้ำ
Date Analysis Commenced	Feb 01, 2023
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

Remark :

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO00278
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 2311608
Date Received : Feb 08, 2023
Date Reported : Feb 18, 2023
Report Number : 2557174-1

Page 1 of 1

Sample Number 2311608-1
Sampled Date Feb 08, 2023 10:10 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Feb 09, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	950	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	>23	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : P000278
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 2311609
Date Received : Feb 15, 2023
Date Reported : Feb 27, 2023
Report Number : 2557180-1

Page 1 of 1

Sample Number 2311609-1
Sampled Date Feb 15, 2023 9:30 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Feb 15, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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P/O : PO00278
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 2311610
Date Received : Feb 22, 2023
Date Reported : Mar 03, 2023
Report Number : 2557182-1

Page 1 of 1

Sample Number 2311610-1
Sampled Date Feb 22, 2023 10:30 AM
Sample Description Swimming Pool
Location น้ําสระว่ายน้ำ
Date Analysis Commenced Feb 23, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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Tuanjai Thangklang
Manager

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P/O :
Project Name : Monitoring EIA
Project Location :

Lot ID: 2322768
Date Received : Mar 01, 2023
Date Reported : Mar 13, 2023
Report Number : 2580159-1

Page 1 of 1

Sample Number 2322768-1
Sampled Date Mar 01, 2023 8:50 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Mar 01, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	4500	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	>23	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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Tuanjai Thangklang
Manager



Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330

P/O :

Project Name : Monitoring EIA

Project Location :

TESTING

No.0009

Lot ID: 2323872

Date Received : Mar 08, 2023

Date Reported : Mar 16, 2023

Report Number : 2582386-1

Page 1 of 1

Sample Number	2323872-1
Sampled Date	Mar 08, 2023 11:40 AM
Sample Description	Swimming Pool
Location	น้ำสระว่ายน้ำ
Date Analysis Commenced	Mar 09, 2023
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA ; Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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Analysis / Test Report

TESTING

No.0009

Lot ID: 2323873

Date Received : Mar 15, 2023

Date Reported : Mar 23, 2023

Report Number : 2582387-1

Client : Piyasombat Property Co., Ltd.

81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330

P/O : PO01427

Project Name : Monitoring EIA

Project Location :

Page 1 of 1

Sample Number	2323873-1
Sampled Date	Mar 15, 2023 11:55 AM
Sample Description	Swimming Pool
Location	น้ำสระว่ายน้ำ
Date Analysis Commenced	Mar 16, 2023
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO01427
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 2323874
Date Received : Mar 22, 2023
Date Reported : Mar 30, 2023
Report Number : 2582389-1

Page 1 of 1

Sample Number 2323874-1
Sampled Date Mar 22, 2023 12:00 PM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Mar 23, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	In 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO01427
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 2323875
Date Received : Mar 29, 2023
Date Reported : Apr 06, 2023
Report Number : 2582391-1

Page 1 of 1

Sample Number 2323875-1
Sampled Date Mar 29, 2023 10:45 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Mar 29, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Jiranat Khowlaor

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Suwannee Chuamkeaw
Section Head

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81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO02695
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 2338137
Date Received : Apr 05, 2023
Date Reported : Apr 18, 2023
Report Number : 2613515-1

Page 1 of 1

Sample Number 2338137-1
Sampled Date Apr 05, 2023 1:10 PM
Sample Description Swimming Pool
Location น้าสระว่ายน้ำ
Date Analysis Commenced Apr 06, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Residual Free Chlorine *	mg/L	-	0.1	4.3	0.6-1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Cl (F)	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

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Suwimon Chairuangwut
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Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO02695
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 2340833
Date Received : Apr 12, 2023
Date Reported : Apr 25, 2023
Report Number : 2620205-1

Page 1 of 1

Sample Number 2340833-1
Sampled Date Apr 12, 2023 9:40 AM
Sample Description Swimming Pool
Location น้ำสระวายุหน้า
Date Analysis Commenced Apr 12, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	32000	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Chulladet Warin

Remark :

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Tuanjai Thangklang
Manager

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81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO02695
Project Name : Monitoring EIA
Project Location :

TESTING
No.0009
Lot ID: 2340834
Date Received : Apr 19, 2023
Date Reported : Apr 28, 2023
Report Number : 2620217-1

Page 1 of 1

Sample Number 2340834-1
Sampled Date Apr 19, 2023 10:00 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Apr 19, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	In 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO02695
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2340835
Date Received : Apr 26, 2023
Date Reported : May 09, 2023
Report Number : 2620218-1

Page 1 of 1

Sample Number : 2340835-1
Sampled Date : Apr 26, 2023 10:40 AM
Sample Description : Swimming Pool
Location : น้ำสระว่ายน้ำ
Date Analysis Commenced : Apr 26, 2023
Condition of Sample : Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property : Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O : PO03738
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2348870
Date Received : May 03, 2023
Date Reported : May 15, 2023
Report Number : 2637542-1

Page 1 of 1

Sample Number 2348870-1
Sampled Date May 03, 2023 10:20 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced May 03, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Chulladet Warin

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P/O : PO03738
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2348871
Date Received : May 10, 2023
Date Reported : May 20, 2023
Report Number : 2643776-1

Page 1 of 1

Sample Number 2348871-1
Sampled Date May 10, 2023 10:15 AM
Sample Description Swimming Pool
Location น้ำสระวนน้า
Date Analysis Commenced May 11, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Chulladet Warin

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
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P/O : PO03738
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2348872
Date Received : May 17, 2023
Date Reported : May 27, 2023
Report Number : 2643780-1

Page 1 of 1

Sample Number 2348872-1
Sampled Date May 17, 2023 11:10 AM
Sample Description Swimming Pool
Location น้ําสระว่ายน้ำ
Date Analysis Commenced May 17, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	In 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
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P/O : PO03738
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2348873
Date Received : May 24, 2023
Date Reported : Jun 02, 2023
Report Number : 2643784-1

Page 1 of 1

Sample Number 2348873-1
Sampled Date May 24, 2023 12:10 PM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced May 24, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

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P/O : PO03738
Project Name : Monitoring EIA
Project Location: Hotel Indigo

TESTING
No.0009
Lot ID: 2348874
Date Received : May 31, 2023
Date Reported : Jun 12, 2023
Report Number : 2643788-1

Page 1 of 1

Sample Number 2348874-1
Sampled Date May 31, 2023 9:30 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced May 31, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	5	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Anuwat Phutawin

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O :
Project Name : Monitoring EIA
Project Location: Hotel Indigo

TESTING
No.0009
Lot ID: 2365035
Date Received : Jun 07, 2023
Date Reported : Jun 17, 2023
Report Number : 2672857-1

Page 1 of 1

Sample Number 2365035-1
Sampled Date Jun 07, 2023 8:40 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Jun 07, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, F	Bangkok
Standard Plate Count	CFU/mL	-	-	1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330

P/O :

Project Name : Monitoring EIA

Project Location: Hotel Indigo

TESTING

No.0009

Lot ID: 2368079

Date Received : Jun 14, 2023

Date Reported : Jun 24, 2023

Report Number : 2681360-1

Page 1 of 1

Sample Number	2368079-1
Sampled Date	Jun 14, 2023 9:50 AM
Sample Description	Swimming Pool
Location	น้ำสระว่ายน้ำ
Date Analysis Commenced	Jun 15, 2023
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Pichai Boonyong

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O :
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2368080
Date Received : Jun 21, 2023
Date Reported : Jun 30, 2023
Report Number : 2681361-1

Page 1 of 1

Sample Number 2368080-1
Sampled Date Jun 21, 2023 10:10 AM
Sample Description Swimming Pool
Location น้ำสระว่ายน้ำ
Date Analysis Commenced Jun 21, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sithichok T.

Sithichok Thongnuean
Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

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Analysis / Test Report

Client : Piyasombat Property Co., Ltd.
81, Wireless Road, Lumpini, Phatumwan, Bangkok Thailand 10330
P/O :
Project Name : Monitoring EIA
Project Location : Hotel Indigo

TESTING
No.0009
Lot ID: 2368081
Date Received : Jun 28, 2023
Date Reported : Jul 07, 2023
Report Number : 2681362-1

Page 1 of 1

Sample Number 2368081-1
Sampled Date Jun 28, 2023 11:35 AM
Sample Description Swimming Pool
Location น้าสระว่ายน้ำ
Date Analysis Commenced Jun 28, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property Colorless, odourless, no solid and turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Escherichia coli</i>	in 100 mL	-	-	Not Detected	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 F	Bangkok
Standard Plate Count	CFU/mL	-	-	<1	Not Detected	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 B	Bangkok
Total Coliform	MPN/100mL	-	-	<1.1	<10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok

Guideline : BMA : Regulation of Bangkok about Swimming Pool, B.E.2530

Sampling By : Panupong Homewong

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

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Approved by

Sithichok T.

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10364-22/ EMAIL

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ภาคผนวก ท

ใบรับรองเอกสารการสอบเทียบเครื่องมือตรวจวิเคราะห์



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รายการเครื่องมือที่ใช้ในการวิเคราะห์ / พหุสอย

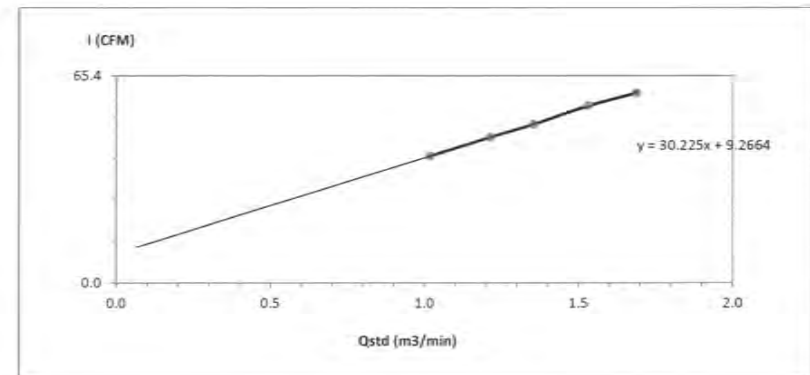
Sample Name	Parameter	Equipment Name	ID No.	Calibrated Date	Next Cal	Freq. Calibrate (Months)
Ambient	Total Suspended Particulate	High Volume	BKK_FS1057			
Ambient	Total Suspended Particulate	Digital Balance	BKK_EN0004	8 Feb 23	8 Feb 24	On site Calibration 12
Ambient	Particulate Matter (PM 10)	High Volume	BKK_FS1063			
Ambient	Particulate Matter (PM 10)	Digital Balance	BKK_EN0004	8 Feb 23	8 Feb 24	On site Calibration 12
Ambient	Nitrogen Dioxide	NO ₂ Analyzer	BKK_FS1090	5 Jan 23	5 Jul 23	6
Ambient	Sulfur Dioxide	SO ₂ Analyzer	BKK_FS1089	4 Jan 23	4 Jul 23	6
Ambient	Total Hydrocarbon	Total Hydrocarbon Analyzer	BKK_EN0057	9 Aug 22	9 Feb 24	18
Ambient	Carbon Monoxide	CO Analyzer	BKK_EN0073	7 Apr 22	7 Oct 23	18
Water Lab	pH at 25 °C	pH meter	BKK_EN0072	12 Sep 22	12 Mar 24	18
Water Lab	Settleable Solids	Chamber (Cold Room)	BKK_EN0167	30 Jun 22	30 Dec 23	18
Water Lab	Sulfide	Burette	BKK_EN0171	30 Aug 22	1 Mar 24	18
Water Lab	Sulfide	Chamber (Cold Room)	BKK_EN0167	30 Jun 22	30 Dec 23	18
Water Lab	Oil & Grease	Electronic Top Loading Balance	BKK_EN0002	8 Feb 23	8 Feb 24	12
Water Lab	Oil & Grease	Water Bath	BKK_EN0148	31 Jan 23	1 Aug 23	18
Water Lab	Total Kjeldahl Nitrogen	Digestion Unit	BKK_EN0366	17 May 23	17 May 24	12
Water Lab	Total Kjeldahl Nitrogen	Discrete analyzer	BKK_EN0037	5 Jan 23	5 Jan 24	12
Water Lab	Total Suspended Solids	Electronic Top Loading Balance	BKK_EN0002	8 Feb 23	8 Feb 24	12
Water Lab	Total Suspended Solids	Oven	BKK_EN0273	29 Nov 22	29 May 24	18
Water Lab	Total Dissolved Solids 180°C	Electronic Top Loading Balance	BKK_EN0002	8 Feb 23	8 Feb 24	12
Water Lab	Total Dissolved Solids 180°C	Oven	BKK_EN0273	29 Nov 22	29 May 24	18
Water Lab	BOD	DO Meter	BKK_EN0017	24 May 22	24 Nov 23	18
Water Lab	BOD	Incubator	BKK_EN0272	17 May 22	17 May 23	12
Water Lab	BOD	Incubator	BKK_EN0305	5 Apr 23	5 Apr 24	18
Water Lab	Legionella spp	Balance	BKK_ML0001	8 Feb 23	8 Feb 24	12
Water Lab	Legionella spp	Autoclave	BKK_ML0041	20 May 22	20 Nov 23	18
Water Lab	Legionella spp	Incubator	BKK_ML0189	4 Nov 22	4 Nov 23	12
Water Lab	Legionella spp	Hot Air Oven	BKK_ML0013	21 Nov 22	21 May 24	18
Water Lab	Total Coliform	Autoclave	BKK_ML0041	20 May 22	20 Nov 23	18
Water Lab	Total Coliform	Incubator	BKK_ML0010	21 Jan 22	22 Jul 23	18
Water Lab	Total Coliform	Hot Air Oven	BKK_ML0013	21 Nov 22	21 May 24	18
Water Lab	Standard Plate Count	Autoclave	BKK_ML0041	20 May 22	20 Nov 23	18
Water Lab	Standard Plate Count	Incubator	BKK_ML0010	21 Jan 22	22 Jul 23	18
Water Lab	Standard Plate Count	Hot Air Oven	BKK_ML0013	21 Nov 22	21 May 24	18
Water Lab	Escherichia coli	Autoclave	BKK_ML0041	20 May 22	20 Nov 23	18
Water Lab	Escherichia coli	Incubator	BKK_ML0010	21 Jan 22	22 Jul 23	18
Water Lab	Escherichia coli	Hot Air Oven	BKK_ML0013	21 Nov 22	21 May 24	18
Water Lab	Escherichia coli	Water Bath	BKK_ML0056	20 Apr 23	20 Apr 24	12



High Volume Air Sampler Calibration Worksheet

Project Site :	Piyasombat Property Co., Ltd.	Barometric Pressure (mm Hg) :	757
Calibrate Location :	Hotel Indigo Bangkok : บริเวณชั้นใต้ดินหลังพื้นที่โครงการ (ทางทิศตะวันออก)	Temperature (°C) :	36
Calibrate Date :	22-May-23	High Volume ID :	BKK_FS1057
Calibration Sheet No.:	C-220523-BKK_FS1057	High Volume Model :	TE-5009X
Calibrator ID:	BKK_FS0624	High Volume S/N :	5500
Calibrator Model :	TE-5028A	Calibrator Slope :	1.63932
Calibrator S/N :	2584	Calibrator Intercept :	-0.01785

Test No.	Delta H ₂ O (inch)	Q _{std} (m ³ /min)	I : Chart (CFM)	Linear Regression
1	2.8	1.0183	40	Slope : 30.2253 Intercept : 9.2664 Correlation Coefficient : 0.9993
2	4.0	1.2136	46	
3	5.0	1.3547	50	
4	6.4	1.5303	56	
5	7.8	1.6876	60	



Calibrated by

(Mr. Winyou Boontanai)
Field Scientist(2)

Approved by :

(Mr. Noppong Juntarupan)
Enviro Field Coordinator Scientist (3)



NSC-TIS-17025
CALIBRATION 0426

SARTORIUS

Certificate of Calibration

Model Number : XP105DU
Description : Semi-micro Balance
Serial Number : 1123091884
ID No. : BKK_EN0004
Manufacturer : Mettler Toledo

Certificate No. : 23BC10071
Issued Date : Monday, February 13, 2023
Reference No. : 203245
Page No. : 1 of 3

Customer Name : ALS Laboratory Group (Thailand)Co., Ltd.
104 Phatthanakan 40,Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250.

Calibrated Place : Balance Room.

Calibrated By : Mr. Chonchai Inthana
Calibration Date : Wednesday, February 08, 2023

Calibration Procedure No. : This calibration was conducted by
Using in-house calibration procedure number (WI-003)
Based on UKAS LAB 14 : 2019

Metrological data :
Capacity : 31/120 g Readability : 0.0001 g
Temperature : 21.0 °C ± 3.0 °C
Humidity : 65.0 % RH ± 5.0 % RH
Pressure : ±

Reasons for calibration
☐ New Installation ☐ Service / Repaired ☒ Re-calibration/ Maintenance

Ambients Conditions:
Equipment Condition: ☒ Good Operate ☐ Fair

Measurement Method UKAS Publication Ref :Lab 14

The measurement uncertainty stated is the expended uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM). The calibration certificate documents the traceability to National Standards, which realise the unit of measurement according to the International Standard System of Units (SI). Report of Tolerance came form list of Sartorius Metrological Specifications.

Traceability:

Model Number	Description	Traceability	Certificate No.	Due Date
YCS011-522-00	Sartorius weight set 1mg - 1kg E2 s/n 37929119	SPC-RT	C02212565	14-Sep-2023
MHB-382SD	Humidity/Barometer/Temp Lutron MHB-382SD	DKSH	C19220444	5-Sep-2023

This certificate relate and apply this equipment only.
This certificate may not be reproduced other than in full except with the prior written approval of the Verification Operation Division
Sartorius (Thailand) Co., Ltd.

Mr. Chonchai Inthana(Technical Manager)

STAMP



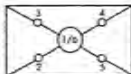
SARTORIUS

Certificate of Calibration

Model Number : XP105DU
Description : Semi-micro Balance
Serial Number : 1123091884
ID No. : BKK_EN0004
Manufacturer : Mettler Toledo

Certificate No. : 23BC10071
Issued Date : Monday, February 13, 2023
Reference No. : 203245
Page No. : 2 of 3

Calibration Results : Without Adjustment

Repeatability			Eccentricity (Off-center loading error)	
<i>The reproducibility is the ability of a weighing instrument to display nearly identical readouts under constant test conditions when the same load within a measurement series is placed repeatedly on the weighing pan in the same manner. The standard deviation is used to express reproducibility quantitatively.</i>			<i>The off-center loading error is yielded by the difference between the readout of the load, i.e. 1/3 or 1/4 of maximum capacity, placed in the middle of the weighing pan and between each of four additional measurement points (positions defined according to OIML R76).</i>	
Nominal Value : (Low Load)	2.00002	20.00002	Nominal value :	20 g
2 g	2.00001	20.00001	Tolerance	N/A g
Tolerance	2.00002	20.00001		Difference
N/A g	2.00002	20.00001		1
Nominal Value : (High Load)	2.00002	20.00000	2	-0.00002
20 g	2.00002	20.00001	3	-0.00004
Tolerance	2.00002	20.00000	4	0.00002
N/A g	2.00001	20.00000	5	0.00003
	2.00001	20.00001	6	—
Standard Deviation	0.000005	0.000007		

Linearity

The linearity, also called linearity error. Describes the deviation of the characteristic curve of a weighing instrument from the linear slope.

Tolerance	N/A	g		
Nominal Value	Conventional Mass Value	Displayed Value	Deviation	Uncertainty
(g)	(g)	(g)	(g)	(g)
0.1	0.10000	0.10000	0.00000	0.000022
0.5	0.50001	0.50000	-0.00001	0.000023
1	1.00000	1.00000	0.00000	0.000024
2	2.00002	2.00001	-0.00001	0.000026
5	5.00002	5.00002	0.00000	0.000030
10	10.00002	10.00002	0.00000	0.000035
15	15.00004	15.00004	0.00000	0.000053
20	20.00000	20.00000	0.00000	0.000053
25	25.00002	25.00002	0.00000	0.000089
30	30.00002	30.00004	0.00002	0.000089

Certificate of Calibration

Model Number : XS105DU
Description : Semi-micro Balance
Serial Number : 1123091884
ID No. : BKK_EN0004
Manufacturer : Mettler Toledo

Certificate No. : 23BCI0071
Issued Date : Monday, February 13, 2023
Reference No. : 203245
Page No. : 3 of 3

Calibration Results : Without Adjustment

Repeatability <i>The reproducibility is the ability of a weighing instrument to display nearly identical readouts under constant test conditions when the same load within a measurement series is placed repeatedly on the weighing pan in the same manner. The standard deviation is used to express reproducibility quantitatively.</i>		Eccentricity (Off-center loading error) <i>The off-center loading error is yielded by the difference between the readout of the load, i.e. 1/3 or 1/4 of maximum capacity, placed in the middle of the weighing pan and between each of four additional measurement points (positions defined according to OIML R76).</i>	
Nominal Value : (Low Load)	100.0000	Nominal value :	g
g	100.0000	Tolerance	N/A
Tolerance	100.0000		
N/A g	100.0000		
	100.0000		
Nominal Value : (High Load)	100.0000		
100 g	100.0000		
Tolerance	99.9999		
N/A g	100.0000		
	100.0000		
Standard Deviation	0.00003		

Linearity <i>The linearity, also called linearity error. Describes the deviation of the characteristic curve of a weighing instrument from the linear slope.</i>				
Tolerance	N/A	g		
Nominal Value	Conventional Mass Value	Displayed Value	Deviation	Uncertainty
(g)	(g)	(g)	(g)	(g)
50	50.0000	50.0000	0.0000	0.00012
55	55.0000	55.0000	0.0000	0.00015
60	60.0000	60.0000	0.0000	0.00015
65	65.0001	65.0001	0.0000	0.00015
70	70.0000	70.0000	0.0000	0.00015
80	80.0000	80.0000	0.0000	0.00017
90	90.0001	90.0001	0.0000	0.00018
100	100.0000	100.0000	0.0000	0.00018
110	110.0000	110.0000	0.0000	0.00026
120	120.0000	120.0000	0.0000	0.00026

End of Report.

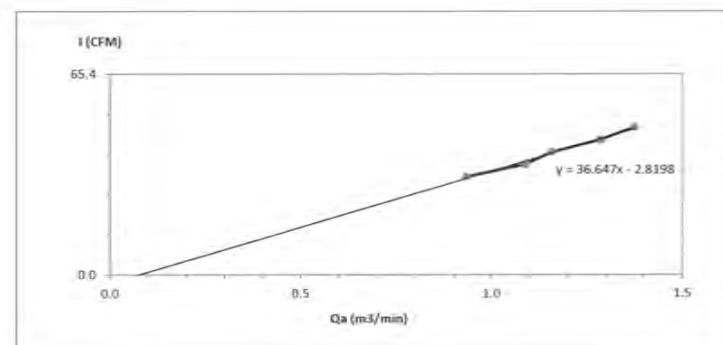
High Volume Air Sampler Calibration Worksheet

Project Site : Piyasombat Property Co., Ltd.
Hotel Indigo Bangkok : อาคารโรงแรมฮิลตัน
เซ็นทรัลเวิลด์ (ทางทิศตะวันออก)

Calibrate Location :
Calibrate Date : 22-May-23
Calibration Sheet No. : C-220523-BKK_FS1063
Calibrator ID : BKK_FS0624
Calibrator Model : TE-5028A
Calibrator S/N : 2584

Barometric Pressure (mm Hg) : 757
Temperature (°C) : 36
High Volume ID : BKK_FS1063
High Volume Model : TE-5009X
High Volume S/N : 5685
Calibrator Slope : 1.0268
Calibrator Intercept : -0.01116

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	2.2	0.934	32	Slope : 36.6473 Intercept : -2.8198 Correlation Coefficient : 0.9938
2	3.0	1.089	36	
3	3.4	1.158	40	
4	4.2	1.286	44	
5	4.8	1.374	48	



Calibrated by

(Mr. Winyou Boontasai)
Field Scientist(2)

Approved by

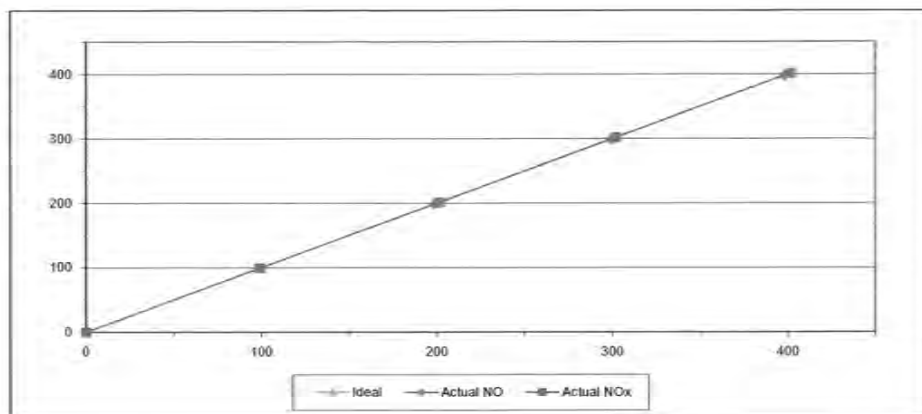
(Mr. Noppong Juntarapan)
Enviro Field Coordinator Scientist (3)



MULTIPOINT CALIBRATION REPORT

Calibration Date	5-Jan-23	Equipment Name	NOx Analyzer
Manufacturer	HORIBA	Model	APNA-370
Serial No.	SUDL58MU	Equipment ID	BKK_FS1090
Calibrator Manufacturer	Teledyne API	Model	700
Serial No.	947		
Std. Gas Concentration (PPM)	55.88	Cylinder No.	GN0027222
Cylinder Pressure (psi)	1800	Certified By	Airgas Inc.
Certified Date	9-Feb-22	Expired Date	9-Feb-30

Point	CALIBRATION RESULTS						
	Ideal	Actual NO	Error NO	%Error NO	Actual NOx	Error NOx	%Error NOx
ZERO	0.00	0.10	0.10	0.10	0.10	0.10	0.10
1	100.00	98.70	-1.30	-1.30	99.10	-0.90	-0.90
2	200.00	198.30	-1.70	-0.85	201.50	1.50	0.75
3	300.00	299.30	-0.70	-0.23	302.20	2.20	0.73
4	400.00	398.00	-2.00	-0.50	401.70	1.70	0.42
AVERAGE (%)				-0.56			0.22



Calibrated By

(Mr. Jirawut Sakam)
Field Environmental Scientist (3)

Approved By

(Mr. Sarayuth Jitranont)
Assistant General Manager

ALS Laboratory Group

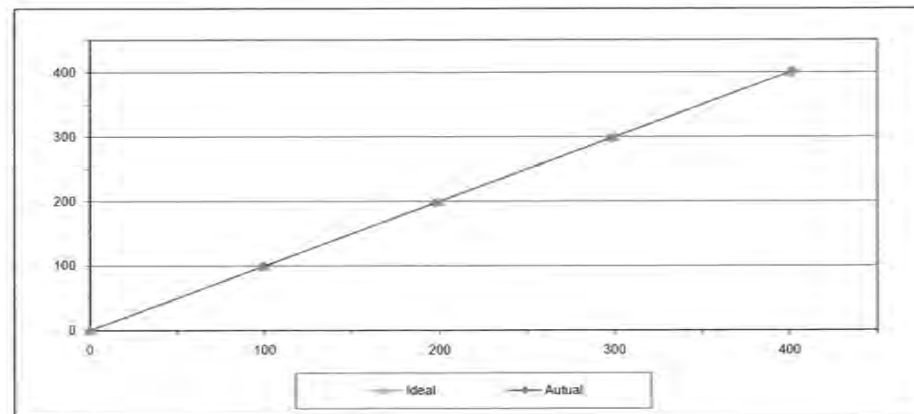
FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date	4-Jan-23	Equipment Name	SO2 Analyzer
Manufacturer	HORIBA	Model	APSA-370
Serial No.	XGYV1AU	Equipment ID	BKK_FS1089
Calibrator Manufacturer	Teledyne API	Model	700
Serial No.	947		
Std. Gas Concentration (PPM)	56.3	Cylinder No.	GN0027222
Cylinder Pressure (psi)	1800	Certified By	Airgas Inc.
Certified Date	9-Feb-22	Expired Date	9-Feb-30

Point	CALIBRATION RESULTS			
	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	98.80	-1.20	-1.20
2	200.00	197.40	-2.60	-1.30
3	300.00	297.80	-2.20	-0.73
4	400.00	402.00	2.00	0.50
AVERAGE (%)				-0.53



Calibrated By

(Mr. Jirawut Sakam)
Field Environmental Scientist (3)

Approved By

(Mr. Sarayuth Jitranont)
Assistant General Manager

ALS Laboratory Group

FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



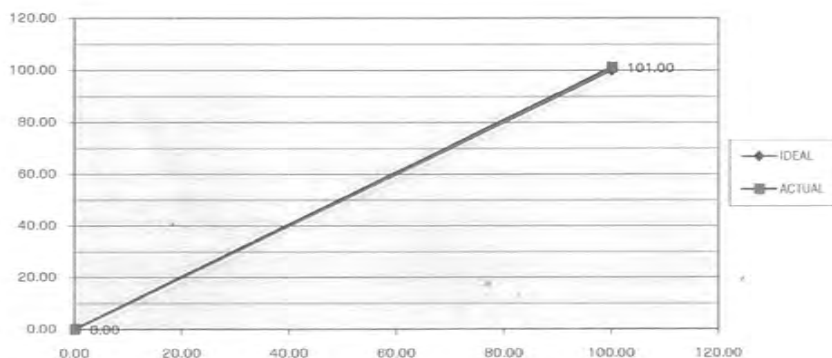
CALIBRATION REPORT

REVIEW BY: Vichuta N
 APPROVED BY: Sararat M
 NEXT CAL DATE: 9/8/67

CUSTOMER NAME : ALS Laboratory Group (Thailand) Co., Ltd.			
EQUIPMENT NAME : Total Hydrocarbon Analyzer			
MANUFACTURER : Baseline	MODEL : 9000 NMHC	SERIAL NO : 0314DR0170	
STANDARD GAS CONCENTRATION (PPM) : 100 PPM (Methane)		CYLINDER NO : ND55981	
CYLINDER PRESSURE (psig) : 900 PSI		CERTIFIED DATE : 12/02/2022	
CERTIFIED BY : AIRGAS		EXPIRED DATE : 12/02/2025	

CALIBRATION RESULTS

POINT NO	CALIBRATION RESULTS			
	IDEAL	ACTUAL	ERROR	%ERROR
ZERO	0.00	0.00	0.00	-
* 1	100.00	101.00	1.0	1.00
AVERAGE (%)				0.25



CALIBRATED BY: วราพล ศิริกิจเจริญ DATE: 9/8/65
 CHECKED BY: ศศิธร อึ้งนาค DATE: 9/8/65



ต้องการข้อมูลทางด้านเทคนิคเพิ่มเติม : เจ้าหน้าที่ฝ่ายบริการลูกค้า โทร 02-868-0812 * 31, E-Mail : Engineer@jranatee.com
 เลขที่ 63/14-15,67/35-36 ถนน เพชรเกษม 7, 7/1 แขวง วัดท่าพระ เขต บางกอกใหญ่ กรุงเทพมหานคร 10600 โทร 02-868-0812-13 โทรสาร 02868-1889

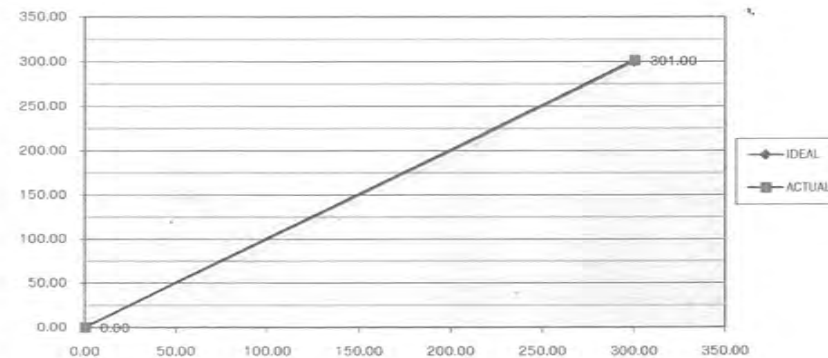


CALIBRATION REPORT

CUSTOMER NAME : ALS Laboratory Group (Thailand) Co., Ltd.			
EQUIPMENT NAME : Total Hydrocarbon Analyzer			
MANUFACTURER : Baseline	MODEL : 9000 NMHC	SERIAL NO : 0314DR0170	
STANDARD GAS CONCENTRATION (PPM) : 100 PPM (Propane)		CYLINDER NO : ND55981	
CYLINDER PRESSURE (psig) : 900 PSI		CERTIFIED DATE : 12/02/2022	
CERTIFIED BY : AIRGAS		EXPIRED DATE : 12/02/2025	

CALIBRATION RESULTS

POINT NO	CALIBRATION RESULTS			
	IDEAL	ACTUAL	ERROR	%ERROR
ZERO	0.00	0.00	0.00	-
* 1	300.00	301.00	1.0	0.33
AVERAGE (%)				0.08



CALIBRATED BY: วราพล ศิริกิจเจริญ DATE: 9/8/65
 CHECKED BY: ศศิธร อึ้งนาค DATE: 9/8/65



ต้องการข้อมูลทางด้านเทคนิคเพิ่มเติม : เจ้าหน้าที่ฝ่ายบริการลูกค้า โทร 02-868-0812 * 31, E-Mail : Engineer@jranatee.com
 เลขที่ 63/14-15,67/35-36 ถนน เพชรเกษม 7, 7/1 แขวง วัดท่าพระ เขต บางกอกใหญ่ กรุงเทพมหานคร 10600 โทร 02-868-0812-13 โทรสาร 02868-1889



FLOW CALIBRATE

CUSTOMER NAME	: ALS Laboratory Group (Thailand) Co., Ltd.
EQUIPMENT NAME	: Flow Calibrator
MANUFACTURER	: Bios
MODEL	: 510 L
SERIAL NO	: 129549

Flow Parameter	Step	Set	Display	Flow Meter
Sample	Before	40	38	15 cc/min
	After	40	40	39.7 cc/min
Air	Before	175	175	190 cc/min
	After	175	175	176 cc/min
Fuel	Before	35	32	36 cc/min
	After	35	35	35 cc/min

CALIBRATED BY :

วราพร ลักขิณศิริ

DATE :

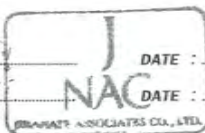
9/8/65

CHECKED BY :

สราวุธ ลักขิณศิริ

DATE :

9/8/65



ต้องการข้อมูลทางด้านเทคนิคเพิ่มเติม : เจ้าหน้าที่ฝ่ายบริการหลังการขาย โทร 02-868-0812 # 15-16, E-Mail : Engineer@jirante.com

เลขที่ 63/14-15,67/35-36 ถนน เพชรเกษม 7/1 แขวง วัดหลักพร เขต บางกอกใหญ่ กรุงเทพฯ 10600 โทร 02-868-0812-13 โทรสาร 02868-1889

MULTI POINT CALIBRATION REPORT

REVIEW BY Vichuta N.

APPROVED BY Sararat M.

NEXT CAL. DATE 7 Oct 23

CUSTOMER NAME : ALS Laboratory Group (Thailand) Co.Ltd.

EQUIPMENT NAME : CO Analyzer

MANUFACTURER : Teledyne - API

MODEL : T300

SERIAL NO : 1756

STANDARD GAS CONCENTRATION (PPM) : 4512

CYLINDER NO : CC745169

CYLINDER PRESSURE (psig) : 1900

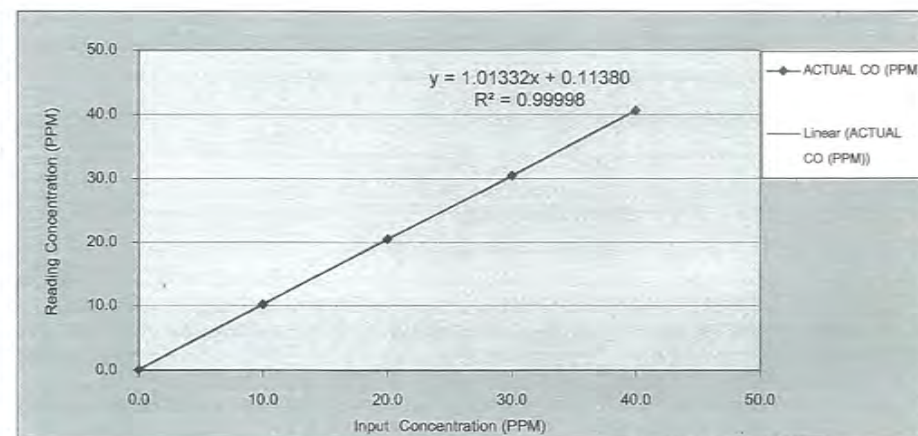
CERTIFIED DATE : Mar 10, 2021

CERTIFIED BY : AIRGAS SPECIALTY GASES

EXPIRED DATE : Mar 10, 2029

CALIBRATION RESULTS

POINT NO	CALIBRATION RESULTS			
	IDEAL (PPM)	ACTUAL CO (PPM)	ERROR CO (PPM)	% ERROR CO
ZERO	0.0	0.065	0.065	-
1	10.0	10.238	0.238	2.380
2	20.0	20.514	0.514	2.570
3	30.0	30.468	0.468	1.560
4	40.0	40.616	0.616	1.540
AVERAGE (%)				2.012



CALIBRATED BY : คุณพรชัย ผาติวนารักษ์

DATE : 7 เมษายน 2565

ต้องการข้อมูลทางด้านเทคนิคเพิ่มเติม : คุณพรชัย ผาติวนารักษ์ โทรศัพท์: 02-515-8987

เลขที่ 388 ถนนรัชดาภิเษก แขวงจันทน์เกษม เขตจตุจักร กรุงเทพฯ 10900 โทรศัพท์: 0-2515-8999 โทรสาร: 0-2515-8988 E-Mail: info@kinetics.co.th



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL. 0-2717-3000-27 FAX. 0-2719-9484



Cert.No.: 22CH1222
Page.: 1 of 2

Certificate of Calibration

Equipment : pH Meter
Manufacturer : Mettler Toledo
Model : Seven Compact S220
Serial No. : B520948426
ID No. : BKK_EN0072
Condition As-Received: Used Item
Received Date : 09 September 2022
Calibration Date : 12 September 2022
Reference : 2209-0312DSC-1
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Phatthanakan, Khet Suan Luang,
Bangkok 10250 Thailand
Ambient Temperature : (25 ± 2.5) °C
Relative Humidity : (50 ± 15) %
Calibration Procedure : In - house method :
- CP-CH5 by direct measurement with standard
voltage calibrator and direct measurement
with certified reference material (CRM)

REVIEW BY Sinluk P.
APPROVED BY KL AL
NEXT CAL. DATE 12/03/24

Calibrated by : Warakorn Lerngagtrakul

Approved by : Malee Butkruea
Approved Signatory

(✓) Malee Butkruea
() Sathip Meangmai
() Warakorn Lerngagtrakul

Issue Date : 15 September 2022

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written
Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.



Cert. No.: 22CH1222
Page.: 2 of 2

Condition of this calibration result

1. Reference Standard Instrument :-

Instrument	Serial No.	ID No.	Cert. No.	Due Date
1) Document Process Calibrator	54030049	130RC116	22E2769	24 Aug 2023

This certification is traceable to the International System of Unit maintained at:-
- Traceable to National Institute of Metrology (Thailand), NIMT

2. Certified Reference Materials : The measurement results are traceable to SI through CPA chem Ltd.,
ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

Buffer Solution	Manufacturer	Lot No.	Exp. date
pH 4.008	CPA chem	823320	20 June 2024
pH 6.985	CPA chem	794122	14 Feb 2023
pH 10.008	CPA chem	823323	20 June 2023

3. This certificate is valid only to the item calibrated on date and place of calibration.

Calibration Results

Function : mV Measurement

Performing standard curve by Fluke at pH (4,7,10)

Unit Under Calibration	Nominal Value	Standard Voltage Input	Actual Reading		Uncertainty of Measurement (±mV)	Coverage factor k
	pH	mV	mV	pH		
pH Meter	4.000	177.48	177.4	4.000	0.058	2.00
S/N.: B520948426	7.000	0.00	0.0	7.000	0.058	2.00
	10.000	-177.48	-177.5	10.000	0.058	2.00

Function : pH Measurement

Performing three buffers standard curve by using buffer nominal pH (4,7,10)

Unit Under Calibration	Standard pH Buffer Solution	Actual pH Reading	Actual mV Reading (mV)	Uncertainty of pH measurement (±)	Coverage factor k
pH Electrode S/N.: PCE-86-EX1001	4.008	3.999	153.9	0.0055	2.09
	6.985	7.017	-13.7	0.0084	2.00
	10.008	9.996	-179.0	0.0078	2.06

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95 %.

-o0o-

Malee

a 1126274



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.

Saraburi Tel : +66 3627 3096 Fax : +66 3627 3100

Bangkok Tel : +668 9205 6851 , +669 8247 2360

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.



Certificate No. T221644

Page 2 of 4

Certificate No. T221644

Page 1 of 4

Certificate of Calibration

Equipment : Chamber (Cold Room)

Manufacturer : KOLDTECH

Model : KM 320

Serial No. : TBN-1012061/05

Customer Code : BKK_EN0167

ID No. : T2463A3

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

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

Customer Location : Environmental Laboratory

Date of Receipt : 27 June 2022

Calibrated By : Sujjar Naknakred (Site Calibration Manager)

Approved By : [Signature] / Boonchai Suriyawong (Site Calibration Manager)

Date of Issue : 04 JUL 2022

REVIEW BY	<u>Sinlert P.</u>
APPROVED BY	<u>[Signature]</u>
NEXT CAL DATE	<u>30/12/23</u>

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

FM-L14 117/01-02-64

Calibration Report

Equipment : Chamber (Cold Room)
 Date of Calibration : 30 June - 1 July 2022
 Environment : Temperature : 18.9-23.7 °C
 Line Voltage : 222.9-226.5 V
 Relative Humidity : 55 - 65 %RH

Condition of this results of calibration :

1. This equipment was calibrated by insert nine standard thermocouples type T into its chamber , the other one standard thermocouples type T use for ambient temperature measurement . The calibration was done in according to WI-T20 (based on ASTM E145-94 (Reapproved 2001) and AS2853-1986).
All data show below were final values and the initial data from customer request , The temperature scale used was based on ITS - 90 .

2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
TC	TYPE T	TN161-TN170	T210009	30 July 2022
TC	TYPE T	TN171-TN180	T210009	30 July 2022
DATA LOGGER	34970A	T149	T210009	30 July 2022

3. This certificate is traceable to :

National Institute of Metrology (Thailand) through Metrological Center (NSC-TISI-TIS 17025 CALIBRATION 0244.)

4. Condition of calibrated item : good

Equipment Description :

Time Constant 3 Hour - Minute At 3 °C
 Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max
☐ Close
☒ Not Available

5. Adjustment :

() without adjustment (X) after adjustment

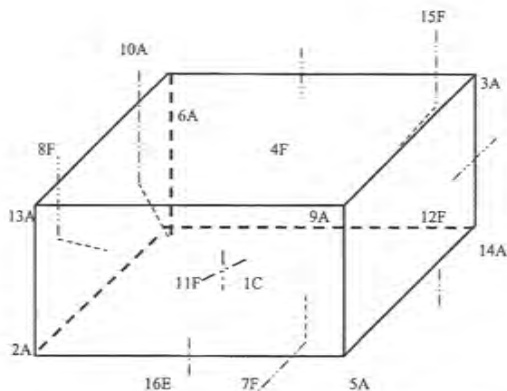
Approved By. [Signature]

FM-L15 117/15-05-63

Certificate No. T221644

Page 3 of 4

Calibration Report



C = Centre, F = Centre of Face, A = Corner, E = Centre of Edge

1C	=	TN161
2A	=	TN162
3A	=	TN163
4F	=	TN164
5A	=	TN165
6A	=	TN166
7F	=	TN167
8F	=	TN168
9A	=	TN169
10A	=	TN170

11F	=	TN171
12F	=	TN172
13A	=	TN173
14A	=	TN174
15F	=	TN175
16E	=	TN176

Approved By. _____

Certificate No. T221644

Page 4 of 4

Calibration Report

Measurement Results:

Calibration Point	Average Standard Reading at each position (°C)									
	TN161	TN162	TN163	TN164	TN165	TN166	TN167	TN168	TN169	TN170
3	2.71	2.82	2.75	2.89	2.95	3.68	3.02	2.96	3.03	2.85
	TN171	TN172	TN173	TN174	TN175	TN176				
	2.97	3.02	2.89	3.04	2.97	3.33				

Chamber (Cold Room)		Temperature Distribution					
Setting (°C)	Reading (°C)		Average (°C)	Stability (± °C)	Uniformity (°C)	Uncertainty (± °C)	Coverage Factor k
	Min , Max	Average					
3.0	2.9 , 4.0	3.2	2.99	1.05	1.30	1.66	2.00

* The quoted uncertainty exclude " uniformity "

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 % .

Approved By. _____



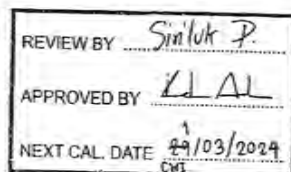
TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL. 0-2717-3000-27 FAX. 0-2719-9484



Cert.No.: 22CG3154
Page.: 1 of 2

Certificate of Calibration

Equipment : Burette
Capacity : 50 mL
Serial No. : -
ID. No. : BKK_EN0171
Manufacturer : Witeg
Made in : Germany
Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.
Khwaeng Phatthanakan, Khet Suan Luang
Bangkok 10250 Thailand
Ambient Temperature : (20 ± 2.5) °C
Relative Humidity : (50 ± 10) %
Barometric Pressure : 759 mmHg
Calibration Procedure : ASTM E 542 - 01
Calibrated by : Panward Pramklam



Approved by : *[Signature]*
Approved Signatory

- () Pornthippa Tameyakul
() Malee Butkruea
(☒) Ponpan Paipim
() Srisuda Khamtha

Issue Date : 31 August 2022

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written
Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Burette
Received Date : 26 August 2022
Condition As-Received : Used Item
Calibration Date : 30 August 2022
Reference : 2208-0918DSC-2

Cert.No.: 22CG3154

Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instruments :

Instruments	Model	Serial No.	ID. No.	Certificate No.	Traceability	Due date
1) Balance	AE200S	N03679	140RC001	21MM429	NIMT	22 Sep 2022
2) Thermo-Hygrograph	THDX-CE	00016540	140EC001	22H1243	NIST,NIMT	09 June 2023
3) Thermometer	-	1594592	140EC010	22I181	NIMT	10 Feb 2023

This certification is traceable to SI Unit

2. The certificate is valid only to the item calibrated on date and place of calibration.
3. True value is converted to true volume at the standard temperature of 20 °C

Calibration result :

Nominal capacity (mL)	Reading (mL)	Uncertainty (± mL)	k Factor
50	49.9959	0.010	2.00

Remark mL = cm³

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

-000-

[Signature]

Certificate of Calibration

Represent to Certificate of Calibration ,PTC/07/22071

Certificate No.: PTC/07/22071 Page: 1 of 2
 Equipment: Digital Balance Condition: Normal
 Manufacturer: Sartorius Serial No: 26207042
 Model: MSE224-100-DU ID No: BKK_EN0002
 Type of Balance: Single Interval

Customer: ALS Laboratory Group (Thailand) Co.,Ltd.
 104 Phatthanakarn 40 Phatthanakarn Rd.,
 Khwaeng Phatthanakarn, Khet Suan Luang, Bangkok 10250.

Environment Condition: Temperature 21.5 °C ± 0.7 °C
 Humidity 61.8 %RH ± 4.7 %RH
 Air density 1.19 kg/m³

Calibration Place: ALS Laboratory Group (Thailand) Co.,Ltd.
 104 Phatthanakarn 40 Phatthanakarn Rd.,
 Khwaeng Phatthanakarn, Khet Suan Luang, Bangkok 10250.

The Method used: In house method, PTC-WI-07, base on Euramet cg. 18

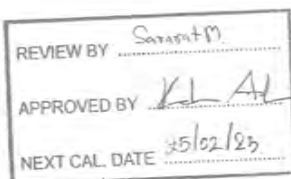
Traceability: This certificate is traceable to the SI Units through Thai Calibration Service Co.,Ltd.
 , NSC-ONSC Accreditation No.: Calibration 0189

Date Received: February 25, 2022

Calibration Date: February 25, 2022

Issued Date: March 01, 2022

Calibration By: Mr. Rungroje Metakul




(Mr.Kriangsak Kalasin)
 Reviewed by

Approved By :



(Mr. Keattisak Kerdto)
 Laboratory Manager

This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognised national standard laboratories.

The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM). The effect that the results relate only to the items calibrated.

This calibration certificate shall not be reproduced except in full only, without written approval from penta calibration co., ltd.

Represent to Certificate of Calibration ,PTC/07/22071

Certificate No.: PTC/07/22071

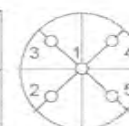
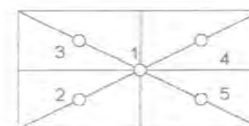
Page: 2 of 2

Measurement Results:

Without Adjustment :

Function Calibration: Non Adjustment

Eccentric Error: Weight to be 1/3 ,1/2 or of Maximum capacity



Eccentricity test 100 (g)

Position (g)				
1	2	3	4	5
0.0000	-0.0002	-0.0001	0.0001	-0.0001
Maximum deviation:				0.0002

 Repeatability Test : Weight to be 1/2 ≤ L₁ ≤ Maximum capacity

Determination of the standard deviation of weighing balance.. Readability 0.0001 (g)

Nominal test value (g)	Standard Deviation
200	0.00005

Error of indication : from nominal value.. Readability 0.0001 (g)

Nominal Value (g)	Conventional Mass (g)	Indication (g)	Correction of Balance (g)	Uncertainty (g)	k
0	0.00000	0.0000	0.0000	0.00016	2.52
0.1	0.10000	0.1000	0.0000	0.00017	2.20
0.5	0.50000	0.5000	0.0000	0.00016	2.28
1	1.00001	1.0000	0.0000	0.00016	2.28
2	2.00001	2.0000	0.0000	0.00016	2.28
5	5.00001	5.0000	0.0000	0.00016	2.28
10	10.00002	10.0000	0.0000	0.00016	2.28
20	20.00002	20.0000	0.0000	0.00016	2.23
50	50.00001	50.0000	0.0000	0.00017	2.15
100	100.00002	99.9999	0.0001	0.00020	2.06
120	120.00004	120.0000	0.0000	0.00023	2.03
150	150.00003	150.0000	0.0000	0.00026	2.00
200	200.00003	199.9999	0.0001	0.00030	2.00

Note: Weight of adjust - (g)

The End of Certificate

Sartorius (Thailand) Co., Ltd.

129 Rama 9 Road, Huaykwang, Bangkok 10310
Tel: +66 2643 8361-6, e-mail: service.thailand@sartorius.com



SARTORIUS

REVIEW BY Sirilot P.
APPROVED BY KL AL
NEXT CAL. DATE 8/2/24

Certificate

of Calibration

Model Number : MSE224S-100-DU

Description : Analytical Balance

Serial Number : 26207042

ID No. : BKK_EN0002

Manufacturer : Sartorius

Certificate No. : 23BCI0072

Issued Date : Monday, February 13, 2023

Reference No. : 203245

Page No. : 1 of 2

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

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250.

Calibrated Place : Balance Room

Calibrated By : Mr. Chonchai Inthana

Calibration Date : Wednesday, February 08, 2023

Calibration

Procedure No. : This calibration was conducted by

Using in-house calibration procedure number (WI-003)

Based on UKAS LAB 14 : 2019

Metrological data :

Capacity : 220 g Readability : 0.0001 g

Ambients Conditions:

Temperature : 23.2 °C ± 5.0 °C

Humidity : 60.0 % RH ± 10.0 % RH

Pressure : ±

Equipment Condition : ☒ Good Operate ☐ Fair

Reasons for calibration

☐ New Installation ☐ Service / Repaired ☒ Re-calibration/ Maintenance

Measurement Method

UKAS Publication Ref : Lab 14

The measurement uncertainty stated is the expended uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM). The calibration certificate documents the traceability to National Standards, which realise the unit of measurement according to the International Standard System of Units (SI). Report of Tolerance came from list of Sartorius Metrological Specifications.

Traceability:

Model Number	Description	Traceability	Certificate No.	Due Date
YCS011-522-00	Sartorius weight set 1mg - 5000g E2,YCS011-522-00	SPC-RT	C02212565	14-Sep-2023
MHB-382SD	Humidity/Barometer/Temp Lutron MHB-382SD	DKSH	C19220444	5-Sep-2023

This certificate relate and apply this equipment only.

This certificate may not be reproduced other than in full except with the prior written approval of the Verification Operation Division Sartorius (Thailand) Co., Ltd.

Chonchai Inthana

Mr. Chonchai Inthana (Technical Manager)



Sartorius (Thailand) Co., Ltd.

129 Rama 9 Road, Huaykwang, Bangkok 10310
Tel: +66 2643 8361-6 Fax: +66 2643-8367, e-mail: service.thailand@sartorius.com

SARTORIUS

Certificate

of Calibration

Model Number : MSE224S-100-DU

Description : Analytical Balance

Serial Number : 26207042

ID No. : BKK_EN0002

Manufacturer : Sartorius

Certificate No. : 23BCI0072

Issued Date : Monday, February 13, 2023

Reference No. : 203245

Page No. : 2 of 2

Calibration Results : Without Adjustment

Repeatability

The reproducibility is the ability of a weighing instrument to display nearly identical readouts under constant test conditions when the same load within a measurement series is placed repeatedly on the weighing pan in the same manner. The standard deviation is used to express reproducibility quantitatively.

Nominal Value : (Low Load)	20.0000	200.0000
20 g	20.0000	199.9999
Tolerance	20.0000	200.0000
0.0001 g	20.0000	199.9999
	20.0001	200.0000
Nominal Value : (High Load)	20.0000	200.0000
200 g	20.0000	199.9999
Tolerance	20.0000	199.9999
0.0001 g	20.0000	200.0000
	20.0001	199.9999
Standard Deviation	0.00004	0.00005

Eccentricity (Off-center loading error)

The off-center loading error is yielded by the difference between the readout of the load, i.e. 1/3 or 1/4 of maximum capacity, placed in the middle of the weighing pan and between each of four additional measurement points (positions defined according to GIML R76).

Nominal value :	50	g
Tolerance	0.0004	g
	Difference	
1	—	
2	-0.0001	
3	0.0000	
4	0.0001	
5	0.0000	
6	—	

Linearity

The linearity, also called linearity error. Describes the deviation of the characteristic curve of a weighing instrument from the linear slope.

Tolerance 0.0002 g

Nominal Value	Conventional Mass Value	Displayed Value	Deviation	Uncertainty
(g)	(g)	(g)	(g)	(g)
0.01	0.0100	0.0100	0.0000	0.00014
0.1	0.1000	0.1000	0.0000	0.00014
1	1.0000	1.0000	0.0000	0.00014
2	2.0000	2.0000	0.0000	0.00014
5	5.0000	5.0000	0.0000	0.00014
10	10.0000	10.0000	0.0000	0.00014
20	20.0000	20.0000	0.0000	0.00014
50	50.0000	50.0000	0.0000	0.00015
100	100.0000	100.0000	0.0000	0.00019
200	200.0000	199.9999	-0.0001	0.00030

End of Report.



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.

Saraburi Tel : +66 3627 3096 Fax : +66 3627 3100

Bangkok Tel : +668 9205 6851, +669 8247 2360

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.



Certificate No. T220139

Page 1 of 3

Certificate of Calibration

Equipment : Liquid Bath (Water)

Manufacturer : MEMMERT

Model : WNB29

Serial No. : L611.0135

Customer Code : BKK_EN0148

ID No. : T6455A4

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

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

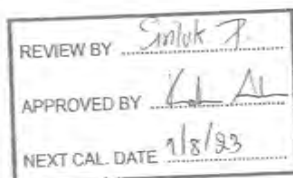
Customer Location : ORGANIC PREPARATION LAB

Date of Receipt : 26 January 2022

Calibrated By : Watcharapon Sangtong (Technician)

Approved By :  / Sujjar Nakkakred (Site Calibration Manager)

Date of Issue : 08 FEB 2022



The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

FM-L14 117/01-02-64

Certificate No. T220139

Page 2 of 3

Calibration Report

Equipment : Liquid Bath (Water)

Date of Calibration : 31 January 2022

Environment : Temperature : 22.4-23.9 °C

Line Voltage : 221.4-225.4 V

Relative Humidity : 55 - 65 %RH

Condition of this results of calibration :

1. This equipment was calibrated by insert five resistance thermometer detectors into its water bath , the other one thermocouple type T use for ambient temperature measurement . The calibration was done in according to WI-T36 (based on ASTM E715-80 (Reapproved 2001)).
All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .
2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
RTD	100 OHM	M34 (CH1-CH5)	T210115	2 February 2022
DATA LOGGER	34970A	T47	T210115	2 February 2022
3. This certificate is traceable to :
National Institute of Metrology (Thailand) through Metrological Center (NSC-TISF-TIS 17025 CALIBRATION 0244.)
4. Condition of calibrated item : good
Equipment Description :
Time Constant 1 Hour - Minute At 60 °C
5. Adjustment :
(X) without adjustment () after adjustment

Approved By : 

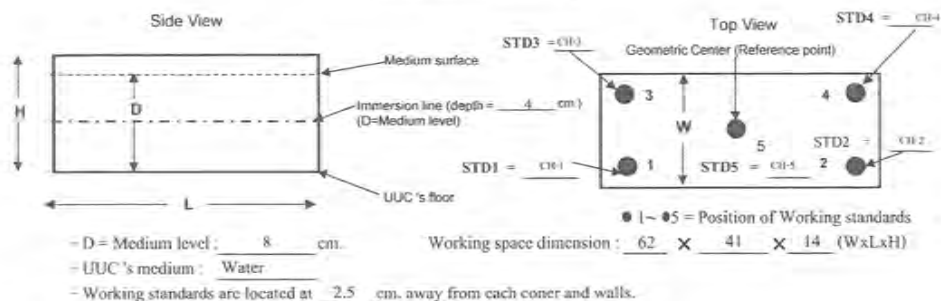
FM-L15 117/15-05-63



Certificate No. T220139

Page 3 of 3

Calibration Report



Measurement Results:

Calibration Point	Average Standard Reading at each position (°C)				
	CH-1	CH-2	CH-3	CH-4	CH-5
60	59.95	60.04	60.12	60.01	59.89
85	85.17	84.89	85.34	84.78	84.93
95	93.46	93.14	93.81	93.05	93.28

Liquid Bath (Water)			Temperature Distribution			
Setting (°C)	Reading (°C)		Stability (± °C)	Uniformity (± °C)	Uncertainty (± °C)	Coverage Factor k
	Min	Max				
61.0	60.9	61	0.10	0.19	0.25	2.00
86.0	85.9	86.1	0.12	0.39	0.32	2.06
95.0	94.8	95.1	0.14	0.51	0.38	2.11

* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 %.

Approved By

Certificate No. T221642

Page 1 of 5

Certificate of Calibration

Equipment : Digestion Unit

Manufacturer : SCP Science

Model : DigiPRER HT

Serial No. : HTC1120480658

Customer Code : BKK_EN0366

ID No. : T2635A5

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

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

Customer Location : Wet Chemistry Lab 1

Date of Receipt : 27 June 2022

Calibrated By : Sujjar Naknakred (Site Calibration Manager)

Approved By : / Boonchai Suriyawong (Site Calibration Manager)

Date of Issue : 04 JUL 2022

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110

Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T221642

Page 2 of 5

Calibration Report

Equipment : Digestion Unit
 Date of Calibration : 30 June 2022
 Environment : Temperature : 23.9 - 26.3 °C
 Line Voltage : 221.4 - 225.1 V
 Relative Humidity : 55 - 65 %RH

Condition of this results of calibration :

1. This equipment was calibrated by insert four standard thermocouples type S into its chamber , the other one thermocouple type T use for ambient temperature measurement . The calibration was done in according to WI-T10.

2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
TC	Type S	M7-(CH16-17,CH19-CH20)	T212004	15 October 2022
DATA LOGGER	34970A	T121	T212004	15 October 2022

3. This certificate is traceable to :

National Institute of Metrology (Thailand) through Metrological Center (NSC-TISI-TIS 17025 CALIBRATION 0244.)

4. Condition of calibrated item : good

Equipment Description :

Time Constant ~ Hour 26 Minute At 380 °C
 Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max
☐ Close
☒ Not Available

5. Adjustment :

(X) without adjustment

() after adjustment

Approved By.



Metrological Center

SCI ECO Services Company Limited

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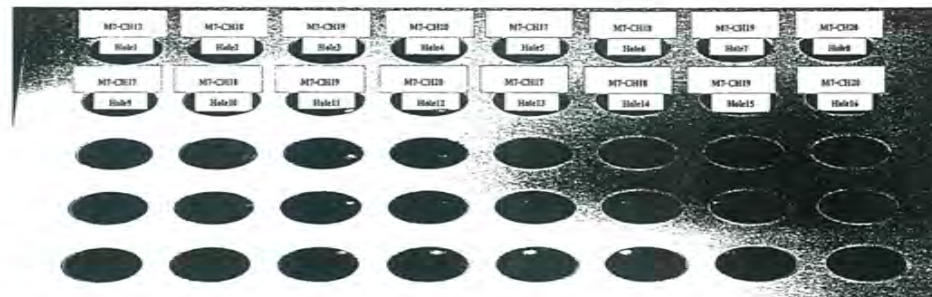
Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T221642

Page 3 of 5

Calibration Report



FRONT

Measurement Results

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
				Hole1	Hole2	Hole3	Hole4	Hole5	Hole6	Hole7	Hole8
380.0	380.0	379.4 - 380.7	Reading	M7-CH17	M7-CH18	M7-CH19	M7-CH20	M7-CH17	M7-CH18	M7-CH19	M7-CH20
			Max °C	379.1	379.8	379.3	377.4	377.6	379.3	379.6	377.9
			Min °C	378.7	379.4	378.9	377.0	377.3	378.8	379.1	377.3
			Average °C	378.9	379.6	379.1	377.2	377.4	379.1	379.3	377.6
			Stability ± °C	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
				Hole9	Hole10	Hole11	Hole12	Hole13	Hole14	Hole15	Hole16
380.0	380.0	379.4 - 380.7	Reading	M7-CH17	M7-CH18	M7-CH19	M7-CH20	M7-CH17	M7-CH18	M7-CH19	M7-CH20
			Max °C	378.5	378.8	378.1	379.0	380.3	381.6	381.0	379.5
			Min °C	377.8	378.2	377.6	378.6	379.9	381.2	380.5	378.9
			Average °C	378.2	378.5	377.9	378.8	380.1	381.4	380.7	379.2
			Stability ± °C	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3

Approved By.



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110

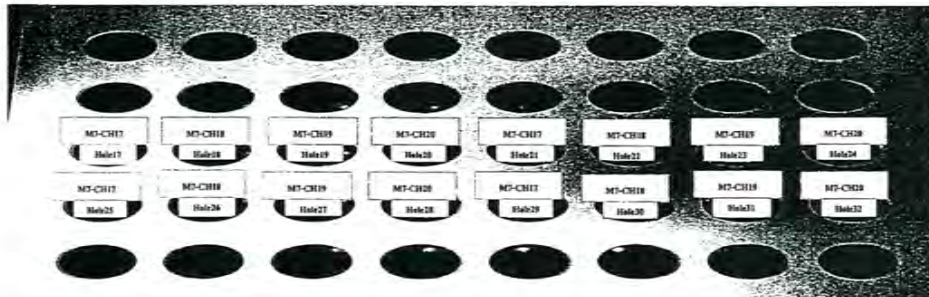
Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T221642

Page 4 of 5

Calibration Report



FRONT

Measurement Results

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
(°C)	(°C)	(°C)	Reading	Hole17	Hole18	Hole19	Hole20	Hole21	Hole22	Hole23	Hole24
				M7-CH17	M7-CH18	M7-CH19	M7-CH20	M7-CH17	M7-CH18	M7-CH19	M7-CH20
380.0	380.0	379.4 - 380.7	Max °C	378.4	378.8	378.0	379.2	379.0	382.0	381.5	380.3
			Min °C	377.8	378.2	377.7	378.8	378.7	381.5	381.1	379.6
			Average °C	378.1	378.5	377.9	379.0	378.9	381.8	381.3	379.9
			Stability ± °C	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.4

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
(°C)	(°C)	(°C)	Reading	Hole25	Hole26	Hole27	Hole28	Hole29	Hole30	Hole31	Hole32
				M7-CH17	M7-CH18	M7-CH19	M7-CH20	M7-CH17	M7-CH18	M7-CH19	M7-CH20
380.0	380.0	379.4 - 380.7	Max °C	378.3	378.7	378.4	378.8	379.6	382.6	382.0	380.8
			Min °C	377.6	378.3	377.9	378.4	379.3	382.2	381.4	380.0
			Average °C	378.0	378.5	378.1	378.6	379.5	382.4	381.7	380.4
			Stability ± °C	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4

Approved By.

FM-L13 I08/30-05-57



Metrological Center

SCI ECO Services Company Limited

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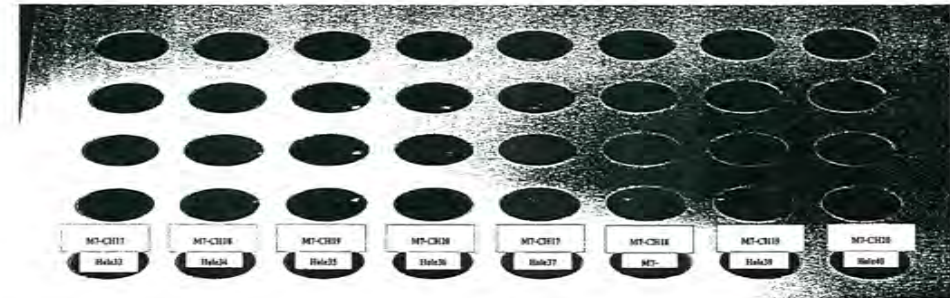
Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T221642

Page 5 of 5

Calibration Report



FRONT

Measurement Results

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
(°C)	(°C)	(°C)	Reading	Hole33	Hole34	Hole35	Hole36	Hole37	Hole38	Hole39	Hole40
				M7-CH17	M7-CH18	M7-CH19	M7-CH20	M7-CH17	M7-CH18	M7-CH19	M7-CH20
380.0	380.0	379.4 - 380.7	Max °C	378.6	376.7	377.2	378.0	380.0	382.2	381.5	379.7
			Min °C	378.1	376.2	376.7	377.5	379.5	381.7	380.9	379.1
			Average °C	378.3	376.5	377.0	377.7	379.8	381.9	381.2	379.4
			Stability ± °C	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

The expanded uncertainty of temperature measurement was ± 2.49 °C

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95 %.

Approved By.

FM-L13 I08/30-05-57



Metrological Center

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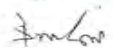
Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

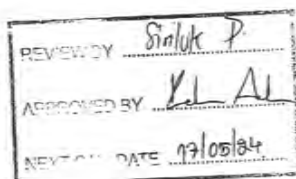
Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T230902

Page 1 of 5

Certificate of Calibration

Equipment : Digestion Unit
Manufacturer : SCP Science
Model : DigiPRER HT
Serial No. : HTC1120480658
Customer Code : BKK_EN0366
ID No. : T2635A5
Customer : ALS Laboratory Group (Thailand) Co.,Ltd.
104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,
Khet Suan Luang, Bangkok 10250
Customer Location : Wet Chemistry Lab 1
Date of Receipt : 10 May 2023
Calibrated By : Sujjar Naknakred (Site Calibration Manager)
Approved By :  / Boonchai Suriyawong (Site Calibration Manager)
Date of Issue : 29 MAY 2023



The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

FM-L12 I09/30-05-57

Certificate No. T230902

Page 2 of 5

Calibration Report

Equipment : Digestion Unit
Date of Calibration : 17 May 2023
Environment : Temperature : 23.9 - 26.3 °C
Line Voltage : 221.8 - 225.9 V
Relative Humidity : 55 - 65 %RH

Condition of this results of calibration :

- This equipment was calibrated by insert four standard thermocouples type S into its chamber , the other one thermocouple type T use for ambient temperature measurement . The calibration was done in according to WI-T10.
- Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
TC	Type S	M20A1-(CH17-CH20)	T230547	18 April 2024
DATA LOGGER	34970A	T149	T230547	18 April 2024
- This certificate is traceable to :
National Institute of Metrology (Thailand) through Metrological Center (NSC-TISI-TIS 17025 CALIBRATION 0244.)
- Condition of calibrated item : good
Equipment Description :
Time Constant 1 Hour 54 Minute At 380 °C
Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max
☐ Close
☒ Not Available
- Adjustment :
(X) without adjustment () after adjustment

Approved By : 

FM-L13 I08/30-05-57



Metrological Center

SCI ECO Services Company Limited

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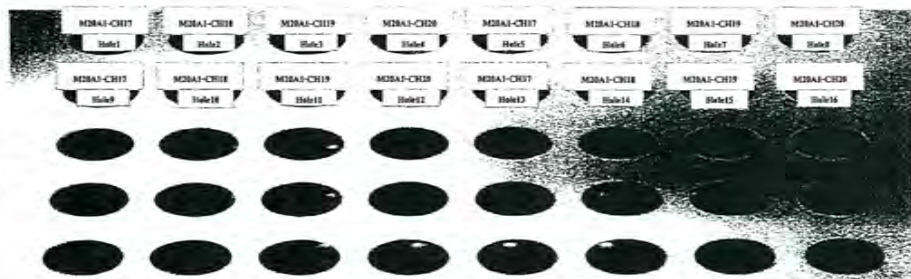
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Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T230902

Page 3 of 5

Calibration Report



FRONT

Measurement Results

Measurement Results											
Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
(^o C)	(^o C)	(^o C)	Reading	Hole1	Hole2	Hole3	Hole4	Hole5	Hole6	Hole7	Hole8
380.0	380.0	379.4 - 380.7		M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20	M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20
			Max ^o C	377.3	379.0	379.2	380.2	377.5	379.5	380.7	380.1
			Min ^o C	376.8	378.6	378.9	379.9	377.0	379.0	380.2	379.6
			Average ^o C	377.0	378.8	379.1	380.0	377.3	379.2	380.4	379.9
			Stability ± ^o C	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
(^o C)	(^o C)	(^o C)	Reading	Hole9	Hole10	Hole11	Hole12	Hole13	Hole14	Hole15	Hole16
380.0	380.0	379.4 - 380.7		M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20	M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20
			Max ^o C	377.1	378.9	379.7	379.9	379.3	379.6	379.5	377.4
			Min ^o C	376.7	378.5	379.3	379.5	378.9	379.1	379.0	377.0
			Average ^o C	376.9	378.7	379.5	379.7	379.1	379.4	379.3	377.2
			Stability ± ^o C	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2

Approved By

[Signature]

FM-L13 108/30-05-57



Metrological Center

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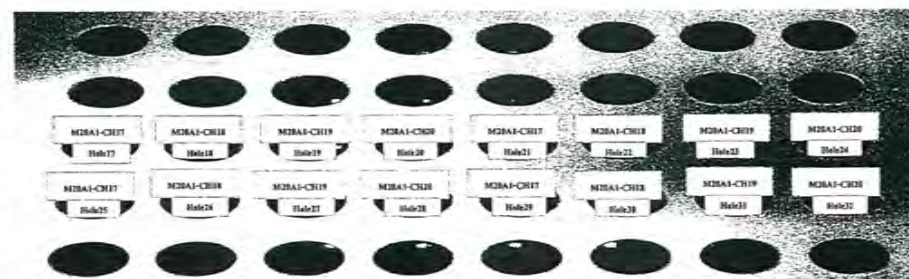
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Certificate No. T230902

Page 4 of 5

Calibration Report



FRONT

Measurement Results

Measurement Results											
Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
(°C)	(°C)	(°C)	Reading	Hole17	Hole18	Hole19	Hole20	Hole21	Hole22	Hole23	Hole24
				M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20	M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20
380.0	380.0	379.4 - 380.7	Max °C	378.4	380.1	380.1	380.0	379.1	379.8	379.6	377.8
			Min °C	377.8	379.6	379.7	379.3	378.6	379.2	379.2	377.3
			Average °C	378.1	379.9	379.9	379.7	378.9	379.5	379.4	377.5
			Stability ± °C	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
(° C)	(° C)	(° C)	Reading	Hole25	Hole26	Hole27	Hole28	Hole29	Hole30	Hole31	Hole32
				M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20	M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20
380.0	380.0	379.4 - 380.7	Max ° C	377.9	379.4	380.1	380.1	379.3	379.6	378.9	377.3
			Min ° C	377.4	378.9	379.7	379.7	378.8	378.9	378.4	376.7
			Average ° C	377.7	379.2	379.9	379.9	379.0	379.3	378.6	377.0
			Stability ± ° C	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.3

Approved By

[Signature]

FM-L13 108/30-05-57



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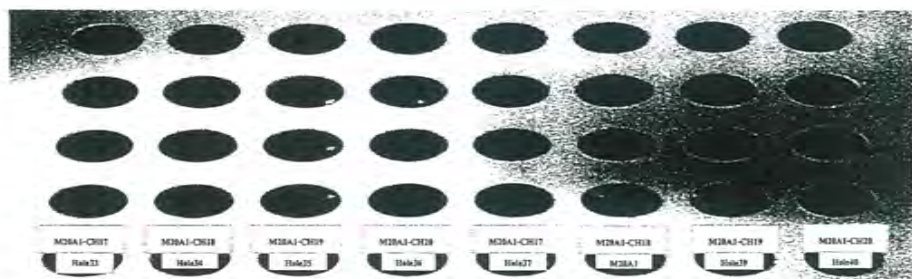
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Certificate No. T230902

Page 5 of 5

Calibration Report



FRONT

Measurement Results

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
(°C)	(°C)	(°C)	Reading	Hole33	Hole34	Hole35	Hole36	Hole37	Hole38	Hole39	Hole40
				M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20	M2BA1-CH17	M2BA1-CH18	M2BA1-CH19	M2BA1-CH20
			Max °C	377.7	378.0	378.3	379.0	378.2	378.5	377.3	377.4
			Min °C	377.3	377.6	377.9	378.6	377.7	378.1	376.9	377.0
			Average °C	377.5	377.8	378.1	378.8	378.0	378.3	377.1	377.2
			Stability ± °C	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

The expanded uncertainty of temperature measurement was ± 1.85 °C

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95 %.

Approved By. [Signature]

FM-L13 108/30-05-57



บริษัท ดับเบิล เอส ไดแอกโนสติกส์ จำกัด
DOUBLE S DIAGNOSTICS CO., LTD.

4 ซอยอุดมสุข 14 แขวงคลองเตย เขตคลองเตย กรุงเทพฯ 10260 โทรศัพท์ (02) 747-7009 โทรสาร (02) 747-7008
4 Soi Udomsuk 14, Bangna, Bangkok 10260 Tel. (02) 747-7009 Fax: (02) 747-7008

Maintenance Plan YEAR : 2023

เดือน	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
รวม	PM 6 CK											

Periodical maintenance check list for Konelab

	6M	12M	Note!
1.Diluent-wash tubing change	☒	☐	
2.ISE tubing change	☒	☒	none.
3.Syringe check/change		☐	
4.Dispensing check/ change		☐	
5.Waste tubing change when necessary		☐	
6.Lamp check/change	☒	☐	
7.Mixer paddle/paddle change(not Konelab20)		☐	
8.ISE needles check/change		☐	
9.Pump tubing check/ chance	☒	☐	
10.Broken/worn out part check /change		☐	
11.Peristaltic pump check /cleaning/ lubrication	☒	☐	
12.Heating check		☐	
13.Cooling check		☐	
14.Dispenser mechanic check/adjustment	☒	☐	
15.Cuvette transfer mechanic check/adjustment	☒	☐	
16.Dispenser movement check/adjustment	☒	☐	
17.Sample/reagent register check/adjustment	☒	☐	
18.Dispensing tubing tightness check	☒	☐	
19.Photometer and optics cleaning/check/adjustment	☒	☐	
20.Workstation PC cleaning if necessary	☒	☐	
21.Mechanic cleaning/lubrication	☒	☐	
22.Instrument cleaning if necessary	☒	☐	
23.Complete analyzer testing with waterblank/QC or sample	☒	☐	
24.Test parameters/Adjustment/config. Save to USB key	☒	☐	
25.UPS Test	☒	☐	

Place: PLS Laboratory Instrument: K20 Aquakem 250
Date/Time: 05-01-66 Serial no: 89781
Service done by: [Signature] Install date: _____
Signature of customer: [Signature] Date/Time: _____



Metrological Center

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Saraburi Tel: +66 3627 3096 Fax: +66 3627 3100

Bangkok Tel: +668 9205 6851, +669 8247 2360

Website: www.scieco.co.th

E-Mail: calibrate@scg.com



NSC-TISI-TIS 17025
CALIBRATION 0244

Certificate No. T222502

Page 1 of 4

Certificate of Calibration

Equipment : Chamber (Oven)

Manufacturer : Memmert

Model : UF 450

Serial No. : B7170531

Customer Code : BKK_EN0273

ID No. : T8042A4

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

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

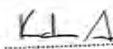
Customer Location : Oven Room

Date of Receipt : 23 November 2022

Calibrated By : Sujjar Naknakred (Site Calibration Manager)

Approved By :  /Boonchai Suriyawong (Site Calibration Manager)

Date of Issue : 09 DEC 2022

REVIEW BY	
APPROVED BY	
NEXT CAL. DATE	29/05/24

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

FM-L14118/31-08-64



Metrological Center

SCI ECO Services Company Limited

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NSC-TISI-TIS 17025
CALIBRATION 0244

Certificate No. T222502

Page 2 of 4

Calibration Report

Equipment : Chamber (Oven)

Date of Calibration : 29 November 2022

Environment : Temperature : 29.1-29.6 °C

Line Voltage : 221.3-223.2 V

Relative Humidity : 55 - 65 %RH

Condition of this results of calibration :

- This equipment was calibrated by insert nine resistance thermometer detectors and nine standard thermocouples type T into its chamber , the other one resistance thermometer detector use for ambient temperature measurement . The calibration was done in according to WI-T20 (based on ASTM E145-94 (Reapproved 2001) and AS2853-1986) . All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .

2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
RTD	100 ohm	27-(CH1-10)	T210004	30 December 2022
TC	TYPE T	TN261-TN270	T210010	30 December 2022
DATA LOGGER	34970A	T149	T210004	30 December 2022

3. This certificate is traceable to :

National Institute of Metrology (Thailand) through Metrological Center (NSC-TISI-TIS 17025 CALIBRATION 0244)

4. Condition of calibrated item : good

Equipment Description :

Time Constant $\frac{1}{49}$ Hour Minute At 104 °C

Fresh Air Damper ☒ Open ☐ Min ☐ Medium ☒ Max

☐ Close

☐ Not Available

5. Adjustment :

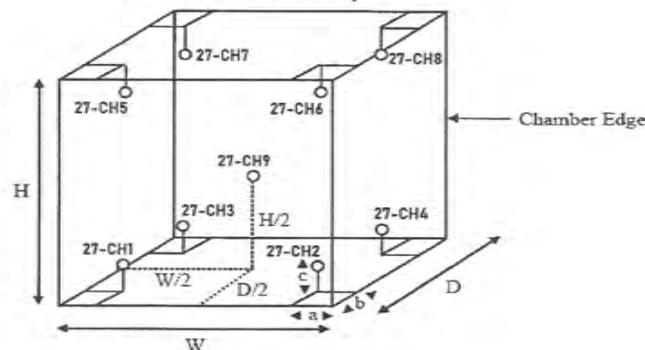
() without adjustment

(X) after adjustment

Approved By, 

FM-L15 117/15-05-63

Calibration Report



Remark :

Internal Dimensions of Chamber : W (Width) = 104 cm. , H (Height) = 72 cm. and D (Depth) = 60 cm.
Size of Installed Standard sensor number 27-CH1 to number 27-CH8 : a = 5 cm. , b = 5 cm. and c = 5 cm.
Size of Installed Standard sensor number 27-CH9 : W/2 = 104 cm./2 , H/2 = 72 cm./2 and D/2 = 60cm./2

Measurement Results

Calibration Point	Average Standard Reading at each position (°C)							
	27-CH1	27-CH2	27-CH3	27-CH4	27-CH5	27-CH6	27-CH7	27-CH8
104	104.07	103.60	103.45	104.02	104.47	103.57	104.59	103.78

Chamber (Oven)		Temperature Distribution					
Setting (°C)	Reading (°C)		Average (°C)	Stability (±°C)	Uniformity (°C)	Uncertainty (±°C)	Coverage Factor k
	Min , Max	Average					
104.0	-	104.0	103.97	0.07	0.70	0.42	2.00

* The quoted uncertainty exclude "uniformity"

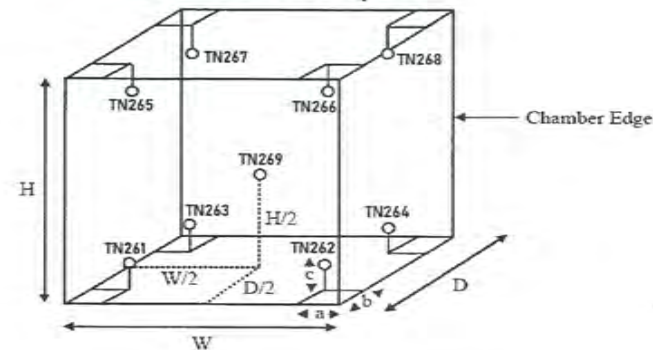
The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 %.

Approved By.

Calibration Report



Remark :

Internal Dimensions of Chamber : W (Width) = 104 cm. , H (Height) = 72 cm. and D (Depth) = 60 cm.
Size of Installed Standard sensor number TN261 to number TN268 : a = 5 cm. , b = 5 cm. and c = 5 cm.
Size of Installed Standard sensor number TN269 : W/2 = 104 cm./2 , H/2 = 72 cm./2 and D/2 = 60cm./2

Measurement Results

Calibration Point	Average Standard Reading at each position (°C)							
	TN261	TN262	TN263	TN264	TN265	TN266	TN267	TN268
180	179.14	179.17	179.65	179.26	180.41	179.64	181.18	180.99

Chamber (Oven)		Temperature Distribution					
Setting (°C)	Reading (°C)		Average (°C)	Stability (±°C)	Uniformity (°C)	Uncertainty (±°C)	Coverage Factor k
	Min , Max	Average					
180.0	-	180.0	179.98	0.38	1.78	1.10	2.00

* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 %.

Approved By.



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3 : EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL. 0-2717-3000 FAX. 0-2719-9484

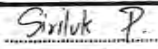
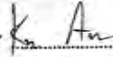


Cert.No.: 22TW122
Page.: 2 of 2

Cert.No.: 22TW122
Page.: 1 of 2

Certificate of Testing

Equipment : DO Meter
Manufacturer : YSI
Model : 5000-230V
Serial No. : 09J101147
ID No. : BKK_EN0017
Received Date : 20 May 2022
Test Date : 24 May 2022
Reference : 2205-0638DSC-8
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Phatthanakan, Khet Suan Luang,
Bangkok 10250 Thailand
Laboratory Condition : Temperature (25 ± 5) °C
Humidity (50 ± 20) %
Test Procedure : In - house method : CP-CH9
by Comparison Technique with Azide Modification Method
Tested by : Warakorn Lerngagtrakul
Approved by : 
Approved Signatory
(/) Malee Butkruea
() Saithip Meangmai
() Warakorn Lerngagtrakul
Issue Date : 31 May 2022

REVIEW BY 
APPROVED BY 
NEXT CAL. DATE 24/11/23

Condition of this result of calibration

1. Reference Standard Instruments :

This certification is traceable to the International System of Unit through the reference standards laboratory of Industrial Calibration Center, Technology Promotion Association (Thailand-Japan).

Instruments	Serial No.	ID No.	Certificate No.	Due Date
1) Burette	-	130BU10	21CG1389	25 Mar 2023
2) Balance	1126143764	140RC004	21MM430	21 Sep 2022

2. Standard Material :-

Material	Manufacturer	Lot.No.	Assay
Sodium Thiosulfate pentahydrate	Merck	AM1763316	100.2%

Result : Dissolved Oxygen Meter Adjustment With Air 100 %

Dissolved Oxygen Probe No.: 16K100498

Titration Method (Azide Modification Method) (mg/L)	DO Meter Reading (mg/L)	Standard Deviation (mg/L)
8.12	8.13	0.015

This report was certified only for the instrument we tested. It is allowable to use for study the system efficiency. The environmental impact control and present to organization it may concerned. Intend to use for advertising and referral purpose is prohibited. This report may not be reproduced other in full, without written approval of the laboratory.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL. 0-2717-3000-27 FAX. 0-2719-9484



Cert. No.: 22LM83
Page.: 1 of 2

Certificate of Calibration

Equipment : DO Meter with Sensor
Manufacturer : YSI
Model : 5000-230V
Serial No. : 09J 101147
ID No. : BKK_EN0017
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Phatthanakan, Khet Suan Luang,
Bangkok 10250 Thailand
Location : TPA On Site Calibration Laboratory
Received Order : 20 May 2022
Calibrated Date : 30 May 2022
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %
AC Line Voltage : (220 ± 22) V

Calibrated by : Tawatchai Pama

Approved by : 
Approved Signatory

() Pornthippa Tameyakul
(✓) Malee Butkruea
() Suwit Imjai

Issue Date : 31 May 2022

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written
Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.



Equipment : DO Meter with Sensor
Condition As-Received : Used Item
Reference : 2205-0638DSC-10
Procedure Used :-

Cert. No.: 22LM83
Page.: 2 of 2

Calibration were conducted using in-house calibration procedure CP-OT01 according to comparison with Industrial Platinum Resistance Thermometer (IPRT) into Temperature Bath.

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Digital Thermometer	1502A	A09204	2218	04 Jan 2023

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function : Temperature measurement.

This instrument was connected with thermistor sensor , ID No.: 16K100498

Calibration Point (°C)	Immersion Depth (mm)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty (± °C)	Coverage Factor k
20.00	60	20.003	20.01	0.007	0.15	2.00

UUC* : Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

-o0o-



A 0039957

a 1090806



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.

Saraburi Tel : +66 3627 3096 Fax : +66 3627 3100

Bangkok Tel : +668 9205 6851 , +669 8247 2360

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.



Certificate No. T221081

Page 1 of 4

Certificate of Calibration

Equipment : Chamber (Incubator)

Manufacturer : MEMMERT

Model : ICP 750

Serial No. : F818.0033

Customer Code : BKK_EN0272

ID No. : T8041A4

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

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

Customer Location : Wet Chemistry Lab 2

Date of Receipt : 12 May 2022

Calibrated By : Watcharapon Sangtong (Technician)

Approved By :  / Sujjar Naknakred (Assistant Calibration Manager)

Date of Issue : 20 MAY 2022

REVIEW BY	
APPROVED BY	
NEXT CAL. DATE	17/5/23

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

FM-L14 11/7/01-02-64

Certificate No. T221081

Calibration Report

Page 2 of 4

Equipment : Chamber (Incubator)

Date of Calibration : 17 May 2022 (Finished Time 3:30 PM)

Environment : Temperature 24.0-24.9 °C

Line Voltage 221.7-224.9 V

Condition of this results of test :

1. This instrument was calibrated by insert 12 standard resistance thermometer into its chamber and test according to WI-T20 (based on ASTM E145-94 (Reapproved 2001) and AS2853-1986.)

All data show below were final values and the initial data may be obtained upon request.

The temperature scale used was based on ITS - 90.

2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
RTD	100 ohm	29-(CH1-10)	T220274	28 February 2023
RTD	100 ohm	30-(CH1-10)	T220274	28 February 2023
DATA LOGGER	34970A	T47	T220274	28 February 2023

3. This certificate is traceable to :

National Institute of Metrology (Thailand) through Metrological Center (NSC-TISI-TIS 17025 CALIBRATION 0244.)

4. Condition of calibrated item : good

UUC Description :

Time Constant 2 Hour 9 Minute At 20 °C

Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max

☐ Close

☒ Not Available

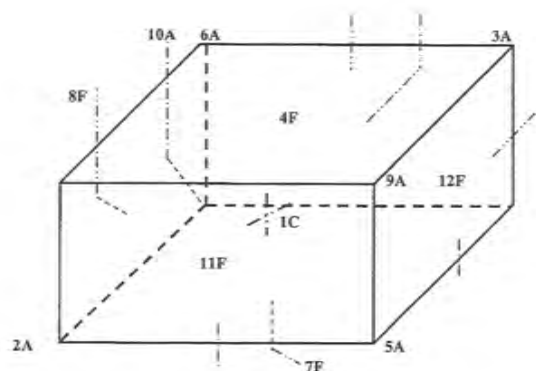
5. Result of test :

() without adjustment

(X) after adjustment

Approved By: 

FM-L15 11/7/15-05-63



C = Centre, F = Centre of Face, A = Corner, E = Centre of Edge

1C = 29-CH1
2A = 29-CH2
3A = 29-CH3
4F = 29-CH4
5A = 29-CH5
6A = 29-CH6
7F = 29-CH7
8F = 29-CH8
9A = 29-CH9
10A = 29-CH10

11F = 30-CH1
12F = 30-CH2

Approved By. 

Measurement Results

Calibration Point	Average Standard Reading at each position (°C)									
	29-CH1	29-CH2	29-CH3	29-CH4	29-CH5	29-CH6	29-CH7	29-CH8	29-CH9	29-CH10
20.0	19.77	20.10	19.53	20.48	20.24	20.46	19.97	19.49	20.14	19.62
	30-CH1	30-CH2								
	19.73	19.56								

Chamber (Incubator)			Temperature Distribution				
Setting (°C)	Reading (°C)		Average (°C)	Stability (± °C)	Uniformity (°C)	Uncertainty (± °C)	Coverage Factor k
	Min , Max	Average					
20.0	20 , 20.1	20.1	19.98	0.05	0.36	0.38	2.00

* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 % .

Approved By. 



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.

Saraburi Tel : +66 3627 3096 Fax : +66 3627 3100

Bangkok Tel : +668 9205 6851 , +669 8247 2360

Website : www.scieco.co.th E-Mail : calibrate@scg.com



NSC-TISI-TIS 17025
CALIBRATION 0244

Certificate No. T230683

Page 1 of 4

Certificate of Calibration

Equipment : Chamber (Incubator)

Manufacturer : MEMMERT

Model : ICP 750

Serial No. : F818.0075

Customer Code : BKK_EN0305

ID No. : T9571A4

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

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

Customer Location : Wet Chemistry Lab 2

Date of Receipt : 30 March 2023

Calibrated By : Sujjar Naknakred (Site Calibration Manager)

Approved By : Sunjai / Boonchai Suriyawong (Assistant Calibration Manager)

Date of Issue : 10 APR 2023

REVIEW BY	<u>Sinluk P.</u>
APPROVED BY	<u>KL AL</u>
NEXT CAL. DATE	<u>05/04/24</u>

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

FM-L14118/31-08-64



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.



NSC-TISI-TIS 17025
CALIBRATION 0244

Certificate No. T230683

Page 2 of 4

Calibration Report

Equipment : Chamber (Incubator)

Date of Calibration : 5 April 2023 (Finished Time 4:30 PM)

Environment : Temperature 22.9-28.6 °C
Line Voltage 221.7-225.5 V

Condition of this results of test :

1. This instrument was calibrated by insert 12 standard resistance thermometer into its chamber and test according to WI-T20 (based on ASTM E145-94 (Reapproved 2001) and AS2853-1986.)

All data show below were final values and the initial data may be obtained upon request.

The temperature scale used was based on ITS - 90.

2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
RTD	100 ohm	37-(CH1-10)	T222493	28 November 2023
RTD	100 ohm	36-(CH1-10)	T222493	28 November 2023
DATA LOGGER	34970A	T193	T222493	28 November 2023

3. This certificate is traceable to :

National Institute of Metrology (Thailand) through Metrological Center (NSC-TISI-TIS 17025 CALIBRATION 0244.)

4. Condition of calibrated item : good

UUC Description :

Time Constant 2 Hour 24 Minute At 20 °C

Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max

☐ Close

☒ Not Available

5. Result of test :

() without adjustment

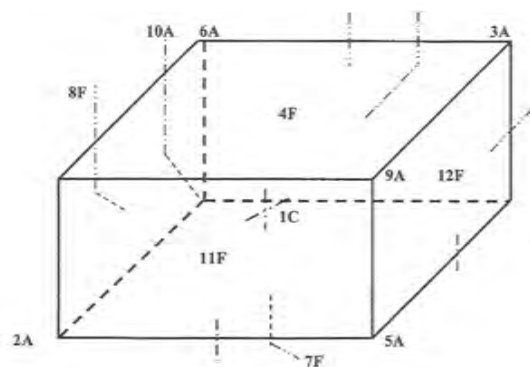
(X) after adjustment

Approved By

Sunjai

FM-L15 117/15-05-63

Calibration Report



C = Centre, F = Centre of Face, A = Corner, E = Centre of Edge

1C = 37CH1
2A = 37CH2
3A = 37CH3
4F = 37CH4
5A = 37CH5
6A = 37CH6
7F = 37CH7
8F = 37CH8
9A = 37CH9
10A = 37CH10

11F = 36CH1
12F = 36CH2

Approved By: 

Calibration Report

Measurement Results

Calibration Point	Average Standard Reading at each position (°C)									
	37CH1	37CH2	37CH3	37CH4	37CH5	37CH6	37CH7	37CH8	37CH9	37CH10
20.0	20.32	20.28	20.17	20.22	20.22	20.04	20.17	19.74	20.31	19.93
	36CH1	36CH2								
	20.14	20.20								
Calibration Point	37CH1	37CH2	37CH3	37CH4	37CH5	37CH6	37CH7	37CH8	37CH9	37CH10
25	25.28	25.15	25.13	25.13	25.20	25.02	25.11	24.79	25.20	25.26
	36CH1	36CH2								
	25.13	24.94								

Chamber (Incubator)		Temperature Distribution					
Setting (°C)	Reading (°C)		Average (°C)	Stability (± °C)	Uniformity (°C)	Uncertainty (± °C)	Coverage Factor k
	Min, Max	Average					
20.0	19.9, 20.1	20.0	20.02	0.09	0.54	0.38	2.00
25.0	24.9, 25.1	25.0	25.03	0.03	0.51	0.38	2.00

* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 % .

Approved By: 

Certificate of Calibration

Represent to Certificate of Calibration ,PTC/07/22075

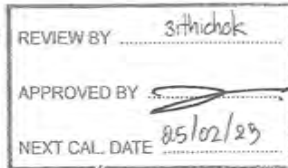
Certificate No.: PTC/07/22075 Page: 1 of 3
 Equipment: Digital Balance Condition: Normal
 Manufacturer: Sartorius Serial No: 16704832
 Model: CP3202S ID No: BKK_ML0001
 Type of Balance: Single interval



Customer: ALS Laboratory Group (Thailand) Co.,Ltd.
 104 Phatthanakarn 40 Phatthanakarn Rd.,
 khwaeng Phatthanakarn, Khet Suan Luang, Bangkok 10250.

Environment Condition: Temperature 20.9 °C ± 0.4 °C
 Humidity 61.2 %RH ± 2.6 %RH
 Air density 1.19 kg/m³

Calibration Place: ALS Laboratory Group (Thailand) Co.,Ltd.
 104 Phatthanakarn 40 Phatthanakarn Rd.,
 khwaeng Phatthanakarn, Khet Suan Luang, Bangkok 10250.



The Method used: In house method, PTC-WI-07, base on Euramet cg. 18
 Traceability: This certificate is traceable to the SI Units through Thai Calibration Service Co.,Ltd.
 , NSC-ONSC Accreditation No.: Calibration 0189
 Date Received: February 25, 2022
 Calibration Date: February 25, 2022
 Issued Date: March 01, 2022
 Calibration By: Mr. Rungraje Metakul



[Signature]
 (Mr.Kriangsak Kalasri)
 Reviewed by

Approved By: [Signature]
 (Mr. Keattisak Kerdo)
 Laboratory Manager

This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognised national standard laboratories.

The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM). The effect that the results relate only to the items calibrated.

This calibration certificate shall not be reproduced except in full only, without written approval from penta calibration co., ltd

Represent to Certificate of Calibration ,PTC/07/22075

Certificate No.: PTC/07/22075

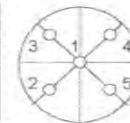
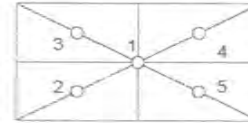
Page: 2 of 3

Measurement Results:

Before Adjustment :

Function Calibration: Non Adjustment

Eccentric Error: Weight to be 1/3 ,1/2 or of Maximum capacity



Eccentricity test 1000 (g)

Position (g)				
1	2	3	4	5
0.00	0.00	0.00	-0.02	0.01
Maximum deviation:				0.02

 Repeatability Test : Weight to be $1/2 \leq L_1 \leq$ Maximum capacity

Determination of the standard deviation of weighing balance , Readability 0.01 (g)

Nominal test value (g)	Standard Deviation
2000	0.011

Error of indication : from nominal value., Readability 0.01 (g)

Nominal Value (g)	Conventional Mass (g)	Indication (g)	Correction of Balance (g)	Uncertainty (g)	k
0	0.000	0.00	0.00	0.034	2.87
1	1.000	0.99	0.01	0.032	2.65
5	5.000	5.00	0.00	0.032	2.65
10	10.000	10.00	0.00	0.032	2.65
20	20.000	20.01	-0.01	0.032	2.65
50	50.000	50.02	-0.02	0.032	2.65
100	100.000	100.01	-0.01	0.032	2.65
500	500.001	499.98	0.02	0.033	2.65
1000	1000.000	999.98	0.02	0.033	2.43
1500	1500.001	1500.01	-0.01	0.034	2.25
2000	2000.004	2000.05	-0.05	0.036	2.14
2500	2500.005	2500.08	-0.07	0.040	2.09
3000	3000.004	3000.08	-0.08	0.044	2.05

Note: Weight of adjust (g)

Represent to Certificate of Calibration PTC/07/22075

Certificate No.: PTC/07/22075

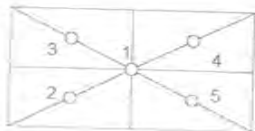
Page: 3 of 3

Measurement Results:

After Adjustment :

Function Calibration: External Calibration (Lab Weight)

Eccentric Error: Weight to be 1/3, 1/2 or of Maximum capacity



Eccentricity test 1000 (g)				
Position (g)				
1	2	3	4	5
0.00	0.00	0.00	-0.01	0.00
Maximum deviation: 0.01				

Repeatability Test : Weight to be $1/2 \leq L_1 \leq$ Maximum capacity

Determination of the standard deviation of weighing balance, Readability 0.01 (g)

Nominal test value (g)	Standard Deviation
2000	0.005

Error of indication : from nominal value, Readability 0.01 (g)

Nominal Value (g)	Conventional Mass (g)	Indication (g)	Correction of Balance (g)	Uncertainty (g)	k
0	0.000	0.00	0.00	0.016	2.52
1	1.000	0.99	0.01	0.016	2.32
5	5.000	4.99	0.01	0.016	2.32
10	10.000	10.00	0.00	0.016	2.32
20	20.000	20.01	-0.01	0.016	2.32
50	50.000	50.00	0.00	0.016	2.32
100	100.000	100.01	-0.01	0.016	2.32
500	500.001	500.00	0.00	0.016	2.28
1000	1000.000	1000.00	0.00	0.017	2.21
1500	1500.001	1499.99	0.01	0.018	2.13
2000	2000.004	2000.00	0.00	0.019	2.08
2500	2500.005	2500.00	0.01	0.021	2.05
3000	3000.004	3000.01	-0.01	0.023	2.03

Note: Weight of adjust 2000 (g)

The End of Certificate

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang, Huaykwang, Bangkok 10310
Tel: +66 2643 8361-6, e-mail: service.thailand@sartorius.com



SARTORIUS

Certificate of Calibration

REVIEW BY: *Sithichok*
APPROVED BY: *[Signature]*
NEXT CAL. DATE: 8/2/24

Model Number : CP3202S

Description : Precision Balance

Serial Number : 16704832

ID No. BKK_ML0001

Manufacturer : Sartorius

Certificate No. : 23BCI0073

Issued Date : Monday, February 13, 2023

Reference No. : 203245

Page No. : 1 of 2

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

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250

Calibrated Place : Balance Room.

Calibrated By : Mr.Chonchai Inthana

Calibration Date : Wednesday, February 08, 2023

Calibration Procedure No. : This calibration was conducted by Using in-house calibration procedure number (WI-003) Based on UKAS LAB 14 : 2019

Metrological data :

Capacity : 3,200 g Readability : 0.01 g

Ambients Conditions:

Temperature : 23.5 °C ± 3.0 °C

Humidity : 56.0 % RH ± 5.0 % RH

Pressure : ±

Reasons for calibration

☐ New Installation ☐ Service / Repaired ☒ Re-calibration/ Maintenance

Equipment Condition: ☒ Good Operate ☐ Fair

Measurement Method UKAS Publication Ref :Lab 14

The measurement uncertainty stated is the expended uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM). The calibration certificate documents the traceability to National Standards, which realise the unit of measurement according to the International Standard System of Units (SI). Report of Tolerance came form list of Sartorius Metrological Specifications.

Traceability:

Model Number	Description	Traceability	Certificate No.	Due Date
YCS011-522-00	Sartorius weight set 1mg - 5000g E2,YCS011-522-00	SPC-RT	C02212565	14-Sep-2023
MHB-382SD	Humidity/Barometer/Temp Lutron MHB-382SD	DKSH	C19220444	5-Sep-2023

This certificate relate and apply this equipment only.

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[Signature]

Mr.Chonchai Inthana(Technical Manager)

SOP FM 33 03 February 2022



Sartorius (Thailand) Co., Ltd.

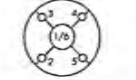
129 Rama 9 Road, Huaykwang, Huaykwang, Bangkok 10310
Tel: +66 2643 8361-5 Fax: +66 2643-8387, e-mail: service.thailand@sartorius.com

SARTORIUS

Certificate of Calibration

Model Number : CP3202S Certificate No. : 23BCI0073
Description : Precision Balance Issued Date : Monday, February 13, 2023
Serial Number : 16704832 Reference No. : 203245
ID No. : BKK_ML0001
Manufacturer : Sartorius Page No. : 2 of 2

Calibration Results : Without Adjustment

Repeatability			Eccentricity (Off-center loading error)		
The reproducibility is the ability of a weighing instrument to display nearly identical readouts under constant test conditions when the same load within a measurement series is placed repeatedly on the weighing pan in the same manner. The standard deviation is used to express reproducibility quantitatively.			The off-center loading error is yielded by the difference between the readout of the load, i.e. 1/3 or 1/4 of maximum capacity, placed in the middle of the weighing pan and between each of four additional measurement points (positions defined according to OIML R76).		
Nominal Value : (Low Load)	200.00	1999.99	Nominal value :	1000	g
200 g	200.00	2000.00	Tolerance	0.06	g
Tolerance	200.00	1999.99			
0.01 g	199.99	2000.00			
	200.00	2000.00			
Nominal Value : (High Load)	200.00	1999.99			
2000 g	200.00	1999.99			
Tolerance	199.99	2000.00			
0.01 g	200.00	2000.00			
	200.00	2000.00			
Standard Deviation	0.004	0.005			

Linearity

The linearity, also called linearity error. Describes the deviation of the characteristic curve of a weighing instrument from the linear slope.

Tolerance 0.02 g				
Nominal Value (g)	Conventional Mass Value (g)	Displayed Value (g)	Deviation (g)	Uncertainty (g)
1	1.00	1.00	0.00	0.013
5	5.00	5.00	0.00	0.013
10	10.00	10.00	0.00	0.013
20	20.00	20.00	0.00	0.013
50	50.00	50.00	0.00	0.013
100	100.00	100.00	0.00	0.013
500	500.00	500.00	0.00	0.013
1000	1000.00	1000.00	0.00	0.014
2000	2000.00	2000.00	0.00	0.014
3000	3000.00	3000.00	0.00	0.014

End of Report.



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES & EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL. 0-2717-3000-27 FAX. 0-2719-9484



Cert. No.: 22TM676
Page.: 1 of 3

Certificate of Calibration

Equipment : Autoclave
Manufacturer : TOMY
Model : SX-700
Serial No. : 48134190
ID No. : BKK_ML0041

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Phatthanakan, Khet Suan Luang,
Bangkok 10250 Thailand
Location : Media Preparation Room
Received Order : 20 May 2022
Calibration Date : 20 May 2022
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %

Calibrated by : Preecha Hlahib

Approved by :


Approved Signatory

() Pornthippa Tameyakul
() Malee Butkruea
(✓) Suwit Imjai

Issue Date : 24 May 2022

The Uncertainties are for a confidence probability of approximately 95 %

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Approval of the Head of Corporate Services & Equipment Calibration and Testing Services.



Equipment : Autoclave
 Condition As-Received : Used Item
 Reference : 2205-0404OC-2

Cert. No.: 22TM676
 Page: 2 of 3

Procedure Used :-

Calibration were conducted using in-house calibration procedure CP-OT03 according to direct measurement method with Data Acquisition which connected with Thermocouple Type T

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Data Acquisition	34972A	MY57013823	22LM24	26 Feb 2023

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

4. This result of calibration covers laboratory autoclaves for the sterilization of goods and material which could be infected with organisms categorized as Hazard Group 1, 2 and 3**

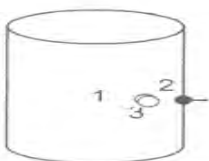
(** = Categorization of pathogens according to hazard and categories of containment, second edition, 1990)

It does not cover autoclaves for use with material infect with organisms in Hazard Group 4, for which complete containment and sterilization of infected condensate is considered to be essential.

This result of calibration does not apply to sterilizers or disinfectors used for medical, dental, pharmaceutical or veterinary purposes which are directly concerned with patient care, or those used for fabrics subjected to sterilization which are required to be dry at the end of cycle.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source



	Environmental		
	(°C)	(%R.H.)	(Volt)
Beginning of Calibration	24	55	220
Finished of Calibration	26	57	221

Position	Description	Ref. Std. ID No.:
1 =	Center of chamber	19-17TC-11
2 =	Temperature sensor	19-17TC-12
3 =	Exhaust port	19-17TC-13



Equipment : Autoclave
 Condition As-Received : Used Item
 Reference : 2205-0404OC-2

Cert. No.: 22TM676
 Page.: 3 of 3

Result of Calibration :- (*) Without Adjustment

Operating parameter Set : Temperature = 108 °C

Sterilization period = 10 minute

UUC* Setting (°C)	UUC* Reading (°C)	Position	Average* Standard Reading (°C)	Stability (± °C)	Pressure Reading (MPa)	Uncertainty (± °C)	Coverage Factor k
108	108	1	107.536	0.19	0.04	0.91	2
		2	107.542				
		3	107.471				

Operating parameter Set : Temperature = 115 °C

Sterilization period = 20 minute

UUC* Setting (°C)	UUC* Reading (°C)	Position	Average* Standard Reading (°C)	Stability (± °C)	Pressure Reading (MPa)	Uncertainty (± °C)	Coverage Factor k
115	115	1	114.502	0.15	0.08	0.89	2
		2	114.582				
		3	114.539				

Operating parameter Set : Temperature = 118 °C

Sterilization period = 10 minute

UUC* Setting (°C)	UUC* Reading (°C)	Position	Average* Standard Reading (°C)	Stability (± °C)	Pressure Reading (MPa)	Uncertainty (± °C)	Coverage Factor k
118	118	1	117.517	0.094	0.09	0.88	2
		2	117.616				
		3	117.530				

Result of Calibration :- (*) Without Adjustment

Operating parameter Set : Temperature = 121 °C

Sterilization period = 30 minute

UUC* Setting (°C)	UUC* Reading (°C)	Position	Average* Standard Reading (°C)	Stability (± °C)	Pressure Reading (MPa)	Uncertainty (± °C)	Coverage Factor k
121	121	1	120.400	0.18	1.1	0.90	2
		2	120.511				
		3	120.465				

Average* : The average of 30 values in each position.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity .

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
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TEL. 0-2717-3000-27 FAX. 0-2719-9484



Cert. No.: 22TM1597
Page : 1 of 3

Certificate of Calibration

Equipment : Incubator
Manufacturer : Memmert
Model : ICP 750
Serial No. : F816.0004
ID No. : BKK_ML0189

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Phatthanakan, Khet Suan Luang,
Bangkok 10250 Thailand

Location : Incubation & Microbiological Reading

Received Order : 4 November 2022
Calibration Date : 4 November 2022
Ambient Temperature : $(26 \pm 10) ^\circ\text{C}$
Relative Humidity : $(50 \pm 30) \%$

Calibrated by : Preecha Hlahib

Approved by :
Approved Signatory

() Pornthippa Tameyakul
() Malee Butkruea
() Suwit Imjai

Issue Date : 10 November 2022

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Incubator
Condition As-Received : Used Item
Reference : 2211-0009OC-3
Procedure Used :-

Cert. No.: 22TM1597
Page : 2 of 3

Calibration were conducted using calibration procedure CP-OT02 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector (RTD).

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Data Acquisition	34970A	MY44067817	22LM121	22 Aug 2023

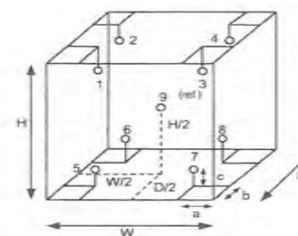
2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Close



Probe Installation Details :

a = 10 cm
b = 10 cm
c = 10 cm

Dimension of Chamber :

D = 0.50 m
W = 1.1 m
H = 0.80 m
Capacity = 0.44 m³

Environment during calibration

	Beginning	Finished
Temp. (°C)	20	20
REL.Humid. (%)	56	55
AC Supply (Volt)	220	221

Position :	Ref. Std. ID No.:
1	19-15RTD-01
2	19-15RTD-02
3	19-15RTD-03
4	19-15RTD-04
5	19-15RTD-05
6	21-15RTD-06
7	19-15RTD-07
8	19-15RTD-08
9 (ref.)	19-15RTD-09



Equipment : Incubator
 Condition As-Received : Used Item
 Reference : 2211-0009OC-3
 Result of Calibration :- (*) Without Adjustment
 Function of UUC* : Temperature Source
 Fresh air setting : Close

Cert. No.: 22TM1597
 Page : 3 of 3

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Uncertainty (± °C)	Coverage Factor k
37.0	37.0	37.0	0.14	0.27	0.44	0.31	2

Calibration Point (°C)	Measured Temperature (°C)								
	Position								
	1	2	3	4	5	6	7	8	9 (ref.)
37.0	37.074	36.997	37.149	37.068	37.146	37.059	37.120	37.172	36.965

Average* : The average of 30 values in each position.

Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor

Temperature uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity .

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
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 534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
 TEL: 0-2747-3000-27 FAX: 0-2719-9484



Cert. No.: 22TM1571
 Page : 1 of 3

Certificate of Calibration

Equipment : Hot Air Oven

Manufacturer : Binder

Model : ED 240/E2

Serial No. : 00-15533

ID No. : BKK_ML0013

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
 104 Phatthanakan 40, Phatthanakan Rd.,
 Khwaeng Phatthanakan, Khet Suan Luang,
 Bangkok 10250 Thailand

Location : Media Preparation Room

Received Order : 21 November 2022

Calibration Date : 21 November 2022

Ambient Temperature : (26 ± 10) °C

Relative Humidity : (50 ± 30) %

Calibrated by : Krisda Malee

Approved by :
 Approved Signatory

- () Pornthippa Tameyakul
 (✓) Malee Butkruea
 () Suwit Imjai

Issue Date : 29 November 2022

The Uncertainties are for a confidence probability of approximately 95%

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 Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services

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A 0048150



Equipment : Hot Air Oven
 Condition As-Received : Used Item
 Reference : 2211-0623OC-1

Cert. No.: 22TM1571
 Page : 2 of 3

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 according to direct measurement method with Data Acquisition which connected with Thermocouple Type T.

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Data Acquisition	34970A	MY44067817	22LM121	22 Aug 2023

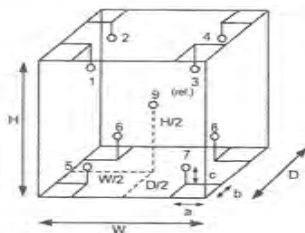
2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) After Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available



Probe Installation Details :

a = 5.0 cm
 b = 5.0 cm
 c = 5.0 cm

Dimension of Chamber :

D = 0.50 m
 W = 0.80 m
 H = 0.60 m
 Capacity = 0.24 m³

Environment during calibration		
	Beginning	Finished
Temp. (°C)	26	26
REL.Humid. (%)	53	55
AC Supply (Volt)	219	220

Position :	Ref. Std. ID No.:
1	21-15TC-01
2	21-15TC-02
3	21-15TC-03
4	21-15TC-04
5	21-15TC-05
6	21-15TC-06
7	21-15TC-07
8	21-15TC-08
9 (ref.)	21-15TC-09



Equipment : Hot Air Oven
 Condition As-Received : Used Item
 Reference : 2211-0623OC-1

Cert. No.: 22TM1571
 Page : 3 of 3

Result of Calibration :- (*) After Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Not Available

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Uncertainty (± °C)	Coverage Factor k
180	180	180	0.70	1.5	2.9	1.4	2

Calibration Point (°C)	Measured Temperature (°C)								
	Position								
	1	2	3	4	5	6	7	8	9 (ref.)
180	179.520	180.585	178.855	179.482	178.827	179.938	179.074	180.199	180.068

Average* : The average of 30 values in each position.

Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor.

Temperature uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
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TEL. 0-2717-3000, 37 FAX. 0-2719-9484



Cert. No.: 22TM102
Page.: 1 of 3

Certificate of Calibration

Equipment : Incubator
Manufacturer : SHEL-LAB
Model : 1915A
Serial No. : 0200599
ID No. : BKK_ML0010

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Phatthanakan, Khet Suan Luang,
Bangkok 10250 Thailand

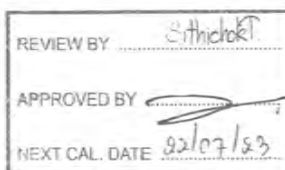
Location : Incubation & Micrological Reading
Received Order : 21 January 2022
Calibration Date : 21 January 2022
Ambient Temperature : $(26 \pm 10) ^\circ\text{C}$
Relative Humidity : $(50 \pm 30) \%$

Calibrated by : Krisda Malee

Approved by : *Malee*
Approved Signatory

() Pornthippa Tameyakul
() Malee Butkruea
() Suwit Imjai

Issue Date : 3 February 2022



The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Incubator
Condition As-Received : Used Item
Reference : 2201-0616OC-1
Procedure Used :-

Cert. No.: 22TM102
Page.: 2 of 3

Calibration were conducted using calibration procedure CP-OT02 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector (RTD).

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Data Acquisition	34972A	MY57013711	21LM7	16 Jun 2022

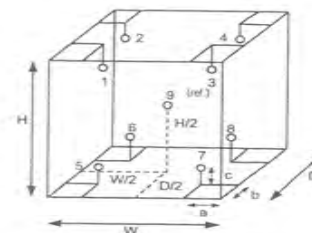
2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Close



Probe Installation Details :		Dimension of Chamber :	
a =	10 cm	D =	0.90 m
b =	10 cm	W =	0.75 m
c =	10 cm	H =	1.2 m
		Capacity =	0.81 m ³

Environment during calibration		
	Beginning	Finished
Temp. (°C)	26	25
REL.Humid. (%)	53	54
AC Supply (Volt)	220	221

Position :	Ref. Std. ID No.:
1	18-18RTD-01
2	18-18RTD-02
3	18-18RTD-03
4	18-18RTD-04
5	18-18RTD-05
6	18-18RTD-06
7	18-18RTD-07
8	18-18RTD-08
9 (ref.)	18-18RTD-09

Malee



Equipment : Incubator
 Condition As-Received : Used Item
 Reference : 2201-0616OC-1
 Result of Calibration :- (*) Without Adjustment
 Function of UUC* : Temperature Source
 Fresh air setting : Close

Cert. No.: 22TM102
 Page.: 3 of 3

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Uncertainty (± °C)	Coverage Factor <i>k</i>
35.0	35.0	35.0	0.043	0.41	0.42	0.30	2

Calibration Point (°C)	Measured Temperature (°C)								
	Position								
	1	2	3	4	5	6	7	8	9 (ref.)
35.0	34.801	34.868	34.862	35.012	35.040	35.010	35.084	35.040	35.178

Average* : The average of 30 values in each position.

Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor.

Temperature uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity .

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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Malu.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
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 534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
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Certificate of Calibration

Cert. No.: 22TM677
 Page.: 1 of 3

Equipment : Water Bath
 Manufacturer : Memmert
 Model : WNE 45
 Serial No. : L712.0429
 ID No. : BKK_ML0056
 Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
 104 Phatthanakan 40, Phatthanakan Rd.,
 Khwaeng Phatthanakan, Khet Suan Luang ,
 Bangkok 10250 Thailand
 Location : Incubator & Microbiological Reading
 Received Order : 20 May 2022
 Calibration Date : 20 May 2022
 Ambient Temperature : (26 ± 10) °C
 Relative Humidity : (50 ± 30) %
 Calibrated by : Preecha Hlahib

REVIEW BY	<i>Sithidok</i>
APPROVED BY	<i>[Signature]</i>
NEXT CAL. DATE	20/5/23

Approved by : *[Signature]*
 Approved Signatory
 () Pornthippa Tameyakul
 () Malee Butkruea
 (/) Suwit Imjai

Issue Date : 24 May 2022
 The Uncertainties are for a confidence probability of approximately 95%

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 Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.

A 0041433



Equipment : Water Bath
 Condition As-Received : Used Item
 Reference : 2205-0404OC-1
 Procedure Used :-

Cert. No.: 22TM677
 Page.: 2 of 3

Calibration were conducted using in-house calibration procedure CP-OT04 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer (IPRT).

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Data Acquisition	34972A	MY57013823	22LM24	26 Feb 2023

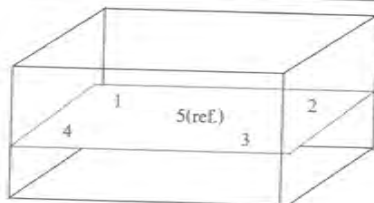
2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

	Environmental		AC Voltage Supply
	(°C)	(%R.H.)	(Volt)
Beginning of Calibration	24	47	220
Finished of Calibration	24	52	221



Front

Position :	Ref. Std. S/N.:
1	4804539-006
2	4804539-007
3	4804539-008
4	4804539-009
5(ref.)	4804539-010

Signature

a 1109674



Equipment : Water Bath
 Condition As-Received : Used Item
 Reference : 2205-0404OC-1
 Result of Calibration :- (*) Without Adjustment
 Function of UUC* : Temperature Source

Cert. No.: 22TM677
 Page.: 3 of 3

Calibration point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Average* Standard Reading (°C)				
			Position				
			1	2	3	4	5 (ref.)
44.5	44.4	44.4	44.539	44.497	44.476	44.506	44.507

Calibration point (°C)	Uniformity (°C)	Stability (± °C)	Uncertainty (± °C)	Coverage Factor k
44.5	0.068	0.030	0.15	2

Average* : The average of 30 values in each position.

Uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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Signature

a 1109673



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES & EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL. 0-2717-3000-29 FAX. 0-2719-9484



Cert. No.: 23TM637

Page : 1 of 3

Certificate of Calibration

Equipment : Water Bath
Manufacturer : Memmert
Model : WNE 45
Serial No. : L712.0429
ID No. : BKK_ML0056

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Phatthanakan, Khet Suan Luang,
Bangkok 10250 Thailand
Location : Incubator & Microbiological Reading

Received Order : 20 April 2023
Calibration Date : 20 April 2023
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %

Calibrated by : Kunchit Promprat

Approved by :
Approved Signatory

() Pornthippa Tameyakul
(/) Malee Butkruea
() Suwit Imjai

Issue Date : 24 April 2023

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written
Approval of the head of Corporate Services & Equipment Calibration and Testing Services



Equipment : Water Bath
Condition As-Received : Used Item
Reference : 2304-0253OC-1
Procedure Used :-

Cert. No.: 23TM637

Page : 2 of 3

Calibration were conducted using in-house calibration procedure CP-OT04 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer (IPRT).

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Data Acquisition	34970A	MY44073381	22LM78/1	12 May 2023

2. This certificate is valid only to the item calibrated on date and place of calibration.

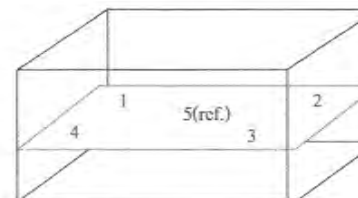
3. This certification is traceable to the International System of Unit.

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Heat transfer medium used : Water

	Environmental		AC Voltage Supply
	(°C)	(%R.H.)	(Volt)
Beginning of Calibration	25	45	223
Finished of Calibration	25	43	223



Front

Position :	Ref. Std. S/N.:
1	4803988-006
2	4803988-007
3	4804539-014
4	4804539-015
5(ref.)	4804539-016



Equipment : Water Bath
Condition As-Received : Used Item
Reference : 2304-0253OC-1
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source

Cert. No.: 23TM637

Page : 3 of 3

Calibration point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Average* Standard Reading (°C)					Uncertainty (± °C)
			Position					
			1	2	3	4	5 (ref.)	
44.5	44.5	44.5	44.492	44.463	44.475	44.510	44.491	0.15
45.0	45.0	45.0	45.005	44.962	44.979	45.016	44.986	0.15

Calibration point (°C)	Uniformity (°C)	Stability (± °C)	Coverage Factor <i>k</i>
44.5	0.051	0.022	2
45.0	0.080	0.026	2

Average* : The average of 30 values in each position.

Uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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Mali.

a 1158264

ภาคผนวก ๘

สำเนาหนังสืออนุญาตขึ้นทะเบียน
ห้องปฏิบัติการวิเคราะห์เอกชน



ที่ อก ๐๓๑๐(๑)/ ๑๐๖๕

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ เขตราชเทวี
กรุงเทพมหานคร ๑๐๕๐๐

๒๘ มกราคม ๒๕๖๕

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๓๐ กรกฎาคม ๒๕๖๓

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น
๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๕ แผ่น
๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ขอต่ออายุ
หนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๕
ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร
ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย)
จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้
ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย ตามสิ่งที่ส่งมาด้วย ๑
ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑๖๒ ราย ตามสิ่งที่ส่งมาด้วย ๒
ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๕๕ รายการ น้ำใต้ดิน
จำนวน ๑๒๖ รายการ อากาศเสีย ๑๖ รายการ สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน ๓๕ รายการ และดิน
จำนวน ๑๒๕ รายการ รวมทั้งสิ้นจำนวน ๓๖๑ รายการ ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ กันยายน ๒๕๖๖ หากประสงค์จะต่ออายุหนังสือ
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอ
ต่อกรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์
เอกชน ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



(นายศิระ จันทน์เกิด)

นักวิทยาศาสตร์ชำนาญการพิเศษ รักษาการแทน
ผู้อำนวยการกองวิจัยและเฝ้าระวังมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเฝ้าระวังมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๒๐๒ ๔๑๔๖ ๐ ๒๒๐๒ ๔๐๐๒

โทรสาร ๐ ๒๓๕๔ ๓๒๐๘ ๐ ๒๓๕๔ ๓๔๑๕

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

เลขทะเบียน ว-๒๐๔

ที่ อก ๐๓๑๐(๑)/

ลงวันที่ ๒๘ มกราคม ๒๕๖๕

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย

๑) นางสาวยุพพร จันทน์เปล่ง	ทะเบียนเลขที่ ว-๒๐๔-ค-๔๗๐๐
๒) นางสาวชัชชัย โภภกรกุล ณ นคร	ทะเบียนเลขที่ ว-๒๐๔-ค-๔๗๐๑
๓) นายศรายุทธ จิตรานนท์	ทะเบียนเลขที่ ว-๒๐๔-ค-๔๗๐๒
๔) นางสาวกนกกร เอนก	ทะเบียนเลขที่ ว-๒๐๔-ค-๖๑๑๑
๕) นายสุริยา สอนแก้ว	ทะเบียนเลขที่ ว-๒๐๔-ค-๖๑๑๒
๖) นายวิชาญ ชูณหะวัณ	ทะเบียนเลขที่ ว-๒๐๔-ค-๖๑๑๓



(นายศิระ จันทน์เกิด)

นักวิทยาศาสตร์ชำนาญการพิเศษ รักษาการแทน
ผู้อำนวยการกองวิจัยและเฝ้าระวังมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

เลขทะเบียน ว-๒๐๔

ที่ อก ๐๓๑๐(๑) ๑๐๖๕

ลงวันที่ ๒๘ มกราคม ๒๕๖๕

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑๖๒ ราย

๑) นางสาวจินดา ไชยธรรม	ทะเบียนเลขที่ ว-๒๐๔-จ-๔๗๐๘
๒) นางสาวสาวตรี น้อยเสงี่ยม	ทะเบียนเลขที่ ว-๒๐๔-จ-๔๗๐๙
๓) นางสาวชนันฎาญจน์ อัมม	ทะเบียนเลขที่ ว-๒๐๔-จ-๔๗๑๐
๔) นางสาวนรินทร์ สายเส็ง	ทะเบียนเลขที่ ว-๒๐๔-จ-๔๗๑๕
๕) นางสาวนันทิ สมบูรณ์	ทะเบียนเลขที่ ว-๒๐๔-จ-๔๗๑๖
๖) นางสาวศรีนยา เฉลิมอ้างค์	ทะเบียนเลขที่ ว-๒๐๔-จ-๔๗๑๗
๗) นางสาวสรารักษ์ มงคลจิราวุฒิ	ทะเบียนเลขที่ ว-๒๐๔-จ-๔๗๑๙
๘) นางสาวศิริลักษณ์ พึ่งแพง	ทะเบียนเลขที่ ว-๒๐๔-จ-๔๗๒๐
๙) นายนพพงศ์ จันทพันธ์	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๐๘
๑๐) นายบรรพต ภิรมย์	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๑
๑๑) นายธนา จริยา	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๔
๑๒) นางสาวเกศรินทร์ แก้วมัน	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๖
๑๓) นางสาวสุวิมล ชัยเรืองวุฒิ	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๗
๑๔) นางสาวสุชาดา ธรรมถาวร	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๑
๑๕) นางสาวเปมิกา ชัยเดชอนกุล	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๓
๑๖) นางสาวศศิธร หนูสวัสดิ์	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๔
๑๗) นางสาวเสาวลักษณ์ ภู่นภาอำพร	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๕
๑๘) นายอภิสิทธิ์ สิงหา	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๖
๑๙) นายศักดิ์สิทธิ์ ไพศาลพิสุทธิ	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๗
๒๐) ว่าที่ร้อยตรีหญิง พรรณิภา ชำเจริญ	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๘
๒๑) นางจิตตา คำแก้ว	ทะเบียนเลขที่ ว-๒๐๔-จ-๕๕๑๑
๒๒) นางสาวอรพรรณ รักยง	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๑๕
๒๓) นางสาวนพรัตน์ แยมกรานต์	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๑๙
๒๔) นายจุลเดช วารินทร์	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๒๐
๒๕) นางสาวดาญรัตน์ รื่องคำ	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๒๑
๒๖) นายนคร สุขเจริญ	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๒๒
๒๗) นายบัญชา นามเขตต์	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๒๓
๒๘) นายพรมณ์ ศรีปิตเนตร	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๒๕
๒๙) นายสุทธิ อนุสิม	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๒๖
๓๐) ว่าที่ร้อยตรี เฉลิมเกียรติ อมรศรีเสริม	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๒๘
๓๑) นางสาววิริยา สร้างนา	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๒๙
๓๒) นายอนุพงศ์ รัตนศรีประเสริฐ	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๑๓๐
๓๓) นางสาวจุฑารัตน์ โอนสันเทียะ	ทะเบียนเลขที่ ว-๒๐๔-จ-๖๒๔๒
๓๔) นางสาวจรรวณ พันธ์อภิกุลดิยา	ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๗๖

(นายศิระ จันทร์เจ็ด)

๓๕) นางสาวปรารถน์ทิพย์...

นักวิทยาศาสตร์ชำนาญการพิเศษ รักษาการแทน

ผู้อำนวยการกองวิจัยและพัฒนาสิ่งแวดล้อมโรงงาน

สำนักงานสิ่งแวดล้อมและที่ปรึกษา

๓๕) นางสาวปรารถน์ทิพย์ กิจไพศาลศักดิ์

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๗๙

๓๖) นางสาวเตือนใจ ทางกลาง

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๐

๓๗) นางสาวจิราพร ศิริเวช

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๒

๓๘) นายวรากร ผู้รักษ์

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๓

๓๙) นายทอง วิริยะสหกิจ

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๔

๔๐) นายอนันต์ เจริญ

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๕

๔๑) นายณิศร ข้าเพชร

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๖

๔๒) นายอรศพล นิยมวิทยาพันธ์

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๗

๔๓) นายภูวิช พรหมสะอาด

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๘

๔๔) นายธนาเดช โกศาพิพัฒน์

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๘๙

๔๕) นายชวฤทธิ์ วงษ์จันทร์

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๙๐

๔๖) นายอาทิตย์ ศรีเสน

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๙๑

๔๗) นายเจษฎินทร์ คงศักดิ์ไทย

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๙๒

๔๘) นายวีรศ บัญย

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๙๕

๔๙) นายธนวัฒน์ เอนก

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๙๖

๕๐) นายอภิวัฒน์ ทุมพู

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๙๗

๕๑) นางสาวสุภาขวัญ มาก

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๐๙๘

๕๒) นางสาวหัตถพร ขวาลสมบูรณ์

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๐

๕๓) นางสาวอติมา บุญเที่ยง

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๑

๕๔) นางสาวกนกอร เข้มเพ็ชร

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๒

๕๕) นางสาวพัชรียา หงษ์สมดี

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๓

๕๖) นางสาวภาณุศา สุวงศ์ตระกูล

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๔

๕๗) นางสาวภาณุมาศ นามวัฒน์

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๕

๕๘) นางสาวอุไรรัตน์ ทั้งสร้างแป้น

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๖

๕๙) นายธีรวัฒน์ ปวงสุข

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๗

๖๐) นายอิทธิพล ยะโส

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๘

๖๑) นายประพนธ์ วรรณสุขชัย

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๐๙

๖๒) นายชยธร พวงทิพย์

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๑๐

๖๓) นางสาวกนกวรรณ จันทบาล

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๑๑

๖๔) นางสาวเกษร หล้าบุญ

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๑๒

๖๕) นายสิทธิโชค ธงเงิน

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๑๑๓

๖๖) นางศิวารมณ ใจบุญ

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๕๐๕

๖๗) นางสาวพรรณธิดา ทุมคง

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๕๐๘

๖๘) นางสาวศรณีย์ ยิ่งดี

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๕๐๙

๖๙) นายนาถพร ศรีวิริยะ

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๕๑๐

๗๐) นายสุวิชา ทองอ่อน

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๕๑๑

๗๑) นายวิญญู บุญตะนัย

ทะเบียนเลขที่ ว-๒๐๔-จ-๗๕๑๓

(นายศิระ จันทร์เจ็ด)

นักวิทยาศาสตร์ชำนาญการพิเศษ รักษาการแทน

ผู้อำนวยการกองวิจัยและพัฒนาสิ่งแวดล้อมโรงงาน

สำนักงานสิ่งแวดล้อมและที่ปรึกษา

๗๒) นายสมบูรณ์...

๗๒) นายสมบุญ บุตรจันทร์
๗๓) นายวิรัตน์ ไชยชนะรา
๗๔) นายบุญเคน เปี่ยมพูน
๗๕) นายจิรณัฐ ขาวละออ
๗๖) นายสมโภช วันสา
๗๗) นายอัสรี นามบุรี
๗๘) นายณัฐนันท์ ปานประเสริฐ
๗๙) นายอัครเวศ จ่อสาว
๘๐) นายประเสริฐ สุระขันธิ์
๘๑) นายบุญดู จันทรเนียม
๘๒) นายพิรพงษ์ ทองคุณปรีดา
๘๓) นายบุญพล ทองนุช
๘๔) นายอนุวัฒน์ ม่วงแพร่
๘๕) นายเจตศรวาล ปิตตะมะ
๘๖) นายกฤษณะ สายวรรณ
๘๗) นายพิชัย บุญยงค์
๘๘) นายภาณุพงศ์ โสมวงค์
๘๙) นายสามารถ คู่ปลี
๙๐) นายสัณชัย โกศรินาม
๙๑) นายณัฐวุฒิ ศรีประเสริฐ
๙๒) นายชวลิต นาคพนม
๙๓) นายพศธร ชัยทิพย์
๙๔) ว่าที่ร้อยตรี ภาณุพงศ์ แสนศรี
๙๕) นายสิทธิโชค หาเสิดา
๙๖) นายธนากร อินสุตา
๙๗) นางสาวรณิชา ขาดวันชัย
๙๘) นางสาวพิมพ์ตะวัน มีนากุล
๙๙) นางสาวเพชรรัตน์ สิงห์สมบูรณ์
๑๐๐) นางสาวชญาณีน พรหมจันทร์
๑๐๑) นายกิตติ ทวีราช
๑๐๒) นายจักริน หมั่นวิชา
๑๐๓) นายฉัตรชัย สุขเปี้ย
๑๐๔) นายณรรนที เตชะทองคำ
๑๐๕) นายดุลยพล สมนอก
๑๐๖) นายทักษ์ดนัย อุบลศรี
๑๐๗) นายธนพร นามะกุลณา
๑๐๘) นายจิตติพงศ์ บัวแดง

ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๕๑๔
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ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๕๔๓

(นายศิระ จันทร์เกิด)

นิติวิทยาศาสตร์ชำนาญการพิเศษ วิทยาการทางพิษวิทยา
ผู้อำนวยการกองวิจัยและเฝ้าระวังยาเสพติด
กองนิติวิทยาศาสตร์ กองบังคับการปราบปรามการฉ้อโกง

๑๐๙) นายพนนพิชัย...

๑๐๙) นายพนนพิชัย อุปลัมภ
๑๑๐) นายณัฐพล คุณสุทธิ
๑๑๑) นายณัฏฐ์ สารี
๑๑๒) นายปิยะนัฐ พลมะศรี
๑๑๓) นายพงศ์ศิริ โสมเขียว
๑๑๔) นายพิรพัฒน์ กำคำ
๑๑๕) นายภาณุพงศ์ มาณิตย์
๑๑๖) นายมงคล ผลาพิชัย
๑๑๗) นายณัฐนรินทร์ พูลศิริ
๑๑๘) นายสิรินันท์ ทองอิน
๑๑๙) นายอนเนชา พันสมัย
๑๒๐) นายอดิศักดิ์ ผนโผ
๑๒๑) นายอนันต์ชัย วิสม
๑๒๒) นายณัฐดนัย เจือละออง
๑๒๓) นายวรุตร์ คีนิก
๑๒๔) นายแสงตะวัน นะทะลัด
๑๒๕) นายยุทธพงศ์ รัตนะ
๑๒๖) นายชัชณัฐ ไชยชนะนิจ
๑๒๗) นายวิศรุต ศรีธรรมมา
๑๒๘) นายณนทกร เมื่อก้อง
๑๒๙) นายกัษัย สุทธะ
๑๓๐) นางสาวณัฐภรณ์ รักทะเล
๑๓๑) นางสาวประภาภรณ์ บุตรพรหม
๑๓๒) นางสาวนิลาวัลย์ นามพรหม
๑๓๓) นางสาวพัชรินทร์ แสนสร้อย
๑๓๔) นายไพโรจน์ เปี่ยมพิมาย
๑๓๕) นางสาวศุภมาศ ทองมาก
๑๓๖) นางสาวลลิตา จิตรสว่าง
๑๓๗) นางสาวไมพร เล็กอุเขียว
๑๓๘) นางสาวกฤติมาพร คำมีแก่น
๑๓๙) นางสาวสกุลรัตน์ ภาควิน
๑๔๐) นางสาวกาญจนา คงคุณ
๑๔๑) นางสาวไพโรจน์ ศรีรูป
๑๔๒) นางสาวทิพนพร ผุยปัญญา
๑๔๓) นางสาวสาธิตา ปานทอง
๑๔๔) นางสาวอริสา ทองนวล
๑๔๕) นางสาวอริยา คำกล่อม

ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๕๔๔
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(นายศิระ จันทร์เกิด)

นิติวิทยาศาสตร์ชำนาญการพิเศษ วิทยาการทางพิษวิทยา
ผู้อำนวยการกองวิจัยและเฝ้าระวังยาเสพติด
กองนิติวิทยาศาสตร์ กองบังคับการปราบปรามการฉ้อโกง

๑๔๖) นางสาวชุตานัน...

๑๔๖) นางสาวชุตินันท์ สุนทรสนาน	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๓๕
๑๔๗) นางสาวสุภารัตน์ นนทประสาท	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๓๖
๑๔๘) นางสาวรัชนิกร เนียมกลาง	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๓๗
๑๔๙) นางสาวกัญญารัตน์ ศรีนิลทา	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๓๘
๑๕๐) นางสาวอัญชลี คำจันทร์	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๓๙
๑๕๑) นายบุญฤทธิ์ เอี่ยมเทศ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๐
๑๕๒) นายศิริวัฒน์ พานิชย์	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๑
๑๕๓) นางสาวศุภรดา ปันมยุรา	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๒
๑๕๔) นางสาวพาฤดี คุณนนาน	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๓
๑๕๕) นางสาวจิราเจต พ้องดา	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๔
๑๕๖) นางสาวกนกกรณ์ อูระ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๕
๑๕๗) นางสาวอารยา มีชัย	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๖
๑๕๘) นางสาวจิตสุภา ประเทืองสุข	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๗
๑๕๙) นางสาวอริสา วิริยชัยดิธรรม	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๘
๑๖๐) นางสาววิษุตา นาคผจญ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๔๙
๑๖๑) นางสาวพนิดา ยอดอินทร์	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๕๐
๑๖๒) นางสาวนันทิยา จันทะลุน	ทะเบียนเลขที่ ๖-๒๐๔-จ-๔๒๕๑



(นายศิริระ จันทรเจ็ด)

นักวิทยาศาสตร์ชำนาญการพิเศษ วิทยาการแพทย์
ผู้อำนวยการกองวิจัยและพัฒนาด้านสิ่งแวดล้อม
ปฏิบัติการตามแผนปฏิบัติการโรงงานอุตสาหกรรม

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท เอแอลเอส แลบลอรัทอรี กรุ๊ป (ประเทศไทย) จำกัด

เลขทะเบียน ๖-๒๐๔

ที่ ออก ๐๓๑๐(๑)/ ๑๐๖๔

ลงวันที่ ๒๘ มกราคม ๒๕๖๕

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๖๑ รายการ

น้ำเสีย จำนวน 59 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldicarb	High-Performance Liquid Chromatographic Method ⁽⁴⁾
2	Aldicarb Sulfone	High-Performance Liquid Chromatographic Method ⁽⁴⁾
3	Aldicarb Sulfoxide	High-Performance Liquid Chromatographic Method ⁽⁴⁾
4	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
5	Arsenic	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
6	Barium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
7	α-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
8	β-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
9	δ-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
10	γ-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
11	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method ⁽⁴⁾ 2) 5-Day BOD Test, Membrane Electrode Method ⁽⁴⁾
12	Carbaryl	High-Performance Liquid Chromatographic Method ⁽⁴⁾
13	Carbofuran	High-Performance Liquid Chromatographic Method ⁽⁴⁾
14	Cadmium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
15	Chemical Oxygen Demand	1) Closed Reflux, Colorimetric Method ⁽⁴⁾ 2) Closed Reflux, Titrimetric Method ⁽⁴⁾
16	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
17	Chromium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁴⁾
18	Color	ADMI Weighted-Ordinate Spectrophotometric Method



(นางริกาญจน์ ฉัตรสกุลวิไล)

19 Copper...

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
และทะเบียนห้องปฏิบัติการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Copper	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
20	Cyanide	Distillation, Colorimetric Method ⁽⁴⁾
21	2,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
22	4,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
23	2,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
24	4,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
25	2,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
26	4,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
27	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
28	Endosulfan Sulfate	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
29	Endosulfan I	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
30	Endosulfan II	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
31	Endrin	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
32	Endrin Aldehyde	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
33	Formaldehyde	Distillation, Colorimetric Method ⁽³⁾
34	Free Chlorine	1) DPD Ferrous Titrimetric Method ⁽⁴⁾ 2) Iodometric Method ⁽⁴⁾
35	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
36	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
37	Hexavalent Chromium	Filtration, Colorimetric Method ⁽⁴⁾
38	3-Hydroxycarbofuran	High-Performance Liquid Chromatographic Method ⁽⁴⁾
39	Lead	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
40	Manganese	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
41	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/Mass spectrometric Method ⁽⁴⁾
42	Methiocarb	High-Performance Liquid Chromatographic Method ⁽⁴⁾
43	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾

วิมล
(นางริกาญจน์ ฉัตรสกุลวิไล)
ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
.....เพื่อกำหนดระเบียบการ

44 Methomyl...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
44	Methomyl	High-Performance Liquid Chromatographic Method ⁽⁴⁾
45	Nickel	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
46	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method ⁽⁴⁾ 2) Soxhlet Extraction Method ⁽⁴⁾
47	Oxamyl	High-Performance Liquid Chromatographic Method ⁽⁴⁾
48	Propoxur	High-Performance Liquid Chromatographic Method ⁽⁴⁾
49	pH	Electrometric Method ⁽⁴⁾
50	Phenols	1) Distillation, Chloroform Extraction Method ⁽⁴⁾ 2) Distillation, Direct Photometric Method ⁽⁴⁾
51	Selenium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
52	Sulfide	Iodometric Method ⁽⁴⁾
53	Temperature	Laboratory and Field Methods ⁽⁴⁾
54	Total Dissolved Solids	Dried at 180 °C ⁽⁴⁾
55	Total Kjeldahl Nitrogen	Semi-Micro Kjeldahl Method ⁽⁴⁾
56	Total Suspended Solids	Dried at 103-105 °C ⁽⁴⁾
57	Toxaphene	Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾
58	Trivalent Chromium	1) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Colorimetric Method; Calculation ⁽⁴⁾
59	Zinc	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁴⁾

น้ำใต้ดิน จำนวน 126 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
2	Acetone	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

วิมล
(นางริกาญจน์ ฉัตรสกุลวิไล)
ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
.....เพื่อกำหนดระเบียบการ

3 Aldrin...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
5	Antimony	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
6	Arsenic	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
8	Barium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
9	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
11	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
13	Benzoic Acid	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
14	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
15	Benzo(g,h,i)perylene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
16	Beryllium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

วิ/พด)

18 Bis(2-ethylhexyl)phthalate...

(นางริกาญจน์ จักรสกุลวิไล)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
กรมควบคุมมลพิษ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
21	Butanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾ Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
22	Butyl Benzyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
23	Cadmium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
25	Carbon Disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
27	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
28	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
32	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
33	Chromium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾

วิ/พด)

34 Chromium (III)...

(นางริกาญจน์ จักรสกุลวิไล)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
กรมควบคุมมลพิษ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
34	Chromium (III)	1) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Colorimetric Method; Calculation ⁽⁴⁾
35	Chromium (VI)	Colorimetric Method ⁽⁴⁾
36	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
37	Cyanide	Distillation, Colorimetric Method ⁽⁴⁾
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
39	DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
40	DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
41	DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
43	Di-n-Butyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
47	3,3-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

วิมล

51 cis-1,2-Dichloroethylene...

(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบพิษ
กรมวิทยาศาสตร์สิ่งแวดล้อม

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
53	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
57	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
58	Diethyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
59	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
60	2,4-Dinitrophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
61	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
62	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
63	Di-n-Octyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
64	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
65	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
67	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

วิมล

68 Fluorene...

(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบพิษ
กรมวิทยาศาสตร์สิ่งแวดล้อม

ลำดับที่	สารเคมี	วิธีวิเคราะห์
68	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
69	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
70	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
71	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
73	n-Hexane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
74	α -HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
75	β -HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
76	γ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
77	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
79	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
80	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
81	Lead	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
82	Manganese	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
83	Mercury	1) Cold Vapor Atomic Absorption Spectrometric Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾



(นางริกาญจน์ จิตรสกุลไฉ)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทางเคมี
กรมวิทยาศาสตร์สิ่งแวดล้อม

84 Methanol...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
84	Methanol	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾ 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
85	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
86	Methyl Bromide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
87	Methylene Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
89	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
90	Methyl tert-Butyl Ether	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
91	Naphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
92	Nickel	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
93	Nitrobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
94	N-Nitrosodiphenylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
95	N-Nitrosodi-n-Propylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
96	Polychlorinated Biphenyls - PCB 1016 - PCB 1221 - PCB 1232 - PCB 1242 - PCB 1248 - PCB 1254 - PCB 1260	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾



(นางริกาญจน์ จิตรสกุลไฉ)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทางเคมี
กรมวิทยาศาสตร์สิ่งแวดล้อม

97 Pentachlorophenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
97	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
98	pH	Electrometric Method ⁽⁴⁾
99	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
100	Phenol	1) Distillation, Direct Photometric Method ⁽⁴⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
101	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
102	Selenium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
103	Silver	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
104	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
105	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
106	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
107	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
108	Toxaphene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
109	TPH (C ₅ -C ₉)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,24)
110	TPH (C ₈ -C ₁₆)	Solvent Extraction, Gas Chromatographic Method ^(9,21)
111	TPH (C ₁₆ -C ₃₅)	Solvent Extraction, Gas Chromatographic Method ^(9,21)
112	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
113	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

วิทย์

114 1,1,2-Trichloroethane...

(นางริกาญจน์ ฉัตรสกุลวิไล)

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และประเมินภัยพิบัติ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
114	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
115	Trichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
116	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
117	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
118	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
119	Vanadium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
120	Vinyl Acetate	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
121	Vinyl Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
122	m-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
123	o-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
124	p-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
125	Xylene (Total)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
126	Zinc	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾

อากาศเสีย (ปล่อยระบาย) จำนวน 16 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	Isokinetic, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾
2	Arsenic	Isokinetic, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾

วิทย์

3 Carbon Monoxide...

(นางริกาญจน์ ฉัตรสกุลวิไล)

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
3	Carbon Monoxide	1) Sampling Bag Non-Dispersive Infrared Method ^[5] 2) Non-Dispersive Infrared Method ^[5] 3) Instrumental Analyzer Method ^[5]
4	Chlorine	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
5	Copper	Isokinetic, Digestion, Inductively Coupled Plasma Method ^[5]
6	Dioxins	Isokinetic Sampling, Analysis by ISO/IEC 17025 Accredited Laboratory or Analysis by Department of Industrial Works Registered Laboratory (Dioxins/Furans Analysis Approved) ^[5]
7	Hydrogen Chloride	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
8	Hydrogen Sulfide	Absorption Sampling, Iodometric Method ^[5]
9	Lead	Isokinetic, Digestion, Inductively Coupled Plasma Method ^[5]
10	Mercury	1) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[5] 2) Isokinetic, Digestion, Inductively Coupled Plasma Method ^[5]
11	Opacity	Ringelmann's Method ^[2]
12	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method ^[5] 2) Chemiluminescence Method ^[5] 3) Instrumental Analyzer Method ^[5]
13	Sulfur Dioxide	1) Absorption Sampling, Barium-Thorin Titrimetric Method ^[5] 2) UV Fluorescence Method ^[5] 3) Instrumental Analyzer Method ^[5]
14	Sulfuric Acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[5]
15	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method ^[5]
16	Xylene	Adsorption Sampling, Gas Chromatographic Method ^[5]


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 กรมการขนส่งทางบก

สิ่งปลูกสร...

สิ่งปลูกสรหรือวัสดุที่ไม่ใช่แล้ว จำนวน 35 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,25] 2) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^[22,31]
2	Antimony	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,16] 3) Digestion, Inductively Coupled Plasma Method ^[7,15] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,16]
3	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,16] 3) Digestion, Inductively Coupled Plasma Method ^[7,15] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,16]
4	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,16] 3) Digestion, Inductively Coupled Plasma Method ^[7,15] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,16]
5	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,16] 3) Digestion, Inductively Coupled Plasma Method ^[7,15] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,16]


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6 Cadmium....

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
6	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,16] 3) Digestion, Inductively Coupled Plasma Method ^[7,15] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,16]
7	Chlordane	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,19,25] 2) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^[22,31]
8	Chromium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,16] 3) Digestion, Inductively Coupled Plasma Method ^[7,15] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,16]
9	Chromium (III)	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation Method ^[1,6,15,17] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation Method ^[1,6,16,17] 3) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,15,17] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,16,17]
10	Chromium (VI)	1) Waste Extraction, Colorimetric Method ^[1,6,17] 2) Alkaline Digestion, Colorimetric Method ^[8,17]


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11 Cobalt...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
11	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,16] 3) Digestion, Inductively Coupled Plasma Method ^[7,15] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,16]
12	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,16] 3) Digestion, Inductively Coupled Plasma Method ^[7,15] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,16]
13	2,4-D	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,25] 2) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^[22,31]
14	DDD	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,25] 2) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^[22,31]
15	DDE	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,25] 2) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^[22,31]
16	DDT	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,25]


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2) Soxhlet...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
17	Dieldrin	2) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22,31) 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,25)
18	Endrin	2) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22,31) 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,25)
19	Heptachlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,25) 2) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22,31)
20	Lead	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,16) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
21	Lindane	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,25) 2) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22,31)
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^(1,6,18)

วิธีวิเคราะห์

2) Waste Extraction...

(นางริกาญจน์ นัครสกุลวิไล)

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
23	Methoxychlor	2) Waste Extraction, Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method ^(1,6,19) 3) Waste Extraction, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ^(1,6,20) 4) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽¹⁸⁾ 5) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method ⁽¹⁹⁾ 6) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ⁽²⁰⁾
24	Mirex	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,25) 2) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22,31)
25	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,16) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
26	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,16) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)

วิธีวิเคราะห์

27 Polychlorinated...

(นางริกาญจน์ นัครสกุลวิไล)

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
27	Polychlorinated biphenyls (PCBs) - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260 - 2-Chlorobiphenyl - 2,3-Dichlorobiphenyl - 2,2',5-Trichlorobiphenyl - 2,4',5-Trichlorobiphenyl - 2,2',3,5'-Tetrachlorobiphenyl - 2,2',5,5'-Tetrachlorobiphenyl - 2,3',4,4'-Tetrachlorobiphenyl - 2,2',3,4,5'-Pentachlorobiphenyl - 2,2',4,5,5'-Pentachlorobiphenyl - 2,3,3',4,6-Pentachlorobiphenyl - 2,2',3,4,4',5'-Hexachlorobiphenyl - 2,2',3,4,5,5'-Hexachlorobiphenyl - 2,2',3,5,5',6-Hexachlorobiphenyl - 2,2',4,4',5,5'-Hexachlorobiphenyl - 2,2',3,3',4,4',5-Heptachlorobiphenyl - 2,2',3,4,4',5,5'-Heptachlorobiphenyl - 2,2',3,4,4',5,6-Heptachlorobiphenyl - 2,2',3,4',5,5',6-Heptachlorobiphenyl - 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^(1,9,23) 2) Soxhlet Extraction, Gas Chromatographic Method ^(10,23) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22,31)

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28 Pentachlorophenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
28	Pentachlorophenol	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,25) 2) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22,31)
29	pH	Electrometric Method ^(29,30)
30	Selenium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,16) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
31	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,16)
32	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,16) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
33	Toxaphene	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,25) 2) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22,31)
34	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,16) 3) Digestion, Inductively Coupled Plasma Method ^(7,15)

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4) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
35	Zinc	4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16) 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,16) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)

ดิน จำนวน 125 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
2	Acetone	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
3	Aldrin	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
4	Anthracene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
5	Antimony	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)
6	Arsenic	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)
7	Atrazine	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
8	Barium	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)

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9 Benz(a)anthracene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
9	Benz(a)anthracene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
11	Benzo(b)fluoranthene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
12	Benzo(k)fluoranthene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
13	Benzoic acid	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
14	Benzo(a)pyrene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
15	Benzo(g,h,i)perylene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
16	Beryllium	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)
17	Bis(2-chloroethyl)ether	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
18	Bis(2-ethylhexyl)phthalate	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
21	Butanol	Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ^(12,24)
22	Butyl Benzyl Phthalate	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
23	Cadmium	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)
24	Carbazole	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
25	Carbon Disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)

วิมล
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26 Carbon tetrachloride...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
27	Chlordane	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
28	p-Chloroaniline	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
32	2-Chlorophenol	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
33	Chromium	1) Digestion, Inductively Coupled Plasma Method ^[7,15] 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^[7,16]
34	Chromium (III)	1) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,15,17] 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,16,17]
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method ^[8,17]
36	Chrysene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
37	Cyanide	Extraction, Distillation, Colorimetric Method ^[26,27,28]
38	2,4-D	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
39	DDD	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]


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40 DDE...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
40	DDE	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
41	DDT	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
42	Dibenz(a,h)anthracene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
43	Di-n-Butyl Phthalate	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
47	3,3-Dichlorobenzidine	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
53	2,4-Dichlorophenol	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[25,31]
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,24]


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57 Dieldrin...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
57	Dieldrin	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
58	Diethyl Phthalate	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
59	2,4-Dimethylphenol	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
60	2,4-Dinitrophenol	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
61	2,4-Dinitrotoluene	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
62	2,6-Dinitrotoluene	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
63	Di-n-Octyl Phthalate	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
64	Endosulfan	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
65	Endrin	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,24)
67	Fluoranthene	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
68	Fluorene	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
69	Heptachlor	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
70	Heptachlor Epoxide	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)

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71 Hexachlorobenzene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
71	Hexachlorobenzene	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,24)
73	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,24)
74	α -HCH	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
75	β -HCH	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
76	γ -HCH	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
77	Hexachlorocyclopentadiene	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
78	Hexachloroethane	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
79	Indeno(1,2,3-cd)pyrene	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
80	Isophorone	Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
81	Lead	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
82	Manganese	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽¹⁸⁾ 2) Thermal...

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2) Thermal...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
84	Methanol	2) Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry ⁽¹⁹⁾ 3) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ⁽²⁰⁾ Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ^(12,24)
85	Methoxychlor	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
86	Methyl Bromide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
87	Methylene Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
88	2-methylphenol	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
89	2-Methylnaphthalene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
90	Methyl tert-Butyl Ether	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
91	Naphthalene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
92	Nickel	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)
93	Nitrobenzene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
94	N-Nitrosodiphenylamine	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
95	N-Nitrosodi-n-propylamine	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
96	Polychlorinated biphenyls (PCBs) - Aroclor 1016 - Aroclor 1221 - Aroclor 1232	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,23) 2) Automated Soxhlet Extraction, Gas Chromatographic Method ^(23,32)

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- Aroclor 1242...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
	- Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260 - 2-Chlorobiphenyl - 2,2',3,5'-Tetrachlorobiphenyl - 2,2',5,5'-Tetrachlorobiphenyl - 2,3',4,4'-Tetrachlorobiphenyl - 2,2',3,4,5'-Pentachlorobiphenyl - 2,2',4,5,5'-Pentachlorobiphenyl - 2,3,3',4,6-Pentachlorobiphenyl - 2,2',3,4,4',5'-Hexachlorobiphenyl - 2,2',3,4,5,5'-Hexachlorobiphenyl - 2,2',3,5,5',6-Hexachlorobiphenyl - 2,2',4,4',5,5'-Hexachlorobiphenyl - 2,2',3,3',4,4',5-Heptachlorobiphenyl - 2,2',3,4,4',5,5'-Heptachlorobiphenyl - 2,2',3,4,4',5,6-Heptachlorobiphenyl - 2,2',3,4',5,5',6-Heptachlorobiphenyl - 2,2',3,3',4,4',5,6-Nonachlorobiphenyl	
97	Pentachlorophenol	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
98	Phenanthrene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
99	Phenol	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
100	Pyrene	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)

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และคณะผู้บริหาร

101 Selenium...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
101	Selenium	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)
102	Silver	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)
103	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
104	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
105	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
106	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
107	Toxaphene	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
108	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
109	TPH (C ₈ -C ₁₆)	1) Solvent Extraction, Gas Chromatographic Method ^(11,21) 2) Automated Soxhlet Extraction, Gas Chromatographic Method ^(21,31)
110	TPH (C ₁₆ -C ₃₅)	1) Solvent Extraction, Gas Chromatographic Method ^(11,21) 2) Automated Soxhlet Extraction, Gas Chromatographic Method ^(21,31)
111	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
112	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
113	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
114	Trichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
115	2,4,5-Trichlorophenol	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)

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116 2,4,6-Trichlorophenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
116	2,4,6-Trichlorophenol	Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(25,31)
117	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
118	Vanadium	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)
119	Vinyl Acetate	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
120	Vinyl Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
121	m-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
122	o-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
123	p-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
124	Xylene (Total)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(14,24)
125	Zinc	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,16)

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และทะเบียนห้องปฏิบัติการ

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบผลิตภัณฑ์และทะเบียนห้องปฏิบัติการ กองวิจัยและพัฒนาย้อมผลิตภัณฑ์โรงงาน กรมโรงงานอุตสาหกรรม โทร. ๐ ๒๒๐๒ ๔๐๐๒, ๔๑๔๖

ที่ อก ๐๓๑๐(๑)/ ๕๕ ๓ ๗ ๕



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๐ ๙ มีนาคม ๒๕๖๖

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๔ กุมภาพันธ์ ๒๕๖๖

ตามหนังสือที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ
เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์ ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑๙ ราย

๑) นายนคร สุขเจริญ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๖๑๒๒
๒) นายปัญญา นามเขตต์	ทะเบียนเลขที่ ๖-๒๐๔-จ-๖๑๒๓
๓) นายอรรถพล นิยมวิทยพันธ์	ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๐๘๗
๔) นางสาวพัชรียา หงษ์สมบัติ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๑๐๓
๕) นางสาวภาณิดา สุรวงศ์ตระกูล	ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๑๐๔
๖) นางสาวศรณีย์ ยิ่งดี	ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๕๐๙
๗) นายสมโภช วันสา	ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๕๑๙
๘) นายณัฐนันท์ ปานประเสริฐ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๕๑๙
๙) ว่าที่ร้อยตรีภาณุพงศ์ แสนศรี	ทะเบียนเลขที่ ๖-๒๐๔-จ-๗๕๓๖
๑๐) นายมนันท์ ทูลศิริ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๘๖๐๒
๑๑) นายณัฐดนัย เจือละออง	ทะเบียนเลขที่ ๖-๒๐๔-จ-๘๖๐๗
๑๒) นางสาวภาณุจนา คงคุณ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๙๐๒๙
๑๓) นางสาวรัชนิกร เนียมกลาง	ทะเบียนเลขที่ ๖-๒๐๔-จ-๙๐๓๗
๑๔) นางสาวกัญญารัตน์ ศรีนิลหา	ทะเบียนเลขที่ ๖-๒๐๔-จ-๙๐๓๘
๑๕) นายศิริวัฒน์ พานิชย์	ทะเบียนเลขที่ ๖-๒๐๔-จ-๙๐๔๑
๑๖) นางสาวกนกภรณ์ อูระ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๙๐๔๕
๑๗) นางสาวจิตสุภา ประเทืองสุข	ทะเบียนเลขที่ ๖-๒๐๔-จ-๙๐๔๗
๑๘) นางสาวอริสา วิริยขันติธรรม	ทะเบียนเลขที่ ๖-๒๐๔-จ-๙๐๔๘
๑๙) นางสาวพนิดา ยอดอินทร์	ทะเบียนเลขที่ ๖-๒๐๔-จ-๙๐๕๐

๒. ให้เพิ่มเจ้าหน้าที่

-๒-

๒. ให้เพิ่มเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๕ ราย

๑) นายกางบัณฑิต กิตติศุภวัฒน์	ทะเบียนเลขที่ ๖-๒๐๔-จ-๐๐๐๑
๒) นายภัทรพล สว่างใจธรรม	ทะเบียนเลขที่ ๖-๒๐๔-จ-๐๐๐๒
๓) นายณารัตน์ เทือกชัยคำ	ทะเบียนเลขที่ ๖-๒๐๔-จ-๐๐๐๓
๔) นายศิริโชค พงษ์ประสม	ทะเบียนเลขที่ ๖-๒๐๔-จ-๐๐๐๔
๕) นายณัฐวุฒิ ศิวังแพง	ทะเบียนเลขที่ ๖-๒๐๔-จ-๐๐๐๕

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ที่ อก ๐๓๑๐(๑)/๑๐๖๙ ลงวันที่ ๒๘ มกราคม ๒๕๖๙ คือในวันที่ ๒ กันยายน ๒๕๖๖ ทั้งนี้ สามารถยื่นคำขอ
ผ่านระบบอิเล็กทรอนิกส์ได้ทั้งหน้าเว็บไซต์กรมโรงงานอุตสาหกรรม ตาม QR Code หายหนังสือฉบับนี้

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

วิมล

(นางริกาณจน์ อัครสกุลวิไล)

นักวิทยาศาสตร์ชำนาญการพิเศษ วิชาการการแทน
ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัยและนวัตกรรม



ที่อก ๐๓๑๐(๑)/ ๖ ๑ ๒ ๕



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒ ๓ มีนาคม ๒๕๖๖

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๑๐ มีนาคม ๒๕๖๖

ตามหนังสือที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด
ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๕ สถานที่ตั้งเลขที่ ๑๐๕ ซอยพัฒนาการ ๕๐
ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากรของห้องปฏิบัติการ
วิเคราะห์ ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้เปลี่ยนแปลงชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการ
วิเคราะห์ จากเดิม นางสาวสารีศรี มงคลจิรวุฒิ ทะเบียนเลขที่ ๖-๒๐๕-จ-๔๗๑๙ เป็น นางสาวธัญญธร มงคลจิรวุฒิ
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ทั้งนี้ หากท่านมีความประสงค์จะยื่นคำขอใดๆ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์
ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม ตาม QR Code ท้ายหนังสือฉบับนี้

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายประสม คำรงพงษ์)

ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
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กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๙๔

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ยื่นคำขอผ่านระบบอิเล็กทรอนิกส์



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