

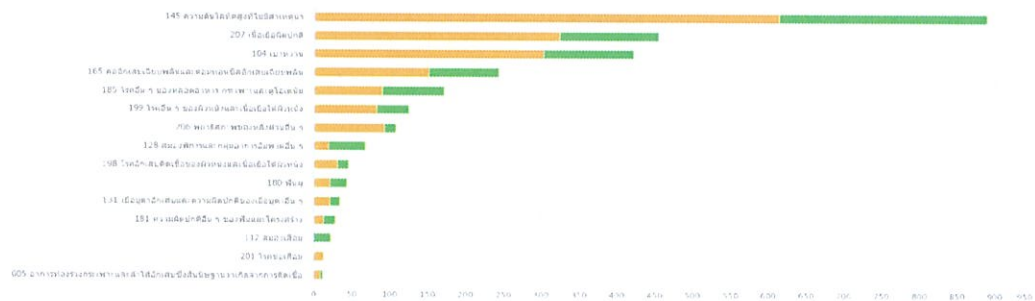
ภาคผนวก ข-38

ข้อมูลสถิติผู้ป่วยตามกลุ่มสาเหตุโรคจากหน่วยงานสาธารณสุข
ที่เกี่ยวข้อง

สาเหตุการป่วยของผู้ป่วยนอกตามกลุ่มโรค 10 อันดับแรก จังหวัดสระบุรี อำเภอเสาไห้ โรงพยาบาลส่งเสริมสุขภาพตำบลหัวปลวก ปี พ.ศ. 2565

ชื่อกลุ่ม (298โรค)	ชาย	หญิง	รวม
145 ความดันโลหิตสูงที่ไม่มีสาเหตุ	196	477	673
167 การติดเชื้อของทางเดินหายใจส่วนบนแบบเฉียบพลันอื่น ๆ	226	261	487
104 เบาหวาน	153	332	485
199 โรคอื่น ๆ ของผิวหนังและเนื้อเยื่อใต้ผิวหนัง	123	208	331
207 เนื้อเยื่อผิดปกติ	124	176	300
185 โรคอื่น ๆ ของหลอดเลือดอาหาร กระเพาะและลำไส้เล็ก	65	120	185
115 จิตเภท พฤติกรรมแบบจิตเภทและความหลงผิด	12	94	106
203 ความผิดปกติอื่น ๆ ของข้อ	32	61	93
005 อาการท้องร่วงกระเพาะและลำไส้เล็กเฉียบพลันซึ่งสันนิษฐานว่าเกิดจากการติดเชื้อ	39	39	78
131 เชื้อราอักเสบและความผิดปกติของเยื่อตาอื่น ๆ	23	29	52
198 โรคอักเสบติดเชื้อของผิวหนังและเนื้อเยื่อใต้ผิวหนัง	16	26	42
165 คออักเสบเฉียบพลันและต่อมทอนซิลอักเสบเฉียบพลัน	13	21	34
206 พยาธิสภาพของหลังส่วนอื่น ๆ	9	18	27
192 โรคอื่น ๆ ของลำไส้และเยื่อช่องท้อง	7	16	23
181 ความผิดปกติอื่น ๆ ของฟันและโครงสร้าง	2	18	20
รวม	1,040	1,896	2,936

สาเหตุการป่วยของผู้ป่วยนอกตามกลุ่มโรค 10 อันดับแรก จังหวัดสระบุรี อำเภอเสาไห้ โรงพยาบาลส่งเสริมสุขภาพตำบลหัวปลวก ปี 2565

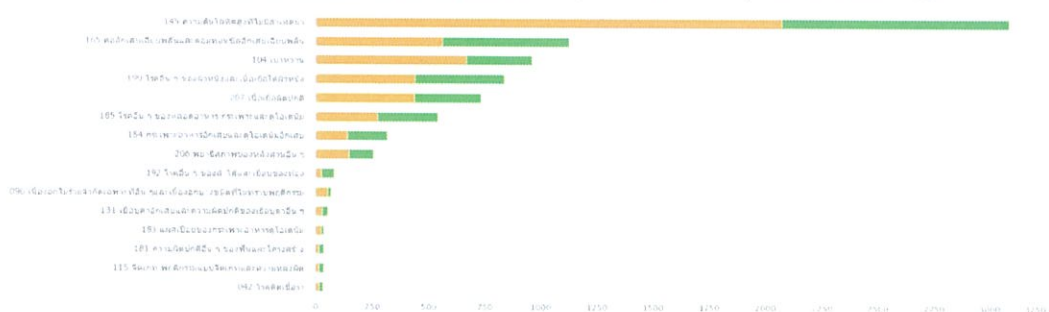


ที่มา : ระบบ Health Data Center กระทรวงสาธารณสุข, <https://hdcservice.moph.go.th/hdc/main/index.php>, สืบค้นข้อมูลเมื่อวันที่ 10 มกราคม 2566

สาเหตุการป่วยของผู้ป่วยนอกตามกลุ่มโรค 10 อันดับแรก จังหวัดสระบุรี อำเภอพระพุทธบาท โรงพยาบาลส่งเสริมสุขภาพตำบลห้วยป่าหวาย ปี พ.ศ. 2565

ชื่อกลุ่ม (298โรค)	ชาย	หญิง	รวม
145 ความดันโลหิตสูงที่ไม่มีสาเหตุ	1,012	2,074	3,086
165 คออักเสบเฉียบพลันและต่อมทอนซิลอักเสบเฉียบพลัน	565	560	1,125
104 เบาหวาน	293	668	961
199 โรคอื่น ๆ ของผิวหนังและเนื้อเยื่อใต้ผิวหนัง	399	439	838
207 เนื้อเยื่อผิดปกติ	294	438	732
185 โรคอื่น ๆ ของหลอดเลือดอาหาร กระเพาะและลำไส้เล็ก	264	277	541
184 กระเพาะอาหารอักเสบและลำไส้เล็กอักเสบ	176	140	316
206 พยาธิสภาพของหลังส่วนอื่น ๆ	108	148	256
192 โรคอื่น ๆ ของลำไส้และเยื่อช่องท้อง	53	29	82
096 เนื่องจากไม่รู้จักสาเหตุเฉพาะที่อื่น ๆ และเนื่องจากบางชนิดที่ไม่ทราบพฤติกรรม	16	54	70
131 เชื้อราอักเสบและความผิดปกติของเยื่อตาอื่น ๆ	24	32	56
183 แผลเปื่อยของกระเพาะอาหารลำไส้เล็ก	13	26	39
181 ความผิดปกติอื่น ๆ ของฟันและโครงสร้าง	21	17	38
115 จิตเภท พฤติกรรมแบบจิตเภทและความหลงผิด	19	18	37
042 โรคติดเชื้อรา	20	16	36
รวม	3,277	4,936	8,213

สาเหตุการป่วยของผู้ป่วยนอกตามกลุ่มโรค 10 อันดับแรก จังหวัดสระบุรี อำเภอพระพุทธบาท โรงพยาบาลส่งเสริมสุขภาพตำบลห้วยป่าหวาย ปี 2565



ที่มา : ระบบ Health Data Center กระทรวงสาธารณสุข, <https://hdcservice.moph.go.th/hdc/main/index.php>, สืบค้นข้อมูลเมื่อวันที่ 10 มกราคม 2566

ภาคผนวก ค

ใบรับรองผลการตรวจวิเคราะห์

ภาคผนวก ค-1

คุณภาพอากาศในบรรยากาศ



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

Page 1 of 21

Sample Number 2279288-1
Sampled Date Jul 15, 2022
Sample Description Air Quality
Location รังนก (A1) (GPS 47P 0697324, 1615137)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	15/07/22 - 16/07/22	mg/m3	-	0.005	0.020	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	15/07/22 - 16/07/22	mg/m3	-	0.005	0.047	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	15/07/22 - 16/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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

Remark :

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- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Approved by

Sawitree N.

Sawitree Naisangiam
Manager

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Analysis / Test Report

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

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Sample Number 2279288-2
Sampled Date Jul 16, 2022
Sample Description Air Quality
Location รังนก (A1) (GPS 47P 0697324, 1615137)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	16/07/22 - 17/07/22	mg/m3	-	0.005	0.019	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	16/07/22 - 17/07/22	mg/m3	-	0.005	0.041	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	16/07/22 - 17/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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

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Sawitree Naisangiam
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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

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Sample Number 2279288-3
Sampled Date Jul 17, 2022
Sample Description Air Quality
Location กรุงเทพมหานคร (A1) (GPS 47P 0697324, 1615137)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	17/07/22 - 18/07/22	mg/m3	-	0.005	0.016	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	17/07/22 - 18/07/22	mg/m3	-	0.005	0.036	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	17/07/22 - 18/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

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

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Sawitree Nolsangiam
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P/O : 403380
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Project Location :



TESTING
No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

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Sample Number 2279288-4
Sampled Date Jul 18, 2022
Sample Description Air Quality
Location กรุงเทพมหานคร (A1) (GPS 47P 0697324, 1615137)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	18/07/22 - 19/07/22	mg/m3	-	0.005	0.024	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	18/07/22 - 19/07/22	mg/m3	-	0.005	0.047	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	18/07/22 - 19/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

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

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Project Location :



TESTING
No.0009

Lot ID: 2279288

Date Received : Jul 25, 2022

Date Reported : Aug 06, 2022

Report Number : 2357506-1

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Sample Number	2279288-S
Sampled Date	Jul 19, 2022
Sample Description	Air Quality
Location	วัดเทพศิรินทร์ (A1) (GPS 47P 0697324, 1615137)
Date Analysis Commenced	Jul 26, 2022
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	19/07/22 - 20/07/22	mg/m3	-	0.005	0.015	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	19/07/22 - 20/07/22	mg/m3	-	0.005	0.036	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	19/07/22 - 20/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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Project Name :

Project Location :



TESTING
No.0009

Lot ID: 2279288

Date Received : Jul 25, 2022

Date Reported : Aug 06, 2022

Report Number : 2357506-1

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Sample Number	2279288-6
Sampled Date	Jul 20, 2022
Sample Description	Air Quality
Location	วัดเทพศิรินทร์ (A1) (GPS 47P 0697324, 1615137)
Date Analysis Commenced	Jul 26, 2022
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	20/07/22 - 21/07/22	mg/m3	-	0.005	0.011	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	20/07/22 - 21/07/22	mg/m3	-	0.005	0.025	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	20/07/22 - 21/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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

Sampled By : Teeravut Sukdee

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P/O : 403380

Project Name :

Project Location :



TESTING
No.0009

Lot ID: 2279288

Date Received : Jul 25, 2022

Date Reported : Aug 06, 2022

Report Number : 2357506-1

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Sample Number	2279288-7
Sampled Date	Jul 21, 2022
Sample Description	Air Quality
Location	วัดป่าพิชัยพรต (A1) (GPS 47P 0697324, 1615137)
Date Analysis Commenced	Jul 26, 2022
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure	754 mmHg
Atmospheric Temperature	30.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	21/07/22 - 22/07/22	mg/m3	-	0.005	0.012	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	21/07/22 - 22/07/22	mg/m3	-	0.005	0.025	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	21/07/22 - 22/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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

Sampled By : Teeravut Sukdee

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Approved by

Sawitree N.

Sawitree Noisangiam
Manager

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Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :



TESTING
No.0009

Lot ID: 2279288

Date Received : Jul 25, 2022

Date Reported : Aug 06, 2022

Report Number : 2357506-1

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Sample Number	2279288-8
Sampled Date	Jul 15, 2022
Sample Description	Air Quality
Location	บ้านพรต (A2) (GPS 47P 0696687, 1616593)
Date Analysis Commenced	Jul 26, 2022
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure	754 mmHg
Atmospheric Temperature	33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	15/07/22 - 16/07/22	mg/m3	-	0.005	0.025	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	15/07/22 - 16/07/22	mg/m3	-	0.005	0.040	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	15/07/22 - 16/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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

Sampled By : Teeravut Sukdee

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TESTING
No.0009

Lot ID: 2279288

Date Received : Jul 25, 2022

Date Reported : Aug 06, 2022

Report Number : 2357506-1

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Sample Number 2279288-9
Sampled Date Jul 16, 2022
Sample Description Air Quality
Location บ้านนาหว้า (A2) (GPS 47P 0696687, 1616593)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	16/07/22 - 17/07/22	mg/m3	-	0.005	0.023	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	16/07/22 - 17/07/22	mg/m3	-	0.005	0.043	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	16/07/22 - 17/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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Sampled By : Teeravut Sukdee

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P/O : 403380

Project Name :

Project Location :

Sample Number 2279288-10
Sampled Date Jul 17, 2022
Sample Description Air Quality
Location บ้านนาหว้า (A2) (GPS 47P 0696687, 1616593)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	17/07/22 - 18/07/22	mg/m3	-	0.005	0.019	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	17/07/22 - 18/07/22	mg/m3	-	0.005	0.032	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	17/07/22 - 18/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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Sampled By : Teeravut Sukdee

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Project Name :
Project Location :

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

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Sample Number 2279288-11
Sampled Date Jul 18, 2022
Sample Description Air Quality
Location บ้านนา (A2) (GPS 47P 0696687, 1616593)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	18/07/22 - 19/07/22	mg/m3	-	0.005	0.024	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	18/07/22 - 19/07/22	mg/m3	-	0.005	0.043	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	18/07/22 - 19/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :
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Project Name :
Project Location :

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

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Sample Number 2279288-12
Sampled Date Jul 19, 2022
Sample Description Air Quality
Location บ้านนา (A2) (GPS 47P 0696687, 1616593)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	19/07/22 - 20/07/22	mg/m3	-	0.005	0.016	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	19/07/22 - 20/07/22	mg/m3	-	0.005	0.032	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	19/07/22 - 20/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :
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TESTING
No.0009

Lot ID: 2279288

Date Received : Jul 25, 2022

Date Reported : Aug 06, 2022

Report Number : 2357506-1

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Sample Number	2279288-13
Sampled Date	Jul 20, 2022
Sample Description	Air Quality
Location	บ้านพลู (A2) (GPS 47P 0696687, 1616593)
Date Analysis Commenced	Jul 26, 2022
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	20/07/22 - 21/07/22	mg/m3	-	0.005	0.010	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	20/07/22 - 21/07/22	mg/m3	-	0.005	0.020	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	20/07/22 - 21/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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

Sampled By : Teeravut Sukdee

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Sawitree Nisangiam
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Project Location :



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Lot ID: 2279288

Date Received : Jul 25, 2022

Date Reported : Aug 06, 2022

Report Number : 2357506-1

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Sample Number	2279288-14
Sampled Date	Jul 21, 2022
Sample Description	Air Quality
Location	บ้านพลู (A2) (GPS 47P 0696687, 1616593)
Date Analysis Commenced	Jul 26, 2022
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure	754 mmHg
Atmospheric Temperature	30.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	21/07/22 - 22/07/22	mg/m3	-	0.005	0.013	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	21/07/22 - 22/07/22	mg/m3	-	0.005	0.021	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	21/07/22 - 22/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
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Sample Number 2279288-15
Sampled Date Jul 15, 2022
Sample Description Air Quality
Location บ้านอ่าวน้ำเหือง (A3) (GPS 47P 0695360, 1615739)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	15/07/22 - 16/07/22	mg/m3	-	0.005	0.024	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	15/07/22 - 16/07/22	mg/m3	-	0.005	0.040	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	15/07/22 - 16/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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Sampled By : Teeravut Sukdee

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No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

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Sample Number 2279288-16
Sampled Date Jul 16, 2022
Sample Description Air Quality
Location บ้านอ่าวน้ำเหือง (A3) (GPS 47P 0695360, 1615739)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 33.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	16/07/22 - 17/07/22	mg/m3	-	0.005	0.016	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	16/07/22 - 17/07/22	mg/m3	-	0.005	0.036	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	16/07/22 - 17/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :

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Sampled By : Teeravut Sukdee

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Project Name :
Project Location :

Lot ID: 2279288
Date Received : Jul 25, 2022
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Sample Number	2279288-17								
Sampled Date	Jul 17, 2022								
Sample Description	Air Quality								
Location	วัดหนองจันทน์ (A3) (GPS 47P 0695360, 1615739)								
Date Analysis Commenced	Jul 26, 2022								
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag								
Barometric Pressure	754 mmHg								
Atmospheric Temperature	33.0 °C								
Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	17/07/22 - 18/07/22	mg/m3	-	0.005	0.014	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	17/07/22 - 18/07/22	mg/m3	-	0.005	0.030	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	17/07/22 - 18/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

Guideline :
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Sampled By : Teeravut Sukdee

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Manager

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11966-21



Analysis / Test Report



TESTING
No.0009

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

Page 18 of 21

Sample Number	2279288-18								
Sampled Date	Jul 18, 2022								
Sample Description	Air Quality								
Location	วัดหนองจันทน์ (A3) (GPS 47P 0695360, 1615739)								
Date Analysis Commenced	Jul 26, 2022								
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag								
Barometric Pressure	754 mmHg								
Atmospheric Temperature	33.0 °C								
Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	18/07/22 - 19/07/22	mg/m3	-	0.005	0.020	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	18/07/22 - 19/07/22	mg/m3	-	0.005	0.040	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	18/07/22 - 19/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

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

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.

Approved by

Sawitree N.

Sawitree Nisangiam
Manager

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Sachai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

Page 19 of 21

Sample Number 2279288-19
Sampled Date Jul 19, 2022
Sample Description Air Quality
Location ร่มหลวงผาแดง (A3) (GPS 47P 0695360, 1615739)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/Time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	19/07/22 - 20/07/22	mg/m3	-	0.005	0.013	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	19/07/22 - 20/07/22	mg/m3	-	0.005	0.031	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	19/07/22 - 20/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

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

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Approved by

Sawitree N.

Sawitree Noisangiam
Manager

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9 Moo 5, Teennoen Rd., Huapluk, Sachai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

Page 20 of 21

Sample Number 2279288-20
Sampled Date Jul 20, 2022
Sample Description Air Quality
Location ร่มหลวงผาแดง (A3) (GPS 47P 0695360, 1615739)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/Time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	20/07/22 - 21/07/22	mg/m3	-	0.005	0.010	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	20/07/22 - 21/07/22	mg/m3	-	0.005	0.018	0.33	US EPA 40 CFR Part 50, Appendix B	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	20/07/22 - 21/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

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

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Approved by

Sawitree N.

Sawitree Noisangiam
Manager

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279288
Date Received : Jul 25, 2022
Date Reported : Aug 06, 2022
Report Number : 2357506-1

Sample Number 2279288-21
Sampled Date Jul 21, 2022
Sample Description Air Quality
Location ฟาร์มเลี้ยงหมู (A3) (GPS 47P 0695360, 1615739)
Date Analysis Commenced Jul 26, 2022
Condition of Sample Drawn into one glass filter paper (8x10 inch) placed in plastic bag, one quartz filter paper (8x10 inch) placed in plastic bag
Barometric Pressure 754 mmHg
Atmospheric Temperature 30.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Particulate matter as PM 10	21/07/22 - 22/07/22	mg/m3	-	0.005	0.009	0.12	US EPA 40 CFR Part 50, Appendix J	NEB No.24 Bangkok	
Total Suspended Particulate	21/07/22 - 22/07/22	mg/m3	-	0.005	0.015	0.33	US EPA 40 CFR Part 50, Appendix 8	NEB No.24 Bangkok	
Metals Testing									
Iron as FeO2 *	21/07/22 - 22/07/22	mg/m3	-	0.02	<0.02	No Standard	Based on US EPA, IO Compendium Method IO-3.4	-	Bangkok

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

Remark :
- LOD : Limit of Detection
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Approved by

Sawitree N.

Sawitree Naisangiam
Manager

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Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 2279287
Date Received : Jul 25, 2022
Date Reported : Aug 01, 2022
Report Number: 2391021-1

Page 1 of 1

Sample Description	Air Quality						
Location	ฟาร์มเลี้ยงหมู (A1) (GPS 47P 0697324, 1615137)						
Parameter	Nitrogen dioxide (ppm)						
Measurement Date	Jul 15, 2022 - Jul 22, 2022						
Measurement by	Teeravut Sukdee						
Time	2279287-1 Jul 15, 2022	2279287-2 Jul 16, 2022	2279287-3 Jul 17, 2022	2279287-4 Jul 18, 2022	2279287-5 Jul 19, 2022	2279287-6 Jul 20, 2022	2279287-7 Jul 21, 2022
12:00 PM - 01:00 PM	0.004	0.003	0.004	0.004	0.004	0.004	0.005
01:00 PM - 02:00 PM	0.003	0.002	0.002	0.002	0.003	0.003	0.004
02:00 PM - 03:00 PM	0.002	0.002	0.004	0.002	0.002	0.002	0.005
03:00 PM - 04:00 PM	0.002	0.002	0.003	0.002	0.002	0.001	0.005
04:00 PM - 05:00 PM	0.002	0.003	0.002	0.002	0.002	0.005	0.004
05:00 PM - 06:00 PM	0.001	0.004	0.002	0.001	0.002	0.009	0.004
06:00 PM - 07:00 PM	0.002	0.007	0.003	0.002	0.002	0.008	0.007
07:00 PM - 08:00 PM	0.005	0.006	0.005	0.002	0.005	0.007	0.008
08:00 PM - 09:00 PM	0.006	0.005	0.010	0.006	0.008	0.007	0.008
09:00 PM - 10:00 PM	0.005	0.005	0.008	0.010	0.004	0.005	0.007
10:00 PM - 11:00 PM	0.005	0.006	0.003	0.009	0.002	0.006	0.006
11:00 PM - 12:00 AM	0.005	0.006	0.004	0.008	0.004	0.007	0.006
12:00 AM - 01:00 AM	0.004	0.004	0.004	0.010	0.005	0.004	0.005
01:00 AM - 02:00 AM	0.004	0.003	0.004	0.009	0.005	0.003	0.004
02:00 AM - 03:00 AM	0.004	0.002	0.004	0.008	0.003	0.003	0.004
03:00 AM - 04:00 AM	0.004	0.002	0.006	0.008	0.003	0.003	0.004
04:00 AM - 05:00 AM	0.004	0.002	0.006	0.006	0.003	0.003	0.003
05:00 AM - 06:00 AM	0.004	0.003	0.005	0.005	0.004	0.003	0.003
06:00 AM - 07:00 AM	0.005	0.004	0.006	0.005	0.004	0.003	0.004
07:00 AM - 08:00 AM	0.004	0.004	0.005	0.005	0.004	0.003	0.004
08:00 AM - 09:00 AM	0.004	0.004	0.006	0.005	0.005	0.004	0.004
09:00 AM - 10:00 AM	0.004	0.004	0.005	0.005	0.006	0.004	0.004
10:00 AM - 11:00 AM	0.003	0.004	0.004	0.005	0.004	0.006	0.004
11:00 AM - 12:00 PM	0.003	0.004	0.004	0.006	0.004	0.010	0.004
Average	0.004	0.004	0.005	0.005	0.004	0.005	0.005
1hr - Maximum	0.006	0.007	0.010	0.010	0.008	0.010	0.008
Standard 1hr - Average	0.170	0.170	0.170	0.170	0.170	0.170	0.170

Standard : Notification of the National Environmental Board No. 33, 2009 (B.E. 2552).
Reference Method : US EPA Method Part 50 App. F (Chemiluminescence)

Approved by

Sararat

Sararat Mongkonjirawat
Supervisor

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 2279287
Date Received : Jul 25, 2022
Date Reported : Aug 01, 2022
Report Number: 2391031-1

Page 1 of 1

Sample Description	Air Quality						
Location	หน้างาน (A2) (GPS 47P 0696687, 1616593)						
Parameter	Nitrogen dioxide (ppm)						
Measurement Date	Jul 15, 2022 - Jul 22, 2022						
Measurement by	Teeravut Sukdee						
Time	2279287-8 Jul 15, 2022	2279287-9 Jul 16, 2022	2279287-10 Jul 17, 2022	2279287-11 Jul 18, 2022	2279287-12 Jul 19, 2022	2279287-13 Jul 20, 2022	2279287-14 Jul 21, 2022
10:00 AM - 11:00 AM	0.006	0.006	0.006	0.005	0.004	0.006	0.006
11:00 AM - 12:00 PM	0.008	0.006	0.005	0.004	0.004	0.005	0.006
12:00 PM - 01:00 PM	0.008	0.004	0.011	0.004	0.004	0.004	0.007
01:00 PM - 02:00 PM	0.009	0.004	0.010	0.004	0.004	0.004	0.008
02:00 PM - 03:00 PM	0.007	0.004	0.006	0.004	0.004	0.012	0.007
03:00 PM - 04:00 PM	0.007	0.007	0.005	0.004	0.004	0.011	0.009
04:00 PM - 05:00 PM	0.006	0.008	0.007	0.004	0.004	0.012	0.012
05:00 PM - 06:00 PM	0.007	0.008	0.007	0.004	0.005	0.012	0.016
06:00 PM - 07:00 PM	0.008	0.007	0.008	0.005	0.006	0.011	0.014
07:00 PM - 08:00 PM	0.008	0.008	0.009	0.006	0.005	0.008	0.013
08:00 PM - 09:00 PM	0.008	0.008	0.005	0.010	0.005	0.010	0.011
09:00 PM - 10:00 PM	0.009	0.009	0.006	0.010	0.006	0.009	0.012
10:00 PM - 11:00 PM	0.009	0.008	0.006	0.011	0.007	0.006	0.010
11:00 PM - 12:00 AM	0.010	0.006	0.008	0.012	0.008	0.005	0.010
12:00 AM - 01:00 AM	0.010	0.008	0.007	0.011	0.008	0.006	0.010
01:00 AM - 02:00 AM	0.010	0.007	0.010	0.012	0.005	0.006	0.013
02:00 AM - 03:00 AM	0.010	0.005	0.010	0.011	0.006	0.007	0.013
03:00 AM - 04:00 AM	0.010	0.007	0.009	0.010	0.006	0.007	0.012
04:00 AM - 05:00 AM	0.011	0.010	0.010	0.010	0.010	0.007	0.013
05:00 AM - 06:00 AM	0.011	0.012	0.008	0.011	0.010	0.007	0.014
06:00 AM - 07:00 AM	0.011	0.015	0.009	0.010	0.014	0.010	0.014
07:00 AM - 08:00 AM	0.009	0.013	0.009	0.007	0.013	0.011	0.012
08:00 AM - 09:00 AM	0.007	0.009	0.007	0.007	0.009	0.014	0.012
09:00 AM - 10:00 AM	0.006	0.006	0.006	0.006	0.008	0.013	0.007
Average	0.009	0.008	0.008	0.008	0.007	0.008	0.011
1hr - Maximum	0.011	0.015	0.011	0.012	0.014	0.014	0.016
Standard 1hr - Average	0.170	0.170	0.170	0.170	0.170	0.170	0.170
Standard	: Notification of the National Environment Board No. 33, 2009 (B.E. 2552).						
Reference Method	: US EPAMethod Part 50 App. F (Chemiluminescence)						

Approved by

Sararat Mongkonjirawut
Supervisor

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 2279287
Date Received : Jul 25, 2022
Date Reported : Aug 01, 2022
Report Number: 2391034-1

Page 1 of 1

Sample Description	Air Quality						
Location	หน้างาน (A3) (GPS 47P 0695360, 1615739)						
Parameter	Nitrogen dioxide (ppm)						
Measurement Date	Jul 15, 2022 - Jul 22, 2022						
Measurement by	Teeravut Sukdee						
Time	2279287-15 Jul 15, 2022	2279287-16 Jul 16, 2022	2279287-17 Jul 17, 2022	2279287-18 Jul 18, 2022	2279287-19 Jul 19, 2022	2279287-20 Jul 20, 2022	2279287-21 Jul 21, 2022
11:00 AM - 12:00 PM	0.011	0.014	0.008	0.007	0.007	0.006	0.006
12:00 PM - 01:00 PM	0.015	0.016	0.009	0.008	0.008	0.008	0.007
01:00 PM - 02:00 PM	0.018	0.017	0.010	0.009	0.010	0.009	0.006
02:00 PM - 03:00 PM	0.017	0.014	0.011	0.010	0.010	0.009	0.006
03:00 PM - 04:00 PM	0.016	0.014	0.011	0.010	0.011	0.010	0.007
04:00 PM - 05:00 PM	0.017	0.015	0.010	0.011	0.012	0.010	0.006
05:00 PM - 06:00 PM	0.016	0.014	0.010	0.011	0.010	0.008	0.006
06:00 PM - 07:00 PM	0.020	0.014	0.009	0.010	0.011	0.008	0.006
07:00 PM - 08:00 PM	0.022	0.013	0.007	0.010	0.010	0.008	0.006
08:00 PM - 09:00 PM	0.020	0.013	0.007	0.010	0.008	0.008	0.006
09:00 PM - 10:00 PM	0.016	0.010	0.007	0.009	0.007	0.007	0.006
10:00 PM - 11:00 PM	0.012	0.008	0.006	0.009	0.006	0.007	0.006
11:00 PM - 12:00 AM	0.010	0.007	0.006	0.009	0.006	0.006	0.005
12:00 AM - 01:00 AM	0.009	0.006	0.005	0.008	0.005	0.006	0.005
01:00 AM - 02:00 AM	0.009	0.006	0.005	0.007	0.005	0.005	0.005
02:00 AM - 03:00 AM	0.010	0.005	0.005	0.006	0.005	0.006	0.004
03:00 AM - 04:00 AM	0.009	0.005	0.005	0.006	0.004	0.006	0.004
04:00 AM - 05:00 AM	0.008	0.005	0.005	0.005	0.004	0.005	0.004
05:00 AM - 06:00 AM	0.007	0.005	0.005	0.004	0.004	0.005	0.004
06:00 AM - 07:00 AM	0.008	0.006	0.005	0.004	0.004	0.005	0.004
07:00 AM - 08:00 AM	0.008	0.006	0.004	0.004	0.004	0.005	0.004
08:00 AM - 09:00 AM	0.009	0.006	0.005	0.005	0.004	0.005	0.004
09:00 AM - 10:00 AM	0.010	0.006	0.005	0.005	0.004	0.005	0.004
10:00 AM - 11:00 AM	0.012	0.007	0.006	0.006	0.005	0.005	0.004
Average	0.013	0.010	0.007	0.008	0.007	0.007	0.005
1hr - Maximum	0.022	0.017	0.011	0.011	0.012	0.010	0.007
Standard 1hr - Average	0.170	0.170	0.170	0.170	0.170	0.170	0.170
Standard	: Notification of the National Environment Board No. 33, 2009 (B.E. 2552).						
Reference Method	: US EPAMethod Part 50 App. F (Chemiluminescence)						

Approved by

Sararat Mongkonjirawut
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Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Lot ID : 2279289

Date Received : Jul 25, 2022

Date Reported : Aug 03, 2022

Report Number : 2357508-1

Page 1 of 2

Sample Number 2279289-1 to 7

Parameter Wind Speed / Wind Direction

Location รังสิตพืชมงคล (A1) (GPS 47P 0697324, 1615137)

Sampling Date Jul 15 - Jul 22, 2022

Sampling by Teeravut Sukdee

Time	Jul 15 - Jul 16, 2022			Jul 16 - Jul 17, 2022			Jul 17 - Jul 18, 2022			Jul 18 - Jul 19, 2022			Jul 19 - Jul 20, 2022			Jul 20 - Jul 21, 2022			Jul 21 - Jul 22, 2022		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
12:00 PM - 01:00 PM	1.3	176.0	S	1.4	174.0	S	0.8	229.0	SW	0.3	251.0	WSW	1.1	271.0	W	1.3	341.0	NNW	0.0	-	-
01:00 PM - 02:00 PM	1.3	244.0	WSW	1.5	235.0	SW	0.9	240.0	WSW	1.0	243.0	WSW	2.9	292.0	WNW	0.1	-	-	1.8	204.0	SSW
02:00 PM - 03:00 PM	0.2	-	-	0.7	246.0	WSW	0.4	232.0	SW	0.5	291.0	WNW	0.7	253.0	WSW	1.1	241.0	WSW	0.5	217.0	SW
03:00 PM - 04:00 PM	0.6	197.0	SSW	0.0	-	-	0.5	252.0	WSW	0.9	266.0	W	1.0	233.0	SW	0.4	1.0	N	0.0	-	-
04:00 PM - 05:00 PM	1.2	222.0	SW	0.0	-	-	0.3	253.0	WSW	0.9	255.0	WSW	0.5	218.0	SW	0.7	26.0	NNE	0.0	-	-
05:00 PM - 06:00 PM	1.3	184.0	S	0.7	179.0	S	0.3	264.0	W	0.6	252.0	WSW	0.6	210.0	SSW	0.0	-	-	0.0	-	-
06:00 PM - 07:00 PM	0.0	-	-	0.8	192.0	SSW	0.0	-	-	0.0	-	-	0.1	-	-	0.0	-	-	0.0	-	-
07:00 PM - 08:00 PM	0.6	179.0	S	0.9	185.0	S	0.0	-	-	0.0	-	-	2.9	178.0	S	0.7	104.0	ESE	0.7	179.0	S
08:00 PM - 09:00 PM	0.9	176.0	S	1.5	178.0	S	0.9	188.0	S	0.0	-	-	2.2	198.0	SSW	0.0	-	-	0.4	176.0	S
09:00 PM - 10:00 PM	0.4	178.0	S	0.7	186.0	S	0.0	-	-	0.0	-	-	0.4	256.0	WSW	0.0	-	-	0.6	178.0	S
10:00 PM - 11:00 PM	0.6	176.0	S	0.8	255.0	WSW	0.5	182.0	S	1.0	179.0	S	0.0	-	-	4.8	167.0	SSE	1.1	173.0	S
11:00 PM - 12:00 AM	0.3	179.0	S	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	1.7	171.0	S	0.1	-	-
12:00 AM - 01:00 AM	0.2	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.8	165.0	SSE	0.6	247.0	WSW	0.5	181.0	S
01:00 AM - 02:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.2	-	-	0.0	-	-	0.9	185.0	S	0.4	179.0	S
02:00 AM - 03:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.3	179.0	S
03:00 AM - 04:00 AM	0.0	-	-	0.7	208.0	SSW	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.3	179.0	S
04:00 AM - 05:00 AM	0.0	-	-	0.0	-	-	0.3	178.0	S	0.0	-	-	0.0	-	-	0.4	178.0	S	0.0	-	-
05:00 AM - 06:00 AM	0.0	-	-	0.0	-	-	0.2	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
06:00 AM - 07:00 AM	0.5	179.0	S	0.0	-	-	0.7	179.0	S	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
07:00 AM - 08:00 AM	0.3	176.0	S	0.0	-	-	0.3	232.0	SW	1.3	173.0	S	0.2	-	-	1.1	172.0	S	1.1	177.0	S
08:00 AM - 09:00 AM	1.2	177.0	S	0.0	-	-	0.6	202.0	SSW	0.0	-	-	0.6	173.0	S	0.2	-	-	0.8	183.0	S
09:00 AM - 10:00 AM	1.4	179.0	S	0.9	184.0	S	1.8	229.0	SW	0.9	200.0	SSW	0.0	-	-	0.7	181.0	S	1.8	181.0	S
10:00 AM - 11:00 AM	1.4	227.0	SW	0.8	183.0	S	0.9	313.0	NW	0.6	260.0	W	0.6	255.0	WSW	1.2	174.0	S	0.7	180.0	S
11:00 AM - 12:00 PM	1.4	243.0	WSW	0.6	197.0	SSW	1.2	250.0	WSW	1.6	260.0	W	0.4	242.0	WSW	0.3	232.0	SW	0.5	180.0	S

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

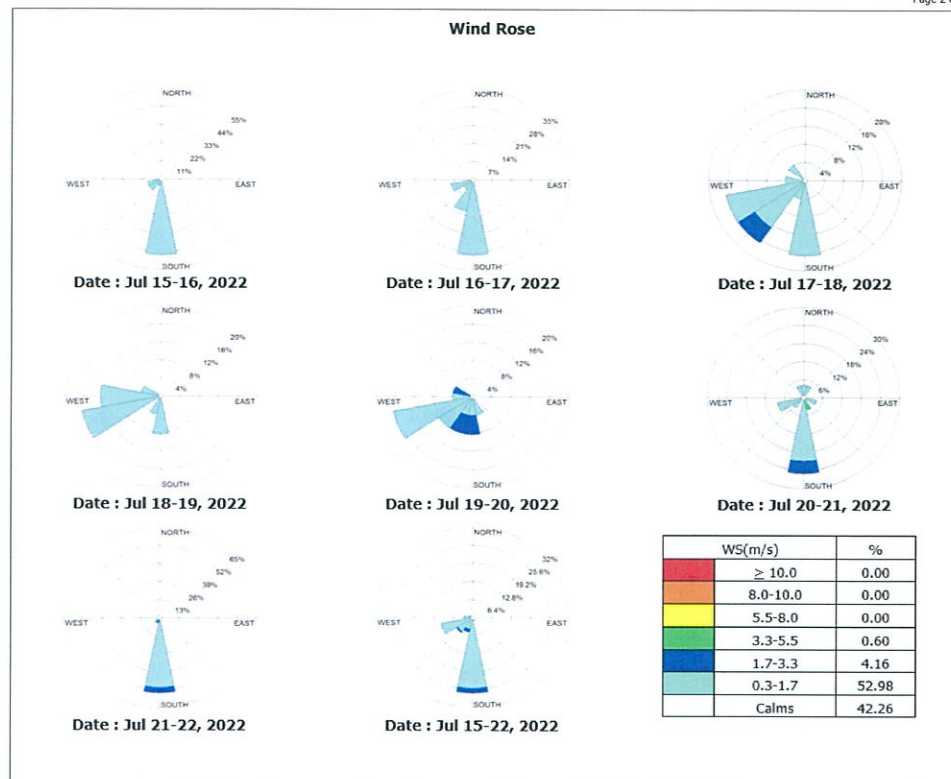
Lot ID : 2279289

Date Received : Jul 25, 2022

Date Reported : Aug 03, 2022

Report Number : 2357508-1

Page 2 of 2



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Assistant General Manager

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Sarayuth Jittrant
Assistant General Manager



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluak, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID : 2279289
Date Received : Jul 25, 2022
Date Reported : Aug 03, 2022
Report Number : 2357508-1

Page 1 of 2

Sample Number : 2279289-8 to 14
Parameter : Wind Speed / Wind Direction
Location : บ้านแพะ (A2) (GPS 47P 0696687, 1616593)
Sampling Date : Jul 15 - Jul 22, 2022
Sampling by : Teeravut Sukdee

Time	Jul 15 - Jul 16, 2022			Jul 16 - Jul 17, 2022			Jul 17 - Jul 18, 2022			Jul 18 - Jul 19, 2022			Jul 19 - Jul 20, 2022			Jul 20 - Jul 21, 2022			Jul 21 - Jul 22, 2022		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
10:00 AM - 11:00 AM	2.6	178.0	S	3.0	202.0	SSW	1.5	204.0	SSW	2.8	225.0	SW	1.7	227.0	SW	0.9	215.0	SW	2.8	219.0	SW
11:00 AM - 12:00 PM	3.3	214.0	SW	2.2	207.0	SSW	3.1	209.0	SSW	2.2	255.0	WSW	2.2	246.0	WSW	1.4	208.0	SSW	1.0	180.0	S
12:00 PM - 01:00 PM	3.7	197.0	SSW	3.1	214.0	SW	0.8	216.0	SW	2.8	233.0	SW	1.6	207.0	SSW	1.7	216.0	SW	3.4	213.0	SSW
01:00 PM - 02:00 PM	2.8	227.0	SW	1.1	216.0	SW	1.5	225.0	SW	0.6	296.0	WNW	1.8	248.0	WSW	0.7	260.0	W	0.6	164.0	SSE
02:00 PM - 03:00 PM	2.4	209.0	SSW	0.0	-	-	1.7	206.0	SSW	0.5	293.0	WNW	0.9	257.0	WSW	2.6	323.0	NW	0.4	182.0	S
03:00 PM - 04:00 PM	2.6	193.0	SSW	0.7	354.0	N	0.9	234.0	SW	2.5	232.0	SW	2.3	233.0	SW	2.1	357.0	N	1.0	76.0	ENE
04:00 PM - 05:00 PM	1.8	191.0	S	1.1	164.0	SSE	0.0	-	-	1.9	224.0	SW	2.2	210.0	SSW	0.8	9.0	N	0.0	-	-
05:00 PM - 06:00 PM	2.5	206.0	SSW	1.3	180.0	S	0.0	-	-	1.4	230.0	SW	1.2	198.0	SSW	1.0	107.0	ESE	0.0	-	-
06:00 PM - 07:00 PM	1.1	161.0	SSE	1.5	190.0	S	0.0	-	-	0.9	228.0	SW	2.9	166.0	SSE	0.4	90.0	E	0.0	-	-
07:00 PM - 08:00 PM	1.0	177.0	S	0.1	-	-	0.0	-	-	0.5	228.0	SW	2.5	211.0	SSW	0.7	101.0	E	1.0	168.0	SSE
08:00 PM - 09:00 PM	1.3	169.0	S	1.6	176.0	S	2.2	186.0	S	0.0	-	-	0.7	241.0	WSW	0.2	-	-	0.0	-	-
09:00 PM - 10:00 PM	0.6	169.0	S	1.8	195.0	SSW	0.8	195.0	SSW	1.8	171.0	S	0.4	120.0	ESE	0.0	-	-	0.0	-	-
10:00 PM - 11:00 PM	2.1	171.0	S	0.5	236.0	SW	0.0	-	-	1.4	173.0	S	1.6	165.0	SSE	2.1	209.0	SSW	0.0	-	-
11:00 PM - 12:00 AM	1.0	145.0	SE	0.0	-	-	0.4	178.0	S	1.2	183.0	S	1.2	87.0	E	2.3	193.0	SSW	0.0	-	-
12:00 AM - 01:00 AM	0.9	171.0	S	0.5	239.0	WSW	0.0	-	-	0.8	184.0	S	0.0	-	-	0.0	-	-	0.5	182.0	S
01:00 AM - 02:00 AM	0.6	174.0	S	0.0	-	-	0.3	156.0	SSE	0.8	187.0	S	1.0	3.0	N	0.0	-	-	0.3	176.0	S
02:00 AM - 03:00 AM	0.3	134.0	SE	0.3	264.0	W	0.4	155.0	SSE	0.3	183.0	S	0.0	-	-	1.7	109.0	ESE	0.1	-	-
03:00 AM - 04:00 AM	0.0	-	-	0.0	-	-	0.4	138.0	SE	0.0	-	-	1.2	62.0	ENE	0.1	-	-	0.2	-	-
04:00 AM - 05:00 AM	0.0	-	-	0.8	215.0	SW	1.0	152.0	SSE	0.5	147.0	SSE	1.9	37.0	NE	0.0	-	-	0.1	-	-
05:00 AM - 06:00 AM	1.3	134.0	SE	0.0	-	-	1.1	180.0	S	0.6	140.0	SE	0.0	-	-	0.0	-	-	1.4	184.0	S
06:00 AM - 07:00 AM	1.9	191.0	S	0.5	87.0	E	1.8	171.0	S	0.9	166.0	SSE	0.0	-	-	0.0	-	-	1.3	165.0	SSE
07:00 AM - 08:00 AM	2.3	188.0	S	0.7	137.0	SE	2.5	209.0	SSW	1.6	170.0	S	0.2	-	-	0.0	-	-	0.6	178.0	S
08:00 AM - 09:00 AM	1.1	166.0	SSE	0.5	135.0	SE	2.8	216.0	SW	1.8	225.0	SW	1.6	185.0	S	0.0	-	-	2.2	200.0	SSW
09:00 AM - 10:00 AM	3.9	211.0	SSW	0.5	163.0	SSE	0.7	197.0	SSW	1.5	236.0	SW	0.0	-	-	1.5	159.0	SSE	1.9	201.0	SSW

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

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Sarayuth Jittrant
Assistant General Manager

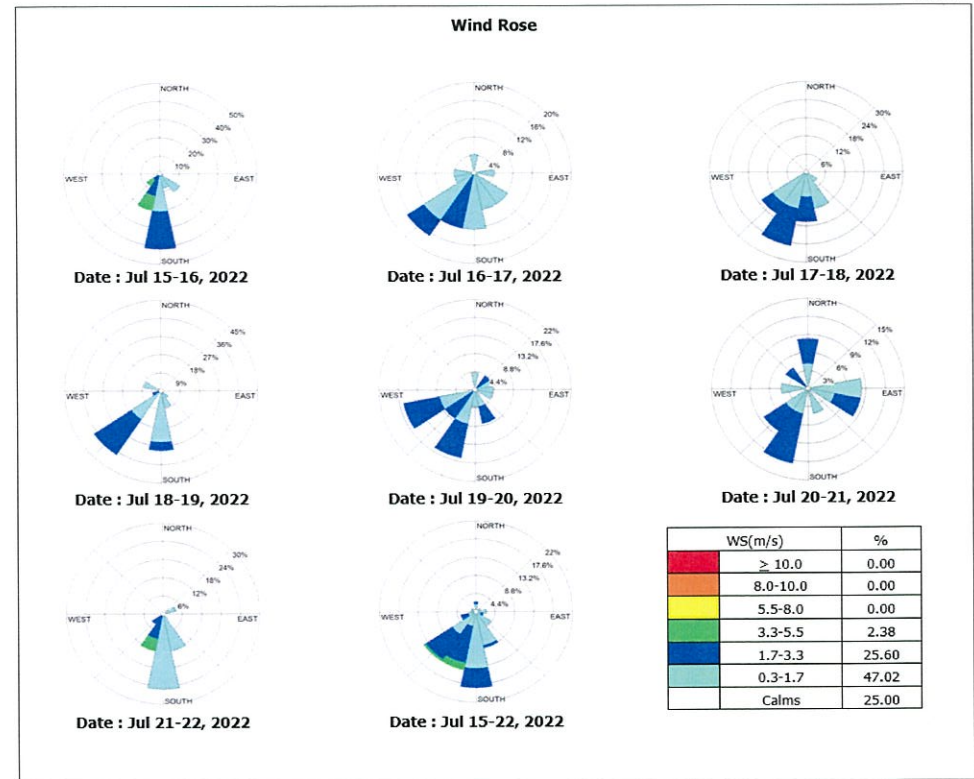


Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluak, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID : 2279289
Date Received : Jul 25, 2022
Date Reported : Aug 03, 2022
Report Number : 2357508-1

Page 2 of 2



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Assistant General Manager



Analysis / Test Report

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Lot ID : 2279289

Date Received : Jul 25, 2022

Date Reported : Aug 03, 2022

Report Number : 2357508-1

Page 1 of 2

Sample Number 2279289-15 to 21

Parameter Wind Speed / Wind Direction

Location วัดหนองน้ำเหนือ (A3) (GPS 47P 0695360, 1615739)

Sampling Date Jul 15 - Jul 22, 2022

Sampling by Teeravut Sukdee

Time	Jul 15 - Jul 16, 2022			Jul 16 - Jul 17, 2022			Jul 17 - Jul 18, 2022			Jul 18 - Jul 19, 2022			Jul 19 - Jul 20, 2022			Jul 20 - Jul 21, 2022			Jul 21 - Jul 22, 2022		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
11:00 AM - 12:00 PM	0.8	226.0	SW	2.0	242.0	WSW	0.0	-	-	0.0	-	-	0.0	-	-	0.4	174.0	S	1.8	197.0	SSW
12:00 PM - 01:00 PM	2.0	256.0	WSW	0.5	209.0	SSW	0.0	-	-	0.0	-	-	0.0	-	-	0.2	-	-	1.2	190.0	S
01:00 PM - 02:00 PM	1.4	233.0	SW	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	1.2	254.0	WSW	0.0	-	-
02:00 PM - 03:00 PM	1.3	291.0	WNW	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	3.8	190.0	S
03:00 PM - 04:00 PM	1.2	183.0	S	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
04:00 PM - 05:00 PM	0.4	214.0	SW	0.0	-	-	0.0	-	-	0.6	242.0	WSW	0.0	-	-	0.3	23.0	NNE	0.2	-	-
05:00 PM - 06:00 PM	1.9	199.0	SSW	0.0	-	-	0.0	-	-	0.4	274.0	W	0.0	-	-	0.0	-	-	0.0	-	-
06:00 PM - 07:00 PM	0.7	189.0	S	0.0	-	-	0.0	-	-	0.2	-	-	0.0	-	-	0.6	121.0	ESE	0.9	104.0	ESE
07:00 PM - 08:00 PM	0.2	-	-	0.2	-	-	0.2	-	-	0.0	-	-	0.0	-	-	1.0	91.0	E	0.6	178.0	S
08:00 PM - 09:00 PM	0.2	-	-	0.5	179.0	S	0.5	209.0	SSW	0.0	-	-	0.0	-	-	0.8	84.0	E	2.0	126.0	SE
09:00 PM - 10:00 PM	0.4	206.0	SSW	0.5	172.0	S	0.2	-	-	0.0	-	-	1.6	107.0	ESE	0.0	-	-	2.4	179.0	S
10:00 PM - 11:00 PM	0.0	-	-	0.9	326.0	NW	0.0	-	-	0.0	-	-	0.7	110.0	ESE	3.6	93.0	E	0.9	98.0	E
11:00 PM - 12:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.5	80.0	E	1.3	203.0	SSW	0.9	184.0	S
12:00 AM - 01:00 AM	0.6	189.0	S	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.8	225.0	SW	0.2	-	-
01:00 AM - 02:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.3	126.0	SE	0.0	-	-
02:00 AM - 03:00 AM	0.1	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.2	-	-	0.0	-	-
03:00 AM - 04:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.5	91.0	E	0.2	-	-	0.4	186.0	S
04:00 AM - 05:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
05:00 AM - 06:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.7	146.0	SE	0.0	-	-
06:00 AM - 07:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.9	203.0	SSW	0.5	82.0	E	0.3	145.0	SE	0.3	161.0	SSE
07:00 AM - 08:00 AM	1.6	183.0	S	0.5	107.0	ESE	2.2	210.0	SSW	0.6	188.0	S	0.5	84.0	E	0.0	-	-	1.6	203.0	SSW
08:00 AM - 09:00 AM	0.6	192.0	SSW	0.4	137.0	SE	0.7	154.0	SSE	0.0	-	-	1.0	180.0	S	0.4	166.0	SSE	1.0	209.0	SSW
09:00 AM - 10:00 AM	1.9	222.0	SW	0.2	-	-	0.0	-	-	0.0	-	-	0.8	218.0	SW	0.7	178.0	S	0.9	210.0	SSW
10:00 AM - 11:00 AM	1.7	123.0	ESE	0.0	-	-	0.0	-	-	0.0	-	-	0.4	289.0	WNW	2.6	180.0	S	0.6	207.0	SSW

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

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Analysis / Test Report

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P/O : 403380

Project Name :

Project Location :

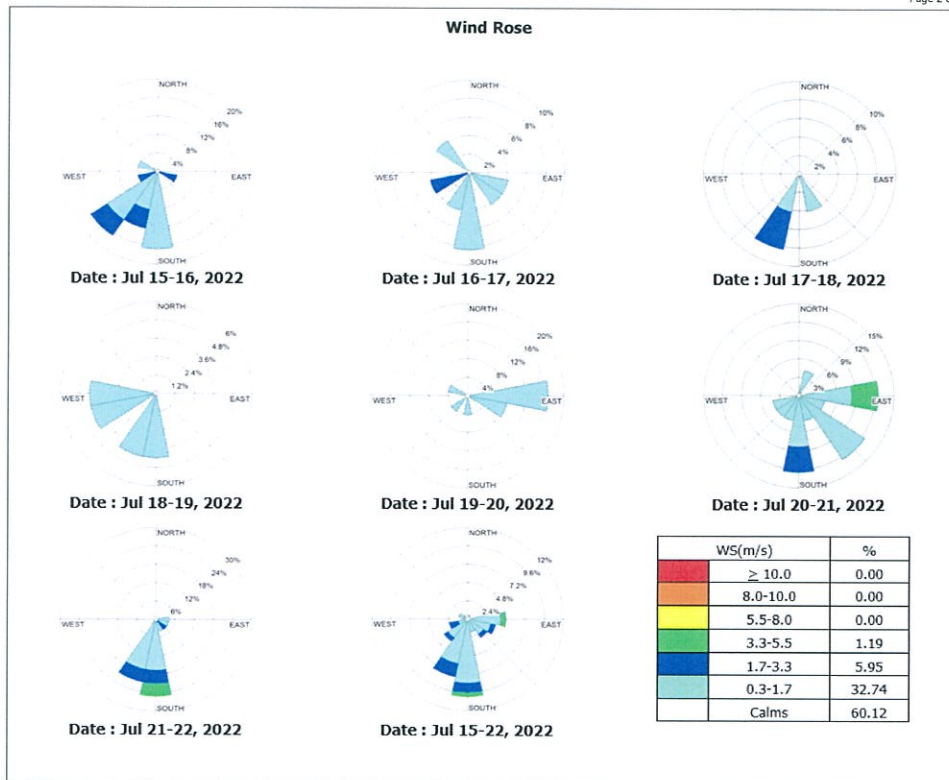
Lot ID : 2279289

Date Received : Jul 25, 2022

Date Reported : Aug 03, 2022

Report Number : 2357508-1

Page 2 of 2



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ภาคผนวก ค-2

คุณภาพอากาศจากปล่องระบาย



Analysis / Test Report

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279294
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357510-1

Page 1 of 1

Sample Number 2279294-1
Sampled Date Jul 19, 2022
Sample Description Emission from Stationary Source
Location เตาหลอม (BH-1)
Date Analysis Commenced Jul 21, 2022
Condition of Sample Extracted into two 2-L collection flasks, one filter paper placed in plastic cassette

Stack Description

Ambient Pressure	754	mmHg	Diameter	1.25	m	Oxygen	19.7	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.9	%
Type of Process	Combustion (Open System)		Stack Temperature	53.0	°C	Gas Velocity	7.4	m/s
Type of Fuel	LPG		Moisture	3.38	%	Flow Rate (Actual O2)	28727	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Oxides of Nitrogen *	10:50 AM - 11:00 AM	ppm	-	1.06	2.61	-	180	US EPA, Method 7	Bangkok
Total Suspended Particulate	10:20 AM - 11:08 AM	mg/m3	-	0.5	<0.5	40	120	US EPA, Method 5	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environmental (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Technical Management

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Approved by

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Kanokkorn Anek
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11956-21



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279295
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357511-1

Page 1 of 1

Sample Number 2279295-1
Sampled Date Jul 18, 2022
Sample Description Emission from Stationary Source
Location เตาอบแห้งถ่านหิน 1 (HT6)
Date Analysis Commenced Jul 21, 2022
Condition of Sample Extracted into two 2-L collection flasks, one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	754	mmHg	Diameter	0.60	m	Oxygen	20.9	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	44.0	°C	Gas Velocity	11.7	m/s
Type of Fuel	-		Moisture	2.59	%	Flow Rate (Actual O2)	10798	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Oxides of Nitrogen *	10:05 AM - 10:15 AM	ppm	-	1.06	3.65	60	180	US EPA, Method 7	Bangkok
Total Suspended Particulate	10:05 AM - 10:53 AM	mg/m3	-	0.5	5.8	60	120	US EPA, Method 5	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environmental (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

Remark :

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Technical Management

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Saratat Mongkonjirawut
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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279296
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357512-1

Page 1 of 1

Sample Number 2279296-1
Sampled Date Jul 18, 2022
Sample Description Emission from Stationary Source
Location เตาเผาขยะและสิ่งปฏิกูล 2 (HT7)
Date Analysis Commenced Jul 21, 2022
Condition of Sample Extracted into two 2-L collection flasks, one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	754	mmHg	Diameter	0.60	m	Oxygen	20.9	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	51.0	°C	Gas Velocity	8.4	m/s
Type of Fuel	-		Moisture	2.16	%	Flow Rate (Actual O2)	7615	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Oxides of Nitrogen *	11:10 AM - 11:20 AM	ppm	-	1.06	1.91	60	180	US EPA, Method 7	Bangkok
Total Suspended Particulate	11:05 AM - 11:53 AM	mg/m3	-	0.5	1.5	60	120	US EPA, Method 5	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environmental (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

Remark :

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Technical Management

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279297
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357513-1

Page 1 of 1

Sample Number 2279297-1
Sampled Date Jul 18, 2022
Sample Description Emission from Stationary Source
Location เตาเผา 1 (HT6)
Date Analysis Commenced Jul 21, 2022
Condition of Sample Extracted into two 2-L collection flasks, one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	754	mmHg	Diameter	0.51	m	Oxygen	18.8	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	1.2	%
Type of Process	Combustion (Open System)		Stack Temperature	121	°C	Gas Velocity	9.0	m/s
Type of Fuel	LPG		Moisture	2.96	%	Flow Rate (Actual O2)	4807	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Oxides of Nitrogen *	03:00 PM - 03:10 PM	ppm	-	1.06	3.85	60	180	US EPA, Method 7	Bangkok
Total Suspended Particulate	02:50 PM - 03:38 PM	mg/m3	-	0.5	1.7	60	120	US EPA, Method 5	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environmental (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2279298
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357514-1

Page 1 of 1

Sample Number 2279298-1
Sampled Date Jul 18, 2022
Sample Description Emission from Stationary Source
Location ตลาด 2 (HT7)
Date Analysis Commenced Jul 21, 2022
Condition of Sample Extracted into two 2-L collection flasks, one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	754	mmHg	Diameter	0.51	m	Oxygen	18.5	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	1.4	%
Type of Process	Combustion (Open System)		Stack Temperature	74.0	°C	Gas Velocity	3.9	m/s
Type of Fuel	LPG		Moisture	2.05	%	Flow Rate (Actual O2)	2397	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Oxides of Nitrogen *	02:00 PM - 02:10 PM	ppm	-	1.06	4.52	60	180	US EPA, Method 7	Bangkok
Total Suspended Particulate	01:50 PM - 02:38 PM	mg/m3	-	0.5	7.4	60	120	US EPA, Method 5	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environmental (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

Remark :

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2279300
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357516-1

Page 1 of 1

Sample Number 2279300-1
Sampled Date Jul 19, 2022
Sample Description Emission from Stationary Source
Location หน่วยปฏิบัติการ 2 (BH-3)
Date Analysis Commenced Jul 22, 2022
Condition of Sample Extracted into one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	754	mmHg	Diameter	1.65	m	Oxygen	20.9	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	61.0	°C	Gas Velocity	10.3	m/s
Type of Fuel	-		Moisture	3.88	%	Flow Rate (Actual O2)	67665	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Total Suspended Particulate	11:00 AM - 11:48 AM	mg/m3	-	0.5	3.8	40	120	US EPA, Method 5	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environmental (B.E.2544) : New Source

Sampled By : Chawalit Wongchan

Remark :

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Technical Management

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Approved by

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279301
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357518-1

Page 1 of 1

Sample Number 2279301-1
Sampled Date Jul 19, 2022
Sample Description Emission from Stationary Source
Location หน่วยผลิตงานและระบบควบคุม (BH-4)
Date Analysis Commenced Jul 22, 2022
Condition of Sample Extracted into one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	754	mmHg	Diameter	1.00	m	Oxygen	20.9	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	42.5	°C	Gas Velocity	14.0	m/s
Type of Fuel	-		Moisture	3.73	%	Flow Rate (Actual O2)	35927	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Total Suspended Particulate	10:00 AM - 10:48 AM	mg/m3	-	0.5	5.5	40	120	US EPA, Method 5	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environment (B.E.2544) : New Source

Sampled By : Chawalit Wongchan

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2279310

Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357533-1

Page 1 of 1

Sample Number 2279310-1
Sampled Date Jul 19, 2022
Sample Description Emission from Stationary Source
Location หน่วยผลิตงาน และระบบควบคุม (BH-4)
Date Analysis Commenced Jul 22, 2022
Condition of Sample Extracted into one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	754	mmHg	Diameter	1.00	m	Oxygen	20.9	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	42.5	°C	Gas Velocity	14.0	m/s
Type of Fuel	-		Moisture	3.73	%	Flow Rate (Actual O2)	35927	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Sulfur dioxide	10:00 AM - 10:30 AM	ppm	-	2.0	<2.00	-	800	US EPA, Method 6	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environment (B.E.2544) : New Source

Sampled By : Chawalit Wongchan

Remark :

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279303
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number: 2357520-1

Page 1 of 1

Sample Number 2279303-1
Sampled Date Jul 19, 2022
Sample Description Emission from Stationary Source
Location โรงงานผลิตแบตเตอรี่ (WS-1)
Date Analysis Commenced Jul 22, 2022
Condition of Sample Extracted into two filter papers placed in each cassette

Stack Description

Ambient Pressure	754	mmHg	Diameter	0.60	m	Oxygen	20.9	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	31.0	°C	Gas Velocity	10.1	m/s
Type of Fuel	-		Moisture	2.60	%	Flow Rate (Actual O2)	9748	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
---------	--------------	------	-----	-----------	--------	---------------	---------------	--------	------------------

Air Testing									
Total Suspended Particulate	11:30 AM - 12:18 PM	mg/m3	-	0.5	0.6	40	120	US EPA, Method 5	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environment (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

Remark :

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2279303
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number: 2357520-2

Page 1 of 1

Sample Number 2279303-1
Sampled Date Jul 19, 2022
Sample Description Emission from Stationary Source
Location โรงงานผลิตแบตเตอรี่ (WS-1)
Date Analysis Commenced Jul 27, 2022
Condition of Sample Extracted into two filter papers placed in each cassette

Stack Description

Ambient Pressure	754	mmHg	Diameter	0.60	m	Oxygen	20.9	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	31.0	°C	Gas Velocity	10.1	m/s
Type of Fuel	-		Moisture	2.60	%	Flow Rate (Actual O2)	9748	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
---------	--------------	------	-----	-----------	--------	--------	------------------

Air Testing							
Triethanolamine	11:30 AM - 12:20 PM	ppm	-	0.002	<0.002	Based on OSHA, PV2141	Bangkok

Sampled By : Khanetson Khamphet

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Analysis / Test Report

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 2279307
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357527-1

Page 1 of 1

Sample Number 2279307-1
Sampled Date Jul 19, 2022
Sample Description Emission from Stationary Source
Location เตาเผาถ่าน (BH-1)
Date Analysis Commenced Jul 22, 2022
Condition of Sample Extracted into one amber plastic bottle, refrigerated

Stack Description

Ambient Pressure	754	mmHg	Diameter	1.25	m	Oxygen	19.7	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.9	%
Type of Process	Combustion (Open System)		Stack Temperature	53.0	°C	Gas Velocity	7.4	m/s
Type of Fuel	LPG		Moisture	3.38	%	Flow Rate (Actual O2)	28727	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Sulfur dioxide	10:30 AM - 11:00 AM	ppm	-	2.0	<2.00	-	800	US EPA, Method 6	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environment (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Sararat Mongkonjirawut
Supervisor
หมายเลขโทรศัพท์ 2-204-4-4719

Approved by

Kanokkorn Anek
Senior Manager
หมายเลขโทรศัพท์ 2-204-4-6111

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11966-21



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 2279309
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357532-1

Page 1 of 1

Sample Number 2279309-1
Sampled Date Jul 19, 2022
Sample Description Emission from Stationary Source
Location เตาเผาถ่านประเภท 2 (BH-3)
Date Analysis Commenced Jul 22, 2022
Condition of Sample Extracted into one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	754	mmHg	Diameter	1.65	m	Oxygen	20.9	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	0.0	%
Type of Process	Process		Stack Temperature	61.0	°C	Gas Velocity	10.3	m/s
Type of Fuel	-		Moisture	3.88	%	Flow Rate (Actual O2)	67665	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Sulfur dioxide	11:00 AM - 11:30 AM	ppm	-	2.0	<2.00	-	800	US EPA, Method 6	Bangkok

Guideline : Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environment (B.E.2544) : New Source

Sampled By : Chawalit Wongchan

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Sararat Mongkonjirawut
Supervisor
หมายเลขโทรศัพท์ 2-204-4-4719

Approved by

Kanokkorn Anek
Senior Manager
หมายเลขโทรศัพท์ 2-204-4-6111

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11966-21



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 2279311
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357534-1

Page 1 of 1

Sample Number 2279311-1
Sampled Date Jul 18, 2022
Sample Description Emission from Stationary Source
Location เสาสูง 1 (HT-2)
Date Analysis Commenced Jul 22, 2022
Condition of Sample Extracted into one amber plastic bottle, refrigerated

Stack Description

Ambient Pressure	754	mmHg	Diameter	0.51	m	Oxygen	18.8	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	1.2	%
Type of Process	Combustion (Open System)		Stack Temperature	121	°C	Gas Velocity	9.0	m/s
Type of Fuel	LPG		Moisture	2.96	%	Flow Rate (Actual O2)	4807	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Sulfur dioxide	02:40 PM - 03:10 PM	ppm	-	2.0	<2.00	-	800	US EPA, Method 6	Bangkok

Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environment (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Sararat Mongkonjirawut
Supervisor
โทรศัพท์ 0-204-4-4719

Approved by

Kanokkorn Anek
Senior Manager
โทรศัพท์ 0-204-4-6111

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2279312
Date Received : Jul 20, 2022
Date Reported : Jul 29, 2022
Report Number: 2357535-1

Page 1 of 1

Sample Number 2279312-1
Sampled Date Jul 18, 2022
Sample Description Emission from Stationary Source
Location เสาสูง 2 (HT-7)
Date Analysis Commenced Jul 22, 2022
Condition of Sample Extracted into one amber plastic bottle, refrigerated

Stack Description

Ambient Pressure	754	mmHg	Diameter	0.51	m	Oxygen	18.5	%
Ambient Temperature	32.0	°C	Shape	Circle		Carbon Dioxide	1.4	%
Type of Process	Combustion (Open System)		Stack Temperature	74.0	°C	Gas Velocity	3.9	m/s
Type of Fuel	LPG		Moisture	2.05	%	Flow Rate (Actual O2)	2397	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Air Testing									
Sulfur dioxide	02:00 PM - 02:30 PM	ppm	-	2.0	<2.00	-	800	US EPA, Method 6	Bangkok

Guideline (1) : Environmental Impact Assessment Report of Magotteaux Co., Ltd. (B.E.2556)
Guideline (2) : Notification of the Ministry of Science, Technology and Environment (B.E.2544) : New Source

Sampled By : Khanetson Khamphet

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

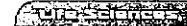
Sararat Mongkonjirawut
Supervisor
โทรศัพท์ 0-204-4-4719

Approved by

Kanokkorn Anek
Senior Manager
โทรศัพท์ 0-204-4-6111

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ภาคผนวก ค-3

คุณภาพน้ำ



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22119900
Date Received : Oct 11, 2022
Date Reported : Oct 19, 2022
Report Number : 2467781-1

Page 1 of 1

Sample Number	22119900-2
Sampled Date	Oct 11, 2022 11:05 AM
Sample Description	Wastewater
Location	บ่อกักน้ำทิ้ง
Date Analysis Commenced	Oct 12, 2022
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected		Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.32	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	4	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	45	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.8	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	740	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	17.2	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	8	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Teerawat Puangsuk

Remark :

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Technical Management

Sawitree N.

Sawitree Naisangiam
Manager

โทรศัพท์ 0-204-4-4709

Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager

โทรศัพท์ 0-204-4-6111

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22119900
Date Received : Oct 11, 2022
Date Reported : Oct 19, 2022
Report Number : 2467781-2

Page 1 of 1

Sample Number	22119900-2
Sampled Date	Oct 11, 2022 11:05 AM
Sample Description	Wastewater
Location	บ่อกักน้ำทิ้ง
Date Analysis Commenced	Oct 12, 2022
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.15	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	<0.1	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Teerawat Puangsuk

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Approved by

Sawitree N.

Sawitree Naisangiam
Manager

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 22119900
Date Received : Oct 11, 2022
Date Reported : Oct 19, 2022
Report Number : 2467780-1

Page 1 of 1

Sample Number	22119900-1						
Sampled Date	Oct 11, 2022 11:30 AM						
Sample Description	Wastewater						
Location	โรงงานน้ำ						
Date Analysis Commenced	Oct 12, 2022						
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.14	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	<2	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	22	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.9	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	368	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	11	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Teerawat Puangsuk

Remark :

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Technical Management

Sawitree N.

Sawitree Nisangiam
Manager

โทรศัพท์มือถือ 02-204-2-4709

Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager

โทรศัพท์มือถือ 02-204-2-6111

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Analysis / Test Report

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 22119900
Date Received : Oct 11, 2022
Date Reported : Oct 19, 2022
Report Number : 2467780-2

Page 1 of 1

Sample Number	22119900-1						
Sampled Date	Oct 11, 2022 11:30 AM						
Sample Description	Wastewater						
Location	โรงงานน้ำ						
Date Analysis Commenced	Oct 12, 2022						
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.06	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	6.0	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Teerawat Puangsuk

Remark :

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Approved by

Sawitree N.

Sawitree Nisangiam
Manager

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Analysis / Test Report

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279917
Date Received : Jul 05, 2022
Date Reported : Jul 12, 2022
Report Number : 2373566-1

Page 1 of 1

Sample Number	2279917-1						
Sampled Date	Jul 05, 2022 11:20 AM						
Sample Description	Wastewater						
Location	ปลัดน้ำก่อนระบายออกนอกโรงงาน						
Date Analysis Commenced	Jul 06, 2022						
Condition of Sample	Contained in one amber glass bottle, five plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.0005	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.07	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	<2	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	13	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C		-	-	7.8	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	400	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.3	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	11	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

Remark :
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Technical Management

Savitree N.

Savitree Noisangiam
Manager

โทร: 02-204-3-4709

Approved by

Kanokkom Anek

Kanokkom Anek
Senior Manager

โทร: 02-204-3-6111

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279917
Date Received : Jul 05, 2022
Date Reported : Jul 12, 2022
Report Number : 2373566-2

Page 1 of 1

Sample Number	2279917-1						
Sampled Date	Jul 05, 2022 11:20 AM						
Sample Description	Wastewater						
Location	บ่อกักน้ำก่อนระบายออกนอกโรงงาน						
Date Analysis Commenced	Jul 06, 2022						
Condition of Sample	Contained in one amber glass bottle, five plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.20	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	3.5	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

Remark :
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Approved by

Savitree N.

Savitree Noisangiam
Manager

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

TESTING
No.0009
Lot ID: 2279900
Date Received : Jul 12, 2022
Date Reported : Jul 20, 2022
Report Number : 2380632-1

Page 1 of 1

Sample Number	2279900-1					
Sampled Date	Jul 12, 2022 10:20 AM					
Sample Description	Wastewater					
Location	บ่อบำบัดน้ำเสียเทศบาลเมือง					
Date Analysis Commenced	Jul 14, 2022					
Condition of Sample	Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)					
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method
Metals Testing						
Chromium	mg/L	0.0003	0.0005	0.0006		Based on APHA (2017), 3125 Bangkok
Manganese	mg/L	0.0003	0.0005	0.18	≤5.0	Based on APHA (2017), 3125 Bangkok
Water Testing						
BOD (5 days at 20 degree C)	mg/L	-	2	3	≤20	Based on APHA (2017), 5210 B Bangkok
COD	mg/L	1.5	5	25	≤120	Based on APHA (2017), 5220 D Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B Bangkok
pH at 25 degree C		-	-	7.6	5.5-9.0	Based on APHA (2017), 4500-H (8) Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	476	≤3000	Based on APHA (2017), 2540 C Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	≤100	Based on APHA (2017), 4500-Norg (C) Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	8	≤50	Based on APHA (2017), 2540 D Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Teerawat Puangsuk

Remark :
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Technical Management

Sawitree N.
Sawitree Noisangiam
Manager
โทรศัพท์ 7-204-7-4709

Approved by

Kanokorn Anek
Kanokorn Anek
Senior Manager
โทรศัพท์ 7-204-6-6111

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P/O : 403380
Project Name :
Project Location :

TESTING
No.0009
Lot ID: 2279900
Date Received : Jul 12, 2022
Date Reported : Jul 20, 2022
Report Number : 2380632-2

Page 1 of 1

Sample Number	2279900-1					
Sampled Date	Jul 12, 2022 10:20 AM					
Sample Description	Wastewater					
Location	บ่อบำบัดน้ำเสียเทศบาลเมือง					
Date Analysis Commenced	Jul 14, 2022					
Condition of Sample	Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)					
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method
Metals Testing						
Iron	mg/L	0.003	0.005	0.03	No Standard	Based on APHA (2017), 3125 Bangkok
Water Testing						
Dissolved Oxygen *	mg/L	-	0.1	5.8	No Standard	Based on APHA (2017), 4500-O (C) Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Teerawat Puangsuk

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Approved by

Sawitree N.
Sawitree Noisangiam
Manager

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Analysis / Test Report

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279918
Date Received : Jul 19, 2022
Date Reported : Jul 26, 2022
Report Number : 2385687-1

Page 1 of 1

Page 2 of 2

Sample Number	2279918-1						
Sampled Date	Jul 19, 2022 11:30 AM						
Sample Description	Wastewater						
Location	ปลั๊กน้ำทิ้งระบายออกนอกโรงงาน						
Date Analysis Commenced	Jul 20, 2022						
Condition of Sample	Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.16	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	4	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	16	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C		-	-	7.6	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	472	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	1.7	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	14	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

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Technical Management

Sawitree N.

Sawitree Naisangiam
Manager
โทรเลขเบอร์ 2-204-2-4709

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager
โทรเลขเบอร์ 2-204-2-6111

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Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279918
Date Received : Jul 19, 2022
Date Reported : Jul 26, 2022
Report Number : 2385687-2

Page 1 of 1

Sample Number	2279918-1						
Sampled Date	Jul 19, 2022 11:30 AM						
Sample Description	Wastewater						
Location	ปลั๊กน้ำก่อนระบายออกนอกโรงงาน						
Date Analysis Commenced	Jul 20, 2022						
Condition of Sample	Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.24	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	3.3	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

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Approved by

Sawitree N.

Sawitree Naisangiam
Manager

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Project Location :



TESTING
No.0009
Lot ID: 2279919
Date Received : Jul 26, 2022
Date Reported : Aug 03, 2022
Report Number : 2393395-1

Page 1 of 1

Sample Number 2279919-1
Sampled Date Jul 26, 2022 11:00 AM
Sample Description Wastewater
Location โรงพักน้ำก่อนระบบบำบัดน้ำ
Date Analysis Commenced Jul 27, 2022
Condition of Sample Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.0008	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.14	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	3	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	12	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.1	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	316	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	17	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

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Technical Management

Sawitree N.

Sawitree Nosanglam
Manager

โทรศัพท์มือถือ 02-204-4-4709

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager

โทรศัพท์มือถือ 02-204-4-6111

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Project Name :
Project Location :



TESTING
No.0009
Lot ID: 2279919
Date Received : Jul 26, 2022
Date Reported : Aug 03, 2022
Report Number : 2393395-2

Page 1 of 1

Sample Number 2279919-1
Sampled Date Jul 26, 2022 11:00 AM
Sample Description Wastewater
Location โรงพักน้ำก่อนระบบบำบัดน้ำ
Date Analysis Commenced Jul 27, 2022
Condition of Sample Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.25	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	3.4	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

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Approved by

Sawitree N.

Sawitree Nosanglam
Manager

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2290873
Date Received : Aug 02, 2022
Date Reported : Aug 09, 2022
Report Number : 2384350-1

Page 1 of 1

Sample Number	2290873-1						
Sampled Date	Aug 02, 2022 2:30 PM						
Sample Description	Wastewater						
Location	ปลักน้ำก่อนระบายออกนอกโรงงาน						
Date Analysis Commenced	Aug 03, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.0006	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.09	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	3	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	16	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.5	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	216	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	17	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

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Technical Management

Sawitree N.

Sawitree Naisangiam
Manager
โทรศัพท์ ๖-204-๖-4709

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager
โทรศัพท์ ๖-204-๖-6111

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2290873
Date Received : Aug 02, 2022
Date Reported : Aug 09, 2022
Report Number : 2384350-2

Page 1 of 1

Page 1 of 1

Sample Number	2290873-1						
Sampled Date	Aug 02, 2022 2:30 PM						
Sample Description	Wastewater						
Location	ปลักน้ำก่อนระบายออกนอกโรงงาน						
Date Analysis Commenced	Aug 03, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.24	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen	mg/L	-	0.1	5.5	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

Remark :
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Approved by

Sawitree N.

Sawitree Naisangiam
Manager

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 2290874
Date Received : Aug 09, 2022
Date Reported : Aug 17, 2022
Report Number : 2384353-1

Page 1 of 1

Sample Number	2290874-1						
Sampled Date	Aug 09, 2022 11:20 AM						
Sample Description	Wastewater						
Location	ปลัฟกน้ำกลั่นระบบบำบัดน้ำเสีย						
Date Analysis Commenced	Aug 10, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.0006	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.23	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	2	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	9	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	4	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C		-	-	7.6	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	328	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	14	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Panupong Sansri

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Technical Management

Sawitree N.

Sawitree Noisangiam
Manager

โทรศัพท์ 02-204-4709

Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager
โทรศัพท์ 02-204-45111

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 2290874
Date Received : Aug 09, 2022
Date Reported : Aug 17, 2022
Report Number : 2384353-2

Page 1 of 1

Sample Number	2290874-1						
Sampled Date	Aug 09, 2022 11:20 AM						
Sample Description	Wastewater						
Location	ปลัฟกน้ำกลั่นระบบบำบัดน้ำเสีย						
Date Analysis Commenced	Aug 10, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.30	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	3.7	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Panupong Sansri

Remark :

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Approved by

Sawitree N.

Sawitree Noisangiam
Manager

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2290875
Date Received : Aug 16, 2022
Date Reported : Aug 23, 2022
Report Number : 2384354-1

Page 1 of 1

Sample Number	2290875-1						
Sampled Date	Aug 16, 2022 11:53 AM						
Sample Description	Wastewater						
Location	ปลัฟฟ์น้ำที่ถนนรณนาถนอกโรงงาน						
Date Analysis Commenced	Aug 17, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	<0.0005	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.05	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	3	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	15	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	4	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C		-	-	7.4	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	220	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	6	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Prapote Wannachoochai

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Technical Management

Savitree N.

Savitree Noisangiam
Manager
เบอร์โทร 02-204-4709

Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager
เบอร์โทร 02-204-6111

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Analysis / Test Report

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2290875
Date Received : Aug 16, 2022
Date Reported : Aug 23, 2022
Report Number : 2384354-2

Page 1 of 1

Sample Number	2290875-1						
Sampled Date	Aug 16, 2022 11:53 AM						
Sample Description	Wastewater						
Location	ผลิตภัณฑ์กระบวนการผลิตโรงงาน						
Date Analysis Commenced	Aug 17, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.14	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	5.2	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Prapote Wannachoochai

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Approved by

Savitree N.

Savitree Noisangiam
Manager

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 2290876
Date Received : Aug 23, 2022
Date Reported : Aug 30, 2022
Report Number : 2384355-1

Page 1 of 1

Sample Number	2290876-1						
Sampled Date	Aug 23, 2022 9:00 AM						
Sample Description	Wastewater						
Location	บ่อกำจัดน้ำเสียชุมชนเทศบาลเมือง						
Date Analysis Commenced	Aug 24, 2022						
Condition of Sample	Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.20	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	3	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	24	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.7	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	484	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	1.5	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	6	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Naruebet Permpoon

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Technical Management

Sawitree N.

Sawitree Nisangiam
Manager

โทรศัพท์ ๖-204-๓-4709

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager
โทรศัพท์ ๖-204-๓-6111

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 2290876
Date Received : Aug 23, 2022
Date Reported : Aug 30, 2022
Report Number : 2384355-2

Page 1 of 1

Sample Number	2290876-1						
Sampled Date	Aug 23, 2022 9:00 AM						
Sample Description	Wastewater						
Location	บ่อกำจัดน้ำเสียชุมชนเทศบาลเมือง						
Date Analysis Commenced	Aug 24, 2022						
Condition of Sample	Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.16	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	3.4	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Naruebet Permpoon

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Approved by

Sawitree N.

Sawitree Nisangiam
Manager

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2290877
Date Received : Aug 30, 2022
Date Reported : Sep 06, 2022
Report Number : 2384356-1

Page 1 of 1

Sample Number	2290877-1
Sampled Date	Aug 30, 2022 11:50 AM
Sample Description	Wastewater
Location	ปลั๊กน้ำที่ถนนหน้าออกนอกโรงงาน
Date Analysis Commenced	Aug 31, 2022
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.0009	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.27	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	<2	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	21	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.8	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	256	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	5	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Naruebet Permpon

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Technical Management

Sawitree N.

Sawitree Noisangiam
Manager

โทร: 02-204-4-4709

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager

โทร: 02-204-4-6111

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22106424
Date Received : Sep 06, 2022
Date Reported : Sep 13, 2022
Report Number : 2416346-1

Page 1 of 1

Sample Number	22106424-1
Sampled Date	Sep 06, 2022 1:40 PM
Sample Description	Wastewater
Location	ปลั๊กน้ำที่ถนนหน้าออกนอกโรงงาน
Date Analysis Commenced	Sep 07, 2022
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.32	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	3	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	16	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.8	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	488	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.4	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	7	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Panupong Sansri

Remark :

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Technical Management

Sawitree N.

Sawitree Noisangiam
Manager

โทร: 02-204-4-4709

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager

โทร: 02-204-4-6111

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Analysis / Test Report



TESTING
No.0009

Lot ID: 22106424

Date Received : Sep 06, 2022

Date Reported : Sep 13, 2022

Report Number : 2416346-2

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Sample Number	22106424-1
Sampled Date	Sep 06, 2022 1:40 PM
Sample Description	Wastewater
Location	บ่อกักน้ำก่อนระบายออกสู่โรงงาน
Date Analysis Commenced	Sep 07, 2022
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.22	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	4.1	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Panupong Sansri

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Approved by

Sawitree N.

Sawitree Noisangiam
Manager

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11966-21



Analysis / Test Report



TESTING
No.0009

Lot ID: 22106425

Date Received : Sep 13, 2022

Date Reported : Sep 20, 2022

Report Number : 2416348-1

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Sample Number	22106425-1
Sampled Date	Sep 13, 2022 9:50 AM
Sample Description	Wastewater
Location	บ่อกักน้ำก่อนระบายออกสู่โรงงาน
Date Analysis Commenced	Sep 14, 2022
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.31	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	2	≤20	Based on APHA (2017), 5210 B	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.8	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	492	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.1	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	9	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Chuladet Warin

Remark :

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Technical Management

Sawitree N.

Sawitree Noisangiam
Manager

หมายเลขโทรศัพท์ 2-204-4-4709

Approved by

Kanokkom Anek

Kanokkom Anek
Senior Manager

หมายเลขโทรศัพท์ 2-204-4-6111

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22106425
Date Received : Sep 13, 2022
Date Reported : Sep 20, 2022
Report Number : 2416348-2

Page 1 of 1

Sample Number	22106425-1
Sampled Date	Sep 13, 2022 9:50 AM
Sample Description	Wastewater
Location	บ่อกักเก็บน้ำทิ้งระบบบำบัดน้ำเสีย
Date Analysis Commenced	Sep 14, 2022
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.17	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
COD	mg/L	1.5	5	17	≤120	Based on APHA (2017), 5220 D	Bangkok
Dissolved Oxygen *	mg/L	-	0.1	2.6	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Chuladet Warin

Remark :
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Approved by

Savitree N.

Savitree Naisangiam
Manager

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22106426
Date Received : Sep 20, 2022
Date Reported : Sep 27, 2022
Report Number : 2416349-1

Page 1 of 1

Sample Number	22106426-1
Sampled Date	Sep 20, 2022 11:30 AM
Sample Description	Wastewater
Location	บ่อกักเก็บน้ำทิ้งระบบบำบัดน้ำเสีย
Date Analysis Commenced	Sep 21, 2022
Condition of Sample	Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	<0.0005	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.29	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	3	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	23	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.8	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	380	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	1.3	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	10	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Norrasat Komal

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Technical Management

Savitree N.

Savitree Naisangiam
Manager
โทรศัพท์ 2-204-3-4709

Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager
โทรศัพท์ 2-204-6-6111

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 22106426
Date Received : Sep 20, 2022
Date Reported : Sep 27, 2022
Report Number : 2416349-2

Page 1 of 1

Sample Number 22106426-1
Sampled Date Sep 20, 2022 11:30 AM
Sample Description Wastewater
Location บ่อกักเก็บน้ำทิ้งระบบบำบัดน้ำเสีย
Date Analysis Commenced Sep 21, 2022
Condition of Sample Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.25	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	4.5	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Noraset Komal

Remark :
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Approved by

Sawitree N.
Sawitree Naisiangiam
Manager

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 22106428
Date Received : Sep 27, 2022
Date Reported : Oct 04, 2022
Report Number : 2416350-1

Page 1 of 1

Sample Number 22106428-1
Sampled Date Sep 27, 2022 12:00 PM
Sample Description Wastewater
Location บ่อกักเก็บน้ำทิ้งระบบบำบัดน้ำเสีย
Date Analysis Commenced Sep 28, 2022
Condition of Sample Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.29	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	<2	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	11	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.1	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	408	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	1.4	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

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Technical Management

Sawitree N.
Sawitree Naisiangiam
Manager
โทรศัพท์ 204-3-4709

Approved by

Kanokorn Anek
Kanokorn Anek
Senior Manager
โทรศัพท์ 204-3-6111

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22106428
Date Received : Sep 27, 2022
Date Reported : Oct 04, 2022
Report Number : 2416350-2

Page 1 of 1

Sample Number	22106428-1						
Sampled Date	Sep 27, 2022 12:00 PM						
Sample Description	Wastewater						
Location	บ่อกำจัดของเสียจากโรงงาน						
Date Analysis Commenced	Sep 28, 2022						
Condition of Sample	Contained in one amber glass bottle, four plastic bottles and two BOD bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.14	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	5.0	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

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Approved by

Savitree N.

Savitree Nisangiam
Manager

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22119912
Date Received : Oct 04, 2022
Date Reported : Oct 11, 2022
Report Number : 2460521-1

Page 1 of 1

Sample Number	22119912-1						
Sampled Date	Oct 04, 2022 11:30 AM						
Sample Description	Wastewater						
Location	บ่อกำจัดของเสียจากโรงงาน						
Date Analysis Commenced	Oct 05, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.001	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.14	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	<2	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	12	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	4	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C		-	-	7.1	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	128	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	1.6	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	15	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Chayanwut Chaitanit

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Technical Management

Savitree N.

Savitree Nisangiam
Manager

โทรศัพท์ 2-204-4-4709

Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager

โทรศัพท์ 2-204-4-6111

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 22119912
Date Received : Oct 04, 2022
Date Reported : Oct 11, 2022
Report Number : 2460521-2

Page 1 of 1

Sample Number	22119912-1						
Sampled Date	Oct 04, 2022 11:30 AM						
Sample Description	Wastewater						
Location	บ่อกักเก็บน้ำทิ้งระบบบำบัดน้ำเสีย						
Date Analysis Commenced	Oct 05, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.31	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	3.3	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Chayanwut Chailanik

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Approved by

Sawitree N.

Sawitree Noisangiam
Manager

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 22119900
Date Received : Oct 11, 2022
Date Reported : Oct 19, 2022
Report Number : 2467782-1

Page 1 of 1

Sample Number	22119900-3						
Sampled Date	Oct 11, 2022 11:20 AM						
Sample Description	Wastewater						
Location	บ่อกักเก็บน้ำทิ้งระบบบำบัดน้ำเสีย						
Date Analysis Commenced	Oct 12, 2022						
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected		Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.42	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	3	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	8	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C		-	-	7.7	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	268	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.3	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	6	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampled By : Teerawat Puangsuk

Remark :
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Technical Management

Sawitree N.

Sawitree Noisangiam
Manager

เบอร์โทรภายใน 7-204-4709

Approved by

Kanokkom Anek

Kanokkom Anek
Senior Manager

เบอร์โทรภายใน 7-204-6111

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22119900
Date Received : Oct 11, 2022
Date Reported : Oct 19, 2022
Report Number : 2467782-2

Page 1 of 1

Sample Number	22119900-3						
Sampled Date	Oct 11, 2022 11:20 AM						
Sample Description	Wastewater						
Location	ปลัดน้ำก่อนระบายออกนอกโรงงาน						
Date Analysis Commenced	Oct 12, 2022						
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.25	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	2.7	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Teerawat Puangsuk

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- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Approved by

Savitree N.

Savitree Naisangiam
Manager

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22119913
Date Received : Oct 18, 2022
Date Reported : Oct 25, 2022
Report Number : 2472748-1

Page 1 of 1

Sample Number	22119913-1						
Sampled Date	Oct 18, 2022 11:10 AM						
Sample Description	Wastewater						
Location	ปลัดน้ำก่อนระบายออกนอกโรงงาน						
Date Analysis Commenced	Oct 20, 2022						
Condition of Sample	Contained in two BOD bottles, four plastic bottles and one amber glass bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.43	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	2	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	12	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.4	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	368	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	2.8	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Technical Management

Savitree N.

Savitree Naisangiam
Manager
โทรศัพท์ 02-204-3-4709

Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager
โทรศัพท์ 02-204-3-6111

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 22119913
Date Received : Oct 18, 2022
Date Reported : Oct 25, 2022
Report Number : 2472748-2

Page 1 of 1

Sample Number	22119913-1						
Sampled Date	Oct 18, 2022 11:10 AM						
Sample Description	Wastewater						
Location	ปทุมธานีการขนถ่ายมูลจากโรงงาน						
Date Analysis Commenced	Oct 20, 2022						
Condition of Sample	Contained in two BOD bottles, four plastic bottles and one amber glass bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.21	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	3.4	No Standard	Based on APHA (2017), 4500-D (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Panupong Sansri

Remark :
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Approved by

Savitree N.
Savitree Noisangiam
Manager

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009
Lot ID: 22119914
Date Received : Oct 25, 2022
Date Reported : Oct 31, 2022
Report Number : 2478294-1

Page 1 of 1

Sample Number	22119914-1						
Sampled Date	Oct 25, 2022 9:30 AM						
Sample Description	Wastewater						
Location	ปทุมธานีการขนถ่ายมูลจากโรงงาน						
Date Analysis Commenced	Oct 26, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	Not Detected		Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.28	≤5.0	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	4	≤20	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	16	≤120	Based on APHA (2017), 5220 D	Bangkok
Oil & Grease	mg/L	-	3	<3	≤5	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C		-	-	8.1	5.5-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	520	≤3000	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	3.5	≤100	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Based on APHA (2017), 2540 D	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Jiranat Knowlcor

Remark :
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Technical Management

Savitree N.
Savitree Noisangiam
Manager
โทรศัพท์ ๖-204-๖-4709

Approved by

Kanokorn Anek
Kanokorn Anek
Senior Manager
โทรศัพท์ ๖-204-๖-6111

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

TESTING
No.0009
Lot ID: 22119914
Date Received : Oct 25, 2022
Date Reported : Oct 31, 2022
Report Number : 2478294-2

Page 1 of 1

Sample Number	22119914-1						
Sampled Date	Oct 25, 2022 9:30 AM						
Sample Description	Wastewater						
Location	ปทุมธานีก่อนระบายออกนอกโรงงาน						
Date Analysis Commenced	Oct 26, 2022						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.16	No Standard	Based on APHA (2017), 3125	Bangkok
Water Testing							
Dissolved Oxygen *	mg/L	-	0.1	3.5	No Standard	Based on APHA (2017), 4500-O (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampled By : Jiranat Khowlao

Remark :
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Approved by

Sawitree N.

Sawitree Nolsangiam
Manager

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ภาคผนวก ค-4

คุณภาพน้ำผิวดิน



Analysis / Test Report



TESTING
No.0009

Lot ID: 22119900

Date Received : Oct 11, 2022

Date Reported : Oct 19, 2022

Report Number : 2467783-1

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluak, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Page 1 of 1

Sample Number	22119900-4
Sampled Date	Oct 11, 2022 11:40 AM
Sample Description	Surface Water
Location	พืชน้ำใน : แหล่งธรรมชาติน้ำจืด 70 เมตร (SW1)
Date Analysis Commenced	Oct 12, 2022
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.0006		Based on APHA (2017), 3125	Bangkok
Iron	mg/L	0.003	0.005	0.31	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.27	≤1	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	<2	≤4	Based on APHA (2017), 5210 B	Bangkok
COD *	mg/L	1.5	5	14	No Standard	Based on APHA (2017), 5220 D	Bangkok
Dissolved Oxygen *	mg/L	-	0.1	6.2	≥2	Based on APHA (2017), 4500-O (C)	Bangkok
Oil & Grease	mg/L	-	3	<3	No Standard	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	7.9	5.0-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C *	mg/L	-	5	392	No Standard	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	No Standard	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	5	21	No Standard	Based on APHA (2017), 2540 D	Bangkok

Guideline : Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act, B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 4)

n: Change from Natural condition not more than 3 degree C

Sampled By : Teerawat Puangsuk

Remark :

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Approved by

Savitree N.

Savitree Noisangiam
Manager

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Analysis / Test Report



TESTING
No.0009

Lot ID: 22119900

Date Received : Oct 11, 2022

Date Reported : Oct 19, 2022

Report Number : 2467784-1

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluak, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Page 1 of 1

Sample Number	22119900-5
Sampled Date	Oct 11, 2022 11:50 AM
Sample Description	Surface Water
Location	พืชน้ำใน : จุลินทรีย์น้ำจืด (SW2)
Date Analysis Commenced	Oct 12, 2022
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.0005		Based on APHA (2017), 3125	Bangkok
Iron	mg/L	0.003	0.005	0.38	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.31	≤1	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	<2	≤4	Based on APHA (2017), 5210 B	Bangkok
COD	mg/L	1.5	5	15	No Standard	Based on APHA (2017), 5220 D	Bangkok
Dissolved Oxygen *	mg/L	-	0.1	6.1	≥2	Based on APHA (2017), 4500-O (C)	Bangkok
Oil & Grease	mg/L	-	3	<3	No Standard	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C	-	-	-	8.0	5.0-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C *	mg/L	-	5	332	No Standard	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	No Standard	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	5	20	No Standard	Based on APHA (2017), 2540 D	Bangkok

Guideline : Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act, B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 4)

n: Change from Natural condition not more than 3 degree C

Sampled By : Teerawat Puangsuk

Remark :

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Approved by

Savitree N.

Savitree Noisangiam
Manager

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Analysis / Test Report

TESTING

No.0009

Lot ID: 22119900

Date Received : Oct 11, 2022

Date Reported : Oct 19, 2022

Report Number : 2467785-1

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location:

Page 1 of 1

Sample Number	22119900-6
Sampled Date	Oct 11, 2022 11:55 AM
Sample Description	Surface Water
Location	พืชน้ำ : ไร่ขจรเกษม (SW3)
Date Analysis Commenced	Oct 12, 2022
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Chromium	mg/L	0.0003	0.0005	0.0008		Based on APHA (2017), 3125	Bangkok
Iron	mg/L	0.003	0.005	0.41	No Standard	Based on APHA (2017), 3125	Bangkok
Manganese	mg/L	0.0003	0.0005	0.30	≤1	Based on APHA (2017), 3125	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2	<2	≤4	Based on APHA (2017), 5210 B	Bangkok
COD *	mg/L	1.5	5	13	No Standard	Based on APHA (2017), 5220 D	Bangkok
Dissolved Oxygen *	mg/L	-	0.1	6.6	≥2	Based on APHA (2017), 4500-O (C)	Bangkok
Oil & Grease	mg/L	-	3	3	No Standard	Based on APHA (2017), 5520 B	Bangkok
pH at 25 degree C		-	-	8.0	5.0-9.0	Based on APHA (2017), 4500-H (B)	Bangkok
Total Dissolved solids Dried at 180 degree C *	mg/L	-	5	366	No Standard	Based on APHA (2017), 2540 C	Bangkok
Total Kjeldahl Nitrogen as N *	mg/L	0.15	1.0	<1.0	No Standard	Based on APHA (2017), 4500-Norg (C)	Bangkok
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	5	20	No Standard	Based on APHA (2017), 2540 D	Bangkok

Guideline : Notification of the National Environmental Board, No. 8, B.E.2537 issued under the Enhancement and Conservation of National Environmental Quality Act, B.E.2535, published in the Royal Government Gazette, Vol. 111, Part 16, Dated February 24, B.E. 2537 (Class 4)

n: Change from Natural condition not more than 3 degree C

Sampled By : Teerawat Puangsuk

Remark :

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Approved by

Sawitree N.

Sawitree Noisangiam
Manager

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ระดับเสียงโดยทั่วไป



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505893-1

Page 1 of 1

Sample Number 22134324-1
Parameter Noise (Leq 24 hrs.)
Location บริเวณหน้าโรงงาน N1
Measurement Date Nov 18 - Nov 19, 2022
Measurement by Arlit Srisen
Sound Level meter Serial No. 858525

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	61.2	86.6	51.2
01:00 PM - 02:00 PM	63.3	85.7	54.1
02:00 PM - 03:00 PM	62.6	82.6	51.9
03:00 PM - 04:00 PM	59.7	77.6	51.4
04:00 PM - 05:00 PM	61.5	76.4	52.2
05:00 PM - 06:00 PM	62.4	81.5	53.6
06:00 PM - 07:00 PM	60.1	79.9	53.0
07:00 PM - 08:00 PM	60.4	75.5	53.7
08:00 PM - 09:00 PM	61.5	75.6	54.3
09:00 PM - 10:00 PM	61.9	82.6	54.1
10:00 PM - 11:00 PM	60.6	76.6	54.3
11:00 PM - 12:00 AM	59.3	84.4	55.2
12:00 AM - 01:00 AM	61.5	77.2	57.0
01:00 AM - 02:00 AM	61.7	76.1	55.3
02:00 AM - 03:00 AM	60.1	77.3	54.7
03:00 AM - 04:00 AM	60.7	75.3	55.1
04:00 AM - 05:00 AM	58.6	73.4	55.4
05:00 AM - 06:00 AM	60.9	79.7	56.6
06:00 AM - 07:00 AM	62.4	83.2	56.4
07:00 AM - 08:00 AM	61.2	77.5	55.1
08:00 AM - 09:00 AM	61.7	84.3	55.0
09:00 AM - 10:00 AM	61.0	83.6	54.6
10:00 AM - 11:00 AM	61.6	79.5	54.2
11:00 AM - 12:00 PM	60.3	82.4	53.4

Leq Average 24 hrs. (dB(A))

61.2

Lmax (dB(A))

86.6

L90 (dB(A))

54.3

Ldn (dB(A))

67.3

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

Saranya C.

Saranya Chalemtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505894-1

Page 1 of 1

Sample Number 22134324-2
Parameter Noise (Leq 24 hrs.)
Location บริเวณหน้าโรงงาน N1
Measurement Date Nov 19 - Nov 20, 2022
Measurement by Arlit Srisen
Sound Level meter Serial No. 858525

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	61.1	78.7	53.3
01:00 PM - 02:00 PM	62.5	81.6	55.4
02:00 PM - 03:00 PM	62.0	83.7	54.4
03:00 PM - 04:00 PM	60.8	80.4	53.4
04:00 PM - 05:00 PM	61.9	87.0	54.9
05:00 PM - 06:00 PM	63.1	86.2	56.3
06:00 PM - 07:00 PM	62.3	84.1	56.2
07:00 PM - 08:00 PM	62.1	82.5	57.0
08:00 PM - 09:00 PM	62.2	76.6	57.8
09:00 PM - 10:00 PM	63.9	77.4	58.0
10:00 PM - 11:00 PM	61.0	72.8	57.6
11:00 PM - 12:00 AM	59.3	72.6	56.9
12:00 AM - 01:00 AM	62.2	77.8	57.1
01:00 AM - 02:00 AM	62.5	76.9	57.0
02:00 AM - 03:00 AM	59.6	73.1	56.6
03:00 AM - 04:00 AM	59.4	78.0	56.3
04:00 AM - 05:00 AM	60.3	83.0	56.6
05:00 AM - 06:00 AM	61.3	82.0	56.2
06:00 AM - 07:00 AM	62.2	82.5	56.3
07:00 AM - 08:00 AM	60.6	78.8	54.8
08:00 AM - 09:00 AM	60.1	83.9	54.7
09:00 AM - 10:00 AM	62.0	83.5	55.4
10:00 AM - 11:00 AM	61.3	81.1	54.4
11:00 AM - 12:00 PM	60.1	81.3	53.1

Leq Average 24 hrs. (dB(A))

61.6

Lmax (dB(A))

87.0

L90 (dB(A))

56.2

Ldn (dB(A))

67.6

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
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Technical Management

Saranya C.

Saranya Chalemtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505895-1

Page 1 of 1

Sample Number : 22134324-3
Parameter : Noise (Leq 24 hrs.)
Location : บริเวณรั้วโรงงาน N1
Measurement Date : Nov 20 - Nov 21, 2022
Measurement by : Artit Srisen
Sound Level meter : Serial No. 858525

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	60.3	81.6	53.6
01:00 PM - 02:00 PM	62.6	85.8	55.6
02:00 PM - 03:00 PM	62.3	87.5	55.5
03:00 PM - 04:00 PM	61.5	77.4	55.5
04:00 PM - 05:00 PM	62.7	79.0	56.1
05:00 PM - 06:00 PM	62.2	76.9	57.0
06:00 PM - 07:00 PM	62.3	78.5	56.2
07:00 PM - 08:00 PM	61.2	82.5	56.1
08:00 PM - 09:00 PM	61.0	79.4	56.7
09:00 PM - 10:00 PM	60.3	80.7	56.2
10:00 PM - 11:00 PM	59.5	77.0	56.2
11:00 PM - 12:00 AM	58.1	75.2	55.8
12:00 AM - 01:00 AM	59.2	72.5	55.5
01:00 AM - 02:00 AM	59.9	72.2	57.0
02:00 AM - 03:00 AM	62.2	83.5	56.9
03:00 AM - 04:00 AM	58.3	77.5	55.7
04:00 AM - 05:00 AM	58.3	77.4	56.1
05:00 AM - 06:00 AM	59.0	79.1	55.0
06:00 AM - 07:00 AM	61.3	80.9	55.7
07:00 AM - 08:00 AM	62.5	79.1	55.3
08:00 AM - 09:00 AM	62.0	83.7	53.8
09:00 AM - 10:00 AM	61.5	85.9	54.1
10:00 AM - 11:00 AM	60.6	78.5	51.9
11:00 AM - 12:00 PM	60.3	80.1	50.4

Leq Average 24 hrs. (dB(A)) : 61.0
Lmax (dB(A)) : 87.5
L90 (dB(A)) : 55.7
Ldn (dB(A)) : 66.5
Standard (dB(A)) : 70

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
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Technical Management

Saranya C.

Saranya Chalemtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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11966-21



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505896-1

Page 1 of 1

Sample Number : 22134324-4
Parameter : Noise (Leq 24 hrs.)
Location : บริเวณรั้วโรงงาน N2
Measurement Date : Nov 18 - Nov 19, 2022
Measurement by : Artit Srisen
Sound Level meter : Serial No. 572457

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	52.2	77.7	49.0
01:00 PM - 02:00 PM	61.0	87.2	53.3
02:00 PM - 03:00 PM	57.1	79.8	51.7
03:00 PM - 04:00 PM	53.4	67.0	50.3
04:00 PM - 05:00 PM	57.8	77.6	52.3
05:00 PM - 06:00 PM	59.5	74.8	52.9
06:00 PM - 07:00 PM	55.7	74.0	52.0
07:00 PM - 08:00 PM	56.6	71.8	51.7
08:00 PM - 09:00 PM	57.1	71.3	52.1
09:00 PM - 10:00 PM	59.3	92.6	52.8
10:00 PM - 11:00 PM	61.3	71.6	58.0
11:00 PM - 12:00 AM	61.6	71.5	59.0
12:00 AM - 01:00 AM	63.2	71.4	60.1
01:00 AM - 02:00 AM	59.8	71.2	58.9
02:00 AM - 03:00 AM	59.7	75.3	58.1
03:00 AM - 04:00 AM	59.4	72.0	58.5
04:00 AM - 05:00 AM	59.6	70.6	58.9
05:00 AM - 06:00 AM	60.5	76.6	59.2
06:00 AM - 07:00 AM	61.7	79.7	59.8
07:00 AM - 08:00 AM	60.2	78.1	58.8
08:00 AM - 09:00 AM	60.4	76.3	58.3
09:00 AM - 10:00 AM	60.0	83.1	56.7
10:00 AM - 11:00 AM	57.8	72.6	55.7
11:00 AM - 12:00 PM	61.3	83.9	57.6

Leq Average 24 hrs. (dB(A)) : 59.6
Lmax (dB(A)) : 92.6
L90 (dB(A)) : 56.7
Ldn (dB(A)) : 67.1
Standard (dB(A)) : 70

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เฝ้าระวังการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

Saranya C.

Saranya Chalemtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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11966-21



Analysis / Test Report

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9 Moo 5, Teennoen Rd., Huapluak, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505897-1

Page 1 of 1

Sample Number 22134324-5
Parameter Noise (Leq 24 hrs.)
Location บริเวณชั้นโรงงาน N2
Measurement Date Nov 19 - Nov 20, 2022
Measurement by Artit Srisen
Sound Level meter Serial No. 572457

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	58.9	75.5	57.4
01:00 PM - 02:00 PM	60.4	78.8	58.0
02:00 PM - 03:00 PM	60.2	79.6	58.1
03:00 PM - 04:00 PM	59.2	79.4	57.5
04:00 PM - 05:00 PM	59.1	78.7	57.7
05:00 PM - 06:00 PM	61.5	78.9	58.5
06:00 PM - 07:00 PM	60.2	71.5	58.9
07:00 PM - 08:00 PM	59.9	74.1	58.7
08:00 PM - 09:00 PM	60.4	79.2	59.2
09:00 PM - 10:00 PM	61.6	83.5	59.0
10:00 PM - 11:00 PM	61.3	85.0	58.9
11:00 PM - 12:00 AM	59.7	73.3	58.8
12:00 AM - 01:00 AM	60.6	78.1	59.0
01:00 AM - 02:00 AM	61.4	83.2	59.2
02:00 AM - 03:00 AM	60.0	74.2	59.1
03:00 AM - 04:00 AM	59.6	73.0	58.7
04:00 AM - 05:00 AM	61.7	79.6	59.2
05:00 AM - 06:00 AM	60.6	81.8	59.0
06:00 AM - 07:00 AM	61.5	82.8	58.9
07:00 AM - 08:00 AM	60.3	87.8	57.3
08:00 AM - 09:00 AM	59.5	73.7	57.7
09:00 AM - 10:00 AM	61.5	80.1	58.6
10:00 AM - 11:00 AM	60.4	81.1	57.9
11:00 AM - 12:00 PM	59.2	71.5	57.6

Leq Average 24 hrs. (dB(A)) 60.4
Lmax (dB(A)) 87.8
L90 (dB(A)) 58.7
Ldn (dB(A)) 67.1
Standard (dB(A)) 70
Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

Saranya C.

Saranya Chalermtamrong
Scientist (4)

Approved by

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Supot Salamteh
Section Head

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11966-21



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluak, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505898-1

Page 1 of 1

Sample Number 22134324-6
Parameter Noise (Leq 24 hrs.)
Location บริเวณชั้นโรงงาน N2
Measurement Date Nov 20 - Nov 21, 2022
Measurement by Artit Srisen
Sound Level meter Serial No. 572457

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	59.1	76.4	57.4
01:00 PM - 02:00 PM	59.4	79.9	57.3
02:00 PM - 03:00 PM	60.5	80.8	58.0
03:00 PM - 04:00 PM	59.2	73.6	57.8
04:00 PM - 05:00 PM	59.4	76.0	58.2
05:00 PM - 06:00 PM	62.3	78.6	58.8
06:00 PM - 07:00 PM	60.1	74.0	58.6
07:00 PM - 08:00 PM	59.4	72.3	58.3
08:00 PM - 09:00 PM	60.6	80.1	58.7
09:00 PM - 10:00 PM	60.3	76.2	58.6
10:00 PM - 11:00 PM	60.7	78.7	58.8
11:00 PM - 12:00 AM	59.6	76.2	58.3
12:00 AM - 01:00 AM	58.7	71.1	58.1
01:00 AM - 02:00 AM	59.6	77.0	58.4
02:00 AM - 03:00 AM	60.5	76.8	58.9
03:00 AM - 04:00 AM	59.7	80.4	58.4
04:00 AM - 05:00 AM	59.1	71.4	58.2
05:00 AM - 06:00 AM	59.8	83.8	58.4
06:00 AM - 07:00 AM	61.3	87.3	58.8
07:00 AM - 08:00 AM	59.1	81.6	56.2
08:00 AM - 09:00 AM	57.1	80.6	53.8
09:00 AM - 10:00 AM	58.1	83.0	51.9
10:00 AM - 11:00 AM	58.6	79.4	54.2
11:00 AM - 12:00 PM	56.8	87.0	49.1

Leq Average 24 hrs. (dB(A)) 59.7
Lmax (dB(A)) 87.3
L90 (dB(A)) 58.2
Ldn (dB(A)) 66.3
Standard (dB(A)) 70
Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
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Technical Management

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Saranya Chalermtamrong
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Approved by

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Supot Salamteh
Section Head

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11966-21



Analysis / Test Report

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505899-1

Page 1 of 1

Sample Number	22134324-7
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณริมรั้วโรงงาน N3
Measurement Date	Nov 18 - Nov 19, 2022
Measurement by	Artit Srisen
Sound Level meter	Serial No. 858527

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	62.4	92.5	55.0
01:00 PM - 02:00 PM	60.1	86.8	54.0
02:00 PM - 03:00 PM	54.7	64.6	52.2
03:00 PM - 04:00 PM	55.1	64.2	52.4
04:00 PM - 05:00 PM	56.6	70.0	51.6
05:00 PM - 06:00 PM	59.0	72.0	54.6
06:00 PM - 07:00 PM	60.0	86.8	53.3
07:00 PM - 08:00 PM	55.9	69.0	52.8
08:00 PM - 09:00 PM	58.7	72.0	54.1
09:00 PM - 10:00 PM	59.6	71.9	54.4
10:00 PM - 11:00 PM	64.0	88.5	55.2
11:00 PM - 12:00 AM	58.3	71.1	55.8
12:00 AM - 01:00 AM	59.5	72.2	57.3
01:00 AM - 02:00 AM	59.1	85.5	56.4
02:00 AM - 03:00 AM	61.2	83.9	58.2
03:00 AM - 04:00 AM	57.8	66.0	56.4
04:00 AM - 05:00 AM	61.7	71.2	57.6
05:00 AM - 06:00 AM	61.2	72.8	59.3
06:00 AM - 07:00 AM	61.3	91.3	57.7
07:00 AM - 08:00 AM	59.9	78.6	57.8
08:00 AM - 09:00 AM	60.3	85.7	57.5
09:00 AM - 10:00 AM	59.3	83.5	56.3
10:00 AM - 11:00 AM	58.0	88.2	54.6
11:00 AM - 12:00 PM	58.6	70.1	54.1

Leq Average 24 hrs. (dB(A))	59.8		
Lmax (dB(A))		92.5	
L90 (dB(A))			55.0
Ldn (dB(A))	67.0		
Standard (dB(A))	70	115	

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
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Technical Management

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Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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11966-21



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505900-1

Page 1 of 1

Sample Number	22134324-8
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณริมรั้วโรงงาน N3
Measurement Date	Nov 19 - Nov 20, 2022
Measurement by	Artit Srisen
Sound Level meter	Serial No. 858527

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	63.4	72.9	62.0
01:00 PM - 02:00 PM	63.8	78.1	62.5
02:00 PM - 03:00 PM	68.6	82.1	60.6
03:00 PM - 04:00 PM	63.6	75.9	62.2
04:00 PM - 05:00 PM	63.3	73.1	62.1
05:00 PM - 06:00 PM	66.7	77.3	63.8
06:00 PM - 07:00 PM	64.2	78.9	63.0
07:00 PM - 08:00 PM	64.5	81.3	63.3
08:00 PM - 09:00 PM	65.0	82.8	63.4
09:00 PM - 10:00 PM	64.3	74.0	63.1
10:00 PM - 11:00 PM	64.7	77.4	62.7
11:00 PM - 12:00 AM	63.3	74.4	62.1
12:00 AM - 01:00 AM	66.3	86.8	64.5
01:00 AM - 02:00 AM	65.1	78.0	64.0
02:00 AM - 03:00 AM	64.0	73.9	62.0
03:00 AM - 04:00 AM	64.1	78.2	62.0
04:00 AM - 05:00 AM	64.7	77.9	62.6
05:00 AM - 06:00 AM	66.1	79.9	64.6
06:00 AM - 07:00 AM	65.8	81.0	63.2
07:00 AM - 08:00 AM	62.0	72.6	60.6
08:00 AM - 09:00 AM	64.4	75.7	61.8
09:00 AM - 10:00 AM	64.1	72.5	62.8
10:00 AM - 11:00 AM	64.2	75.7	63.0
11:00 AM - 12:00 PM	64.1	75.8	62.6

Leq Average 24 hrs. (dB(A))	64.8		
Lmax (dB(A))		86.8	
L90 (dB(A))			62.6
Ldn (dB(A))	71.4		
Standard (dB(A))	70	115	

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

Saranya C.

Saranya Chalemtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505901-1

Page 1 of 1

Sample Number	22134324-9
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณโรงโม่หิน N3
Measurement Date	Nov 20 - Nov 21, 2022
Measurement by	Artit Srisen
Sound Level meter	Serial No. 858527

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	64.5	82.9	62.8
01:00 PM - 02:00 PM	63.9	73.8	62.9
02:00 PM - 03:00 PM	64.4	79.3	62.8
03:00 PM - 04:00 PM	64.0	74.0	63.1
04:00 PM - 05:00 PM	64.7	77.4	63.4
05:00 PM - 06:00 PM	66.6	74.2	63.9
06:00 PM - 07:00 PM	64.7	74.4	63.5
07:00 PM - 08:00 PM	64.1	74.1	63.3
08:00 PM - 09:00 PM	65.2	76.1	63.6
09:00 PM - 10:00 PM	65.0	75.9	63.9
10:00 PM - 11:00 PM	65.1	83.0	63.8
11:00 PM - 12:00 AM	63.9	77.4	62.3
12:00 AM - 01:00 AM	63.3	72.1	62.1
01:00 AM - 02:00 AM	65.6	77.3	64.5
02:00 AM - 03:00 AM	63.5	77.6	61.4
03:00 AM - 04:00 AM	63.9	74.7	61.7
04:00 AM - 05:00 AM	64.3	76.6	62.4
05:00 AM - 06:00 AM	64.6	74.2	63.2
06:00 AM - 07:00 AM	63.7	80.5	62.0
07:00 AM - 08:00 AM	61.8	79.0	60.4
08:00 AM - 09:00 AM	60.8	80.9	56.6
09:00 AM - 10:00 AM	60.0	86.0	56.1
10:00 AM - 11:00 AM	55.5	75.7	53.1
11:00 AM - 12:00 PM	56.1	69.7	53.8

Leq Average 24 hrs. (dB(A))	63.9		
Lmax (dB(A))		86.0	
L90 (dB(A))			62.8
Ldn (dB(A))	70.6		
Standard (dB(A))	70	115	

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เบี่ยงเบนจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

Saranya C.

Saranya Chalemthamrong
Scientist (4)

Approved by

Supt S.

Supt Salameh
Section Head

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Analysis / Test Report

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505902-1

Page 1 of 1

Sample Number	22134324-10
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณโรงโม่หิน N4
Measurement Date	Nov 18 - Nov 19, 2022
Measurement by	Artit Srisen
Sound Level meter	Serial No. 858526

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	55.7	73.7	46.9
01:00 PM - 02:00 PM	59.8	87.5	50.8
02:00 PM - 03:00 PM	54.8	74.2	47.7
03:00 PM - 04:00 PM	53.9	69.9	47.8
04:00 PM - 05:00 PM	54.3	73.5	47.5
05:00 PM - 06:00 PM	56.2	71.9	51.0
06:00 PM - 07:00 PM	54.6	70.5	49.7
07:00 PM - 08:00 PM	53.1	67.8	49.0
08:00 PM - 09:00 PM	54.8	69.6	48.0
09:00 PM - 10:00 PM	52.7	69.2	47.9
10:00 PM - 11:00 PM	53.1	69.7	48.0
11:00 PM - 12:00 AM	51.3	70.1	47.5
12:00 AM - 01:00 AM	52.2	65.1	49.0
01:00 AM - 02:00 AM	51.7	69.3	48.0
02:00 AM - 03:00 AM	52.5	68.4	48.2
03:00 AM - 04:00 AM	51.1	63.4	47.3
04:00 AM - 05:00 AM	50.7	64.6	47.1
05:00 AM - 06:00 AM	54.5	70.2	51.4
06:00 AM - 07:00 AM	54.9	77.8	50.3
07:00 AM - 08:00 AM	55.4	74.4	50.0
08:00 AM - 09:00 AM	55.7	70.1	51.5
09:00 AM - 10:00 AM	55.2	71.5	50.6
10:00 AM - 11:00 AM	59.1	74.6	50.2
11:00 AM - 12:00 PM	54.2	74.9	47.9

Leq Average 24 hrs. (dB(A))	54.9		
Lmax (dB(A))		87.5	
L90 (dB(A))			48.0
Ldn (dB(A))	59.7		
Standard (dB(A))	70	115	

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เบี่ยงเบนจากการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

Saranya C.

Saranya Chalemthamrong
Scientist (4)

Approved by

Supt S.

Supt Salameh
Section Head

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Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505903-1

Page 1 of 1

Sample Number 22134324-11
 Parameter Noise (Leq 24 hrs.)
 Location บริเวณรั้วโรงงาน N4
 Measurement Date Nov 19 - Nov 20, 2022
 Measurement by Artit Srisen
 Sound Level meter Serial No. 858526

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	55.2	69.2	49.6
01:00 PM - 02:00 PM	58.5	75.3	52.9
02:00 PM - 03:00 PM	57.8	75.5	52.0
03:00 PM - 04:00 PM	56.9	79.3	51.4
04:00 PM - 05:00 PM	56.3	75.0	51.1
05:00 PM - 06:00 PM	57.6	77.3	52.6
06:00 PM - 07:00 PM	56.4	68.0	52.4
07:00 PM - 08:00 PM	56.9	76.4	53.0
08:00 PM - 09:00 PM	56.4	70.0	53.4
09:00 PM - 10:00 PM	57.5	77.1	52.6
10:00 PM - 11:00 PM	54.6	73.1	51.5
11:00 PM - 12:00 AM	53.9	66.6	50.5
12:00 AM - 01:00 AM	55.1	75.4	49.8
01:00 AM - 02:00 AM	53.2	68.5	50.3
02:00 AM - 03:00 AM	54.6	74.9	50.1
03:00 AM - 04:00 AM	55.0	76.5	49.9
04:00 AM - 05:00 AM	56.4	75.8	50.0
05:00 AM - 06:00 AM	55.1	70.0	51.9
06:00 AM - 07:00 AM	56.1	77.1	51.4
07:00 AM - 08:00 AM	54.6	78.1	49.9
08:00 AM - 09:00 AM	54.7	74.2	50.0
09:00 AM - 10:00 AM	56.3	73.5	50.8
10:00 AM - 11:00 AM	55.3	74.7	49.8
11:00 AM - 12:00 PM	55.4	71.0	50.2

Leq Average 24 hrs. (dB(A)) 56.0
 Lmax (dB(A)) 79.3
 L90 (dB(A)) 50.8
 Ldn (dB(A)) 61.7
 Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
 2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เฝ้าระวังการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

Saranya C.

Saranya Chalemtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteah
Section Head

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Analysis / Test Report

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134324

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505904-1

Page 1 of 1

Sample Number 22134324-12
 Parameter Noise (Leq 24 hrs.)
 Location บริเวณรั้วโรงงาน N4
 Measurement Date Nov 20 - Nov 21, 2022
 Measurement by Artit Srisen
 Sound Level meter Serial No. 858526

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	55.3	76.9	49.5
01:00 PM - 02:00 PM	55.5	74.2	50.4
02:00 PM - 03:00 PM	56.4	70.5	51.1
03:00 PM - 04:00 PM	55.4	71.7	50.5
04:00 PM - 05:00 PM	56.0	69.8	50.9
05:00 PM - 06:00 PM	56.5	71.8	52.8
06:00 PM - 07:00 PM	55.0	70.5	51.1
07:00 PM - 08:00 PM	54.6	75.6	49.6
08:00 PM - 09:00 PM	54.0	70.6	50.0
09:00 PM - 10:00 PM	53.3	68.7	49.9
10:00 PM - 11:00 PM	52.9	76.3	49.5
11:00 PM - 12:00 AM	52.6	83.3	48.7
12:00 AM - 01:00 AM	51.3	64.2	48.7
01:00 AM - 02:00 AM	51.9	62.8	49.9
02:00 AM - 03:00 AM	54.2	79.5	49.9
03:00 AM - 04:00 AM	52.5	78.2	47.5
04:00 AM - 05:00 AM	51.2	67.7	48.6
05:00 AM - 06:00 AM	53.6	69.2	48.6
06:00 AM - 07:00 AM	56.2	70.0	52.1
07:00 AM - 08:00 AM	57.0	70.4	51.9
08:00 AM - 09:00 AM	56.4	71.4	51.7
09:00 AM - 10:00 AM	56.1	76.9	49.9
10:00 AM - 11:00 AM	55.2	70.3	48.5
11:00 AM - 12:00 PM	54.7	71.4	46.8

Leq Average 24 hrs. (dB(A)) 54.8
 Lmax (dB(A)) 83.3
 L90 (dB(A)) 49.9
 Ldn (dB(A)) 60.0
 Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
 2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เฝ้าระวังการประกอบกิจการโรงงาน พ.ศ. 2548

Technical Management

Saranya C.

Saranya Chalemtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteah
Section Head

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Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134331

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505907-1

Page 1 of 1

Sample Number 22134331-1
 Parameter Noise (Leq 24 hrs.)
 Location หมู่ 4 บ้านแพะ ตำบลหัวปลวก (AN 1) (GPS 47P 0697284, 1615158)
 Measurement Date Nov 18 - Nov 19, 2022
 Measurement by Artit Srisen
 Sound Level meter Serial No. 858521

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
01:00 PM - 02:00 PM	57.9	85.4	46.2
02:00 PM - 03:00 PM	45.3	68.4	38.9
03:00 PM - 04:00 PM	43.4	66.4	38.2
04:00 PM - 05:00 PM	45.9	70.3	40.1
05:00 PM - 06:00 PM	49.3	71.8	41.9
06:00 PM - 07:00 PM	53.8	82.3	47.9
07:00 PM - 08:00 PM	50.5	64.2	49.7
08:00 PM - 09:00 PM	49.5	65.1	48.6
09:00 PM - 10:00 PM	48.7	70.6	48.0
10:00 PM - 11:00 PM	49.3	62.1	48.8
11:00 PM - 12:00 AM	51.4	76.9	49.1
12:00 AM - 01:00 AM	49.4	68.9	48.5
01:00 AM - 02:00 AM	48.5	63.3	48.0
02:00 AM - 03:00 AM	47.6	62.0	47.2
03:00 AM - 04:00 AM	46.6	66.5	46.0
04:00 AM - 05:00 AM	46.2	59.2	45.4
05:00 AM - 06:00 AM	53.7	78.0	45.5
06:00 AM - 07:00 AM	47.2	71.6	44.2
07:00 AM - 08:00 AM	47.1	71.4	42.7
08:00 AM - 09:00 AM	47.6	73.3	42.2
09:00 AM - 10:00 AM	49.3	77.9	42.1
10:00 AM - 11:00 AM	46.4	74.4	40.9
11:00 AM - 12:00 PM	46.4	73.1	40.0
12:00 PM - 01:00 PM	50.4	63.6	46.6

Leq Average 24 hrs. (dB(A))

50.2

Lmax (dB(A))

85.4

L90 (dB(A))

45.5

Ldn (dB(A))

56.1

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
 2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการ
 โรงงาน พ.ศ. 2548

Technical Management

Saratat

Saratat Mongkonjirawat
Supervisor

Approved by

Supot S

Supot Salamteh
Section Head

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Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :

Project Name :

Project Location :

Lot ID: 22134331

Date Received : Nov 21, 2022

Date Reported : Nov 29, 2022

Report Number: 2505908-1

Page 1 of 1

Sample Number 22134331-2
 Parameter Noise (Leq 24 hrs.)
 Location หมู่ 5 บ้านแพะ ตำบลหัวปลวก (AN 2) (GPS 47P 0696655, 1616585)
 Measurement Date Nov 18 - Nov 19, 2022
 Measurement by Artit Srisen
 Sound Level meter Serial No. 858523

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
01:00 PM - 02:00 PM	56.7	76.6	45.0
02:00 PM - 03:00 PM	56.5	76.9	40.9
03:00 PM - 04:00 PM	55.2	75.5	41.8
04:00 PM - 05:00 PM	56.5	75.9	41.8
05:00 PM - 06:00 PM	55.2	75.1	40.8
06:00 PM - 07:00 PM	54.3	73.9	48.3
07:00 PM - 08:00 PM	54.1	69.2	49.8
08:00 PM - 09:00 PM	53.6	72.2	49.0
09:00 PM - 10:00 PM	52.1	71.0	47.8
10:00 PM - 11:00 PM	50.4	73.3	45.8
11:00 PM - 12:00 AM	51.9	75.3	47.7
12:00 AM - 01:00 AM	50.4	69.7	47.2
01:00 AM - 02:00 AM	48.6	65.7	47.0
02:00 AM - 03:00 AM	49.9	72.5	46.7
03:00 AM - 04:00 AM	45.2	62.8	42.4
04:00 AM - 05:00 AM	47.8	70.9	42.7
05:00 AM - 06:00 AM	52.2	76.1	42.7
06:00 AM - 07:00 AM	56.6	76.0	44.3
07:00 AM - 08:00 AM	55.4	72.3	43.9
08:00 AM - 09:00 AM	55.5	74.7	42.2
09:00 AM - 10:00 AM	55.7	77.2	40.3
10:00 AM - 11:00 AM	57.0	77.8	41.6
11:00 AM - 12:00 PM	56.6	74.9	47.0
12:00 PM - 01:00 PM	59.1	72.4	54.6

Leq Average 24 hrs. (dB(A))

54.7

Lmax (dB(A))

77.8

L90 (dB(A))

44.3

Ldn (dB(A))

58.9

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
 2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการ
 โรงงาน พ.ศ. 2548

Technical Management

Saratat

Saratat Mongkonjirawat
Supervisor

Approved by

Supot S

Supot Salamteh
Section Head

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22134327
Date Received : Nov 21, 2022
Date Reported : Nov 29, 2022
Report Number : 2506277-1

Page 1 of 3

Sample No. 22134327-1
Parameter เสียงรบกวน
Location หมู่ 4 บ้านแพะ ตำบลหัวปลวก (AN 1) (GPS 47P 0697284, 1615158)
Measurement Date Nov 18 - 19, 2022
Measurement by Artit Srisen
Sound Level Meter 00858521

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	ระดับเสียง (dB(A))		ตัวปรับค่า	ปรับค่าเสียงจากแหล่งกำเนิด		เสียงพื้นฐาน	ค่าระดับการรบกวน
			ผลต่างระดับเสียง	(A-C)		กลางคืน	กลางวัน		
10:00 PM - 10:05 PM	48.7	45.5	3.2	3.0	-	48.7	45.0	3.7	
10:05 PM - 10:10 PM	48.5	45.5	3.0	3.0	-	48.5	45.0	3.5	
10:10 PM - 10:15 PM	48.4	45.5	2.9	3.0	-	48.4	45.0	3.4	
10:15 PM - 10:20 PM	48.7	45.5	3.2	3.0	-	48.7	45.0	3.7	
10:20 PM - 10:25 PM	49.0	45.5	3.5	2.0	-	50.0	45.0	5.0	
10:25 PM - 10:30 PM	48.9	45.5	3.4	3.0	-	48.9	45.0	3.9	
10:30 PM - 10:35 PM	48.8	45.5	3.3	3.0	-	48.8	45.0	3.8	
10:35 PM - 10:40 PM	49.9	45.5	4.4	2.0	-	50.9	45.0	5.9	
10:40 PM - 10:45 PM	50.2	45.5	4.7	1.5	-	51.7	45.0	6.7	
10:45 PM - 10:50 PM	49.8	45.5	4.3	2.0	-	50.8	45.0	5.8	
10:50 PM - 10:55 PM	50.3	45.5	4.8	1.5	-	51.8	45.0	6.8	
10:55 PM - 11:00 PM	49.9	45.5	4.4	2.0	-	50.9	45.0	5.9	
11:00 PM - 11:05 PM	53.3	45.5	7.8	0.5	-	55.8	45.0	10.8	
11:05 PM - 11:10 PM	53.8	45.5	8.3	0.5	-	56.3	45.0	11.3	
11:10 PM - 11:15 PM	49.8	45.5	4.3	2.0	-	50.8	45.0	5.8	
11:15 PM - 11:20 PM	52.6	45.5	7.1	1.0	-	54.6	45.0	9.6	
11:20 PM - 11:25 PM	54.3	45.5	8.8	0.5	-	55.8	45.0	11.8	
11:25 PM - 11:30 PM	50.0	45.5	4.5	1.5	-	51.5	45.0	6.5	
11:30 PM - 11:35 PM	51.1	45.5	5.6	1.5	-	52.6	45.0	7.6	
11:35 PM - 11:40 PM	49.4	45.5	3.9	2.0	-	50.4	45.0	5.4	
11:40 PM - 11:45 PM	49.3	45.5	3.8	2.0	-	50.3	45.0	5.3	
11:45 PM - 11:50 PM	49.3	45.5	3.8	2.0	-	50.3	45.0	5.3	
11:50 PM - 11:55 PM	49.4	45.5	3.9	2.0	-	50.4	45.0	5.4	
11:55 PM - 12:00 AM	49.3	45.5	3.8	2.0	-	50.3	45.0	5.3	
12:00 AM - 12:05 AM	49.0	45.5	3.5	2.0	-	50.0	45.0	5.0	
12:05 AM - 12:10 AM	51.4	45.5	5.9	1.5	-	52.9	45.0	7.9	
12:10 AM - 12:15 AM	48.8	45.5	3.3	3.0	-	48.8	45.0	3.8	
12:15 AM - 12:20 AM	48.8	45.5	3.3	3.0	-	48.8	45.0	3.8	
12:20 AM - 12:25 AM	48.9	45.5	3.4	3.0	-	48.9	45.0	3.9	
12:25 AM - 12:30 AM	48.6	45.5	3.1	3.0	-	48.6	45.0	3.6	
12:30 AM - 12:35 AM	48.7	45.5	3.2	3.0	-	48.7	45.0	3.7	
12:35 AM - 12:40 AM	49.2	45.5	3.7	2.0	-	50.2	45.0	5.2	
12:40 AM - 12:45 AM	49.0	45.5	3.5	2.0	-	50.0	45.0	5.0	
12:45 AM - 12:50 AM	49.9	45.5	4.4	2.0	-	50.9	45.0	5.9	
12:50 AM - 12:55 AM	49.4	45.5	3.9	2.0	-	50.4	45.0	5.4	
12:55 AM - 01:00 AM	49.7	45.5	4.2	2.0	-	50.7	45.0	5.7	
01:00 AM - 01:05 AM	49.2	45.5	3.7	2.0	-	50.2	45.0	5.2	
01:05 AM - 01:10 AM	49.1	45.5	3.6	2.0	-	50.1	45.0	5.1	
01:10 AM - 01:15 AM	49.2	45.5	3.7	2.0	-	50.2	45.0	5.2	
01:15 AM - 01:20 AM	48.9	45.5	3.4	3.0	-	48.9	45.0	3.9	

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Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22134327
Date Received : Nov 21, 2022
Date Reported : Nov 29, 2022
Report Number : 2506277-1

Page 2 of 3

Sample No. 22134327-1
Parameter เสียงรบกวน
Location หมู่ 4 บ้านแพะ ตำบลหัวปลวก (AN 1) (GPS 47P 0697284, 1615158)
Measurement Date Nov 18 - 19, 2022
Measurement by Artit Srisen
Sound Level Meter 00858521

ระดับเสียง (dB(A))							
เวลา	เสียงจาก แหล่งกำเนิด	เสียงขณะ ไม่มีการรบกวน	ผลต่าง ระดับเสียง	ตัวปรับค่า	ปรับค่าเสียงจากแหล่งกำเนิด		ค่าระดับ การรบกวน
					กลางวัน	กลางคืน	
01:20 AM - 01:25 AM	48.7	45.5	3.2	3.0	-	48.7	3.7
01:25 AM - 01:30 AM	48.7	45.5	3.2	3.0	-	48.7	3.7
01:30 AM - 01:35 AM	48.5	45.5	3.0	3.0	-	48.5	3.5
01:35 AM - 01:40 AM	48.1	45.5	2.6	3.0	-	48.1	3.1
01:40 AM - 01:45 AM	48.5	45.5	3.0	3.0	-	48.5	3.5
01:45 AM - 01:50 AM	47.6	45.5	2.1	4.5	-	46.1	1.1
01:50 AM - 01:55 AM	47.5	45.5	2.0	4.5	-	46.0	1.0
01:55 AM - 02:00 AM	47.3	45.5	1.8	4.5	-	45.8	0.8
02:00 AM - 02:05 AM	47.5	45.5	2.0	4.5	-	46.0	1.0
02:05 AM - 02:10 AM	47.6	45.5	2.1	4.5	-	46.1	1.1
02:10 AM - 02:15 AM	47.6	45.5	2.1	4.5	-	46.1	1.1
02:15 AM - 02:20 AM	47.6	45.5	2.1	4.5	-	46.1	1.1
02:20 AM - 02:25 AM	47.6	45.5	2.1	4.5	-	46.1	1.1
02:25 AM - 02:30 AM	47.8	45.5	2.3	4.5	-	46.3	1.3
02:30 AM - 02:35 AM	47.7	45.5	2.2	4.5	-	46.2	1.2
02:35 AM - 02:40 AM	47.6	45.5	2.1	4.5	-	46.1	1.1
02:40 AM - 02:45 AM	47.9	45.5	2.4	4.5	-	46.4	1.4
02:45 AM - 02:50 AM	47.4	45.5	1.9	4.5	-	45.9	0.9
02:50 AM - 02:55 AM	47.7	45.5	2.2	4.5	-	46.2	1.2
02:55 AM - 03:00 AM	47.6	45.5	2.1	4.5	-	46.1	1.1
03:00 AM - 03:05 AM	47.7	45.5	2.2	4.5	-	46.2	1.2
03:05 AM - 03:10 AM	48.3	45.5	2.8	3.0	-	48.3	3.3
03:10 AM - 03:15 AM	47.6	45.5	2.1	4.5	-	46.1	1.1
03:15 AM - 03:20 AM	46.5	45.5	1.0	7.0	-	42.5	-2.5
03:20 AM - 03:25 AM	46.5	45.5	1.0	7.0	-	42.5	-2.5
03:25 AM - 03:30 AM	46.2	45.5	0.7	7.0	-	42.2	-2.8
04:30 AM - 04:35 AM	45.9	45.5	0.4	7.0	-	41.9	-3.1
04:35 AM - 04:40 AM	46.8	45.5	1.3	7.0	-	42.8	-2.2
04:40 AM - 04:45 AM	48.6	45.5	3.1	3.0	-	48.6	3.6
04:45 AM - 04:50 AM	46.5	45.5	1.0	7.0	-	42.5	-2.5
04:50 AM - 04:55 AM	46.2	45.5	0.7	7.0	-	42.2	-2.8
04:55 AM - 05:00 AM	46.2	45.5	0.7	7.0	-	42.2	-2.8
05:00 AM - 05:05 AM	46.0	45.5	0.5	7.0	-	42.0	-3.0
05:05 AM - 05:10 AM	46.7	45.5	1.2	7.0	-	42.7	-2.3
05:10 AM - 05:15 AM	47.0	45.5	1.5	4.5	-	45.5	0.5
05:15 AM - 05:20 AM	46.6	45.5	1.1	7.0	-	42.6	-2.4
05:20 AM - 05:25 AM	47.0	45.5	1.5	4.5	-	45.5	0.5
05:25 AM - 05:30 AM	46.2	45.5	0.7	7.0	-	42.2	-2.8
05:30 AM - 05:35 AM	46.8	45.5	1.3	7.0	-	42.8	-2.2
05:35 AM - 05:40 AM	46.4	45.5	0.9	7.0	-	42.4	-2.6

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Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :
Project Name :
Project Location :



TESTING

No.0009

Lot ID: 22134327
Date Received : Nov 21, 2022
Date Reported : Nov 29, 2022
Report Number : 2506277-1

Page 3 of 3

Sample No. 22134327-1
Parameter เสียงรบกวน
Location หมู่ 4 บ้านแพะ ตำบลน้ำปลวก (AN 1) (GPS 47P 0697284, 1615158)
Measurement Date Nov 18 - 19, 2022
Measurement by Artit Srisen
Sound Level Meter 00858521

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	ผลต่างระดับเสียง	ตัวปรับค่า	ปรับค่าเสียงจากแหล่งกำเนิด		เสียงพื้นฐาน	ค่าระดับการรบกวน
					กลางวัน	กลางคืน		
05:40 AM - 05:45 AM	47.0	45.5	1.5	4.5	-	45.5	45.0	0.5
05:45 AM - 05:50 AM	59.8	45.5	14.3	0.0	-	62.8	45.0	17.8
05:50 AM - 05:55 AM	61.0	45.5	15.5	0.0	-	64.0	45.0	19.0
05:55 AM - 06:00 AM	51.8	45.5	6.3	1.5	-	53.3	45.0	8.3
06:00 AM - 07:00 AM	47.2	57.9	-10.7	7.0	40.2	-	46.2	-6.0
07:00 AM - 08:00 AM	47.1	57.9	-10.8	7.0	40.1	-	46.2	-6.1
ค่ามาตรฐาน								≤ 10

Reference Method : Based on ISO 1996-1 and ISO 1996-2

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2553
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

ระดับเสียงจากแหล่งกำเนิด ท่าอากาศยาน วัด ณ 18-19 พฤศจิกายน 2565

ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.22134329-1 วันที่ตรวจวัด 18-19 พฤศจิกายน 2565)

Approved by

Kanok Korn Anek

Kanok Korn Anek
Senior Manager

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Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :
Project Name :
Project Location :



TESTING

No.0009

Lot ID: 22134327
Date Received : Nov 21, 2022
Date Reported : Dec 07, 2022
Report Number : 2506278-1 Rev.No.1

Page 1 of 3

Sample No. 22134327-2
Parameter เสียงรบกวน
Location หมู่ 5 บ้านแพะ ตำบลน้ำปลวก (AN 2) (GPS 47P 0696655, 1616585)
Measurement Date Nov 18 - 19, 2022
Measurement by Artit Srisen
Sound Level Meter 00858523

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	ผลต่างระดับเสียง	ตัวปรับค่า	ปรับค่าเสียงจากแหล่งกำเนิด		เสียงพื้นฐาน	ค่าระดับการรบกวน
					กลางวัน	กลางคืน		
10:00 PM - 10:05 PM	52.1	43.6	8.5	0.5	-	54.6	42.1	12.5
10:05 PM - 10:10 PM	52.3	43.6	8.7	0.5	-	54.8	42.1	12.7
10:10 PM - 10:15 PM	52.8	43.6	9.2	0.5	-	55.3	42.1	13.2
10:15 PM - 10:20 PM	46.4	43.6	2.8	3.0	-	46.4	42.1	4.3
10:20 PM - 10:25 PM	49.2	43.6	5.6	1.5	-	50.7	42.1	8.6
10:25 PM - 10:30 PM	50.2	43.6	6.6	1.0	-	52.2	42.1	10.1
10:30 PM - 10:35 PM	46.9	43.6	3.3	3.0	-	46.9	42.1	4.8
10:35 PM - 10:40 PM	46.2	43.6	2.6	3.0	-	46.2	42.1	4.1
10:40 PM - 10:45 PM	50.7	43.6	7.1	1.0	-	52.7	42.1	10.6
10:45 PM - 10:50 PM	50.0	43.6	6.4	1.5	-	51.5	42.1	9.4
10:50 PM - 10:55 PM	45.8	43.6	2.2	4.5	-	44.3	42.1	2.2
10:55 PM - 11:00 PM	53.6	43.6	10.0	0.5	-	56.1	42.1	14.0
11:00 PM - 11:05 PM	49.7	43.6	6.1	1.5	-	51.2	42.1	9.1
11:05 PM - 11:10 PM	50.6	43.6	7.0	1.0	-	52.6	42.1	10.5
11:10 PM - 11:15 PM	57.5	43.6	13.9	0.0	-	60.5	42.1	18.4
11:15 PM - 11:20 PM	49.5	43.6	5.9	1.5	-	51.0	42.1	8.9
11:20 PM - 11:25 PM	50.5	43.6	6.9	1.0	-	52.5	42.1	10.4
11:25 PM - 11:30 PM	51.7	43.6	8.1	0.5	-	54.2	42.1	12.1
11:30 PM - 11:35 PM	50.5	43.6	6.9	1.0	-	52.5	42.1	10.4
11:35 PM - 11:40 PM	50.9	43.6	7.3	1.0	-	52.9	42.1	10.8
11:40 PM - 11:45 PM	52.0	43.6	8.4	0.5	-	54.5	42.1	12.4
11:45 PM - 11:50 PM	50.0	43.6	6.4	1.5	-	51.5	42.1	9.4
11:50 PM - 11:55 PM	50.5	43.6	6.9	1.0	-	52.5	42.1	10.4
11:55 PM - 12:00 AM	51.6	43.6	8.0	0.5	-	54.1	42.1	12.0
12:00 AM - 12:05 AM	50.5	43.6	6.9	1.0	-	52.5	42.1	10.4
12:05 AM - 12:10 AM	48.9	43.6	5.3	1.5	-	50.4	42.1	8.3
12:10 AM - 12:15 AM	52.0	43.6	8.4	0.5	-	54.5	42.1	12.4
12:15 AM - 12:20 AM	48.5	43.6	4.9	1.5	-	50.0	42.1	7.9
12:20 AM - 12:25 AM	48.1	43.6	4.5	1.5	-	49.6	42.1	7.5
12:25 AM - 12:30 AM	55.0	43.6	11.4	0.5	-	57.5	42.1	15.4
12:30 AM - 12:35 AM	51.7	43.6	8.1	0.5	-	54.2	42.1	12.1
12:35 AM - 12:40 AM	48.3	43.6	4.7	1.5	-	49.8	42.1	7.7
12:40 AM - 12:45 AM	48.6	43.6	5.0	1.5	-	50.1	42.1	8.0
12:45 AM - 12:50 AM	50.5	43.6	6.9	1.0	-	52.5	42.1	10.4
12:50 AM - 12:55 AM	47.1	43.6	3.5	2.0	-	48.1	42.1	6.0
12:55 AM - 01:00 AM	47.8	43.6	4.2	2.0	-	48.8	42.1	6.7
01:00 AM - 01:05 AM	47.2	43.6	3.6	2.0	-	48.2	42.1	6.1
01:05 AM - 01:10 AM	48.2	43.6	4.6	1.5	-	49.7	42.1	7.6
01:10 AM - 01:15 AM	48.5	43.6	4.9	1.5	-	50.0	42.1	7.9
01:15 AM - 01:20 AM	51.0	43.6	7.4	1.0	-	53.0	42.1	10.9

Approved by

Kanok Korn Anek

Kanok Korn Anek
Senior Manager

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Life Sciences

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22134327
Date Received : Nov 21, 2022
Date Reported : Dec 07, 2022
Report Number : 2506278-1Rev.No.1

Page 2 of 3

Sample No. 22134327-2
Parameter เสียงรบกวน
Location หมู่ 5 บ้านแพะ ตำบลหัวปลวก (AN 2) (GPS 47P 0696655, 1616585)
Measurement Date Nov 18 - 19, 2022
Measurement by Artit Srisen
Sound Level Meter 00858523

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีกิจกรรม	ระดับเสียง (dB(A))		ปรับค่าเสียงจากแหล่งกำเนิด		เสียงพื้นฐาน	ค่าระดับการรบกวน
			ผลต่าง	ตัวปรับค่า	กลางวัน	กลางคืน		
01:20 AM - 01:25 AM	48.7	43.6	5.1	1.5	-	50.2	42.1	8.1
01:25 AM - 01:30 AM	47.2	43.6	3.6	2.0	-	48.2	42.1	6.1
01:30 AM - 01:35 AM	47.4	43.6	3.8	2.0	-	48.4	42.1	6.3
01:35 AM - 01:40 AM	47.4	43.6	3.8	2.0	-	48.4	42.1	6.3
01:40 AM - 01:45 AM	49.9	43.6	6.3	1.5	-	51.4	42.1	9.3
01:45 AM - 01:50 AM	48.0	43.6	4.4	2.0	-	49.0	42.1	6.9
01:50 AM - 01:55 AM	48.2	43.6	4.6	1.5	-	49.7	42.1	7.6
01:55 AM - 02:00 AM	50.0	43.6	6.4	1.5	-	51.5	42.1	9.4
02:00 AM - 02:05 AM	51.7	43.6	8.1	0.5	-	54.2	42.1	12.1
02:05 AM - 02:10 AM	47.1	43.6	3.5	2.0	-	48.1	42.1	6.0
02:10 AM - 02:15 AM	48.8	43.6	5.2	1.5	-	50.3	42.1	8.2
02:15 AM - 02:20 AM	50.5	43.6	6.9	1.0	-	52.5	42.1	10.4
02:20 AM - 02:25 AM	48.5	43.6	4.9	1.5	-	50.0	42.1	7.9
02:25 AM - 02:30 AM	49.4	43.6	5.8	1.5	-	50.9	42.1	8.8
02:30 AM - 02:35 AM	47.3	43.6	3.7	2.0	-	48.3	42.1	6.2
02:35 AM - 02:40 AM	48.5	43.6	4.9	1.5	-	50.0	42.1	7.9
02:40 AM - 02:45 AM	48.4	43.6	4.8	1.5	-	49.9	42.1	7.8
02:45 AM - 02:50 AM	54.7	43.6	11.1	0.5	-	57.2	42.1	15.1
02:50 AM - 02:55 AM	47.3	43.6	3.7	2.0	-	48.3	42.1	6.2
02:55 AM - 03:00 AM	49.7	43.6	6.1	1.5	-	51.2	42.1	9.1
03:00 AM - 03:05 AM	46.1	43.6	2.5	3.0	-	46.1	42.1	4.0
03:05 AM - 03:10 AM	43.2	43.6	-0.4	7.0	-	39.2	42.1	-2.9
03:10 AM - 03:15 AM	46.6	43.6	3.0	3.0	-	46.6	42.1	4.5
03:15 AM - 03:20 AM	45.5	43.6	1.9	4.5	-	44.0	42.1	1.9
03:20 AM - 03:25 AM	46.4	43.6	2.8	3.0	-	46.4	42.1	4.3
03:25 AM - 03:30 AM	47.5	43.6	3.9	2.0	-	48.5	42.1	6.4
04:30 AM - 04:35 AM	46.1	43.6	2.5	3.0	-	46.1	42.1	4.0
04:35 AM - 04:40 AM	47.7	43.6	4.1	2.0	-	48.7	42.1	6.6
04:40 AM - 04:45 AM	52.2	43.6	8.6	0.5	-	54.7	42.1	12.6
04:45 AM - 04:50 AM	52.6	43.6	9.0	0.5	-	55.1	42.1	13.0
04:50 AM - 04:55 AM	46.2	43.6	2.6	3.0	-	46.2	42.1	4.1
04:55 AM - 05:00 AM	48.5	43.6	4.9	1.5	-	50.0	42.1	7.9
05:00 AM - 05:05 AM	50.1	43.6	6.5	1.0	-	52.1	42.1	10.0
05:05 AM - 05:10 AM	49.9	43.6	6.3	1.5	-	51.4	42.1	9.3
05:10 AM - 05:15 AM	50.2	43.6	6.6	1.0	-	52.2	42.1	10.1
05:15 AM - 05:20 AM	52.3	43.6	8.7	0.5	-	54.8	42.1	12.7
05:20 AM - 05:25 AM	51.8	43.6	8.2	0.5	-	54.3	42.1	12.2
05:25 AM - 05:30 AM	56.4	43.6	12.8	0.0	-	59.4	42.1	17.3
05:30 AM - 05:35 AM	54.1	43.6	10.5	0.5	-	56.6	42.1	14.5
05:35 AM - 05:40 AM	46.1	43.6	2.5	3.0	-	46.1	42.1	4.0

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Approved by

Kanok Korn Anek
Kanok Korn Anek
Senior Manager



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O :
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22134327
Date Received : Nov 21, 2022
Date Reported : Dec 07, 2022
Report Number : 2506278-1Rev.No.1

Page 3 of 3

Sample No. 22134327-2
Parameter เสียงรบกวน
Location หมู่ 5 บ้านแพะ ตำบลหัวปลวก (AN 2) (GPS 47P 0696655, 1616585)
Measurement Date Nov 18 - 19, 2022
Measurement by Artit Srisen
Sound Level Meter 00858523

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีกิจกรรม	ระดับเสียง (dB(A))		ปรับค่าเสียงจากแหล่งกำเนิด		เสียงพื้นฐาน	ค่าระดับการรบกวน
			ผลต่าง	ตัวปรับค่า	กลางวัน	กลางคืน		
05:40 AM - 05:45 AM	50.4	43.6	6.8	1.0	-	52.4	42.1	10.3
05:45 AM - 05:50 AM	47.0	43.6	3.4	3.0	-	47.0	42.1	4.9
05:50 AM - 05:55 AM	53.1	43.6	9.5	0.5	-	55.6	42.1	13.5
05:55 AM - 06:00 AM	54.4	43.6	10.8	0.5	-	56.9	42.1	14.8
06:00 AM - 07:00 AM	56.6	56.7	-0.1	7.0	49.6	-	45.0	4.6
07:00 AM - 08:00 AM	55.4	56.7	-1.3	7.0	48.4	-	45.0	3.4
ค่ามาตรฐาน								≤ 10

Reference Method : Based on ISO 1996-1 and ISO 1996-2

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2553
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

ระดับเสียงจากแหล่งกำเนิด ค่าการตรวจวัด วันที่ 18-19 พฤศจิกายน 2565

ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีกิจกรรม (Sample No.22134329-2 วันที่ตรวจวัด 18-19 พฤศจิกายน 2565)

Note : This Analysis test report is reissued to supersede report No. 2506278-1, Date Reported : Nov 29, 2022 due to revise sample information.

Approved by

Kanok Korn Anek
Kanok Korn Anek
Senior Manager



Analysis / Test Report



TESTING
No.0009

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

Lot ID: 22134329
Date Received : Nov 21, 2022
Date Reported : Nov 29, 2022
Report No. : 2506279-1

P/O :
Project Name :
Project Location :

Page 1 of 1

Sample No. 22134329-1
Parameter Noise
Location หมู่ 4 บ้านหนองศาลาลำไย (AN 1) (GPS 47P 0697284, 1615158) (Shut down)
Measurement Date Nov 18 - 19, 2022
Measurement by Artit Srisen
Sound Level Meter 00858521

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
01:00 PM - 02:00 PM	57.9	85.4	46.2
02:00 PM - 03:00 PM	45.3	68.4	38.9
03:00 PM - 04:00 PM	43.4	65.4	38.2
04:00 PM - 05:00 PM	45.9	70.3	40.1
05:00 PM - 06:00 PM	49.3	71.8	41.9
06:00 PM - 07:00 PM	53.8	82.3	47.9
07:00 PM - 08:00 PM	50.5	64.2	49.7
08:00 PM - 09:00 PM	49.5	65.1	48.6
09:00 PM - 10:00 PM	48.7	70.6	48.0
03:30 AM - 03:35 AM	45.8	49.6	45.4
03:35 AM - 03:40 AM	45.9	54.0	45.3
03:40 AM - 03:45 AM	46.5	48.2	46.0
03:45 AM - 03:50 AM	46.1	50.4	45.5
03:50 AM - 03:55 AM	45.8	47.4	45.4
03:55 AM - 04:00 AM	45.9	51.2	45.2
04:00 AM - 04:05 AM	45.5	49.6	45.0
04:05 AM - 04:10 AM	45.4	52.6	44.9
04:10 AM - 04:15 AM	45.4	50.1	44.7
04:15 AM - 04:20 AM	45.3	47.6	44.8
04:20 AM - 04:25 AM	45.4	47.9	44.8
04:25 AM - 04:30 AM	45.3	48.9	44.5

Reference Method : Based on ISO 1996-1 and ISO 1996-2

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Analysis / Test Report



TESTING
No.0009

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

Lot ID: 22134329
Date Received : Nov 21, 2022
Date Reported : Dec 07, 2022
Report No. : 2506280-1 Rev.No.1

P/O :
Project Name :
Project Location :

Page 1 of 1

Sample No. 22134329-2
Parameter Noise
Location หมู่ 5 บ้านหนองศาลาลำไย (AN 2) (GPS 47P 0696655, 1616585) (Shut down)
Measurement Date Nov 18 - 19, 2022
Measurement by Artit Srisen
Sound Level Meter 00858523

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
01:00 PM - 02:00 PM	56.7	76.6	45.0
02:00 PM - 03:00 PM	56.5	76.9	40.9
03:00 PM - 04:00 PM	55.2	75.5	41.8
04:00 PM - 05:00 PM	56.5	75.9	41.8
05:00 PM - 06:00 PM	55.2	75.1	40.8
06:00 PM - 07:00 PM	54.3	73.9	48.3
07:00 PM - 08:00 PM	54.1	69.2	49.8
08:00 PM - 09:00 PM	53.6	72.2	49.0
09:00 PM - 10:00 PM	52.1	71.0	47.8
03:30 AM - 03:35 AM	43.6	45.3	42.1
03:35 AM - 03:40 AM	42.5	51.1	41.3
03:40 AM - 03:45 AM	44.1	46.2	43.5
03:45 AM - 03:50 AM	43.2	55.1	41.9
03:50 AM - 03:55 AM	45.9	60.3	40.0
03:55 AM - 04:00 AM	44.3	51.1	43.7
04:00 AM - 04:05 AM	45.5	61.0	42.6
04:05 AM - 04:10 AM	43.0	45.5	42.3
04:10 AM - 04:15 AM	45.7	60.5	42.5
04:15 AM - 04:20 AM	41.4	47.3	40.1
04:20 AM - 04:25 AM	44.9	59.9	39.5
04:25 AM - 04:30 AM	42.9	45.8	42.5

Reference Method : Based on ISO 1996-1 and ISO 1996-2

Note : This Analysis test report is issued to supersede report No. 2506280-1, Date Reported : Nov 29, 2022 due to revise sample information.

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Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager

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ภาคผนวก ค-6

ระดับเสียงในบริเวณการทำงาน



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Lot ID: 2279304

Date Received : Jul 20, 2022

Date Reported : Jul 26, 2022

Report Number: 2386175-1

Page 1 of 1

Sample Number 2279304-1
Parameter Noise (Leq 8 hrs.)
Location เตาหลอม
Measurement Date Jul 19, 2022
Measurement by Aphiwat Tumnoo

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:14 AM - 10:14 AM	88.0	105.0	85.0
10:14 AM - 11:14 AM	87.5	102.4	85.1
11:14 AM - 12:14 PM	87.4	102.0	84.8
12:14 PM - 01:14 PM	84.0	102.1	80.0
01:14 PM - 02:14 PM	81.8	93.0	80.1
02:14 PM - 03:14 PM	80.2	88.8	78.4
03:14 PM - 04:14 PM	83.2	85.6	78.9
04:14 PM - 05:14 PM	81.3	92.6	71.4

Leq Average 8 hrs. (dB(A))

85.1

Lmax (dB(A))

105.0

Standard (dB(A))

90

140

Reference Method : Based on ISO1996-1 and 1996-2

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๖๖

Technical Management

Saranya C.

Saranya Chalermtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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11956-21

S:\Reports\Air Noise.rpt (4:36PM)



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Lot ID: 2279304

Date Received : Jul 20, 2022

Date Reported : Jul 26, 2022

Report Number: 2386176-1

Page 1 of 1

Sample Number 2279304-2
Parameter Noise (Leq 8 hrs.)
Location เครื่องคัดแยกขนาดหินร่วน
Measurement Date Jul 19, 2022
Measurement by Aphiwat Tumnoo

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:00 AM - 10:00 AM	87.4	98.6	85.5
10:00 AM - 11:00 AM	87.0	99.7	85.0
11:00 AM - 12:00 PM	87.6	97.4	85.7
12:00 PM - 01:00 PM	88.4	99.9	85.4
01:00 PM - 02:00 PM	89.2	99.2	87.2
02:00 PM - 03:00 PM	88.8	102.3	86.4
03:00 PM - 04:00 PM	86.3	93.5	82.6
04:00 PM - 05:00 PM	84.1	95.7	82.0

Leq Average 8 hrs. (dB(A))

87.6

Lmax (dB(A))

102.3

Standard (dB(A))

90

140

Reference Method : Based on ISO1996-1 and 1996-2

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๖๖

Technical Management

Saranya C.

Saranya Chalermtamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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11956-21

S:\Reports\Air Noise.rpt (4:36PM)



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Lot ID: 2279304

Date Received : Jul 20, 2022

Date Reported : Jul 26, 2022

Report Number: 2386177-1

Page 1 of 1

Sample Number	2279304-3
Parameter	Noise (Leq 8 hrs.)
Location	เคาน์เตอร์งาน
Measurement Date	Jul 19, 2022
Measurement by	Aphiwat Tunnoo

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:02 AM - 10:02 AM	84.7	102.4	80.5
10:02 AM - 11:02 AM	84.6	99.9	80.3
11:02 AM - 12:02 PM	82.9	91.9	80.9
12:02 PM - 01:02 PM	85.6	96.8	80.3
01:02 PM - 02:02 PM	88.5	99.9	82.6
02:02 PM - 03:02 PM	84.2	93.3	81.3
03:02 PM - 04:02 PM	81.4	94.2	78.2
04:02 PM - 05:02 PM	84.5	101.9	79.0

Leq Average 8 hrs. (dB(A)) 85.0
 Lmax (dB(A)) 102.4
 Standard (dB(A)) 90
 Reference Method : Based on ISO1996-1 and 1996-2
 Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรฐานการคุ้มครองความปลอดภัย
 ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๕๖

Technical Management

Saranya C.

Saranya Chalemithamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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S:\Reports_Air Noise.rpt (4:38PM)



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Lot ID: 22118486

Date Received : Oct 24, 2022

Date Reported : Oct 29, 2022

Report Number: 2477550-1

Page 1 of 1

Sample Number	22118486-1
Parameter	Noise (Leq 8 hrs.)
Location	เคาน์เตอร์
Measurement Date	Oct 23, 2022
Measurement by	Phongsiri Somkaew

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
01:39 AM - 02:39 AM	87.0	104.7	84.3
02:39 AM - 03:39 AM	85.2	94.0	83.2
03:39 AM - 04:39 AM	85.5	106.0	83.3
04:39 AM - 05:39 AM	86.5	106.0	83.9
05:39 AM - 06:39 AM	86.2	104.5	84.0
06:39 AM - 07:39 AM	86.3	105.4	83.6
07:39 AM - 08:39 AM	85.5	103.9	83.6
08:39 AM - 09:39 AM	86.8	103.5	84.4

Leq Average 8 hrs. (dB(A)) 86.2
 Lmax (dB(A)) 106.0
 Standard (dB(A)) 90
 Reference Method : Based on ISO1996-1 and 1996-2
 Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรฐานการคุ้มครองความปลอดภัย
 ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๕๖

Technical Management

Saranya C.

Saranya Chalemithamrong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

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S:\Reports_Air Noise.rpt (11:00AM)



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Lot ID: 22118486

Date Received : Oct 24, 2022

Date Reported : Oct 29, 2022

Report Number: 2477552-1

Page 1 of 1

Sample Number	22118486-2		
Parameter	Noise (Leq 8 hrs.)		
Location	เครื่องคัดแยกขนาดชิ้นงาน		
Measurement Date	Oct 23, 2022		
Measurement by	Phongsiri Somkaew		
Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
01:11 AM - 02:11 AM	82.0	86.8	81.5
02:11 AM - 03:11 AM	81.4	94.4	80.9
03:11 AM - 04:11 AM	88.3	102.2	83.1
04:11 AM - 05:11 AM	86.7	100.2	81.2
05:11 AM - 06:11 AM	84.5	97.6	81.3
06:11 AM - 07:11 AM	86.8	97.6	83.9
07:11 AM - 08:11 AM	87.6	100.3	84.7
08:11 AM - 09:11 AM	87.8	98.5	85.3
Leq Average 8 hrs. (dB(A))	86.3		
Lmax (dB(A))		102.2	
Standard (dB(A))	90	140	
Reference Method : Based on ISO1996-1 and 1996-2			
Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรฐานการคุ้มครองความปลอดภัย ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๕๖			



Analysis / Test Report

Client : Magotteaux Co., Ltd.

9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160

P/O : 403380

Project Name :

Project Location :

Lot ID: 22118486

Date Received : Oct 24, 2022

Date Reported : Oct 29, 2022

Report Number: 2477552-1

Page 1 of 1

Sample Number	22118486-3		
Parameter	Noise (Leq 8 hrs.)		
Location	เขาคอนกรีต		
Measurement Date	Oct 23, 2022		
Measurement by	Phongsiri Somkaew		
Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
02:01 AM - 03:01 AM	83.0	94.2	81.4
03:01 AM - 04:01 AM	84.7	94.6	82.4
04:01 AM - 05:01 AM	84.9	95.4	82.0
05:01 AM - 06:01 AM	84.5	93.6	82.1
06:01 AM - 07:01 AM	85.3	95.7	83.3
07:01 AM - 08:01 AM	85.0	94.7	83.2
08:01 AM - 09:01 AM	85.2	93.8	83.3
09:01 AM - 10:01 AM	85.4	94.7	83.6
Leq Average 8 hrs. (dB(A))	84.8		
Lmax (dB(A))		95.7	
Standard (dB(A))	90	140	
Reference Method : Based on ISO1996-1 and 1996-2			
Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรฐานการคุ้มครองความปลอดภัย ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๕๖			

Technical Management

Saranya C.

Saranya Chalerthamrong
Scientist (4)

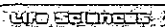
Approved by

Supot S.

Supot Salamteh
Section Head

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Technical Management

Saranya C.

Saranya Chalerthamrong
Scientist (4)

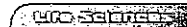
Approved by

Supot S.

Supot Salamteh
Section Head

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ภาคผนวก ค-7

ระดับความร้อนในบริเวณการทำงาน



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 22118488
Date Received : Oct 24, 2022
Date Reported : Oct 26, 2022
Report Number: 2445813-1

Page 1 of 3

Sample Number	22118488-1				
Parameter	Heat Stress (Sampling Time : 11.00 AM - 01.00 PM)				
Measurement Date	Oct 22, 2022				
Measurement by	Phongsiri Somkaew				
Location	ปฏิบัติงาน 2 พื้นที่ (ข้อ-นามสกุล ผู้ปฏิบัติงาน : คุณประทีป ศรีโตย แผนก : เตาหลอม)				
Location	Duration (min)	WBGT (°C)	NWB (°C)	GT (°C)	DB (°C)
บริเวณหน้าเตาหลอม	30	28.5	25.8	34.7	34.4
บริเวณห้องควบคุมเตาหลอม	90	20.4	18.2	25.4	25.3
Average (WBGT)		22.4			
Guideline WBGT (°C)		34.0			

Reference Method : Wet Bulb Globe Temperature

Guideline:

1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
2. Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

Supt S

Supot Salamteh
Section Head

Approved by

Wichan Chm

Wichan Choonharat
Assistant Manager

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Analysis / Test Report

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9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 22118488
Date Received : Oct 24, 2022
Date Reported : Oct 26, 2022
Report Number: 2445813-1

Page 2 of 3

Sample Number	22118488-2				
Parameter	Heat Stress (Sampling Time : 11.00 AM - 01.00 PM)				
Measurement Date	Oct 22, 2022				
Measurement by	Phongsiri Somkaew				
Location	ปฏิบัติงาน 2 พื้นที่ (ข้อ-นามสกุล ผู้ปฏิบัติงาน : คุณประทีป ศรีโตย แผนก : เตาหลอม)				
Location	Duration (min)	WBGT (°C)	NWB (°C)	GT (°C)	DB (°C)
บริเวณหน้าเตาหลอม	30	28.2	25.3	35.0	34.8
บริเวณห้องควบคุมเตาหลอม	90	20.6	18.4	25.7	25.5
Average (WBGT)		22.5			
Guideline WBGT (°C)		34.0			

Reference Method : Wet Bulb Globe Temperature

Guideline:

1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
2. Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

Supt S

Supot Salamteh
Section Head

Approved by

Wichan Chm

Wichan Choonharat
Assistant Manager

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P/O : 403380
Project Name :
Project Location :

Lot ID: 22118488
Date Received : Oct 24, 2022
Date Reported : Oct 26, 2022
Report Number: 2445813-1

Page 3 of 3

Sample Number	22118488-3				
Parameter	Heat Stress (Sampling Time : 11.00 AM - 01.00 PM)				
Measurement Date	Oct 22, 2022				
Measurement by	Phongsiri Somkaew				
Location	ปฏิบัติงาน 1 ชั้นที่ (ชื่อ-นามสกุล ผู้ปฏิบัติงาน : คุณขวัญชัย ภานุพัทธ์ แผนก : เสาธงชัยงาน)				
Location	Duration (min)	WBGT (°C)	NWB (°C)	GT (°C)	DB (°C)
บริเวณเสาธงชัยงาน	120	27.3	24.5	33.9	33.9
Average (WBGT)		27.3			
Guideline WBGT (°C)		34.0			

Reference Method : Wet Bulb Globe Temperature

Guideline:

1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
2. Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

Supot Salamteah
Section Head

Approved by

Wichan Choonharat
Assistant Manager

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ภาคผนวก ค-8

คุณภาพอากาศในสถานประกอบการ



Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279306
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number : 2357523-1

Page 1 of 10

Sample Number 2279306-1
Sampled Date Jul 19, 2022
Sample Description Air Quality
Location บริเวณเตาเผา
Personal Sampling ชุดแบบพกพา 1 เครื่อง
Date Analysis Commenced Jul 22, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 754 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	09:35 AM - 11:35 AM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok
Metals Testing									
Chromium *	09:35 AM - 11:35 AM	mg/m3	-	0.002	<0.002	0.5	NIOSH (2003), 7301	ACGIH	Bangkok
Manganese *	09:35 AM - 11:35 AM	mg/m3	-	0.001	<0.001	0.1(1)	NIOSH (2003), 7301	ACGIH	Bangkok

Guideline :
ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2020).
OSHA : Occupational Safety and Health Administration
Note : (1)Guideline for Metal and Inorganic compounds as Manganese (2012).
Sampled By : Warakorn Pookrak

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.

Approved by

Saranya C.
Saranya Chalemthamrong
Scientist (4)

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11966-21



Analysis / Test Report

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279306
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number : 2357523-1

Page 2 of 10

Sample Number 2279306-2
Sampled Date Jul 19, 2022
Sample Description Air Quality
Location บริเวณเตาเผา
Personal Sampling ชุดแบบพกพา 1 เครื่อง
Date Analysis Commenced Jul 22, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 754 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	09:40 AM - 11:40 AM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok
Metals Testing									
Chromium *	09:40 AM - 11:40 AM	mg/m3	-	0.002	<0.002	0.5	NIOSH (2003), 7301	ACGIH	Bangkok
Manganese *	09:40 AM - 11:40 AM	mg/m3	-	0.001	<0.001	0.1(1)	NIOSH (2003), 7301	ACGIH	Bangkok

Guideline :
ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2020).
OSHA : Occupational Safety and Health Administration
Note : (1)Guideline for Metal and Inorganic compounds as Manganese (2012).
Sampled By : Warakorn Pookrak

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.

Approved by

Saranya C.
Saranya Chalemthamrong
Scientist (4)

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Analysis / Test Report

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279306
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number : 2357523-1

Page 3 of 10

Sample Number	2279306-3
Sampled Date	Jul 19, 2022
Sample Description	Air Quality
Location	เครื่องคัดแยกขนาดฝุ่นงาน
Personal Sampling	คุณณรงค์กร วงศ์ภา
Date Analysis Commenced	Jul 21, 2022
Condition of Sample	Drawn into two filter papers placed in each cassette
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	09:15 AM - 11:15 AM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), OSHA 0600	OSHA	Bangkok
Silica (SiO2) *	09:15 AM - 12:15 PM	mg/m3	-	0.020	<0.020	0.025 (R)	NIOSH (1994), 7601	MOL	Bangkok

Guideline :
MOL : Announcement of the Department of Labour Protection and Welfare on Threshold Limit Values of Hazardous Chemical Substances Dated August 3, B.E. 2560 (2017)
OSHA : Occupational Safety and Health Administration
Sampled By : Warakorn Pookrak

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.

Approved by

Saranya C.

Saranya Chalermtamrong
Scientist (4)

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 2279306
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number : 2357523-1

Page 4 of 10

Sample Number	2279306-4
Sampled Date	Jul 19, 2022
Sample Description	Air Quality
Location	บริเวณโรงคัดแยกอาหาร
Personal Sampling	คุณวัชร : สุนทักษา
Date Analysis Commenced	Jul 21, 2022
Condition of Sample	Drawn into two filter papers placed in each cassette
Barometric Pressure	754 mmHg
Atmospheric Temperature	34.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	02:10 PM - 04:10 PM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), OSHA 0600	OSHA	Bangkok
Silica (SiO2) *	02:10 PM - 05:10 PM	mg/m3	-	0.020	<0.020	0.025 (R)	NIOSH (1994), 7601	MOL	Bangkok

Guideline :
MOL : Announcement of the Department of Labour Protection and Welfare on Threshold Limit Values of Hazardous Chemical Substances Dated August 3, B.E. 2560 (2017)
OSHA : Occupational Safety and Health Administration
Sampled By : Warakorn Pookrak

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.

Approved by

Saranya C.

Saranya Chalermtamrong
Scientist (4)

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Analysis / Test Report



TESTING
No.0009

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 2279306
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number : 2357523-1

Page 5 of 10

Sample Number	2279306-5
Sampled Date	Jul 19, 2022
Sample Description	Air Quality
Location	เครื่องปรับอากาศ
Personal Sampling	อุปกรณ์วัดอากาศ
Date Analysis Commenced	Jul 27, 2022
Condition of Sample	Drawn into one filter paper placed in plastic cassette
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Triethanolamine(TEA) *	09:52 AM - 11:25 AM	mg/m3	-	0.1	<0.1	5	OSHA, PV2141	ACGIH	Bangkok

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2020).

Sampled By : Warakorn Pookrak

Remark :

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Approved by

Saranya C.

Saranya Chalemmthamrong
Scientist (4)

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2279306
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number : 2357523-1

Page 6 of 10

Sample Number	2279306-6
Sampled Date	Jul 19, 2022
Sample Description	Air Quality
Location	บริเวณเตาหลอม
Date Analysis Commenced	Jul 22, 2022
Condition of Sample	Drawn into two filter papers placed in each cassette
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Total dust	09:35 AM - 11:35 AM	mg/m3	-	0.15	0.18	15	Based on NIOSH (1994), OSHA 0501	OSHA	Bangkok
Metals Testing									
Chromium *	09:35 AM - 11:35 AM	mg/m3	-	0.002	<0.002	0.5	NIOSH (2003), 7301	ACGIH	Bangkok
Manganese *	09:35 AM - 11:35 AM	mg/m3	-	0.001	0.003	0.1(1)	NIOSH (2003), 7301	ACGIH	Bangkok

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2020).

OSHA : Occupational Safety and Health Administration

Note : (1)Guideline for Metal and Inorganic compounds as Manganese (2012).

Sampled By : Warakorn Pookrak

Remark :

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Approved by

Saranya C.

Saranya Chalemmthamrong
Scientist (4)

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Project Name :

Project Location :



TESTING
No.0009

Lot ID: 2279306

Date Received : Jul 20, 2022

Date Reported : Aug 08, 2022

Report Number : 2357523-1

Page 7 of 10

Sample Number 2279306-7
Sampled Date Jul 19, 2022
Sample Description Air Quality
Location บริเวณเหมือง
Date Analysis Commenced Jul 22, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 754 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Total dust	09:40 AM - 11:40 AM	mg/m3	-	0.15	0.22	15	Based on NIOSH (1994), OSHA 0501	OSHA	Bangkok
Metals Testing									
Chromium *	09:40 AM - 11:40 AM	mg/m3	-	0.002	<0.002	0.5	NIOSH (2003), 7301	ACGIH	Bangkok
Manganese *	09:40 AM - 11:40 AM	mg/m3	-	0.001	<0.001	0.1(1)	NIOSH (2003), 7301	ACGIH	Bangkok

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2020).

OSHA : Occupational Safety and Health Administration

Note : (1)Guideline for Metal and Inorganic compounds as Manganese (2012).

Sampled By : Warakom Pookrak

Remark :

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Approved by

Sarenya C.

Sarenya Chalermthamrong
Scientist (4)

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P/O : 403380

Project Name :

Project Location :



TESTING
No.0009

Lot ID: 2279306

Date Received : Jul 20, 2022

Date Reported : Aug 08, 2022

Report Number : 2357523-1

Page 8 of 10

Sample Number 2279306-8
Sampled Date Jul 19, 2022
Sample Description Air Quality
Location เครื่องคัดแยกขนาดหินงาน
Date Analysis Commenced Jul 21, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 754 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Silica (SiO2) *	09:15 AM - 12:15 PM	mg/m3	-	0.020	<0.020	0.025 (R)	NIOSH (1994), 7601	MOL	Bangkok
Total dust	09:15 AM - 11:15 AM	mg/m3	-	0.15	<0.15	15	Based on NIOSH (1994), OSHA 0501	OSHA	Bangkok

Guideline :

MOL : Announcement of the Department of Labour Protection and Welfare on Threshold Limit Values of Hazardous Chemical Substances Dated August 3, B.E. 2560 (2017)

OSHA : Occupational Safety and Health Administration

Sampled By : Warakom Pookrak

Remark :

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Approved by

Sarenya C.

Sarenya Chalermthamrong
Scientist (4)

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2279306
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number : 2357523-1

Page 9 of 10

Sample Number	2279306-9
Sampled Date	Jul 19, 2022
Sample Description	Air Quality
Location	ปรัญญูคณาทรรณ
Date Analysis Commenced	Jul 21, 2022
Condition of Sample	Drawn into two filter papers placed in each cassette
Barometric Pressure	754 mmHg
Atmospheric Temperature	34.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Silica (SiO ₂) *	02:10 PM - 05:10 PM	mg/m ³	-	0.020	<0.020	0.025 (R)	NIOSH (1994), 7601	MOL	Bangkok
Total dust		mg/m ³	-	0.15	<0.15	15	Based on NIOSH (1994), 0501	OSHA	Bangkok

Guideline :

MOL : Announcement of the Department of Labour Protection and Welfare on Threshold Limit Values of Hazardous Chemical Substances Dated August 3, B.E. 2560 (2017)
OSHA : Occupational Safety and Health Administration
Sampled By : Warakorn Pookrak

Remark :

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Approved by

Saranya C.

Saranya Chalemmthamrong
Scientist (4)

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P/O : 403380
Project Name :
Project Location :

Lot ID: 2279306
Date Received : Jul 20, 2022
Date Reported : Aug 08, 2022
Report Number : 2357523-1

Page 10 of 10

Sample Number	2279306-10
Sampled Date	Jul 19, 2022
Sample Description	Air Quality
Location	เครื่องปั้นดินเผา
Date Analysis Commenced	Jul 27, 2022
Condition of Sample	Drawn into one filter paper placed in plastic cassette
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Triethanolamine(TEA) *	09:52 AM - 11:25 AM	mg/m ³	-	0.1	<0.1	5	OSHA, PV2141	ACGIH	Bangkok

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2020).

Sampled By : Warakorn Pookrak

Remark :

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Approved by

Saranya C.

Saranya Chalemmthamrong
Scientist (4)

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P/O :

Project Name :

Project Location :



TESTING
No.0009

Lot ID: 2288885

Date Received : Jul 20, 2022

Date Reported : Jul 29, 2022

Report Number : 2379393-1

Page 1 of 2

Sample Number	2288885-1
Sampled Date	Jul 20, 2022
Sample Description	Air Quality
Location	เครื่องสูดดมที่หน้ารถจักรยาน
Date Analysis Commenced	Jul 22, 2022
Condition of Sample	Drawn into one filter paper placed in plastic cassette
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	09:00 AM - 11:00 AM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok

Guideline :

OSHA : Occupational Safety and Health Administration

Sampled By : Warakorn Pookrak

Remark :

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Approved by

Sararat Mongkonjirawut
Supervisor

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P/O :

Project Name :

Project Location :



TESTING
No.0009

Lot ID: 2288885

Date Received : Jul 20, 2022

Date Reported : Jul 29, 2022

Report Number : 2379393-1

Page 2 of 2

Sample Number	2288885-2
Sampled Date	Jul 20, 2022
Sample Description	Air Quality
Location	บริเวณจุดตรวจทางด่วน
Date Analysis Commenced	Jul 22, 2022
Condition of Sample	Drawn into one filter paper placed in plastic cassette
Barometric Pressure	754 mmHg
Atmospheric Temperature	32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	09:05 AM - 11:05 AM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok

Guideline :

OSHA : Occupational Safety and Health Administration

Sampled By : Warakorn Pookrak

Remark :

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Approved by

Sararat Mongkonjirawut
Supervisor

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Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22103902
Date Received : Nov 21, 2022
Date Reported : Nov 28, 2022
Report Number : 2411896-1

Page 1 of 2

Sample Number 22103902-1
Sampled Date Nov 18, 2022
Sample Description Air Quality
Location เครื่องคัดแยกขนาดฝุ่นงาน
Date Analysis Commenced Nov 23, 2022
Condition of Sample Drawn into one filter paper placed in plastic cassette
Barometric Pressure 757 mmHg
Atmospheric Temperature 28.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	10:00 PM - 00:00 AM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok

Guideline :
OSHA : Occupational Safety and Health Administration
Sampled By : Artit Srisen

Remark :
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Approved by

Saranya C.

Saranya Chalemtamrong
Scientist (4)

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22103902
Date Received : Nov 21, 2022
Date Reported : Nov 28, 2022
Report Number : 2411896-1

Page 2 of 2

Sample Number 22103902-2
Sampled Date Nov 18, 2022
Sample Description Air Quality
Location บริเวณจุดแยกทางรถไฟ
Date Analysis Commenced Nov 23, 2022
Condition of Sample Drawn into one filter paper placed in plastic cassette
Barometric Pressure 757 mmHg
Atmospheric Temperature 28.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	10:00 PM - 00:00 AM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok

Guideline :
OSHA : Occupational Safety and Health Administration
Sampled By : Artit Srisen

Remark :
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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Approved by

Saranya C.

Saranya Chalemtamrong
Scientist (4)

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P/O : 403380
Project Name :
Project Location :

Lot ID: 22118489
Date Received : Oct 24, 2022
Date Reported : Nov 12, 2022
Report Number : 2445816-1

Page 1 of 10

Sample Number 22118489-1
Sampled Date Oct 22, 2022
Sample Description Air Quality
Location บริเวณอาคารหอ
Personal Sampling คุณศิริกัญญา สอนโพธิ์
Date Analysis Commenced Oct 25, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 758 mmHg
Atmospheric Temperature 29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	10:52 AM - 12:52 PM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok
Metals Testing									
Chromium	10:52 AM - 12:52 PM	mg/m3	-	0.002	<0.002	0.5	NIOSH (2003), 7301	ACGIH	Bangkok
Manganese	10:52 AM - 12:52 PM	mg/m3	-	0.001	<0.001	0.1*	NIOSH (2003), 7301	ACGIH	Bangkok

Guideline :
ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2022).
OSHA : Occupational Safety and Health Administration
Note : (1)Guideline for Metal and Inorganic compounds as Manganese (2012).
Sampled By : Phongsiri Somkaew

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Saranya C.

Saranya Chalermtamrong
Scientist (4)

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P/O : 403380
Project Name :
Project Location :

Lot ID: 22118489
Date Received : Oct 24, 2022
Date Reported : Nov 12, 2022
Report Number : 2445816-1

Page 2 of 10

Sample Number 22118489-2
Sampled Date Oct 22, 2022
Sample Description Air Quality
Location บริเวณอาคารหอ
Personal Sampling คุณศิริกัญญา สอนโพธิ์
Date Analysis Commenced Oct 25, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 758 mmHg
Atmospheric Temperature 29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	10:55 AM - 12:55 PM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok
Metals Testing									
Chromium	10:55 AM - 12:55 PM	mg/m3	-	0.002	<0.002	0.5	NIOSH (2003), 7301	ACGIH	Bangkok
Manganese	10:55 AM - 12:55 PM	mg/m3	-	0.001	<0.001	0.1*	NIOSH (2003), 7301	ACGIH	Bangkok

Guideline :
ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2022).
OSHA : Occupational Safety and Health Administration
Note : (1)Guideline for Metal and Inorganic compounds as Manganese (2012).
Sampled By : Phongsiri Somkaew

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Saranya C.

Saranya Chalermtamrong
Scientist (4)

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Analysis / Test Report

Client : Magotteaux Co., Ltd.
9 Moo 5, Teennoen Rd., Huapluk, Saohai, Saraburi Thailand 18160
P/O : 403380
Project Name :
Project Location :

Lot ID: 22118489
Date Received : Oct 24, 2022
Date Reported : Nov 12, 2022
Report Number : 2445816-1

Page 3 of 10

Sample Number 22118489-3
Sampled Date Oct 22, 2022
Sample Description Air Quality
Location เครื่องคัดแยกขนาดฝุ่นงาน
Personal Sampling ชุดอุปกรณ์วัดฝุ่น
Date Analysis Commenced Oct 25, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 758 mmHg
Atmospheric Temperature 29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	10:37 AM - 12:37 PM	mg/m ³	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok
Silica (SiO ₂)	10:37 AM - 01:37 PM	mg/m ³	-	0.020	<0.020	0.025 (R)	NIOSH (1994), 7601	MOL	Bangkok

Guideline :
MOL : Announcement of the Department of Labour Protection and Welfare on Threshold Limit Values of Hazardous Chemical Substances Dated August 3, B.E. 2560 (2017)
OSHA : Occupational Safety and Health Administration
Sampled By : Phongsiri Somkaew

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

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P/O : 403380
Project Name :
Project Location :

Lot ID: 22118489
Date Received : Oct 24, 2022
Date Reported : Nov 12, 2022
Report Number : 2445816-1

Page 4 of 10

Sample Number 22118489-4
Sampled Date Oct 22, 2022
Sample Description Air Quality
Location ปั่นกรองชุดการตรวจ
Personal Sampling ชุดอุปกรณ์วัดฝุ่น
Date Analysis Commenced Oct 25, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 758 mmHg
Atmospheric Temperature 29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	10:45 AM - 12:45 PM	mg/m ³	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok
Silica (SiO ₂)	10:45 AM - 01:45 PM	mg/m ³	-	0.020	<0.020	0.025 (R)	NIOSH (1994), 7601	MOL	Bangkok

Guideline :
MOL : Announcement of the Department of Labour Protection and Welfare on Threshold Limit Values of Hazardous Chemical Substances Dated August 3, B.E. 2560 (2017)
OSHA : Occupational Safety and Health Administration
Sampled By : Phongsiri Somkaew

Remark :
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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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P/O : 403380

Project Name :

Project Location :

Lot ID: 22118489

Date Received : Oct 24, 2022

Date Reported : Nov 12, 2022

Report Number : 2445816-1

Page 5 of 10

Sample Number 22118489-5
 Sampled Date Oct 22, 2022
 Sample Description Air Quality
 Location เครื่องสูบน้ำหอยหลอด
 Personal Sampling หอยหลอด ไร่ใหญ่
 Date Analysis Commenced Oct 26, 2022
 Condition of Sample Drawn into one filter paper placed in plastic cassette
 Barometric Pressure 758 mmHg
 Atmospheric Temperature 29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Triethanolamine(TEA)	10:42 AM - 12:42 PM	mg/m3	-	0.1	<0.1	5	OSHA, PV2141	ACGIH	Bangkok

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2022).

Sampled By : Phongsiri Somkaew

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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P/O : 403380

Project Name :

Project Location :

Lot ID: 22118489

Date Received : Oct 24, 2022

Date Reported : Nov 12, 2022

Report Number : 2445816-1

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Sample Number 22118489-6
 Sampled Date Oct 22, 2022
 Sample Description Air Quality
 Location บริเวณเสาหลอม
 Date Analysis Commenced Oct 25, 2022
 Condition of Sample Drawn into two filter papers placed in each cassette
 Barometric Pressure 758 mmHg
 Atmospheric Temperature 29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Total dust	10:52 AM - 12:52 PM	mg/m3	-	0.15	0.18	15	Based on NIOSH (1994),	OSHA	Bangkok
Metals Testing									
Chromium	10:52 AM - 12:52 PM	mg/m3	-	0.002	<0.002	0.5	NIOSH (2003), 7301	ACGIH	Bangkok
Manganese	10:52 AM - 12:52 PM	mg/m3	-	0.001	0.001	0.1*	NIOSH (2003), 7301	ACGIH	Bangkok

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2022).

OSHA : Occupational Safety and Health Administration

Note : (1)Guideline for Metal and Inorganic compounds as Manganese (2012).

Sampled By : Phongsiri Somkaew

Remark :

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P/O : 403380

Project Name :

Project Location :

Lot ID: 22118489

Date Received : Oct 24, 2022

Date Reported : Nov 12, 2022

Report Number : 2445816-1

Page 7 of 10

Sample Number	22118489-7
Sampled Date	Oct 22, 2022
Sample Description	Air Quality
Location	บริเวณเหมือง
Date Analysis Commenced	Oct 25, 2022
Condition of Sample	Drawn into two filter papers placed in each cassette
Barometric Pressure	758 mmHg
Atmospheric Temperature	29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Total dust	10:55 AM - 12:55 PM	mg/m3	-	0.15	0.36	15	Based on NIOSH (1994), 0501	OSHA	Bangkok
Metals Testing									
Chromium	10:55 AM - 12:55 PM	mg/m3	-	0.002	<0.002	0.5	NIOSH (2003), 7301	ACGIH	Bangkok
Manganese	10:55 AM - 12:55 PM	mg/m3	-	0.001	<0.001	0.1*	NIOSH (2003), 7301	ACGIH	Bangkok

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2022).

OSHA : Occupational Safety and Health Administration

Note : (1)Guideline for Metal and Inorganic compounds as Manganese (2012).

Sampled By : Phongsiri Somkaew

Remark :

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P/O : 403380

Project Name :

Project Location :

Lot ID: 22118489

Date Received : Oct 24, 2022

Date Reported : Nov 12, 2022

Report Number : 2445816-1

Page 8 of 10

Sample Number	22118489-8
Sampled Date	Oct 22, 2022
Sample Description	Air Quality
Location	เครื่องคัดแยกขนาดชิ้นงาน
Date Analysis Commenced	Oct 25, 2022
Condition of Sample	Drawn into two filter papers placed in each cassette
Barometric Pressure	758 mmHg
Atmospheric Temperature	29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Silica (SiO2)	10:37 AM - 01:37 PM	mg/m3	-	0.020	<0.020	0.025 (R)	NIOSH (1994), 7601	MOL	Bangkok
Total dust	10:37 AM - 12:37 PM	mg/m3	-	0.15	0.32	15	Based on NIOSH (1994), 0501	OSHA	Bangkok

Guideline :

MOL : Announcement of the Department of Labour Protection and Welfare on Threshold Limit Values of Hazardous Chemical Substances Dated August 3, B.E. 2560 (2017)

OSHA : Occupational Safety and Health Administration

Sampled By : Phongsiri Somkaew

Remark :

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P/O : 403380
Project Name :
Project Location :

Lot ID: 22118489
Date Received : Oct 24, 2022
Date Reported : Nov 12, 2022
Report Number : 2445816-1

Page 9 of 10

Sample Number 22118489-9
Sampled Date Oct 22, 2022
Sample Description Air Quality
Location กรุงเทพมหานคร
Date Analysis Commenced Oct 25, 2022
Condition of Sample Drawn into two filter papers placed in each cassette
Barometric Pressure 758 mmHg
Atmospheric Temperature 29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Silica (SiO ₂)	10:45 AM - 01:45 PM	mg/m ³	-	0.020	<0.020	0.025 (R)	NIOSH (1994), 7601	MOL	Bangkok
Total dust	10:45 AM - 12:45 PM	mg/m ³	-	0.15	<0.15	15	Based on NIOSH (1994), 0501	OSHA	Bangkok

Guideline :

MOL : Announcement of the Department of Labour Protection and Welfare on Threshold Limit Values of Hazardous Chemical Substances Dated August 3, B.E. 2560 (2017)
OSHA : Occupational Safety and Health Administration
Sampled By : Phongsiri Somkaew

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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P/O : 403380
Project Name :
Project Location :

Lot ID: 22118489
Date Received : Oct 24, 2022
Date Reported : Nov 12, 2022
Report Number : 2445816-1

Page 10 of 10

Sample Number 22118489-10
Sampled Date Oct 22, 2022
Sample Description Air Quality
Location กรุงเทพมหานคร
Date Analysis Commenced Oct 26, 2022
Condition of Sample Drawn into one filter paper placed in plastic cassette
Barometric Pressure 758 mmHg
Atmospheric Temperature 29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Triethanolamine (TEA)	10:42 AM - 12:42 PM	mg/m ³	-	0.1	<0.1	5	OSHA, PV2141	ACGIH	Bangkok

Guideline :

ACGIH : The American Conference of Governmental Industrial Hygiene, The 6th edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices (2022).

Sampled By : Phongsiri Somkaew

Remark :

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TESTING
No.0009

Client : Magotteaux Co., Ltd.

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P/O : 403380

Project Name :

Project Location :

Lot ID: 22118494

Date Received : Oct 24, 2022

Date Reported : Nov 01, 2022

Report Number : 2445826-1

Page 1 of 2

Sample Number	22118494-1
Sampled Date	Oct 22, 2022
Sample Description	Air Quality
Location	เครื่องคัดแยกขนาดชิ้นงาน
Date Analysis Commenced	Oct 27, 2022
Condition of Sample	Drawn into one filter paper placed in plastic cassette
Barometric Pressure	758 mmHg
Atmospheric Temperature	29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	10:37 AM - 12:37 PM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok

Guideline :

OSHA : Occupational Safety and Health Administration

Sampled By : Phongsiri Somkaew

Remark :

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Approved by

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Saranya Chalerthamrong
Scientist (4)

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TESTING
No.0009

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P/O : 403380

Project Name :

Project Location :

Lot ID: 22118494

Date Received : Oct 24, 2022

Date Reported : Nov 01, 2022

Report Number : 2445826-1

Page 2 of 2

Sample Number	22118494-2
Sampled Date	Oct 22, 2022
Sample Description	Air Quality
Location	บริเวณห้องควบคุมการจราจร
Date Analysis Commenced	Oct 27, 2022
Condition of Sample	Drawn into one filter paper placed in plastic cassette
Barometric Pressure	758 mmHg
Atmospheric Temperature	29.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	10:45 AM - 12:45 PM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok

Guideline :

OSHA : Occupational Safety and Health Administration

Sampled By : Phongsiri Somkaew

Remark :

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P/O : 403380
Project Name :
Project Location :



TESTING
No.0009

Lot ID: 22140858
Date Received : Dec 10, 2022
Date Reported : Dec 19, 2022
Report Number : 2496379-1

Page 1 of 2

Sample Number 22140858-1
Sampled Date Dec 10, 2022
Sample Description Air Quality
Location เครื่องผลิตแอมโมเนีย
Date Analysis Commenced Dec 13, 2022
Condition of Sample Drawn into one filter paper placed in plastic cassette
Barometric Pressure 755 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	12:00 PM - 02:00 PM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok

Guideline :
OSHA : Occupational Safety and Health Administration
Sampled By : Phongsiri Somkaew

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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Saranya Chalerthamrong
Scientist (4)

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Project Location :



TESTING
No.0009

Lot ID: 22140858
Date Received : Dec 10, 2022
Date Reported : Dec 19, 2022
Report Number : 2496379-1

Page 2 of 2

Sample Number 22140858-2
Sampled Date Dec 10, 2022
Sample Description Air Quality
Location ปรังหมัดอุตสาหกรรม
Date Analysis Commenced Dec 13, 2022
Condition of Sample Drawn into one filter paper placed in plastic cassette
Barometric Pressure 755 mmHg
Atmospheric Temperature 32.0 °C

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Respirable Dust	12:05 PM - 02:05 PM	mg/m3	-	0.15	<0.15	5	Based on NIOSH (1998), 0600	OSHA	Bangkok

Guideline :
OSHA : Occupational Safety and Health Administration
Sampled By : Phongsiri Somkaew

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.

Approved by

Saranya C.

Saranya Chalerthamrong
Scientist (4)

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ภาคผนวก ง

เอกสารการสอบเทียบเครื่องมือตรวจวิเคราะห์

of agricultural, a more

2 <http://www.elsevier.com>

Point	CALCULATION RESULTS					
	Initial	Actual MD	Error MD	Initial MD	Actual MD%	Error MD%
23700	0.00	0.10	0.10	0.10	0.10	0.10
1	100.00	96.80	-1.20	120.00	0.80	0.80
2	200.00	201.30	1.30	201.50	1.50	0.75
3	300.00	296.30	-1.70	302.40	2.40	0.80
4	400.00	396.90	-3.10	398.50	-1.50	-0.38
	AVERAGE (%)			-0.38		0.41



ALIS Laboratory Group
FORM NO.: F 86-058 REVISION NO.: - ISSUE DATE: 8/20/92

Point	CALCULATION REMITS						
	Initial	Actual MD	Error MD	%Error MD	Actual MDx	Error MDx	%Error MDx
ZERO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	100.00	99.00	-1.00	-1.00	151.10	1.10	1.10
2	200.00	198.20	-1.80	-0.90	201.30	1.30	0.65
3	300.00	298.50	-1.50	-0.50	302.50	2.50	0.83
4	400.00	398.50	-1.50	-0.38	398.90	-1.10	-0.28
	AVERAGE (%)			-0.58			0.60



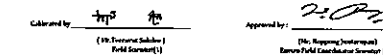
ALS Laboratory Code _____
FORM NO. - F 66-056 REVISION NO. - 65 USE DATE - 02/04/01

Point	CALIBRATION RESULTS						
	Intnl	Actual MD	Error MD	6.10	Actual MD	Error MD	%Error MD
ZERO	0.00	0.15	0.15	0.15	0.15	0.15	0.15
1	100.00	99.00	-1.00	-1.00	100.00	0.50	0.50
2	200.00	199.50	-0.50	-0.25	200.70	0.70	0.35
3	300.00	298.90	-1.10	-0.75	301.10	1.10	0.37
4	400.00	398.70	-1.30	-0.33	399.00	-1.00	-0.25
	AVERAGE FU		-0.38				0.25



ALN Laboratory Code: _____

Test No.	Delta H ₂ O (mmHg)	Q _{max} (m ³ /min)	S: Chart (°C/N)	Linear Regression
1	3.1	1.3763	32	Slope: 34.9499 Intercept: -10.7664 Correlation Coefficient: 0.9973
2	3.3	1.3755	36	
3	4.2	1.3501	40	
4	5.1	1.3768	44	
5	5.8	1.4365	48	



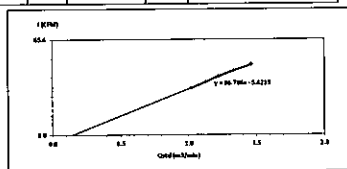
FORM NO. 1 (4-77) RETURN NO. 1 PAGE NO. 1



High Volume Air Sampler Calibration Worksheet

Project Site: Megatronics Co., Ltd. Barometric Pressure (mm Hg): 754
 Calibration Location: Songkhro-Prom Rd. (A1) Temperature (°C): 33
 Calibration Date: 15-Feb-22 High Volume ID: HEX-P28-288
 Calibration Sheet No.: C-118722-000X-P28-288 High Volume Model: TE-500PE
 Calibrator ID: HEX-P28-216 High Volume S/N: 1128
 Calibrator Model: TE-501SA Calibration Slope: 1.04942
 Calibrator S/N: 2584 Calibration Intercept: -0.02702

Test No.	Delta H ₂ O (mm)	Flow (m³/min)	1:Chart (CFM)	Linear Regression
1	2.8	3.8242	33	Slope: 0.00764
2	3.6	3.1279	36	Intercept: -15.4219
3	6.8	1.2389	48	Correlation Coefficient: 0.9976
4	6.8	1.3346	48	
5	5.8	1.4642	48	



Calibrated by: [Signature] Approved by: [Signature]
 (Mr. Taweechai Salakul) (Mr. Hopping Jantarasup) Field Scientist (I) Eawin Field Coordinator Scientist (I)

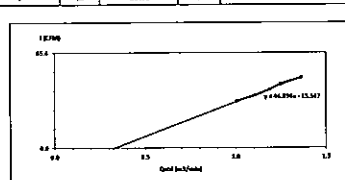
FORM HVL-P-047E REVISION HVL - ISSUE DATE: 14/03/14



High Volume Air Sampler Calibration Worksheet

Project Site: Megatronics Co., Ltd. Barometric Pressure (mm Hg): 754
 Calibration Location: Songkhro-Prom Rd. (A1) Temperature (°C): 33
 Calibration Date: 15-Feb-22 High Volume ID: HEX-P28-288
 Calibration Sheet No.: C-118722-000X-P28-288 High Volume Model: TE-500PE
 Calibrator ID: HEX-P28-216 High Volume S/N: 1128
 Calibrator Model: TE-501SA Calibration Slope: 1.04942
 Calibrator S/N: 2584 Calibration Intercept: -0.02702

Test No.	Delta H ₂ O (mm)	Flow (m³/min)	1:Chart (CFM)	Linear Regression
1	2.7	1.9982	33	Slope: 0.0061
2	3.1	1.1116	36	Intercept: -13.5473
3	3.8	1.1943	36	Correlation Coefficient: 0.9956
4	6.2	1.3323	48	
5	5.8	1.3616	48	



Calibrated by: [Signature] Approved by: [Signature]
 (Mr. Taweechai Salakul) (Mr. Hopping Jantarasup) Field Scientist (I) Eawin Field Coordinator Scientist (I)

FORM HVL-P-047E REVISION HVL - ISSUE DATE: 14/03/14



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 District Prant Bangkok 10250
 Tel: +66 82 2098 4773
 www.pentacal.com

Certificate of Calibration



Reported to Certificate of Calibration: PTC07/22072
 Certificate No.: PTC07/22072 Page: 1 of 3
 Equipment: Digital Balance Condition: Normal
 Manufacturer: METTLER TOLEDO Serial No: 1122911804
 Model: XPI105 ID No: 04K140004
 Type of Balance: Multi-interval

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

Environment Condition: Temperature: 21.0 °C ± 0.4 °C
 Humidity: 62.8 %RH ± 3.7 %RH
 Air density: 1.20 kg/m³

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

The Method used: In house method, PTC-KA-07, based on EURMET Cg 18
 Traceability: This certificate is traceable to the SI Units through The Calibration Service Co., Ltd.
 - NIST OIML Accreditation No. Calibration 0189

Date Received: February 25, 2022
 Calibration Date: February 25, 2022
 Issued Date: March 01, 2022
 Calibration By: Mr. Rungroj Meechai

REVIEW BY: [Signature]
 APPROVED BY: [Signature]
 NEXT CAL. DATE: 20/06/23

Reviewed by: [Signature] (Mr. Rungroj Meechai)
 Approved by: [Signature] (Mr. Kaimon Kerdin)
 Laboratory Manager

This certificate is issued for the unit of measurement according to the International System of Units (SI). It provides a statement of measurement for the unit of measurement or related quantity in SI units. It is provided for information only. The measurement uncertainty, stated in this certificate, represents the uncertainty of the measurement. The measurement uncertainty is expressed as a percentage of the measured value. The measurement uncertainty is expressed as a percentage of the measured value. The measurement uncertainty is expressed as a percentage of the measured value. The measurement uncertainty is expressed as a percentage of the measured value.

PTC07/22072



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Reported to Certificate of Calibration: PTC07/22072

Certificate No.: PTC07/22072 Page: 2 of 3

Measurement Results:

Without Adjustment:

Function Calibration: Non Adjustment

Excessive Error: Weight to be 1.0, 1.2, or 1.5 of Maximum capacity

Excessivity test	30 (g)
Position (g)	1 2 3 4 5
0.0000 0.0000 0.0000 0.0000 0.0000	
Maximum deviation	0.0000

Repeatability Test: Weight to be 1.2 ± 1.5 Maximum capacity

Determination of the standard deviation of weighing balance: Repeatability 0.0001 (g)

Nominal test value (g)	Standard Deviation
100	0.0005

Error of indication: from nominal value: Repeatability 0.0001 (g)

Nominal Value (g)	Conventional Mass (g)	Indication (g)	Correction of Balance (g)	Uncertainty (g)	k
40	40.00005	40.0002	0.00015	0.00016	2.11
50	50.00004	50.0002	0.00016	0.00016	2.13
60	60.00003	60.0002	0.00017	0.00016	2.08
70	70.00003	70.0002	0.00017	0.00016	2.07
80	80.00002	80.0001	0.00008	0.00016	2.14
90	90.00006	90.0001	0.00004	0.00016	2.03
100	100.00002	100.0001	0.00008	0.00016	2.05

Note: Weight of air buoyancy



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Reported to Certificate of Calibration: PTC07/22072

Certificate No.: PTC07/22072 Page: 3 of 3

Measurement Results:

Without Adjustment

Function Calibration: Non Adjustment

Excessive Error: Weight to be 1.0, 1.2, or 1.5 of Maximum capacity

Excessivity test	30 (g)
Position (g)	1 2 3 4 5
0.0000 0.0000 0.0000 0.0000 0.0000	
Maximum deviation	0.0002

Repeatability Test: Weight to be 1.2 ± 1.5 Maximum capacity

Determination of the standard deviation of weighing balance: Repeatability 0.0001 (g)

Nominal test value (g)	Standard Deviation
20	0.0005

Error of indication: from nominal value: Repeatability 0.0001 (g)

Nominal Value (g)	Conventional Mass (g)	Indication (g)	Correction of Balance (g)	Uncertainty (g)	k
0	0.00000	0.00000	0.00000	0.00016	2.83
0.1	0.10000	0.10000	0.00000	0.00019	2.04
0.5	0.49999	0.49999	0.00000	0.00019	2.00
2	2.00000	2.00000	0.00000	0.00024	2.00
5	5.00000	5.00001	0.00000	0.00027	2.00
10	10.00000	10.00001	0.00000	0.00031	2.00
20	20.00000	20.00001	0.00001	0.00042	2.00
30	30.00000	30.00000	0.00000	0.00060	2.00

Note: Weight of air buoyancy

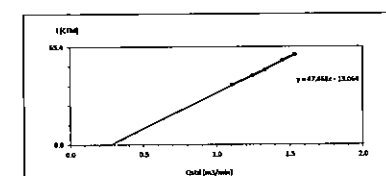
The End of Certificate



High Volume Air Sampler Calibration Worksheet

Project Site: Megatronics Co., Ltd. Barometric Pressure (mm Hg): 754
 Calibration Location: Songkhro-Prom Rd. (A1) Temperature (°C): 33
 Calibration Date: 15-Feb-22 High Volume ID: HEX-P28-288
 Calibration Sheet No.: C-118722-000X-P28-288 High Volume Model: TE-500PE
 Calibrator ID: HEX-P28-216 High Volume S/N: 1128
 Calibrator Model: TE-501SA Calibration Slope: 1.04942
 Calibrator S/N: 2584 Calibration Intercept: -0.02702


Test No.	Delta H ₂ O (mm)	Flow (m³/min)	1:Chart (CFM)	Linear Regression
1	3.3	1.1116	48	Slope: 0.00602
2	6.2	1.2581	48	Intercept: -13.0478
3	6.8	1.3346	50	Correlation Coefficient: 0.9961
4	5.7	1.4218	56	
5	6.1	1.5356	60	




Calibrated by: [Signature] Approved by: [Signature]
 (Mr. Taweechai Salakul) (Mr. Hopping Jantarasup) Field Scientist (I) Eawin Field Coordinator Scientist (I)


FORM HVL-P-047E REVISION HVL - ISSUE DATE: 14/03/14

Document Name: Certificate of Analyte Wavelength calibration solution



2 Period of Validity: Agilent reserves the right to vary the validity of this certificate at any time without notice. The validity of this certificate is limited to the period of time specified in the scope of the report.


Signature: 

Set of Wavelengths: 
Date of Signature: 10/09/2020


Date: September 13, 2021 8:05:41 PM
System ID: MY16010006


Page 18 / 34

Document Name: Certificate of Analyte Wavelength calibration solution



2 Period of Validity: Agilent reserves the right to vary the validity of this certificate at any time without notice. The validity of this certificate is limited to the period of time specified in the scope of the report.


Signature: 

Set of Wavelengths: 
Date of Signature: 10/09/2020


Date: September 13, 2021 8:05:41 PM
System ID: MY16010006


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Document Name: Certificate of Analyte Wavelength calibration solution



2 Period of Validity: Agilent reserves the right to vary the validity of this certificate at any time without notice. The validity of this certificate is limited to the period of time specified in the scope of the report.

Signature: 

Set of Wavelengths: 
Date of Signature: 10/09/2020

Date: September 13, 2021 8:05:41 PM
System ID: MY16010006

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Document Name: Comments

Date/Time: September 13, 2021 8:07:58 PM

Text: Comment

Comment: Start DO on 05 Sep 21 and found water line full. On repair job complete for 13 Sep 21 and DO continues to complete.

Date: September 13, 2021 8:07:58 PM
System ID: MY16010006

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Document Name: Instrument's Test Report

Instrument's Test Report

Instrument Information

Instrument Model	Agilent 8470 B
Instrument ID	MY16010006
Instrument Serial Number	MY16010006
Software Version	1.3.5.1184
Hardware Version	1.0.0
Tested By	Agilent 8470 B
Test Method	MY16010006 (1) (1) (1)
Test Completed On	2021/09/13 10:00:00 AM

Test Results

Subsequent Compliance Test	Pass
IR Filter Test	Pass
Water Flow Test	Pass
Gas Flow Test	Pass
RF Amplifier Test	Pass
Current Test	Pass
Capacitor Test	Pass
Aluminum Vial System Test	Pass
Resistor Test	Pass
Stability Test	Pass
Pressure Test	Pass

Subsequent Compliance Test

Subsequent Compliance Test	Pass
----------------------------	------

Operator Test

Operator	Test	Result
Operator	Test	Pass

Date: September 13, 2021 8:05:41 PM
System ID: MY16010006

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Document Name: Instrument's Test Report

Instrument's Test Report

Test Results

Test Item	Test Result	Test Date
Subsequent Compliance Test	Pass	2021/09/13
IR Filter Test	Pass	2021/09/13
Water Flow Test	Pass	2021/09/13
Gas Flow Test	Pass	2021/09/13
RF Amplifier Test	Pass	2021/09/13
Current Test	Pass	2021/09/13
Capacitor Test	Pass	2021/09/13
Aluminum Vial System Test	Pass	2021/09/13
Resistor Test	Pass	2021/09/13
Stability Test	Pass	2021/09/13
Pressure Test	Pass	2021/09/13

Date: September 13, 2021 8:05:41 PM
System ID: MY16010006

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Inspector's Test Record[illegible]

Date: September 13, 2021 8:59:41 PM
System ID: NY16010009

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Discussion

This signature page was created and published because the ACE sign-off action was selected, which is valid for the entire document, including addendums. The ACE sign-off is an electronic signature that requires two distinct identification components: unique username and personal password. The Agent representative who has defined this service understands the meaning and legal status of an electronic signature. As a trained office counselor, the Agent representative has a unique password and knows to access ACE and electronically sign this document. (Other co-signatures can be applied to this document using a Document Content Management, or other suitable, method defined in your data access and control procedures.)

Details	
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Logged On User Name:	praveen@praveenpraveen@gmail.com
Signature Creation Date:	September 13, 2021
Reason for Signature:	
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Date: September 12, 2021 8:50:49 PM
System ID: MY-4270306

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Time	Transaction Date	Activity Description	Type of Transaction	Optional Information
September 5, 2021 9:31 AM	9/5/21	Deposit	Automated Deposits: Automated - 1. 100% Qualifier Trust - No-advance payment	None
September 5, 2021 10:56 AM	9/5/21	Cashout	Automated Deposits: Automated - 1. 100% Qualifier Trust - No-advance payment	Net Cash: 1
September 5, 2021 9:31 AM	9/5/21	Cashout	Deposit	OD
September 6, 2021 4:11 PM	9/6/21	Payment	Deposit	None
September 6, 2021 10:50 AM	9/6/21	Pay	PayCheck	None
September 11, 2021 3:01 PM	9/11/21	Auto	Automated	None
September 11, 2021 9:01 PM	9/11/21	Auto	Automated/Manual	Deposit
September 12, 2021 9:31 PM	9/12/21	Pay	Cashout	None
September 13, 2021 9:31 PM	9/13/21	Auto	Payment	None Disputed: Dispute

Date: September 12, 2011 8:49 AM
 By: [redacted] 10000

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[illegible]

Page: September 13, 2021 6:30:41 PM
DocId: 30514745

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[illegible]

Date: September 13, 2021 8:02:41 PM
 Problem ID: 1073101073

[illegible]

CERTIFICATE OF CALIBRATION

Doc. 1 of 2 pages

Page 1 of 3 pages

[illegible]

Result of Calibration: ☒ Within tolerance ☐ With adjustment
Calibrated in the range of 0 to 2500 mmHg with an accuracy of 0.5%
The results of calibration and associated measurement uncertainties are reported in table below.

NO	Typing location	Volume (mmHg)	Standard Reading (mmHg)	UNC ¹ Reading (mmHg)	Error (mmHg)	Uncertainty (mmHg)
1		0	0	0	0	0.0
2		45	45	44	1	0.7
3		90	90	89	1	0.7
4		135	135	134	1	0.7
5		180	180	179	1	0.7
6		225	225	224	1	0.7
7		270	270	269	1	0.7
8		315	315	314	1	0.7
9		360	360	359	1	0.7
10		405	405	404	1	0.7
11		450	450	449	1	0.7
12		495	495	494	1	0.7
13		540	540	539	1	0.7
14		585	585	584	1	0.7
15		630	630	629	1	0.7
16		675	675	674	1	0.7
17		720	720	719	1	0.7
18		765	765	764	1	0.7
19		810	810	809	1	0.7
20		855	855	854	1	0.7

UNC¹ Limit (per Calibration Certificate) expanded uncertainty, is based on standard uncertainty multiplied by a coverage factor of 2, giving a level of confidence of approximately 95%.



Measurement Item: Pressure (mmHg) with 0.5% accuracy
Manufacturer: Janatee Engineering Co., Ltd.
Model/Type: Janatee Engineering Co., Ltd.
Serial Number: Janatee Engineering Co., Ltd.
ID No: Janatee Engineering Co., Ltd.
Location: Janatee Engineering Co., Ltd.

Measurement Item	Manufacturer	Model/Type	Serial Number	ID No	Location
Pressure (mmHg) with 0.5% accuracy	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.

Professional Evaluation: The instrument was calibrated in an ambient temperature of 23.0°C and relative humidity of 65% RH.
Measurement Method: The instrument was calibrated using a primary standard of 0.5% accuracy and a secondary standard of 0.5% accuracy.

Measurement Date: JAN 24, 2022
Issued Date: JAN 25, 2022

Measurement Item	Standard Reading (mmHg)	UNC ¹ Reading (mmHg)	Error (mmHg)
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1

Performed by: ☒ In-house calibration ☐ External calibration
Approved Signature:

This certificate is valid only for the instrument and the range of use specified in the scope of calibration.

Measurement Item: Pressure (mmHg) with 0.5% accuracy
Manufacturer: Janatee Engineering Co., Ltd.
Model/Type: Janatee Engineering Co., Ltd.
Serial Number: Janatee Engineering Co., Ltd.
ID No: Janatee Engineering Co., Ltd.
Location: Janatee Engineering Co., Ltd.

Measurement Item	Manufacturer	Model/Type	Serial Number	ID No	Location
Pressure (mmHg) with 0.5% accuracy	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.

Professional Evaluation: The instrument was calibrated in an ambient temperature of 23.0°C and relative humidity of 65% RH.
Measurement Method: The instrument was calibrated using a primary standard of 0.5% accuracy and a secondary standard of 0.5% accuracy.

Measurement Date: JAN 24, 2022
Issued Date: JAN 25, 2022

Measurement Item	Standard Reading (mmHg)	UNC ¹ Reading (mmHg)	Error (mmHg)
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1

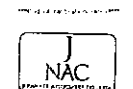
Performed by: ☒ In-house calibration ☐ External calibration
Approved Signature:

This certificate is valid only for the instrument and the range of use specified in the scope of calibration.

Result of Calibration: ☒ Within tolerance ☐ With adjustment
Calibrated in the range of 0 to 2500 mmHg with an accuracy of 0.5%
The results of calibration and associated measurement uncertainties are reported in table below.

Quantity of N2O (mmHg)	Measured Reading (mmHg)	Typing value (mmHg)	Acceptable Typing value (mmHg)
0	0	0	0
10	10	10	10
20	20	20	20
30	30	30	30
40	40	40	40
50	50	50	50

Notes: The pressure is measured by the primary standard of 0.5% accuracy and the secondary standard of 0.5% accuracy.



Measurement Item: Pressure (mmHg) with 0.5% accuracy
Manufacturer: Janatee Engineering Co., Ltd.
Model/Type: Janatee Engineering Co., Ltd.
Serial Number: Janatee Engineering Co., Ltd.
ID No: Janatee Engineering Co., Ltd.
Location: Janatee Engineering Co., Ltd.

Measurement Item	Manufacturer	Model/Type	Serial Number	ID No	Location
Pressure (mmHg) with 0.5% accuracy	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.

Professional Evaluation: The instrument was calibrated in an ambient temperature of 23.0°C and relative humidity of 65% RH.
Measurement Method: The instrument was calibrated using a primary standard of 0.5% accuracy and a secondary standard of 0.5% accuracy.

Measurement Date: JAN 24, 2022
Issued Date: JAN 25, 2022

Measurement Item	Standard Reading (mmHg)	UNC ¹ Reading (mmHg)	Error (mmHg)
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1

Performed by: ☒ In-house calibration ☐ External calibration
Approved Signature:

This certificate is valid only for the instrument and the range of use specified in the scope of calibration.

Measurement Item: Pressure (mmHg) with 0.5% accuracy
Manufacturer: Janatee Engineering Co., Ltd.
Model/Type: Janatee Engineering Co., Ltd.
Serial Number: Janatee Engineering Co., Ltd.
ID No: Janatee Engineering Co., Ltd.
Location: Janatee Engineering Co., Ltd.

Measurement Item	Manufacturer	Model/Type	Serial Number	ID No	Location
Pressure (mmHg) with 0.5% accuracy	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.	Janatee Engineering Co., Ltd.

Professional Evaluation: The instrument was calibrated in an ambient temperature of 23.0°C and relative humidity of 65% RH.
Measurement Method: The instrument was calibrated using a primary standard of 0.5% accuracy and a secondary standard of 0.5% accuracy.

Measurement Date: JAN 24, 2022
Issued Date: JAN 25, 2022

Measurement Item	Standard Reading (mmHg)	UNC ¹ Reading (mmHg)	Error (mmHg)
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1
Pressure (mmHg) with 0.5% accuracy	22.5	22.4	0.1

Performed by: ☒ In-house calibration ☐ External calibration
Approved Signature:

This certificate is valid only for the instrument and the range of use specified in the scope of calibration.

Calibration of Dots	3 Jul 22	Barometric Pressure (mm Hg)	756
Next Cal Date	3 Jan 23	Relative Humidity (%)	62.0

CONSOLE CONTROL UNIT CALIBRATION TEST REPORT

Console Control Meter Data

Calibration No	C-030722-BHX_F50449	Reference Dry Gas Meter ID	BHX_F50
Dry Gas Meter No	BHX_F50449	Serial No	1507009
Serial No	1401993	Correction Factor (%)	1.0080
Model No	XC 572 V	Next Calibration Date	7 Oct 22

All	ID	Reference City Gas Meter Calibration					Compare Customer - Oregon Meter					City Gas Meter		Difference	
		Meters		m3 (kWh)		T _g	Meters		m3 (kWh)		T _g	m3 (kWh)			
		1	2	1	2		1	2	1	2					
18	1243	150.01	8.053	150.00	8.049	13799999.1	1390630.9	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
26	842	150.00	8.098	150.00	8.098	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
38	842	150.02	8.053	150.02	8.053	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
50	842	150.00	8.098	150.00	8.098	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
62	842	150.00	8.098	150.00	8.098	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
74	842	150.00	8.098	150.00	8.098	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
86	842	150.00	8.098	150.00	8.098	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
98	842	150.00	8.098	150.00	8.098	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
110	842	150.00	8.098	150.00	8.098	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000
122	842	150.00	8.098	150.00	8.098	13799999.1	1390631.0	149.99	8.049	32.0	32.0	149.99	8.049	32.0	0.000

Ans - Office pressure differential that equates to 21.24 mm of H₂O @ 25 °C and 760 mm of mercury. $\rho_{\text{H}_2\text{O}} = 1000$, tolerance for individual values ± 0.08 from average

Process 909 40 CT 60 AMP & METH SEC 6 3 A 7

Contracted by 1-10-2007
 (Site Manager Signature)
 Field Scientist (FI)

Approved by 1-10-2007
 (Site Manager Signature)
 Field Scientist (FI)



Stopwatch Calibration Test Report

Calibration Date	3 Jul 22	Next Cal Date	3 Jan 23
Barometric Pressure (mmHg)	756	Temperature (°C)	31.0
Relative Humidity (%)	62.0		

Reference Stopwatch Data

Stopwatch ID No	E18061
Model	F8195
Serial No	-
Calibration Date	8 Sep 20
Certificate No	E-2009018

Console Control Meter Data

Dry Gas Meter No.	B+K_F50448
Model	9C-672-V
Serial No.	1901583

Run No.	Time Actual (m:ss.ms)	Time Resting (m:ss)	Diff (ms)	Diff (min)
1	5:00:11	5:00	11	0:00:016
2	5:00:11	5:00	11	0:00:016
3	5:00:12	5:00	12	0:00:020
4	5:00:13	5:00	13	0:00:017
5	5:00:10	5:00	10	0:00:017
6	5:00:11	5:00	11	0:00:015
7	5:00:10	5:00	10	0:00:017
8	5:00:12	5:00	12	0:00:020
9	5:00:12	5:00	12	0:00:020
10	5:00:11	5:00	11	0:00:016
Average				0:00:018
SD				0:00:001

Candidate By: Mr. Prasad Suranjan Approved By: Mr. Samrat Poojagan
Field Scientist (I) Specimen (I)



Pitot Tube Calibration Data

Pilot Tube Identification Number	BKK_F50452	Calibration Date	3 Jul 22
Lab test duct Number	258-1-13-01	Standard Print ID	BKK_F50441
Calibration Sheet No	C-030722-BKK_F50452	Ep Standard	0.99

	Type S pilot tube Log A/B	Standard pilot tube (A/B, mm Hg/C)	Type S pilot tube (A/B, mm Hg/C)	C ₁ (C)	C ₂ (D)
				Log B	
Test 1	A	12.00	15.50	0.842	-
	B	12.00	15.50	-	0.842
Test 2	A	12.00	15.50	0.842	-
	B	12.00	15.50	-	0.842
Test 3	A	12.00	15.50	0.842	-
	B	12.00	15.50	-	0.842
				C ₂	0.842

$$\varphi(r) = \varphi - \sqrt{\frac{\Delta F(\omega r)}{\Delta r(r)}}$$

$$\{\bar{C}_{P(A)} - \bar{C}_{P(B)}\}_{max BE} \leq 0.01$$

$$\text{Average deviation}(A \text{ or } B) = \frac{\sum_i |c_p(i) - c_q(A \text{ or } B)|}{n} \text{ must BE} \leq 0.01$$

Calculated by P. S. Approved by S. P.
(Mr. Prasenjit Suranjan) (Mr. Samir Koonjan)
Field Supervisor (2) Times Supervisor (2)



Pitot Tube Calibration Data

Prior Tube Identification Number	BAK_FS0453	Calibration Date	3 Jul 22
Lab test date Number	258-1-13-01	Standard Prior ID	BAK_FS0448
Calibration Sheet No	C-030722-BAK_FS0453	Op Standard	0.99

	Type 5 pear tube Male Ling A-B	Standard pear tube (ΔP , mm H ₂ O)	Type 5 pear tube (ΔP , mm H ₂ O)	Cap (1) Eq. A	Cap (2) Eq. B
Test 1	A	12.00	16.60	0.842	-
	B	12.00	16.60	-	0.842
Test 2	A	12.00	16.60	0.842	-
	B	12.00	16.60	-	0.842
Test 3	A	12.00	16.60	0.842	-
	B	12.00	16.60	-	0.842
			\bar{C}_{50}	0.842	0.842

$$Q_{\text{max}} = Q_p - \sqrt{\frac{\Delta P_{\text{max}}}{\Delta P_{\text{ref}}}}$$

$$\left\{ \bar{c}_{P(A)} - \bar{c}_{P(B)} \right\}_{\text{mean SE}} \leq 0.01$$

$$\text{Average deviation}(A \text{ or } B) = \frac{\sum |C_p(i) - C_p(A \text{ or } B)|}{n} \text{ must be } \leq 0.01$$

Controlled By P. Prasad S. Approved By S. P.

(Mr Prasad Suresh Nani) (Mr Sarath Reddy Nani)

Field Scientist (I) Field Scientist (I)



DIGITAL TEMPERATURE CALIBRATION DATA SHEET

Calibration Date :	3 Jul 22	Ambient Temperature (°C)	31
Calibration vessel No. :	C-030723-BUCK_F50449	Relative Humidity (%) :	52

Digital Temperature ID	BKX_F20428	Reference Temperature ID	BKX_F31144
Serial No. :	1901063	Serial No. :	20900000013
Model :	JC-472-W	Model :	Dajon-CC-VT-4MS
		Next Customer :	25 Jan 20

		Probe Calibration		31 Jan 23
Location	Reference Temperature °C	Digital Temperature °C	Error °C	Remarks
Black	0	1	1	
	25	28	3	
	50	51	1	
	100	101	1	
	150	151	1	
	200	201	1	
	250	252	2	
	300	302	2	
	500	502	2	
	1000	1002	2	
Purple	1500	1502	2	
	160	161	1	
	175	179	1	
Green	180	181	1	
	190	190	0	
	125	128	1	
	150	151	1	
Filter	100	100	0	
	125	125	0	
	150	151	1	
	0	1	1	
Ext	10	11	1	
	20	21	1	
	25	25	0	
Mistur	75	76	1	
	90	91	1	
	98	91	1	
AUX	8	1	1	
	26	26	0	
	50	51	1	
	50	51	1	

Calibrated by _____ Approved by _____
 (Mr Prabhat Surabhai) (Mr Samant Ravi Aggarwal)
 Field Scientist CD Field Scientist (S)
 Polder no. & category Impulsion No., & BORE built, finished

PROBE NOZZLE DIAMETER
CALIBRATION DATA SHEET

Calibration Date	3 Jul 22	Nozzle Set ID	BNK_FS0454
Calibration Sheet No.	C-030722-BNK_FS0454	Vendor Caliper ID	BNK_FS0626

NodeID #	Node Diameter (cm.)			H - L0	$(D_1 + D_2) \times 0.73$
	D_1	D_2	D_3		
1	0.315	0.315	0.315	0.000	0.015
2	0.475	0.475	0.475	0.000	0.415
3	0.515	0.455	0.635	0.000	0.635
4	0.790	0.790	0.790	0.000	0.790
5	0.950	0.950	0.950	0.000	0.950
6	1.110	1.110	1.110	0.000	1.110
7	1.270	1.270	1.270	0.000	1.270
8	1.600	1.600	1.600	0.000	1.600

When

$D_1 = D_2 = D_3$

= Three different nozzle diameters at 50 degrees to each other, each measured the required GDS mm

ΔD_1

= Maximum distance between any two diameters, must be ≥ 150 mm

D_{max}

$- (D_1 = D_2 = D_3) / 3$

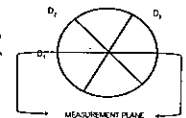
MEASUREMENT PLANE

Handwritten signature: *Prasanth S*

Handwritten signature: *Sudhakar P.*

Controlled by _____ (Mr Prasanth Sudhakar S)
 Fund Schemes (E)

Approved by _____ (Mr Sudhakar Prasanth S)
 Fund Schemes (E)





CONSOLE CONTROL UNIT CALIBRATION TEST REPORT

Calibration Date: 3 Jul 22
 Next Cal Date: 3 Jan 23

Barometric Pressure (mm Hg): 753
 Relative Humidity (%): 55.0
 Temperature: 34.0

Console Control Meter Data

Calibration No: C-000722-BHK_F50495
 Dry Gas Meter No: BHK_F50495
 Serial No: 1412067
 Model No: XC-572-V

Reference Dry Gas Meter Data

Reference Dry Gas Meter ID: BHK_F50429
 Serial No: 1603795
 Correction Factor (CF): 1.0000
 Next Calibration Date: 7 Oct 22

Flow (L/min)	Q	Reference Dry Gas Meter Calibration						Console Control, Oxygen Meter						Dry Gas Meter Calibration		Office Calibration	
		Flow (L/min)		Temp (°C)		Flow (L/min)		Temp (°C)		Flow (L/min)		Temp (°C)		Factor	Factor	Factor	Factor
		Flow	Temp	Flow	Temp	Flow	Temp	Flow	Temp	Flow	Temp	Flow	Temp				
15	11.38	150.00	8.00	150.00	40.0	3.76088	32.79418	147.00	42.0	1.0000	41.2695						
25	9.94	150.00	8.00	150.00	40.0	2.71544	32.72018	147.00	42.0	1.0000	41.8428						
50	4.23	150.00	8.00	150.00	40.0	3.71527	32.79818	147.00	42.0	1.0000	41.7665						
80	3.91	150.00	8.00	150.00	40.0	3.71548	32.79818	147.00	42.0	1.0000	41.8495						
120	3.04	150.00	8.00	150.00	40.0	3.71549	32.77718	147.00	42.0	1.0000	42.4760						
										Avg	1.0000						

1. Rate of reading of reference to dry gas meter. Reference for individual values is 0.02 from average.
 2. Console pressure differential that requires 100.0 mm Hg at 20 °C and 760 mm Hg at sea level.
 3. Console pressure differential that requires 100.0 mm Hg at 20 °C and 760 mm Hg at sea level.

Calibrated by: Mr. Prasad Suranjan
 Approved by: Mr. Samir Prasad
 Field Scientist (1) Supervisor (1)



Stopwatch Calibration Test Report

Calibration Date: 3 Jul 22
 Next Cal Date: 3 Jan 23
 Barometric Pressure (mmHg): 756
 Relative Humidity (%): 62.0

Reference Stopwatch Date

Stopwatch ID No: E19031
 Model: F1008
 Serial No: -
 Calibration Date: 8 Sep 20
 Certificate No: E-2009018

Console Control Meter Data

Dry Gas Meter No: BHK_F50495
 Model: XC-572-V
 Serial No: 1402067

Run No.	Time Actual (m:ss.ms)	Time Reading (m:ss)	Diff. (ms)	Diff. (min)
1	5:00:10	5:00	10	0.00017
2	5:00:11	5:00	11	0.00018
3	5:00:12	5:00	12	0.00020
4	5:00:11	5:00	11	0.00018
5	5:00:10	5:00	10	0.00017
6	5:00:10	5:00	10	0.00017
7	5:00:06	5:00	6	0.00013
8	5:00:10	5:00	10	0.00017
9	5:00:12	5:00	12	0.00020
10	5:00:11	5:00	11	0.00018
			Average	0.00018
			SD	0.00002

Calibrated by: Mr. Prasad Suranjan
 Approved by: Mr. Samir Prasad
 Field Scientist (1) Supervisor (1)



DIGITAL TEMPERATURE CALIBRATION DATA SHEET

Calibration Date: 3 Jul 22		Ambient Temperature (°C): 31		
Calibration sheet No: C-000722-BHK_F50495		Relative Humidity (%): 62		
Digital Temperature ID: BHK_F50497		Reference Temperature ID: BHK_F50498		
Serial No: 1412067		Serial No: 1603795		
Model: XC-572-V		Model: F1008		
		Next Calibration: 28 Jul 23		
Location	Reference Temperature °C	Digital Temperature °C	Error °C	Remarks
Room	31	31	0	
	25	25	0	
	34	34	0	
	140	139	0	
	156	156	0	
	205	205	0	
	270	268	-1	
Probe	200	204	-1	
	940	938	-1	
	1305	1304	-1	
	1320	1318	-1	
	130	130	0	
	125	125	0	
	150	150	0	
Quem	137	136	-1	
	125	125	0	
	150	151	1	
	157	156	-1	
	135	135	0	
	156	153	-3	
	8	1	1	
Filter	16	11	1	
	25	21	1	
	0	1	1	
	25	25	0	
	30	31	1	
	0	0	0	
	25	25	0	
Meter	30	31	1	
	0	0	0	
	25	25	0	
	30	30	0	
	25	25	0	
	30	30	0	
	30	30	0	

Calibrated by: Mr. Prasad Suranjan
 Approved by: Mr. Samir Prasad
 Field Scientist (1) Supervisor (1)



Pitot Tube Calibration Data

Pitot Tube Identification Number: BHK_F50500
 Lab Test Sheet Number: 256-1-13-01
 Calibration Sheet No: C-000722-BHK_F50501

Calibration Date: 3 Jul 22
 Standard Pitot ID: BHK_F50441
 Cap Standard: 0.99

Type S Pitot Tube Coefficient Data	Type S pitot tube Leg A/B	Standard pitot tube (ΔP, mm H ₂ O)	Type S pitot tube Leg A/B	Cap (A)	Cap (B)
	Leg A	Leg B	Leg A	Leg B	Leg B
Test 1	A	12.00	16.00	0.842	-
	B	12.00	16.00	-	0.842
Test 2	A	12.00	16.00	0.842	-
	B	12.00	16.00	-	0.842
Test 3	A	12.00	16.00	0.842	-
	B	12.00	16.00	-	0.842
	C ₀	-	-	0.842	0.842

$$C_{p0} = C_p \sqrt{\frac{\Delta P_{Pitot}}{\Delta P_{0.5}}}$$

$$[C_{p0} - C_{p0}]_{max} \leq 0.01$$

$$\sum [C_{p0} - C_{p0}]_{max} \leq 0.01$$

Average deviation of B1 to B2 must be ≤ 0.01

Calibrated by: Mr. Prasad Suranjan
 Approved by: Mr. Samir Prasad
 Field Scientist (1) Supervisor (1)



Pitot Tube Calibration Data

Pitot Tube Identification Number: BHK_F50501
 Lab Test Sheet Number: 256-1-13-01
 Calibration Sheet No: C-000722-BHK_F50501

Calibration Date: 3 Jul 22
 Standard Pitot ID: BHK_F50441
 Cap Standard: 0.99

Type S Pitot Tube Coefficient Data	Type S pitot tube Leg A/B	Standard pitot tube (ΔP, mm H ₂ O)	Type S pitot tube Leg A/B	Cap (A)	Cap (B)
	Leg A	Leg B	Leg A	Leg B	Leg B
Test 1	A	12.00	16.00	0.842	-
	B	12.00	16.00	-	0.842
Test 2	A	12.00	16.00	0.842	-
	B	12.00	16.00	-	0.842
Test 3	A	12.00	16.00	0.842	-
	B	12.00	16.00	-	0.842
	C ₀	-	-	0.842	0.842

$$C_{p0} = C_p \sqrt{\frac{\Delta P_{Pitot}}{\Delta P_{0.5}}}$$

$$[C_{p0} - C_{p0}]_{max} \leq 0.01$$

$$\sum [C_{p0} - C_{p0}]_{max} \leq 0.01$$

Average deviation of B1 to B2 must be ≤ 0.01

Calibrated by: Mr. Prasad Suranjan
 Approved by: Mr. Samir Prasad
 Field Scientist (1) Supervisor (1)

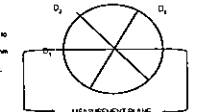


PROBE NOZZLE DIAMETER CALIBRATION DATA SHEET

Calibration Date: 3 Jul 22		Probe Serial ID: BHK_F50502			
Calibration Sheet No: C-000722-BHK_F50502		Vendor Calibration ID: BHK_F50502			
Probe ID #	Probe Diameter (mm)			H ₂ - L ₀	D ₀ - D _{0.5}
1	D ₁	D ₂	D ₃	ΔD	D _{avg}
1	0.315	0.315	0.315	0.000	0.315
2	0.475	0.475	0.475	0.000	0.475
3	0.635	0.635	0.635	0.000	0.635
4	0.790	0.790	0.790	0.000	0.790
5	0.950	0.950	0.950	0.000	0.950
6	1.180	1.180	1.180	0.000	1.180
7	1.270	1.270	1.270	0.000	1.270

Where:
 D₁, D₂, D₃ = Three different probe diameters at 50 degrees to each other, each measured the required 0.025 mm.
 ΔD = Maximum difference between any two diameters, must be ≤ 0.025 mm.
 D₀ = (D₁ + D₂ + D₃) / 3

Calibrated by: Mr. Prasad Suranjan
 Approved by: Mr. Samir Prasad
 Field Scientist (1) Supervisor (1)





PENTA CALIBRATION CO., LTD.
86/111 The Corner 33 Wings Jomnansaphan Road
Chomphu Pruek Bangkok 10250
Tel : +66 (0) 2698 9772
www.pentacal.com

Certificate of Calibration

Reversion to Certificate of Calibration: PTC07/01181

Certificate No. PTC07/01181 Page 1 of 2
Equipment Digital Balance
Manufacturer Sartorius
Model SK104A24 15
Type of Balance Single Weigh

Customer ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanasukarn Rd., Phatthanasukarn Rd.,
Klongkiew Phatthanasukarn, Mueang Suan Luang, Bangkok 10250

Environment Condition: Temperature 23.8 °C ± 0.4 °C
Humidity 53.1 %RH ± 0.2 %RH
Air density 1.2 kg/m³

Calibration Place: ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanasukarn Rd., Phatthanasukarn Rd.,
Klongkiew Phatthanasukarn, Mueang Suan Luang, Bangkok 10250

The Method used: In-house method, PTC-01/01, based on EN 847-2:19
Traceability: The certificate is traceable to the SI Unit through the Calibration Service Co., Ltd.
(NIST-0000 Accredited), Calibration 0183

Date Received: December 16, 2021
Calibration Date: December 16, 2021
Issued Date: December 20, 2021
Calibration By: Mr. PATTANA KEROO

Prepared by
(Mr. Kongsak KASIN)

Approved By
(Mr. Kongsak KASIN)

RECEIVED BY
APPROVED BY
NEXT CAL. DATE

The number is issued with the unit of measurement, providing the measurement result of the unit is provided for the unit of measurement.

The measurement uncertainty is provided in the expanded uncertainty, which is determined by the standard deviation, multiplied by the coverage factor of 2, providing a level of confidence of approximately 95%.

This calibration certificate shall not be reproduced or used in full, without written approval of the Calibration Service Co., Ltd.



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)
Mechanical Engineering Standards Laboratory Set 1, Bangna Industrial Estate, Bang Na, Bangkok 10260, Thailand

Request No. 23-65/0316-01

2 / 2

MTC No. 23-65/0316-01

Calibration range : -27 in Hg to 0 in Hg

Calibration method : The Digital Pressure Gauge Under Vacuum (UUC) was calibrated by comparison method followed DANF-S-000-0-1: Calibration of Pressure Gauge, edition 03/2014

Calibration condition : Temperature (23.1 ± 2.1) °C, Relative Humidity (62 ± 10) %
Atmospheric pressure (1005 ± 10) hPa,
Local gravity (9.753023 ± 0.000000) m/s²

Measurement Data :

Gauge position : Vertical Medium : Air
Reference level : Gauge Water Unit : in Hg

UUC Reading	Gauge Pressure	Error	(k) Uncertainty
0.00	0.000	0.000	0.090
-10.00	-9.814	-0.086	0.090
-20.00	-19.820	-0.180	0.090
-26.00	-25.758	-0.241	0.090
-27.00	-26.659	-0.341	0.095
-28.00	-27.746	-0.252	0.090

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

The End of Calibration Certificate

RECEIVED BY
APPROVED BY
NEXT CAL. DATE

Head Office
111/11, 11th Floor, The Corner 33 Wings Jomnansaphan Road
Chomphu Pruek Bangkok 10250, Thailand
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Chomphu Pruek Bangkok 10250
Tel : +66 (0) 2698 9772
www.pentacal.com

Reversion to Certificate of Calibration: PTC07/01181

Certificate No. PTC07/01181 Page 2 of 2

Measurement Results:

Without Adjustment

Function Calibration Internal Calibration

Estimated Error Weight 24.13 17.2 of Maximum Capacity

Estimated Error Weight 24.13 17.2 of Maximum Capacity

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Estimated Error Weight 24.13 17.2 of Maximum Capacity

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

Repeatability Test: Weight to be 10 ≤ 4 L Maximum capacity

Comparison of the standard deviation of weighing balance: Repeatability 0.0001 g

Nominal and value (g)	Standard Deviation
200	0.0004

Free of indication from nominal value: Repeatability 0.0001 g

Nominal Value (g)	Conventional Mass (g)	Indication (g)	Correction of Balance (g)	Uncertainty (g)	k
0	0.0000	0.0000	0.0000	0.00013	2.57
0.01	0.0100	0.0100	0.0000	0.00028	2.58
0.1	0.1000	0.1000	0.0000	0.00015	2.12
1	1.0000	1.0000	0.0000	0.00014	2.18
5	5.0000	5.0000	0.0000	0.00014	2.20
10	10.0000	10.0000	0.0000	0.00014	2.20
20	20.0000	20.0000	0.0000	0.00014	2.18
50	50.0000	50.0000	0.0000	0.00015	2.11
100	100.0000	100.0000	0.0000	0.00018	2.06
200	200.0000	200.0000	0.0001	0.00025	2.00

Note: Weight of standard (g)

The End of Certificate

RECEIVED BY
APPROVED BY
NEXT CAL. DATE

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THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)
Mechanical Engineering Standards Laboratory Set 1, Bangna Industrial Estate, Bang Na, Bangkok 10260, Thailand
Request No. 23-65/0316-01
MTC No. 23-65/0316-01
Number of Pages: 2

CALIBRATION CERTIFICATE

Nomenclature : "Dwyer" DIGITAL PRESSURE GAUGE

Manufactured by DWYER INSTRUMENTS, INC. U.S.A.

Model : DVG-00

Serial No. : DVG02 ID: BOK_P50422

Range : -30 in Hg to 0 in Hg

Resolution : 0.01 in Hg

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.

104 Phatthanasukarn Rd., Phatthanasukarn Rd.,

Klongkiew Phatthanasukarn, Mueang Suan Luang, Bangkok 10250, Thailand.

Calibration method : Normal

Received date : 17 March 2022

Calibration date : 8 May 2022

Standard : Reference Pressure Monitor, Serial 1950, Certificate No. 23-64/0501-01

Due Date 5 August 2022

The Standard used for the measurement is traceable to SI Unit through

National Institute of Metrology (THAILAND).

Calibrated by : (Mr. Kongsak KASIN)

APPROVED BY : (Mr. Kongsak KASIN)

Director

Mechanical Engineering Standards Laboratory

Ref. 20132553170124001

Issued Date : 12 May 2022

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www.pentascientific.com



Certificate of Calibration

Number of Pages: 1 of 1

Certificate No. BSCG-UV-28021

Equipment UV-000 Spectrophotometer

Model UV-000

Manufacturer Shimadzu

Serial No. A11490853200

ID No. BSCG-UV-28021

Date of receipt 15 October 2021

Date of calibration 15 October 2021

Date of issue 25 October 2021

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

Address 104 Phatthanasukarn Rd., Phatthanasukarn Rd., Phatthanasukarn Suan Luang, Bangkok 10250

Temperature 25.0 ± 0.5 °C (20 ± 0.5 °C)

Humidity 45.0 ± 5.0 %RH (20 ± 5.0 %RH)

Equipment condition Good Operation

Calibration Location Organic Prep

Calibration Procedure In-house method, PTC-01/01, based on ASTM E275-01

Traceability Viewpoint Accuracy is traceable to certified by 0702 and 0704

Photometric Accuracy is traceable to certified by 0702 and 0704



ROTA METER CALIBRATION RESULT OCTOBER 2022

Rotameter ID	Calibration Date	Regression Result	Coefficient (R ²)
BKQ_F50577	01 Oct 22	$Y = 1.0022x + 0.1976$	1.0000
BKQ_F50579	01 Oct 22	$Y = 1.0070x + 0.4769$	0.9998
BKQ_F50583	01 Oct 22	$Y = 1.015x + 0.3922$	1.0000
BKQ_F50584	01 Oct 22	$Y = 1.0036x + 0.2392$	0.9997
BKQ_F50585	01 Oct 22	$Y = 1.0180x + 0.5418$	0.9997
BKQ_F50586	01 Oct 22	$Y = 1.0096x + 1.1524$	0.9995
BKQ_F50587	01 Oct 22	$Y = 1.0131x + 3.6819$	0.9995
BKQ_F50588	01 Oct 22	$Y = 1.0154x + 4.8357$	0.9996
BKQ_F50589	01 Oct 22	$Y = 0.9919x + 4.8069$	0.9999
BKQ_F50590	01 Oct 22	$Y = 1.0030x + 0.4857$	0.9996
BKQ_F50591	01 Oct 22	$Y = 0.9705x + 52.174$	0.9988
BKQ_F50592	01 Oct 22	$Y = 0.9648x + 37.542$	0.9985
BKQ_F50593	01 Oct 22	$Y = 0.9167x + 58.445$	0.9988
BKQ_F50594	01 Oct 22	$Y = 0.9902x + 62.87$	0.9999
BKQ_F50595	01 Oct 22	$Y = 1.0245x + 58.445$	0.9999
BKQ_F50596	01 Oct 22	$Y = 0.9943x + 26.806$	0.9991
BKQ_F50597	01 Oct 22	$Y = 0.9902x + 61.653$	0.9978
BKQ_F51004	01 Oct 22	$Y = 0.9762x + 11.724$	0.9994
BKQ_F51005	01 Oct 22	$Y = 1.0081x + 1.5143$	1.0000
BKQ_F51006	01 Oct 22	$Y = 1.008x + 2.9327$	0.9999
BKQ_F51007	01 Oct 22	$Y = 0.9917x + 1.5592$	1.0000
BKQ_F51008	01 Oct 22	$Y = 1.0132x + 0.7207$	1.0000
BKQ_F51009	01 Oct 22	$Y = 1.0132x + 1.1633$	0.9990
BKQ_F51010	01 Oct 22	$Y = 1.0033x + 0.5758$	0.9999
BKQ_F51011	01 Oct 22	$Y = 1.0234x + 0.1759$	0.9995
BKQ_F51012	01 Oct 22	$Y = 1.0109x + 2.0048$	0.9997
BKQ_F51013	01 Oct 22	$Y = 0.9977x + 35.851$	0.9997
BKQ_F51014	01 Oct 22	$Y = 1.0031x + 0.3148$	0.9998
BKQ_F51015	01 Oct 22	$Y = 0.9994x + 1.786$	1.0000
BKQ_F51016	01 Oct 22	$Y = 1.0102x + 80.755$	0.9998
BKQ_F51017	01 Oct 22	$Y = 0.9992x + 0.649$	1.0000
BKQ_F51018	01 Oct 22	$Y = 1.0011x + 1.1786$	1.0000
BKQ_F51019	01 Oct 22	$Y = 1.0023x + 68.424$	0.9996
BKQ_F51020	01 Oct 22	$Y = 1.0647x + 0.666$	0.9998
BKQ_F51021	01 Oct 22	$Y = 1.018x + 3.3086$	0.9998
BKQ_F51022	01 Oct 22	$Y = 0.9932x + 57.035$	0.9985
BKQ_F51023	01 Oct 22	$Y = 1.0094x + 0.0717$	0.9999
BKQ_F51024	01 Oct 22	$Y = 1.0042x + 0.4086$	0.9997
BKQ_F51025	01 Oct 22	$Y = 1.0132x + 88.507$	0.9995

Page 1 of 2

ALS Laboratory Group

SITHIPORN / SITHIPORN ASSOCIATES CO.,LTD. ASSOCIATES CALIBRATION LABORATORY

Continuation of Calibration Certificate

Cert. No. : ACC22887
Job No. : VCM5 LC0881
Page : 1 of 3

Calibration Procedure : CP-AL-03

Calibration Method :

This equipment was calibrated by based on IEC 4042-2003 Standard.
The sound pressure level, frequency and total distortion of the sound calibrator was measured using the reference microphone.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33111B	8413207242	13-09-22	04-Feb-23
Digital Multimeter	34461A	MY33220104	ET3-BP-04-02A3	09-Feb-23
Digital Multimeter	34461A	MY33220076	ET3-BP-03-02A5	09-Feb-23
Digital Multimeter	34461A	MY30024215	E13-BP-05-02A5	09-Feb-23
Programmable Ammeter	MA1-1070	82100114	13-09-22	07-Feb-23
Consumer Microphone	4180	297760	AA-1013-22	24-Feb-23
Measuring Amplifier	NA-42KAJ	3450495	AA-3042-22	22-Feb-23
Audio Analyzer	AYR-336A3	V744B0609	ET-0210-22	07-Feb-23

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of units maintained at :

- National Institute of Metrology (Thailand).
- Thailand Institute of Scientific and Technological Research (TISTR).



ROTA METER CALIBRATION RESULT OCTOBER 2022

Rotameter ID	Calibration Date	Regression Result	Coefficient (R ²)
BKQ_F51026	01 Oct 22	$Y = 1.0018x + 1.0776$	0.9997
BKQ_F51027	01 Oct 22	$Y = 1.0053x + 0.231$	0.9995
BKQ_F51028	01 Oct 22	$Y = 0.9782x + 60.312$	0.9982
BKQ_F51029	01 Oct 22	$Y = 0.9993x + 0.8234$	1.0000
BKQ_F51030	01 Oct 22	$Y = 1.0038x + 0.515$	0.9999
BKQ_F51031	01 Oct 22	$Y = 1.008x + 79.295$	0.9998
BKQ_F51032	01 Oct 22	$Y = 0.9967x + 4.5048$	0.9999
BKQ_F51040	01 Oct 22	$Y = 0.9936x + 32.894$	0.9998
BKQ_F51041	01 Oct 22	$Y = 1.0057x + 1.599$	1.0000
BKQ_F51042	01 Oct 22	$Y = 1.0079x + 2.1671$	1.0000
BKQ_F51043	01 Oct 22	$Y = 1.1569x + 96.479$	0.9412
BKQ_F51044	01 Oct 22	$Y = 1.0318x + 0.3074$	0.9999
BKQ_F51161	01 Oct 22	$Y = 1.0102x + 0.7738$	0.9999
BKQ_F51162	01 Oct 22	$Y = 0.9904x + 2.6357$	0.9995
BKQ_F51163	01 Oct 22	$Y = 0.9776x + 55.03$	0.9987
BKQ_F51164	01 Oct 22	$Y = 0.9914x + 0.8427$	0.9997
BKQ_F51165	01 Oct 22	$Y = 0.9983x + 5.5919$	0.9998
BKQ_F51166	01 Oct 22	$Y = 1.0031x + 77.881$	0.9966
BKQ_F51200	01 Oct 22	$Y = 1.0131x + 0.4602$	0.9995
BKQ_F51201	01 Oct 22	$Y = 1.0045x + 0.15$	0.9995
BKQ_F51202	01 Oct 22	$Y = 0.9702x + 44.156$	0.9994
RYG_F50197	01 Oct 22	$Y = 1.0039x + 0.170$	0.9999
RYG_F50198	01 Oct 22	$Y = 0.9954x + 21.757$	1.0000
RYG_F50199	01 Oct 22	$Y = 1.0577x + 1.7488$	1.0000

Review By: *Wichan Chomwatt*
(Mr. Wichan Chomwatt)
Envo Field Services Manager

Approved By: *T. Petchu*
(Mr. Saraphut Jitranon)
Assistant General Manager

Page 1 of 2

ALS Laboratory Group

SITHIPORN / SITHIPORN ASSOCIATES CO.,LTD. ASSOCIATES CALIBRATION LABORATORY

Continuation of Calibration Certificate

Cert. No. : ACC23887
Job No. : VCM5 LC0881
Page : 1 of 3

Result of calibration :

1. Sound pressure level

Specified sound pressure level (dB)	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Tolerance limit (dB)
94	94.17	0.17	0.14	0.40

2. Frequency

Specified frequency (Hz)	Measured value (Hz)	Deviated value (%)	Uncertainty (%)	Tolerance limit (%)
1000	1001.9	0.2	0.2	1.0

3. Total distortion

Measured value (%)	Uncertainty (%)	Tolerance limit (%)
1.22	0.10	3.0

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$;
or any value following calculation providing a level of confidence of approximately 95 %.

End of Calibration Certificate

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY

431-431/1 Sathorn Rd, Bangkok, Bangkok Bangkok 10700 THAILAND
Tel: 0-2435-8802 Fax: 0-2435-1629 e-mail: cal@centerphsithiporn.com http://www.sithiporn.com



Cert. No. : ACC22887
Page : 1 of 3

Calibration Certificate

Equipment : SOUND CALIBRATOR
Manufacturer : RION
Model : NC-34
Serial No. : 3442586
ID No. : BKQ_F50617

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PIATTHANAKAN 40, PIATTHANAKAN ROAD,
KHUANG PIATTHANAKAN, KHUANG PIATTHANAKAN,
BANGKOK, 10250 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 2.0) %

Received Date : 04 SEPTEMBER 2022
Calibration Date : 04 SEPTEMBER 2022
Date of Issue : 14 SEPTEMBER 2022

Calibrated by : Natchanon Pongpisan

Approved by : *T. Petchu*
(Thakul Petchu)

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.

04-1512-04-04-02964

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY

431-431/1 Sathorn Rd, Bangkok, Bangkok Bangkok 10700 THAILAND
Tel: 0-2435-8802 Fax: 0-2435-1629 e-mail: cal@centerphsithiporn.com http://www.sithiporn.com



Cert. No. : ACC23887
Page : 1 of 3

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 Microphone UC-02 / Preamplifier NH-24
Serial No. : 0985825 / 138776 / 58777
ID No. : BKQ_F50115

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PIATTHANAKAN 40, PIATTHANAKAN ROAD,
KHUANG PIATTHANAKAN, KHUANG PIATTHANAKAN,
BANGKOK, 10250 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 2.0) %

Received Date : 09 DECEMBER 2021
Calibration Date : 16-15 DECEMBER 2021
Date of Issue : 16 DECEMBER 2021

Calibrated by : Natchanon Pongpisan

Approved by : *T. Petchu*
(Thakul Petchu)

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.

04-1512-04-04-02964

04-1512-04-04-02964

04-1512-04-04-02964

Continuation of Calibration Certificate

Cert. No. : ACL21171
Job No. : VCSAC0903
Page : 3 of 4

Calibration Procedure : CPACD

Calibration Method :

This equipment was calibrated by based on IEC 61010-2:2011 Standard for sound level meter (SLM).
The SLM had tests as Acoustical and Electrical signal tests of frequency weighting with Acoustic chamber and Reference standard Instruments.

For test results of each item were made by observation of each instrument display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert.No.	Due Date
Waveform Generator	3321A	MY54817008	ET-0012-21	10-Feb-22
Waveform Generator	33311H	MY52302942	ET-0011-21	10-Feb-22
Digital Multimeter	3346A	MY5120104	111.LRP.05.0284	10-Feb-22
Digital Multimeter	3446A	MY5120076	111.LRP.05.0284	08-Feb-22
Digital Multimeter	2646A	1997025	111.LRP.06.0264	05-Feb-22
Programmable Attenuator	MAT-1070	62100114	1500-077746	08-Mar-22
Condenser Microphone	4180	2977990	AA-1046-21	05-Feb-22
Measuring Amplifier	NA-426A1	34580493	AA-3000-21	16-Feb-22

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the International system of unit maintained as :

3.1 National Institute of Metrology (Thailand)

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

Continuation of Calibration Certificate

Cert. No. : ACL21171
Job No. : VCSAC0903
Page : 3 of 4

Summary of Measurement Results

Parameter	Pass	Fail	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings	✓	-	0.2	0.6
125 Hz	✓	-	0.2	0.6
1000 Hz	✓	-	0.2	0.6
8000 Hz	✓	-	0.2	0.7
4. Electrical signal tests of frequency weightings	✓	-	0.2	0.6
For 10 Hz to 4 kHz	✓	-	0.2	0.7
For > 4 kHz to 10 kHz	✓	-	0.2	1.0
For > 10 kHz to 20 kHz	✓	-	0.2	0.2
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.1
6. Long-term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.2
8. Level linearity including the level range control	✓	-	0.2	0.2
9. Time burst response	✓	-	0.2	0.2
10. Peak C-weight level	✓	-	0.2	0.2
11. Overload indication	✓	-	0.2	0.2
12. High-level stability	✓	-	0.1	0.1

Continuation of Calibration Certificate

Cert. No. : ACL21171
Job No. : VCSAC0903
Page : 4 of 4

Result of Calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.0 (93.96)	93.4	0.0	±0.2

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
33.4

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	11.6
C-weight	17.8
Flat	23.2

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 94 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits (dB)
125	0.4	0.4	0.5	+1.5
1000	-0.1	-0.1	-0.1	+1.0
8000	-2.8	-2.7	-2.7	+5.0

QE-1512-04-04-02964

T. Rth...

Continuation of Calibration Certificate

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Job No. : VCSAC0903
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4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	0.0	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.1	0.1	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	-
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	-
Slow	94.0	0.0	±0.1
Lee	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SLM Display at start (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	±0.3

QE-1512-04-04-02964

T. Rth...

Continuation of Calibration Certificate

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7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±1.1
136.0	136.0	0.0	±1.1
135.0	135.0	0.0	±1.1
134.0	134.0	0.0	±1.1
133.0	133.0	0.0	±1.1
132.0	132.0	0.0	±1.1
131.0	131.0	0.0	±1.1
130.0	130.0	0.0	±1.1
129.0	129.0	0.0	±1.1
128.0	128.0	0.0	±1.1
127.0	127.0	0.0	±1.1
126.0	126.0	0.0	±1.1
125.0	125.0	0.0	±1.1
124.0	124.0	0.0	±1.1
123.0	123.0	0.0	±1.1
122.0	122.0	0.0	±1.1
121.0	121.0	0.0	±1.1
120.0	120.0	0.0	±1.1
119.0	119.0	0.0	±1.1
118.0	118.0	0.0	±1.1
117.0	117.0	0.0	±1.1
116.0	116.0	0.0	±1.1
115.0	115.0	0.0	±1.1
114.0	114.0	0.0	±1.1
113.0	113.0	0.0	±1.1
112.0	112.0	0.0	±1.1
111.0	111.0	0.0	±1.1
110.0	110.0	0.0	±1.1
109.0	109.0	0.0	±1.1
108.0	108.0	0.0	±1.1
107.0	107.0	0.0	±1.1
106.0	106.0	0.0	±1.1
105.0	105.0	0.0	±1.1
104.0	104.0	0.0	±1.1
103.0	103.0	0.0	±1.1
102.0	102.0	0.0	±1.1
101.0	101.0	0.0	±1.1
100.0	100.0	0.0	±1.1
99.0	99.0	0.0	±1.1
98.0	98.0	0.0	±1.1
97.0	97.0	0.0	±1.1
96.0	96.0	0.0	±1.1
95.0	95.0	0.0	±1.1
94.0	94.0	0.0	±1.1
93.0	93.0	0.0	±1.1
92.0	92.0	0.0	±1.1
91.0	91.0	0.0	±1.1
90.0	90.0	0.0	±1.1
89.0	89.0	0.0	±1.1
88.0	88.0	0.0	±1.1
87.0	87.0	0.0	±1.1
86.0	86.0	0.0	±1.1
85.0	85.0	0.0	±1.1
84.0	84.0	0.0	±1.1
83.0	83.0	0.0	±1.1
82.0	82.0	0.0	±1.1
81.0	81.0	0.0	±1.1
80.0	80.0	0.0	±1.1
79.0	79.0	0.0	±1.1
78.0	78.0	0.0	±1.1
77.0	77.0	0.0	±1.1
76.0	76.0	0.0	±1.1
75.0	75.0	0.0	±1.1
74.0	74.0	0.0	±1.1
73.0	73.0	0.0	±1.1
72.0	72.0	0.0	±1.1
71.0	71.0	0.0	±1.1
70.0	70.0	0.0	±1.1
69.0	69.0	0.0	±1.1
68.0	68.0	0.0	±1.1
67.0	67.0	0.0	±1.1
66.0	66.0	0.0	±1.1
65.0	65.0	0.0	±1.1
64.0	64.0	0.0	±1.1
63.0	63.0	0.0	±1.1
62.0	62.0	0.0	±1.1
61.0	61.0	0.0	±1.1
60.0	60.0	0.0	±1.1
59.0	59.0	0.0	±1.1
58.0	58.0	0.0	±1.1
57.0	57.0	0.0	±1.1
56.0	56.0	0.0	±1.1
55.0	55.0	0.0	±1.1
54.0	54.0	0.0	±1.1
53.0	53.0	0.0	±1.1
52.0	52.0	0.0	±1.1
51.0	51.0	0.0	±1.1
50.0	50.0	0.0	±1.1
49.0	49.0	0.0	±1.1
48.0	48.0	0.0	±1.1
47.0	47.0	0.0	±1.1
46.0	46.0	0.0	±1.1
45.0	45.0	0.0	±1.1
44.0	44.0	0.0	±1.1
43.0	43.0	0.0	±1.1
42.0	42.0	0.0	±1.1
41.0	41.0	0.0	±1.1
40.0	40.0	0.0	±1.1
39.0	39.0	0.0	±1.1
38.0	38.0	0.0	±1.1
37.0	37.0	0.0	±1.1
36.0	36.0	0.0	±1.1
35.0	35.0	0.0	±1.1
34.0	34.0	0.0	±1.1
33.0	33.0	0.0	±1.1
32.0	32.0	0.0	±1.1
31.0	31.0	0.0	±1.1
30.0	30.0	0.0	±1.1
29.0	29.0	0.0	±1.1
28.0	28.0	0.0	±1.1
27.0	27.0	0.0	±1.1
26.0	26.0	0.0	±1.1
25.0	25.0	0.0	±1.1

Continuation of Calibration Certificate

Cert. No. : ACL21171
Job No. : VCSAC0903
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8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Auto	94.0	94.0	0.0	±1.1

9. Time burst response

Time Weighting	Time burst duration, Th (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	100.0	100.9	-0.1	1.5 : -5.0
	2	8	112.0	112.0	0.0	1.0 : -2.5
Slow	200	800	134.0	134.1	0.1	±1.0
	2	8	100.0	100.0	0.0	1.5 : -5.0
SEL	200	800	127.6	127.6	0.0	±0.8
	0.25	1	99.0	98.9	-0.1	1.5 : -5.0
	2	8	100.0	100.0	0.0	1.0 : -2.5
	200	800	126.0	126.0	0.0	±1.0

10. Peak C-weight level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
One	136.4	136.3	-0.1	±1.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

QE-1512-04-04-02964

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Continuation of Calibration Certificate

Cert. No. : ACL21111
Job No. : VCSAAC0033
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11. Overload indication

Measured value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Position one-half cycle	Negative one-half cycle	
89.6	89.5	-0.1

12. High level stability

Frequency	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Weighting				
A-weight	137.0	137.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$
or any value following calculation providing a level of confidence of approximately 95 %

End of Calibration Certificate

CL-1512-04-04-02964

Continuation of Calibration Certificate

Cert. No. : ACL23243
Job No. : VCSAAC0090
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Summary of Measurement Result:

Parameter	Pass	Fail	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings				
125 Hz	✓	-	0.3	0.6
500 Hz	✓	-	0.3	0.6
8000 Hz	✓	-	0.3	0.7
4. Electrical signal tests of frequency weightings				
For 10 Hz to 4 kHz	✓	-	0.2	0.6
For > 4 kHz to 10 kHz	✓	-	0.3	0.7
For > 10 kHz to 20 kHz	-	-	-	1.0
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.2
6. Long-term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. Time burst response	✓	-	0.2	0.3
10. Peak C sound level	✓	-	0.2	0.35
11. Overload indication	✓	-	0.2	0.25
12. High level stability	✓	-	0.1	0.1

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431-01/17, Sathorn Rd., Bangkok, Bangkok 10120 THAILAND
Tel: 2415-0800 Fax: 2415-1879 e-mail: center@sitphorn.com http://www.sitphorn.comCert. No. : ACL23243
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Calibration Certificate

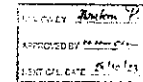
Equipment: SOUND LEVEL METER
Manufacturer: RION
Model: NL-42 Microphone UC-52 / Preamplifier NH-24
Serial No.: 0607457 / 170214 / 17295
ID No.: HCK 130923

Condition As Found: GOOD

Customer: AIS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATHANAKAN 40, PHATHANAKAN ROAD,
KIWAENG PHATHANAKAN, KURT SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location: -
Ambient Temperature: (23.0 ± 3) °C
Pressure: (101.3 ± 3) kPa
Relative Humidity: (50.0 ± 20) %

Received Date: 11 OCTOBER 2022
Calibration Date: 24-26 OCTOBER 2022
Date of Issue: 27 OCTOBER 2022



Calibrated by: Tathakorn Petchum

Approved by: T. Petchum
(Tathakorn Petchum)

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CL-1512-04-04-02964

Continuation of Calibration Certificate

Cert. No. : ACL23243
Job No. : VCSAAC0090
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Result of Calibration:

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limit (dB)
93.0 (93.0)	93.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.6

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	9.9
C-weight	16.9
Flat	22.6

3. Acoustical signal tests of frequency weightings

Noise free-field acoustic response at a level of 94 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits (dB)
125	0.3	0.4	0.4	±1.5
1000	0.0	0.0	0.0	±1.0
8000	-1.4	-1.4	-1.3	±5.0

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Continuation of Calibration Certificate

Cert. No. : ACL23243
Job No. : VCSAAC0090
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Calibration Procedure: CP-AC-01

Calibration Method:

This equipment was calibrated by based on IEC-61672-1 (2013) Standard for sound level meter (SLM).
The SLM had been in Acoustical and Electrical signal tests of frequency weighting with anechoic chamber and Reference Standard Instruments.
For test results of each item were made by observation of each instrument's display and also with SLM's display.

Condition of this result of calibration:

1. Reference Standard Instruments:

Instrument	Model	Serial No.	Cert. No.	Exp. Date
Waveform Generator	33210A	M4V48017076	LT-0007-22	04-Feb-23
Waveform Generator	33511H	M4V3202742	LT-0008-22	04-Feb-23
Digital Multimeter	34461A	M4V32250184	LTJ-0006-23	09-Feb-23
Digital Multimeter	33461A	M4V32250796	LTJ-0006-23	09-Feb-23
Digital Multimeter	34461A	M4V90024273	LTJ-0006-23	09-Feb-23
Programmable Attenuator	MAT-1070	62100114	EF-0009-22	07-Feb-23
Condenser Microphone	4150	2977900	AA-1013-22	24-Feb-23
Measuring Amplifier	NA-42KAI	34040495	AA-3003-22	22-Feb-23

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at:

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

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Continuation of Calibration Certificate

Cert. No. : ACL23243
Job No. : VCSAAC0090
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4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits (dB)
63	0.0	0.0	0.0	±2.0
125	0.1	0.0	0.1	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.1	0.0	±1.0
1000	0.0	0.0	0.0	±2.0
2000	0.0	0.1	0.0	±3.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.1	0.1	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	±0.3
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	±0.1
Slow	94.0	0.0	±0.1
Imp	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.1	0.1	±0.3

CL-1512-04-04-02964

Continuation of Calibration Certificate

Cert. No. : ACL23343
Job No. : VCM5ACW090
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7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	+1.1
136.0	136.0	0.0	+1.1
135.0	135.0	0.0	+1.1
134.0	134.0	0.0	+1.1
133.0	133.0	0.0	+1.1
132.0	132.0	0.0	+1.1
131.0	131.0	0.0	+1.1
129.0	129.0	0.0	+1.1
124.0	124.0	0.0	+1.1
119.0	119.0	0.0	+1.1
114.0	114.0	0.0	+1.1
109.0	109.0	0.0	+1.1
104.0	104.0	0.0	+1.1
99.0	99.0	0.0	+1.1
94.0	94.0	0.0	+1.1
89.0	89.0	0.0	+1.1
84.0	84.0	0.0	+1.1
79.0	79.0	0.0	+1.1
74.0	74.0	0.0	+1.1
69.0	69.0	0.0	+1.1
64.0	64.0	0.0	+1.1
59.0	59.0	0.0	+1.1
54.0	54.0	0.0	+1.1
49.0	49.0	0.0	+1.1
44.0	44.0	0.0	+1.1
39.0	39.0	0.0	+1.1
34.0	34.0	0.0	+1.1
29.0	29.0	0.0	+1.1
24.0	24.0	0.0	+1.1
19.0	19.0	0.0	+1.1
14.0	14.0	0.0	+1.1
9.0	9.0	0.0	+1.1

QE-1512-04-01-02044

T. P. R. R.

SITHIPORN ASSOCIATES CO.,LTD.
CALIBRATION LABORATORY451-451/1 Sathorn Rd, Bangkok, Bangkok 10120 THAILAND
Tel: 02-2515-8800 Fax: 02-2515-8879 e-mail: sithiporn@thaisithiporn.com http://www.sithiporn.comCert. No. : ACL21173
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Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Pre-amplifier NH-24
Serial No. : 0058527 / 15778 / 50779
ID No. : BKK 150117

Condition As Found : GOOD

Customer : AIN LABORATORY GROUP (THAILAND) CO., LTD.
101 PHATHANAKAN 40, PHATHANAKAN ROAD,
KHUANG PHATHANAKAN, KHUANG LUANG,
BANGKOK, 10250 THAILAND.

Location :
Ambient Temperature : (20.0 ± 3.0) °C
Pressure : (101.3 ± 3.0) kPa
Relative Humidity : (50.0 ± 20.0) %
Received Date : 09 DECEMBER 2021
Calibration Date : 16-15 DECEMBER 2021
Date of Issue : 16 DECEMBER 2021

Calibrated by : Katsunori Pongman

Approved by : T. P. R. R.
(Thakorn Pongman)

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QE-1512-04-01-02044

Continuation of Calibration Certificate

Cert. No. : ACL23343
Job No. : VCM5ACW090
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8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Aux	94.0	94.0	0.0	+1.1

9. Tone burst response

Time	Time burst duration, T _b (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.3 ± 0.2
	2	8	117.0	117.0	0.0	1.3 ± 0.2
Slow	2	8	118.0	118.0	0.0	1.3 ± 0.2
	20	300	127.6	127.6	0.0	1.3 ± 0.2
SL3	0.25	1	99.0	98.9	-0.1	1.3 ± 0.2
	2	8	108.0	108.0	0.0	1.3 ± 0.2
	200	300	128.0	128.0	0.0	1.3 ± 0.2

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Leq (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	137.0	137.0	0.0	-
One	136.4	136.2	-0.2	+1.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	135.0	135.0	0.0	-
Positive half cycle	135.4	135.4	-0.2	+1.0
Negative half cycle	135.4	135.4	-0.2	+1.0

QE-1512-04-01-02044

T. P. R. R.

Continuation of Calibration Certificate

Cert. No. : ACL21173
Job No. : VCM5ACW090
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Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by based on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had been in Acoustic and Electrical signal tests of frequency weighting with Acoustic chamber and Reference Standard Instruments.
For test results of each item were made by observation of each instrument display and also with SLM's display.

Condition of this result of calibration :

Instrument	Model	Serial No.	Cert. No.	Exp. Date
Waveform Generator	33210A	MY54017016	IF-0012-21	10-Feb-22
Waveform Generator	33511B	MY55202742	IF-0011-21	10-Feb-22
Digital Multimeter	33601A	MY55220104	EL-0017-03	10-Feb-22
Digital Multimeter	33601A	MY55220076	EL-0017-03	08-Feb-22
Digital Multimeter	8566A	1097025	EL-0017-03	05-Feb-22
Programmable Attenuator	33AT-1070	62109114	1097077445	08-Mar-22
Condenser Microphone	4190	287700	AA-1008-21	05-Feb-22
Measuring Amplifier	NA-43K5J	2650495	AA-1005-21	16-Feb-22

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of units maintained at:

3.1 National Institute of Metrology (NIM).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

QE-1512-04-01-02044

T. P. R. R.

Continuation of Calibration Certificate

Cert. No. : ACL23343
Job No. : VCM5ACW090
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11. Overload indicator

Measured value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	-0.1	+1.5
Negative one-half cycle	-0.1	+1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	136.9	136.9	0.0	+0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor k = 2
or any value following calculation using a level of confidence of approximately 95 %

End of Calibration Certificate

QE-1512-04-01-02044

T. P. R. R.

Continuation of Calibration Certificate

Cert. No. : ACL21173
Job No. : VCM5ACW090
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Summary of Measurement Result

Parameter	Pass	Fail	Uncertainty (dB)	Maximum permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings	✓	-	0.3	0.5
125 Hz	✓	-	0.3	0.5
1000 Hz	✓	-	0.3	0.5
8000 Hz	✓	-	0.3	0.5
4. Electrical signal tests of frequency weightings	✓	-	0.3	0.5
For 10 Hz to 4 kHz	✓	-	0.3	0.5
For 4 kHz to 10 kHz	✓	-	0.3	0.5
For 10 kHz to 20 kHz	✓	-	0.3	0.5
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.2
6. Long-term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.2
8. Level linearity including the level range control	✓	-	0.2	0.2
9. Tone burst response	✓	-	0.2	0.2
10. Peak C sound level	✓	-	0.2	0.2
11. Overload indicator	✓	-	0.2	0.2
12. High level stability	✓	-	0.1	0.1

QE-1512-04-01-02044

T. P. R. R.

Cert. No. : ACL31173
Job No. : VCMAC0833
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Result of calibration:

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limits (dB)
93.0 (93.36)	93.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
16.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	11.2
C-weight	17.6
Flat	27.0

3. Acoustic signal tests of frequency weightings

Measure free-field acoustic response at a level of 84 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
125	1.0	1.0	1.0	±1.5
1000	0.0	0.0	0.0	±1.0
3000	-1.1	-1.1	-1.0	±1.0

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8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviation Value (dB)	Acceptance Limits (dB)
Aux	94.0	94.0	0.0	±1.3

9. Time burst response

Time Weighting	Time burst duration, T _b (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviation Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	106.0	107.0	-0.1	1.3; -5.0
	2	5	117.0	117.0	0.0	1.0; -2.5
	200	500	134.0	134.1	0.1	±0.0
Slow	2	5	106.0	106.0	0.0	1.3; -5.0
	200	500	127.0	127.6	0.6	±0.0
	0.25	1	99.0	98.9	-0.1	1.5; -4.0
SEL	2	5	106.0	106.0	0.0	1.0; -2.5
	200	500	128.0	128.1	0.1	±0.0

10. Peak C annual level

Number of cycle to test signal	Anticipated Value (dB)	Measured Value, C _{peak} (dB)	Deviation Value (dB)	Acceptance Limits (dB)
Continuation	133.0	133.0	0.0	-
One	134.4	134.2	-0.1	±2.0

Number of cycle to test signal	Anticipated Value (dB)	Measured Value (dB)	Deviation Value (dB)	Acceptance Limits (dB)
Continuation	133.0	133.0	0.0	-
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

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4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
50	0.0	-0.1	0.0	±2.0
125	0.0	0.0	0.0	±1.3
250	0.0	0.0	0.0	±1.3
500	0.0	0.0	0.0	±1.3
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.1	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.1	0.1	±3.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	-
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	-
Slow	94.0	0.0	±0.1
1eq	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	±0.5

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11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive over-half cycle	Negative over-half cycle		
89.5	89.5	0.0	±1.3

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	137.0	137.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation providing a level of confidence of approximately 95 %

End of Calibration Certificate

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Job No. : VCMAC0833
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7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±1.3
136.0	136.0	0.0	±1.3
135.0	135.0	0.0	±1.3
134.0	134.0	0.0	±1.3
133.0	133.0	0.0	±1.3
132.0	132.0	0.0	±1.3
131.0	131.0	0.0	±1.3
130.0	130.0	0.0	±1.3
129.0	129.0	0.0	±1.3
128.0	128.0	0.0	±1.3
127.0	127.0	0.0	±1.3
126.0	126.0	0.0	±1.3
125.0	125.0	0.0	±1.3
124.0	124.0	0.0	±1.3
123.0	123.0	0.0	±1.3
122.0	122.0	0.0	±1.3
121.0	121.0	0.0	±1.3
120.0	120.0	0.0	±1.3
119.0	119.0	0.0	±1.3
118.0	118.0	0.0	±1.3
117.0	117.0	0.0	±1.3
116.0	116.0	0.0	±1.3
115.0	115.0	0.0	±1.3
114.0	114.0	0.0	±1.3
113.0	113.0	0.0	±1.3
112.0	112.0	0.0	±1.3
111.0	111.0	0.0	±1.3
110.0	110.0	0.0	±1.3
109.0	109.0	0.0	±1.3
108.0	108.0	0.0	±1.3
107.0	107.0	0.0	±1.3
106.0	106.0	0.0	±1.3
105.0	105.0	0.0	±1.3
104.0	104.0	0.0	±1.3
103.0	103.0	0.0	±1.3
102.0	102.0	0.0	±1.3
101.0	101.0	0.0	±1.3
100.0	100.0	0.0	±1.3
99.0	99.0	0.0	±1.3
98.0	98.0	0.0	±1.3
97.0	97.0	0.0	±1.3
96.0	96.0	0.0	±1.3
95.0	95.0	0.0	±1.3
94.0	94.0	0.0	±1.3
93.0	93.0	0.0	±1.3
92.0	92.0	0.0	±1.3
91.0	91.0	0.0	±1.3
90.0	90.0	0.0	±1.3
89.0	89.0	0.0	±1.3
88.0	88.0	0.0	±1.3
87.0	87.0	0.0	±1.3
86.0	86.0	0.0	±1.3
85.0	85.0	0.0	±1.3
84.0	84.0	0.0	±1.3
83.0	83.0	0.0	±1.3
82.0	82.0	0.0	±1.3
81.0	81.0	0.0	±1.3
80.0	80.0	0.0	±1.3
79.0	79.0	0.0	±1.3
78.0	78.0	0.0	±1.3
77.0	77.0	0.0	±1.3
76.0	76.0	0.0	±1.3
75.0	75.0	0.0	±1.3
74.0	74.0	0.0	±1.3
73.0	73.0	0.0	±1.3
72.0	72.0	0.0	±1.3
71.0	71.0	0.0	±1.3
70.0	70.0	0.0	±1.3
69.0	69.0	0.0	±1.3
68.0	68.0	0.0	±1.3
67.0	67.0	0.0	±1.3
66.0	66.0	0.0	±1.3
65.0	65.0	0.0	±1.3
64.0	64.0	0.0	±1.3
63.0	63.0	0.0	±1.3
62.0	62.0	0.0	±1.3
61.0	61.0	0.0	±1.3
60.0	60.0	0.0	±1.3
59.0	59.0	0.0	±1.3
58.0	58.0	0.0	±1.3
57.0	57.0	0.0	±1.3
56.0	56.0	0.0	±1.3
55.0	55.0	0.0	±1.3
54.0	54.0	0.0	±1.3
53.0	53.0	0.0	±1.3
52.0	52.0	0.0	±1.3
51.0	51.0	0.0	±1.3
50.0	50.0	0.0	±1.3
49.0	49.0	0.0	±1.3
48.0	48.0	0.0	±1.3
47.0	47.0	0.0	±1.3
46.0	46.0	0.0	±1.3
45.0	45.0	0.0	±1.3
44.0	44.0	0.0	±1.3
43.0	43.0	0.0	±1.3
42.0	42.0	0.0	±1.3
41.0	41.0	0.0	±1.3
40.0	40.0	0.0	±1.3
39.0	39.0	0.0	±1.3
38.0	38.0	0.0	±1.3
37.0	37.0	0.0	±1.3
36.0	36.0	0.0	±1.3
35.0	35.0	0.0	±1.3
34.0	34.0	0.0	±1.3
33.0	33.0	0.0	±1.3
32.0	32.0	0.0	±1.3
31.0	31.0	0.0	±1.3
30.0	30.0	0.0	±1.3
29.0	29.0	0.0	±1.3
28.0	28.0	0.0	±1.3
27.0	27.0	0.0	±1.3
26.0	26.0	0.0	±1.3
25.0	25.0	0.0	±1.3
24.0	24.0	0.0	±1.3
23.0	23.0	0.0	±1.3
22.0	22.0	0.0	±1.3
21.0	21.0	0.0	±1.3
20.0	20.0	0.0	±1.3
19.0	19.0	0.0	±1.3
18.0	18.0	0.0	±1.3
17.0	17.0	0.0	±1.3
16.0	16.0	0.0	±1.3
15.0	15.0	0.0	±1.3
14.0	14.0	0.0	±1.3
13.0	13.0	0.0	±1.3
12.0	12.0	0.0	±1.3
11.0	11.0	0.0	±1.3
10.0	10.0	0.0	±1.3
9.0	9.0	0.0	±1.3
8.0	8.0	0.0	±1.3
7.0	7.0	0.0	±1.3
6.0	6.0	0.0	±1.3
5.0	5.0	0.0	±1.3
4.0	4.0	0.0	±1.3
3.0	3.0	0.0	±1.3
2.0	2.0	0.0	±1.3
1.0	1.0	0.0	±1.3
0.0	0.0	0.0	±1.3

QF-1512-04-04-02064

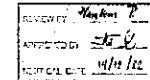
T. Ratan

SITHIPORN ASSOCIATES CO.,LTD.
CALIBRATION LABORATORY451-4517/17 Srinakharin Rd, Bangkok, Bangkok 10700 THAILAND
Tel: 0-2455-8800 Fax: 0-2455-1079 e-mail: cal@stphiporn.com http://www.stphiporn.comCert. No. : ACL31173
Page : 1 of 1

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42/ Microphone UC-52 / Preamp/Filter NH-24
Serial No. : 0058326 / 173176 / 83721
ID No. : RICK, FN0116

Condition As Found : OK

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATHANAKAN 40, PHATHANAKAN ROAD,
KHUANG PHATHANAKAN, KHUANG PHATHANAKAN,
BANGKOK, 10250 THAILAND.Location :
Ambient Temperature : (23.0 ± 3.1) °C
Pressure : (1013 ± 3.3) hPa
Relative Humidity : (50.0 ± 2.0) %
Received Date : 09 DECEMBER 2021
Calibration Date : 14-15 DECEMBER 2021
Date of Issue : 18 DECEMBER 2021

Calibrated by : T. Ratan

Approved by : T. Ratan
(Thakul Petchum)

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.

QF-1512-04-04-02064

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T. Ratan

Continuation of Calibration Certificate

Cert. No. : ACL21172
Job No. : VCMAC0033
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Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by based on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustic and Electrical signal tests of frequency weighting with Acoustic chamber and Reference Standard Instruments.
For test results of each item were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Workshop Generator	33511A	MY50017076	EF-0013-21	10-Feb-22
Workshop Generator	33511B	MY52202742	1F-0011-21	10-Feb-22
Digital Multimeter	33461A	MY5320104	11L-10P-0630264	10-Feb-22
Digital Multimeter	33461A	MY5320076	EEL-10P-0630264	06-Feb-22
Digital Multimeter	33461A	1909025	EEL-10P-0630264	03-Feb-22
Programmable Attenuator	STAT-1070	6100114	1500-07774E	08-Mar-22
Condenser Microphone	4160	2077605	AA-1006-21	05-Feb-22
Measuring Amplifier	NA-426A5	34340495	AA-3089-21	16-Feb-22

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

- 3.1 National Institute of Metrology (Thailand).
3.2 Thailand Institute of Scientific and Technological Research (TISTR).

Continuation of Calibration Certificate

Cert. No. : ACL21172
Job No. : VCMAC0033
Page : 3 of 8

Summary of Measurement Results

Parameter	Pass	Fail	Uncertainty (dB)	Maximum permitted uncertainty (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings	✓	-	0.2	0.6
3.1 125 Hz	✓	-	0.2	0.6
3.2 800 Hz	✓	-	0.2	0.2
4. Electrical signal tests of frequency weightings	✓	-	0.2	0.6
4.1 For 10 Hz to 4 kHz	✓	-	0.2	0.2
For > 4 kHz to 10 kHz	✓	-	0.2	0.2
For > 10 kHz to 20 kHz	-	-	-	1.0
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.2
5.1 Long-term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.2
8. Level linearity including the level range control	✓	-	0.2	0.2
9. Time burst response	✓	-	0.2	0.2
10. Peak C-weight level	✓	-	0.2	0.2
11. Thermal indication	✓	-	0.2	0.2
12. High level stability	✓	-	0.1	0.1

Continuation of Calibration Certificate

Cert. No. : ACL21172
Job No. : VCMAC0033
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Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limits (dB)
93.9 (93.96)	93.9	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
12.1

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	13.4
C-weight	19.7
Flat	25.1

3. Acoustical signal tests of frequency weightings

Water free-field acoustic response at a level of 94 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
125	0.2	0.2	0.2	±1.5
1000	0.1	0.0	0.0	±1.0
8000	1.9	2.0	2.0	±3.0

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T. Bha.

Continuation of Calibration Certificate

Cert. No. : ACL21172
Job No. : VCMAC0033
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4. Electrical signal tests of frequency weightings

Weighting network response relative to 1 kHz

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.2	-0.1	±2.0
125	0.0	0.0	-0.1	±1.5
250	0.0	0.0	-0.1	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.1	0.0	0.0	±3.0
8000	0.1	0.0	0.0	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	-
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	-
Slow	94.0	0.0	±0.1
Low	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	93.9	94.0	0.1	±0.3

QE-TS12-04-04-02064

T. Bha.

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Continuation of Calibration Certificate

Cert. No. : ACL21172
Job No. : VCMAC0033
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7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±1.1
136.0	136.1	0.1	±1.1
135.0	135.1	0.1	±1.1
134.0	134.1	0.1	±1.1
133.0	133.0	0.0	±1.1
132.0	132.0	0.0	±1.1
131.0	131.0	0.0	±1.1
129.0	129.0	0.0	±1.1
124.0	124.0	0.0	±1.1
119.0	119.1	0.1	±1.1
114.0	114.1	0.1	±1.1
109.0	109.1	0.1	±1.1
104.0	104.1	0.1	±1.1
99.0	99.0	0.0	±1.1
94.0	94.0	0.0	±1.1
89.0	89.0	0.0	±1.1
84.0	84.0	0.0	±1.1
79.0	79.0	0.0	±1.1
74.0	74.0	0.0	±1.1
69.0	69.0	0.0	±1.1
64.0	64.0	0.0	±1.1
59.0	59.0	0.0	±1.1
54.0	54.0	0.0	±1.1
49.0	49.0	0.0	±1.1
44.0	44.0	0.0	±1.1
39.0	39.0	0.0	±1.1
34.0	34.0	0.0	±1.1
30.0	29.9	-0.1	±1.1
26.0	25.9	-0.1	±1.1
24.0	23.9	-0.1	±1.1
22.0	21.9	-0.1	±1.1
20.0	20.0	0.0	±1.1
18.0	18.0	0.0	±1.1

Continuation of Calibration Certificate

Cert. No. : ACL21172
Job No. : VCMAC0033
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8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Auto	94.0	94.0	0.0	±1.1

9. Time burst response

Time Weighting	Time burst duration, 10 (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5; ±2.0
	2	8	119.0	118.9	-0.1	1.0; ±2.5
Slow	2	8	108.0	108.0	0.0	1.5; ±2.0
	200	200	127.6	127.6	0.0	±1.0
SEL	0.25	1	99.0	98.8	-0.2	1.5; ±2.0
	2	8	108.0	107.9	-0.1	1.0; ±2.5
	200	800	128.0	128.0	0.0	±1.0

10. Peak C-weight level

Number of cycle test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
One	136.4	136.4	0.0	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
Positive half cycle	135.4	135.1	-0.3	±2.0
Negative half cycle	135.4	135.1	-0.3	±2.0

QE-TS12-04-04-02064

T. Bha.

Continuation of Calibration Certificate

Cert. No. : ACL31173
Job No. : 1 VC65AC0833
Page : 1 of 8

11. Overload indication

Measured value (dB)	Deviation Value	Acceptance Limits
Positive over half cycle	0.0	±0.5
Negative over half cycle	0.0	±0.5

12. High level stability

Frequency	SLM Display at Initial	SLM Display at Final	Deviation Value	Acceptance Limits
Weighting	137.0	137.0	0.0	±0.5
A-weight	137.0	137.0	0.0	±0.5

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$
or any value following calculation providing a level of confidence of approximately 95 %

End of Calibration Certificate

QR-1512-04-01-02644

Continuation of Calibration Certificate

Cert. No. : ACL31170
Job No. : 1 VC65AC0833
Page : 1 of 8

Summary of Measurement Results

Parameter	Pass	Fail	Uncertainty (dB)	Maximum permitted uncertainty (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings	✓	-	0.2	N/A
125 Hz	✓	-	0.3	0.6
1000 Hz	✓	-	0.3	0.6
5000 Hz	✓	-	0.3	0.7
4. Electrical signal tests of frequency weightings	✓	-	0.2	0.6
For 10 Hz to 4 kHz	✓	-	0.3	0.7
For 4 kHz to 10 kHz	✓	-	0.3	1.0
For > 10 kHz to 20 kHz	✓	-	0.2	0.2
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.2
6. Long-term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. Total burst response	✓	-	0.2	0.3
10. Peak C-weight level	✓	-	0.2	0.35
11. Overload indication	✓	-	0.2	0.25
12. High level stability	✓	-	0.1	0.1

QR-1512-04-01-02644

41-451/1 Sukhumvit Rd, Bangkok, Bangkok 10700 THAILAND
Tel: 0-2433-4800 Fax: 0-2433-1879 e-mail: sithiporn@calibrationlab.com http://www.sithiporn.com



Cert. No. : ACL31170
Page : 1 of 8

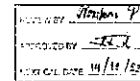
Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 Microphone UC-52 / Pre-amplifier KIP-24
Serial No. : 0004521 / 15476 / 59767
ID No. : BKR 150111

Condition As Found : 0.000

Customer : AIA LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATHANAKAN 40, PHATHANAKAN ROAD,
KHU ATONG PHATHANAKAN, KHUAT SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %
Received Date : 09 DECEMBER 2021
Calibration Date : 14-15 DECEMBER 2021
Date of Issue : 16 DECEMBER 2021



Calibrated by : Katsuhiko Protopopov

Approved by : T. Petchai
(Thanakul Petchai)

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other than in full, except with the prior written approval of the head of Calibration Laboratory.

QR-1512-04-01-02644

Continuation of Calibration Certificate

Cert. No. : ACL31170
Job No. : 1 VC65AC0833
Page : 1 of 8

Result of calibration

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.9)	93.9	0.0	±0.5

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency	Measured value (dB)
Weighting	
A-weight	10.8
C-weight	17.3
Flat	21.1

3. Acoustical signal tests of frequency weightings

Micro free-field acoustic response at a level of 84 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
125	0.5	0.5	0.5	±1.5
1000	0.0	0.0	0.0	±1.0
5000	-2.6	-2.5	-2.5	±5.0

QR-1512-04-01-02644

Continuation of Calibration Certificate

Cert. No. : ACL31170
Job No. : 1 VC65AC0833
Page : 1 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by based on IEC 61672-1 (2013) Standard for sound level meter (SLM).
The SLM had tests in Acoustical and Electrical signal tests of frequency weighting with Acoustic chamber and Reference Standard Instruments.
For test results of each item were made by observation of each instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MV48017076	ET-0012-21	10-Feb-22
Waveform Generator	33511R	MV2202742	ET-0011-21	10-Feb-22
Signal Meter	33441A	MV2202104	ETLJP-050264	10-Feb-22
Digital Multimeter	33441A	MV2202076	ETLJP-050264	08-Feb-22
Digital Multimeter	4046A	1997025	ETLJP-060264	08-Feb-22
Programmable Attenuator	MAT-1070	62100114	1501-07714E	08-Mar-22
Condenser Microphone	4180	2977900	AA-1006-21	05-Feb-22
Noising Amplifier	NA-42K42	3450495	AA-3003-21	16-Feb-22

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

- National Institute of Metrology (Thailand).
- Thailand Institute of Scientific and Technological Research (TISTR).

QR-1512-04-01-02644

Continuation of Calibration Certificate

Cert. No. : ACL31170
Job No. : 1 VC65AC0833
Page : 1 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	-0.1	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.1	0.1	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency	Measured Value (dB)	Deviation Value (dB)	Acceptance Limits (dB)
Weighting			
A-weight	94.0	0.0	±0.2
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency	Measured Value (dB)	Deviation Value (dB)	Acceptance Limits (dB)
Weighting			
Fast	94.0	0.0	±0.2
Slow	94.0	0.0	±0.2
Imp	94.0	0.0	±0.2

6. Long-term stability

Frequency	SLM Display at Initial (dB)	SLM Display at Final (dB)	Deviation Value (dB)	Acceptance Limits (dB)
Weighting				
A-weight	94.0	94.0	0.0	±0.3

QR-1512-04-01-02644

Cert. No.: ACL21179
Job No.: VCSAC0033
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7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	+1.1
136.0	136.0	0.0	+1.1
135.0	135.0	0.0	+1.1
134.0	134.0	0.0	+1.1
133.0	133.0	0.0	+1.1
132.0	132.0	0.0	+1.1
131.0	131.0	0.0	+1.1
129.0	129.0	0.0	+1.1
124.0	124.0	0.0	+1.1
119.0	119.0	0.0	+1.1
114.0	114.0	0.0	+1.1
109.0	109.0	0.0	+1.1
104.0	104.0	0.0	+1.1
99.0	99.0	0.0	+1.1
94.0	94.0	0.0	+1.1
89.0	89.0	0.0	+1.1
84.0	84.0	0.0	+1.1
79.0	79.0	0.0	+1.1
74.0	74.0	0.0	+1.1
69.0	69.0	0.0	+1.1
64.0	64.0	0.0	+1.1
59.0	59.0	0.0	+1.1
54.0	54.0	0.0	+1.1
49.0	49.0	0.0	+1.1
44.0	44.0	0.0	+1.1
39.0	39.0	-0.1	+1.1
34.0	34.0	-0.1	+1.1
29.0	29.0	-0.1	+1.1
24.0	24.0	-0.1	+1.1
19.0	19.0	-0.1	+1.1
14.0	14.0	-0.1	+1.1
9.0	9.0	-0.1	+1.1
4.0	4.0	-0.1	+1.1

08-1512-04-04-02064

T. Pichai

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY81-45111 Sathorn Rd., Bangkok, Thailand 10120 THAILAND
Tel: 2415-8800 Fax: 2415-1879 e-mail: center@sthlphorn.com http://www.sthlphorn.comCert. No.: ACL22043
Page: 1 of 8

Calibration Certificate

Equipment: SOUND LEVEL METER
Manufacturer: RION
Model: NR-42 Microphone UC-92 - Pre-amplifier NH-24
Serial No.: 06W622 134774-96775
ID No.: RKR (NH1)

Condition As Found: GOOD

Customer: ALS LABORATORY GROUP (THAILAND) CO., LTD.
101 PHATHANAKAN 40, PHATHANAKAN ROAD,
RUEANG PHATHANAKAN, KUT-NAN LPAENG,
BANGKOK, 10250 THAILAND.

Location: -
Ambient Temperature: (23.0 ± 3) °C
Pressure: (101.3 ± 1) kPa
Relative Humidity: (50.0 ± 20) %

Received Date: 08 JANUARY 2022
Calibration Date: 12-14 JANUARY 2022
Date of Issue: 17 JANUARY 2022

Calibrated by: Nishadee Pongpan

Approved by: T. Pichai
(Thakul Pichai)

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08-1512-04-04-02064

Cert. No.: ACL21179
Job No.: VCSAC0033
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8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Auto	94.0	94.0	0.0	±1.1

9. Time burst response

Time Weighting	Time burst duration, T _b (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	106.0	107.9	+1.9	1.5; -5.0
	2	8	117.0	117.0	0.0	1.0; -2.5
	200	800	134.0	134.0	0.0	±1.0
Slow	2	8	106.0	106.0	0.0	1.5; -5.0
	200	800	127.4	127.4	0.0	±1.0
	0.25	1	99.0	99.9	+0.9	1.5; -5.0
SEL	2	8	106.0	106.0	0.0	1.0; -2.5
	200	800	128.0	128.0	0.0	±1.0

10. Peak C-weight level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
One	136.4	135.9	-0.5	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

08-1512-04-04-02064

T. Pichai

Cert. No.: ACL22043
Job No.: VCSAC0041
Page: 1 of 8

Calibration Procedure: CP-AC-01

Calibration Method:

This equipment was calibrated by based on IEC 61672-1 (2013) Standard for sound level meter (SLM).
The SLM had been tested in Acoustical and Electrical signal tests of frequency weighting with Acoustic chamber and Reference Standard Instruments.
For test results of each item were made by observation of each instrument display and also with SLM's display.

Condition of this result of calibration:

Reference Standard Instruments:	Model	Serial No.	Cert. No.	Exp. Date
Integrator	31041	MY-40017076	LI-0012-21	10-Feb-22
Waveform Generator	32511H	MY32502742	LI-0011-21	10-Feb-22
Waveform Generator	33461A	MY32220104	LI-0011-21	10-Feb-22
Digital Multimeter	33461A	MY32220104	LI-0011-21	10-Feb-22
Digital Multimeter	33461A	MY32220104	LI-0011-21	10-Feb-22
Digital Multimeter	33461A	MY32220104	LI-0011-21	10-Feb-22
Programmable Microsource	MSF-1070	62100114	1509-0774E	06-Nov-22
Condenser Microphone	4190	2977061	AS-1008-21	05-Feb-22
Measuring Amplifier	N/A-2R3A	3456495	AA-3000-21	16-Feb-22

2. The result of calibration was found accurate as shown on date and place of calibration for this calibrated test only.

3. This certificate is traceable to the international system of unit maintained at:

- 3.1 National Institute of Metrology (NIM)
- 3.2 Thailand Institute of Scientific and Technological Research (TISTR)

Cert. No.: ACL21179
Job No.: VCSAC0033
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11. Overload indication

Measured value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	99.7	0.1
Negative one-half cycle	99.7	0.1

12. High level stability

Frequency Weighting	SLM Display at Initial (dB)	SLM Display at Final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	127.0	127.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$
or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

08-1512-04-04-02064

T. Pichai

Cert. No.: ACL22043
Job No.: VCSAC0041
Page: 3 of 8

Summary of Measurement Results

Parameter	Pass	Fail	Uncertainty (dB)	Maximum permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Accurately signal tests of frequency weightings	✓	-	0.3	0.6
120 Hz	✓	-	0.3	0.6
1000 Hz	✓	-	0.3	0.6
8000 Hz	✓	-	0.3	0.6
4. Electrical signal tests of frequency weightings	✓	-	0.3	0.6
For 10 Hz to 4 kHz	✓	-	0.3	0.6
For 4 kHz to 10 kHz	✓	-	0.3	0.6
For 10 kHz to 20 kHz	✓	-	0.3	0.6
5. Frequency and time weightings at 1 kHz	✓	-	0.1	0.1
6. Temp. + term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. Time burst response	✓	-	0.2	0.3
10. Peak C-weight level	✓	-	0.2	0.3
11. Overload indication	✓	-	0.1	0.25
12. High level stability	✓	-	0.1	0.1

08-1512-04-04-02064

T. Pichai

08-1512-04-04-02064

T. Pichai

Continuation of Calibration Certificate

Cert. No. : ACCL22042
Job No. : YC65AC0042
Pages : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.8 (93.8)	93.9	0.1	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.2

2.2 The microphone of the sound level meter was replaced by electronic signal input device.

Frequency Weighting (dB)	Measured Value (dB)
A-weight	12.0
C-weight	18.7
Flat	24.2

3. Acoustical signal levels of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limit
325	0.4	0.5	0.5	±1.5
1000	0.0	0.0	0.0	±1.0
3400	-1.3	-1.3	-1.3	±5.0

QH-TN12-04-04-02044

T. Petchani

Continuation of Calibration Certificate

Cert. No. : ACCL22042
Job No. : YC65AC0042
Pages : 7 of 8

8. Level Uncertainty including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limit (dB)
Audi	94.0	94.0	0.0	±1.1

9. Time Interval response

Time Weighting	Time Interval (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limit (dB)
Fast	0.25	1	108.0	107.8	-0.1	±1.5, ±5.0
	2	8	117.0	117.0	0.0	±1.0, ±2.5
	200	800	134.0	134.0	0.0	±1.0
Slow	2	8	108.0	108.0	0.0	±1.5, ±5.0
	200	800	127.6	127.6	0.0	±1.0
	0.25	1	99.0	99.9	+0.1	±1.5, ±3.0
SEI	2	8	108.0	108.0	0.0	±1.0, ±2.5
	200	800	126.0	126.1	+0.1	±1.0

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limit (dB)
Continuous	133.0	133.0	0.0	-
One	136.4	136.3	-0.1	±1.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limit (dB)
Continuous	133.0	133.0	0.0	-
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

QH-TN12-04-04-02044

T. Petchani

Continuation of Calibration Certificate

Cert. No. : ACCL22042
Job No. : YC65AC0042
Pages : 5 of 8

4. Electrical signal levels of frequency weightings

Weighting network response with relative to 1 kHz

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limit
63	-0.1	-0.1	0.0	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.0	0.0	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limit (dB)
A-weight	94.0	0.0	-
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limit (dB)
Fast	94.0	0.0	-
Slow	94.0	0.0	±0.1
Imp	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limit (dB)
A-weight	94.0	94.0	0.0	±0.3

QH-TN12-04-04-02044

T. Petchani

Continuation of Calibration Certificate

Cert. No. : ACCL22042
Job No. : YC65AC0042
Pages : 8 of 8

11. Overhead indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limit (dB)
Positive one-half cycle	Negative one-half cycle		
99.7	99.7	0.0	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limit (dB)
A-weight	137.0	137.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation using a level of confidence of approximately 95 %

End of Calibration Certificate

Continuation of Calibration Certificate

Cert. No. : ACCL22042
Job No. : YC65AC0042
Pages : 6 of 8

7. Level Uncertainty on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limit (dB)
137.0	137.0	0.0	±1.1
136.0	136.0	0.0	±1.1
135.0	135.0	0.0	±1.1
134.0	134.0	0.0	±1.1
133.0	133.0	0.0	±1.1
132.0	132.0	0.0	±1.1
131.0	131.0	0.0	±1.1
129.0	129.0	0.0	±1.1
128.0	128.0	0.0	±1.1
119.0	119.0	0.0	±1.1
114.0	114.0	0.0	±1.1
109.0	109.0	0.0	±1.1
104.0	104.0	0.0	±1.1
99.0	99.0	0.0	±1.1
94.0	94.0	0.0	±1.1
89.0	89.0	0.0	±1.1
84.0	84.0	0.0	±1.1
79.0	79.0	0.0	±1.1
74.0	74.0	0.0	±1.1
69.0	69.0	0.0	±1.1
64.0	64.0	0.0	±1.1
59.0	59.0	0.0	±1.1
54.0	54.0	-0.1	±1.1
49.0	49.0	0.0	±1.1
44.0	44.0	0.0	±1.1
39.0	39.0	-0.1	±1.1
34.0	34.0	-0.1	±1.1
29.0	29.0	-0.1	±1.1
24.0	24.0	-0.1	±1.1
19.0	19.0	-0.1	±1.1
14.0	14.0	-0.1	±1.1

QH-TN12-04-04-02044

T. Petchani



41-45/111 Sathorn Rd., Bangkok, Bangkok 10700 THAILAND
Tel: 0-2655-6610 Fax: 0-2655-1459 e-mail: cal@sinhphorn.com http://www.sinhphorn.com

Cert. No. : ACCL22042
Pages : 1 of 2

Calibration Certificate

Equipment : SOUND CALIBRATOR
Manufacturer : RION
Model : 3C74
Serial No. : 34425566
ID No. : BHS-J50617

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATHANAKAN RD., PHATHANAKAN ROAD,
SUKWANG PHATHANAKAN KHEI SUAN LUANG,
BANGKOK 10250 THAILAND

Location :
Ambient Temperature : (23.0 ± 3.3) °C
Pressure : (1013.3 ± 3.3) hPa
Relative Humidity : (30.0 ± 20.0) %
Received Date : 05 AUGUST 2021
Calibration Date : 09 AUGUST 2021
Date of Issue : 11 AUGUST 2021

REVIEW BY : [Signature]
APPROVED BY : [Signature]
NEXT CAL DATE : 05/12/22

Calibrated by : Natchanon Petchani

Approved by : T. Petchani
(Thumakul Petchani)

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QH-TN12-04-04-02044

Continuation of Calibration Certificate

Cert. No. : ACC21812
Job No. : VCSAC0066
Pages : 2 of 3

Calibration Procedure : CP-AC-03

Calibration Method :

This equipment was calibrated by based on IEC-60942:2002 Standard.
The sound pressure level, frequency and total distortion of the sound calibrator was measured using the reference microphone.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33511B	MY32202742	ET-001-21	10-Feb-22
Digital Multimeter	33461A	MY3220104	EE-LRP-05-0264	10-Feb-22
Digital Multimeter	33461A	1097025	EE-LRP-04-0264	05-Feb-22
Digital Multimeter	33461A	MY3220118	EE-LRP-04-0264	10-Feb-22
Programmable Attenuator	MA1-1070	62100114	1200-07714E	06-Mar-22
Condenser Microphone	4180	2977960	AA-1008-21	05-Feb-22
Measuring Amplifier	NA-42EAI	34560495	AA-3003-21	10-Feb-22
Audio Analyzer	AVR-3306A	V72406669	ET-0010-21	10-Feb-22

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

Continuation of Calibration Certificate

Cert. No. : ACC21812
Job No. : VCSAC0066
Pages : 3 of 3

Result of Calibration :

1. Sound pressure level

Specified sound pressure level (dB)	Measured value (dB)	Deviant value (dB)	Uncertainty (dB)	Tolerance limit (dB)
94	94.1	0.10	0.22	0.40

2. Frequency

Specified Frequency (Hz)	Measured value (Hz)	Deviant value (%)	Uncertainty (%)	Tolerance limit (%)
1000	1001.9	0.2	0.1	1.0

3. Total distortion

Measured value (%)	Uncertainty (%)	Tolerance limit (%)
1.14	0.10	3.0

This reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation providing a level of confidence of approximately 95 %.

End of Calibration Certificate

CP-1812-04-04-02064

Continuation of Calibration Certificate

Cert. No. : ACL22134
Job No. : VCSAC0063
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by based on IEC-61179-3 (2013) Standard for sound level meter (SLM).
The SLM had been to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For test results of each item were made by observation of each instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33511B	MY32202742	ET-001-21	04-Feb-22
Waveform Generator	33511B	MY32202742	ET-0006-22	04-Feb-22
Digital Multimeter	33461A	MY3220104	EE-LRP-04-0264	09-Feb-22
Digital Multimeter	33461A	MY32201078	EE-LRP-03-0263	09-Feb-22
Digital Multimeter	33461A	MY32202742	EE-LRP-05-0263	09-Feb-22
Programmable Attenuator	MA1-1070	62100114	ET-0006-22	07-Feb-22
Condenser Microphone	4180	2977960	AA-1015-22	24-Feb-22
Measuring Amplifier	NA-42EAI	34560495	AA-3003-22	22-Feb-22

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

Continuation of Calibration Certificate

Cert. No. : ACL22134
Job No. : VCSAC0063
Pages : 3 of 8

Summary of Measurement Results

Parameter	Pass	Fail	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings	✓	-	0.3	0.6
125 Hz	✓	-	0.3	0.6
1000 Hz	✓	-	0.3	0.6
8000 Hz	✓	-	0.3	0.7
4. Electrical signal tests of frequency weightings	✓	-	0.3	0.6
For 10 Hz to 4 kHz	✓	-	0.3	0.7
For > 4 kHz to 10 kHz	✓	-	0.3	0.7
For > 10 kHz to 20 kHz	-	-	-	1.0
5. Frequency and phase weightings at 1 kHz	✓	-	0.2	0.3
6. Long-term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. True sound level	✓	-	0.2	0.3
10. Peak C-weight level	✓	-	0.2	0.3
11. Overload indication	✓	-	0.2	0.3
12. High level of stability	✓	-	0.1	0.1

CP-1812-04-04-02064

453-4518 Siemchorn Rd. Bangchuen, Bangkok 10700 THAILAND
Telf: 0435-0620 Fax: 0435-1679 E-mail: cal@siemchorn.com http://www.siemchorn.comCert. No. : ACL22134
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : KION
Model : NL-42 Microphone UC-32 / Pre-amplifier M1-24
Serial No. : 0971008 / 134956 / 19639
ID No. : BKK_F30022

Condition As Found : GOOD

Customer : A.S. LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTANAKAN 40, PHATTANAKAN ROAD,
KHUANG PHATTANAKAN, KHUET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 26 MAY 2022
Calibration Date : 09-10 JUNE 2022
Date of Issue : 14 JUNE 2022

Calibrated by : Nadechon Petchum

Approved by : T. Petchum
(Thanakorn Petchum)

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CP-1812-04-04-02064

Continuation of Calibration Certificate

Cert. No. : ACL22134
Job No. : VCSAC0063
Pages : 4 of 8

Result of Calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
95.9 (93.9)	95.9	0.0	±0.3

2. Self-generated noise

2.1 Normal use

Measured Value (dB)
15.4

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	10.8
C-weight	17.3
Flat	22.9

3. Acoustical signal tests of frequency weightings

Near free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance limits
125	0.2	0.3	0.3	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	-0.2	-0.2	-0.1	± 5.0

CP-1812-04-04-02064

Continuation of Calibration Certificate

Cert. No. : ACL23134
Job No. : VCSAC0063
Page : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	F _{min}	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	-0.1	±2.0
125	0.0	0.0	0.0	±1.2
250	0.0	0.0	0.0	±1.2
500	0.0	0.1	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.1	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.1	0.1	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits
A-weight	94.0	0.0	-
C-weight	94.0	0.0	+0.2
Flat	94.0	0.0	+0.2

5.2 Time weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits
Fast	94.0	0.0	-
Slow	94.0	0.0	+0.1
Eq	94.0	0.0	+0.1

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	+0.3

QP-TS12-04-04-0064

T. Petch.

Continuation of Calibration Certificate

Cert. No. : ACL23134
Job No. : VCSAC0063
Page : 6 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	+1.1
136.0	136.0	0.0	+1.1
135.0	135.0	0.0	+1.1
134.0	134.0	0.0	+1.1
133.0	133.0	0.0	+1.1
132.0	132.0	0.0	+1.1
131.0	131.0	0.0	+1.1
129.0	129.0	0.0	+1.1
128.0	128.0	0.0	+1.1
119.0	119.0	0.0	+1.1
118.0	118.0	0.0	+1.1
109.0	109.0	0.0	+1.1
108.0	108.0	0.0	+1.1
99.0	99.0	0.0	+1.1
98.0	98.0	0.0	+1.1
89.0	89.0	0.0	+1.1
88.0	88.0	0.0	+1.1
79.0	79.0	0.0	+1.1
78.0	78.0	0.0	+1.1
69.0	69.0	0.0	+1.1
68.0	68.0	0.0	+1.1
59.0	59.0	0.0	+1.1
58.0	58.0	0.0	+1.1
49.0	49.0	0.0	+1.1
48.0	48.0	0.0	+1.1
39.0	38.9	-0.1	+1.1
38.0	37.9	-0.1	+1.1
29.0	28.9	-0.1	+1.1
28.0	27.9	-0.1	+1.1
27.0	26.9	-0.1	+1.1
26.0	25.9	-0.1	+1.1
25.0	24.8	-0.2	+1.1

QP-TS12-04-04-0064

T. Petch.

Continuation of Calibration Certificate

Cert. No. : ACL23134
Job No. : VCSAC0063
Page : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Auto	94.0	94.0	0.0	+1.1

9. Time level response

Time Weighting	Time level duration (s)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5/-0.0
	2	1	117.0	117.0	0.0	1.0/-2.5
	200	800	134.0	134.1	0.1	+0.0
Slow	0.25	1	108.0	108.0	0.0	1.5/-0.0
	2	1	127.6	127.6	0.0	+0.0
	200	800	128.0	128.1	0.1	+0.0

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Leq (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.8	0.8	-
Ons	136.4	136.1	-0.3	+0.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
Positive half cycle	135.4	135.2	-0.2	+0.0
Negative half cycle	135.4	135.2	-0.2	+0.0

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T. Petch.

Continuation of Calibration Certificate

Cert. No. : ACL23134
Job No. : VCSAC0063
Page : 8 of 8

11. Overload indication

Measured value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Positive over-half cycle	Negative over-half cycle	
99.6	99.6	+0.3

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	137.0	137.0	0.0	+0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ at any value following calculation providing a level of confidence of approximately 95 %

End of Calibration Certificate

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Tel: 02-614-0012 Fax: 02-614-1679 e-mail: cal@sthphiporn.com http://www.sthphiporn.comCert. No. : ACL23133
Page : 1 of 8

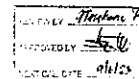
Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Pre-amplifier N21-24
Serial No. : 09710037 / 116904 / 10608
ID No. : RKE JS0021

Condition As Found : (GOOD)

Customer : ALN LABORATORY GROUP (THAI) AND CO., LTD.
104 PHATHANAKAN-AN, PHATHANAKAN ROAD,
KAP-ALING PHATHANAKAN, KIDT SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %
Received Date : 26 MAY 2022
Calibration Date : 09-10 JUNE 2022
Date of Issue : 14 JUNE 2022



Calibrated by : Thanabul Petchum

Approved by :
T. Petch.
(Thanabul Petchum)

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QP-TS12-04-04-0064

T. Petch.

Continuation of Calibration Certificate

Cert. No. : ACL23133
Job No. : VCSAC0063
Page : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by based on IEC 61672-3 (2013) Standard for sound level meter (SLM).
The SLM had been in Acoustical and Electrical signal tests with Acoustic chamber and Reference Standard Instruments.

For test results of each item were made by observation of each instrument display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017676	ET-0007-22	04-Feb-23
Waveform Generator	33511B	MY532062342	ET-0008-22	04-Feb-23
Digital Multimeter	33441A	MY53220104	ELLJ20-10-0546	09-Feb-23
Digital Multimeter	33441A	MY53220076	ETLJ20-03-0546	09-Feb-23
Digital Multimeter	34461A	MY60024273	ETLJ20-05-0546	09-Feb-23
Programmable Attenuator	MAT-1070	42110114	EP-0009-22	07-Feb-23
Condenser Microphone	4180	2977900	AA-1013-22	24-Feb-23
Measuring Amplifier	NA-425A1	34560493	AA-3005-22	22-Feb-23

2. This result of calibration was found accurate in accuracy date and place of calibration. For this calibrated item only.

3. This certificate is available in the international system of unit maintained at :

- 3.1 National Institute of Metrology (Thailand).
- 3.2 Thailand Institute of Scientific and Technological Research (TISTR).

QP-TS12-04-04-0064

T. Petch.

Continuation of Calibration Certificate

Cert. No.: ACL22133
Job No.: VCSAC0063
Pages: 3 of 8

Summary of Measurement Results

Parameter	Pass	Fail	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustic signal tests of frequency weightings				
125 Hz	✓	-	0.3	0.6
1000 Hz	✓	-	0.3	0.6
8000 Hz	✓	-	0.3	0.7
4. Electrical signal tests of frequency weightings				
For 10 Hz to 4 kHz	✓	-	0.3	0.6
For > 4 kHz to 10 kHz	✓	-	0.3	0.7
For > 10 kHz to 20 kHz	-	-	-	1.0
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.2
6. Long-term stability	✓	-	0.2	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. Tone burst response	✓	-	0.2	0.3
10. Peak C sound level	✓	-	0.2	0.35
11. Overload indication	✓	-	0.2	0.25
12. High level stability	✓	-	0.1	0.1

08-1512-04-04-02964

T. Rth.

Continuation of Calibration Certificate

Cert. No.: ACL22133
Job No.: VCSAC0063
Pages: 8 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	± 0.1
136.0	136.0	0.0	± 0.1
135.0	135.0	0.0	± 0.1
134.0	134.0	0.0	± 0.1
133.0	133.0	0.0	± 0.1
132.0	132.0	0.0	± 0.1
131.0	131.0	0.0	± 0.1
129.0	129.0	0.0	± 0.1
128.0	128.0	0.0	± 0.1
118.0	118.0	0.0	± 0.1
114.0	114.0	0.0	± 0.1
109.0	109.0	0.0	± 0.1
104.0	104.0	0.0	± 0.1
99.0	99.0	0.0	± 0.1
94.0	94.0	0.0	± 0.1
84.0	84.0	0.0	± 0.1
79.0	79.0	0.0	± 0.1
74.0	74.0	0.0	± 0.1
69.0	69.0	0.0	± 0.1
64.0	64.0	0.0	± 0.1
59.0	59.0	0.0	± 0.1
54.0	54.0	0.0	± 0.1
49.0	49.0	0.0	± 0.1
44.0	44.0	0.0	± 0.1
39.0	39.0	-0.1	± 0.1
34.0	33.9	-0.1	± 0.1
29.0	29.9	-0.1	± 0.1
24.0	24.9	-0.1	± 0.1
19.0	19.9	-0.1	± 0.1
14.0	14.9	-0.1	± 0.1
9.0	9.9	-0.1	± 0.1
4.0	4.9	-0.1	± 0.1

08-1512-04-04-02964

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Continuation of Calibration Certificate

Cert. No.: ACL22133
Job No.: VCSAC0063
Pages: 4 of 8

Result of calibration:

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
95.0 (93.95)	95.0	0.0	± 0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
15.4

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	15.4
C-weight	20.1
Z-weight	25.3

3. Acoustic signal tests of frequency weightings

Mean free-field acoustic response at a level of 84 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
125	0.2	0.3	0.2	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	-1.4	-1.4	-1.3	± 1.0

08-1512-04-04-02964

T. Rth.

Continuation of Calibration Certificate

Cert. No.: ACL22133
Job No.: VCSAC0063
Pages: 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Auo	94.0	94.0	0.0	± 0.1

9. Tone burst response

Time Weighting	Tone burst duration, T0 (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	± 2.5; ± 0.0
	2	8	117.0	117.0	0.0	± 0.1; ± 2.5
	200	800	134.0	134.1	0.1	± 0.0
Slow	2	8	108.0	108.0	0.0	± 2.5; ± 0.0
	200	800	127.0	127.6	0.6	± 0.0
	0.25	1	99.0	98.9	-0.1	± 2.5; ± 0.0
SEL	2	8	108.0	108.0	0.0	± 0.1; ± 2.5
	200	800	128.0	128.1	0.1	± 0.0

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Typical (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	233.0	233.0	0.0	-
One	136.4	136.1	-0.3	± 0.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	131.0	133.0	0.0	-
Positive half cycle	135.4	135.2	-0.2	± 0.0
Negative half cycle	135.4	135.2	-0.2	± 0.0

08-1512-04-04-02964

T. Rth.

Continuation of Calibration Certificate

Cert. No.: ACL22133
Job No.: VCSAC0063
Pages: 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with reference to 1 kHz

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
43	0.0	-0.1	-0.1	± 2.0
125	0.0	0.0	0.0	± 1.5
250	0.0	0.0	0.0	± 1.5
500	0.0	0.1	0.0	± 1.5
1000	0.0	0.0	0.0	± 1.0
2000	0.0	0.1	0.0	± 2.0
4000	0.0	0.0	0.0	± 3.0
8000	0.0	0.1	0.1	± 5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	-
C-weight	94.0	0.0	± 0.2
Z-weight	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	-
Slow	94.0	0.0	± 0.1
Long	94.0	0.0	± 0.1

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	± 0.3

08-1512-04-04-02964

T. Rth.

Continuation of Calibration Certificate

Cert. No.: ACL22133
Job No.: VCSAC0063
Pages: 8 of 8

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limit (dB)
Positive one-half cycle	Negative one-half cycle		
89.6	89.6	0.0	± 1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	137.0	137.0	0.0	± 0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation, providing a level of confidence of approximately 95 %.

End of Calibration Certificate

08-1512-04-04-02964

T. Rth.

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY



43/43/17 Sathorn Rd, Bangkok, Thailand 10120 THAILAND
Tel: 0-2433-8899 Fax: 0-2433-8879 e-mail: cal@calibrationlab.com th@www.calibrationlab.com

Cert. No.: ACL22135
Page: 1 of 8

Calibration Certificate

Equipment: SOUND LEVEL METER
Manufacturer: RION
Model: NL-42/Microphone UC-32 / Pre-amplifier N1F-24
Serial No.: R010639 / 130957 / 10640
ID No.: RKK F50273

Condition As Found: OKR7

Customer: ALS LAMHASTORY GROUP (THAILAND) CO., LTD.
104 PHATHANAKAN 40, PHATHANAKAN ROAD,
KJ104261 PHATHANAKAN, KJ104261 LUANG,
BANGKOK, 10260 THAILAND

Location: (23.0 ± 3.3) °C
Ambient Temperature: (101.3 ± 3.3) kPa
Pressure: (50.0 ± 2.0) %
Relative Humidity:

Received Date: 26 MAY 2022
Calibration Date: 09-10 JUNE 2022
Date of Issue: 14 JUNE 2022

Calibrated by: Nithakorn Pongpachan

Approved by: T. P. P.
(Thanakorn Pongpachan)

This certificate is issued in accordance with the requirements of ISO/IEC 17025:2017, may not be reproduced
other than as full, except with the prior written approval of the head of Calibration Laboratory.

QE-TS12-04-04-02044

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY

Continuation of Calibration Certificate

Cert. No.: ACL22135
Job No.: VCM5AC0063
Page: 1 of 8

Result of calibration:

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limits (dB)
93.9 (93.9)	93.9	0.0	±0.3

2. Self-generated noise

2.1 Normal law

Measured Value (dB)
18.2

2.2 The microphone of the sound level meter can replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	12.6
C-weight	18.5
Flat	26.3

3. Acoustical signal tests of frequency weightings

Measure free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.1	-0.1	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
8000	-0.1	-0.2	-0.2	±1.0

QE-TS12-04-04-02044

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY

Continuation of Calibration Certificate

Cert. No.: ACL22135
Job No.: VCM5AC0063
Page: 2 of 8

Calibration Procedure: LP-AC-01

Calibration Method:

This equipment is calibrated by based on IEC 61672-2 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Acoustic chamber and Reference
Standard Instruments.

For test results of each item were made by observation of each instrument display and also with SLM's display.

Condition of this result of calibration:

1. Reference Standard Instruments:

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY04017076	IT-0007-22	04-Feb-23
Waveform Generator	33311D	MY52102242	IT-0008-22	04-Feb-23
Digital Multimeter	34461A	MY53220104	TEL-BP-040265	09-Feb-23
Digital Multimeter	34461A	MY53220178	TEL-BP-030265	09-Feb-23
Digital Multimeter	34461A	MY53220173	TEL-BP-040265	09-Feb-23
Programmable Attenuator	35-13-1073	62100114	IT-0009-22	07-Feb-23
Condenser Microphone	4190	2979803	AA-1013-22	24-Feb-23
Measuring Amplifier	NA-42KAJ	NA340005	AA-3005-22	22-Feb-23

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at:

- 3.1 National Institute of Metrology (Thailand).
- 3.2 Thailand Institute of Scientific and Technological Research (TISTR).

QE-TS12-04-04-02044

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY

Continuation of Calibration Certificate

Cert. No.: ACL22135
Job No.: VCM5AC0063
Page: 3 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	-0.1	-0.1	±2.0
125	-0.1	0.0	-0.1	±1.5
250	0.0	0.0	-0.1	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.0	0.0	±1.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	±0.2
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	-
Slow	94.0	0.0	±0.1
2 eq	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SLM Display at Initial (dB)	SLM Display at Final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	±0.3

QE-TS12-04-04-02044

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY

Continuation of Calibration Certificate

Cert. No.: ACL22135
Job No.: VCM5AC0063
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Summary of Measurement Results:

Parameter	Pass	Fail	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings	✓	-	0.3	0.6
125 Hz	✓	-	0.3	0.6
1000 Hz	✓	-	0.3	0.6
8000 Hz	✓	-	0.3	0.7
4. Electrical signal tests of frequency weightings	✓	-	0.3	0.6
For 10 Hz to 4 kHz	✓	-	0.3	0.7
For > 4 kHz to 10 kHz	✓	-	0.3	0.7
For > 10 kHz to 20 kHz	-	-	-	1.0
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.2
6. Long-term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. Test burst response	✓	-	0.2	0.3
10. Peak C sound level	✓	-	0.2	0.35
11. Overload indication	✓	-	0.2	0.35
12. High level stability	✓	-	0.1	0.1

QE-TS12-04-04-02044

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY

Continuation of Calibration Certificate

Cert. No.: ACL22135
Job No.: VCM5AC0063
Page: 4 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±1.1
136.0	136.0	0.0	±1.1
135.0	135.0	0.0	±1.1
134.0	134.0	0.0	±1.1
133.0	132.9	-0.1	±1.1
132.0	131.9	-0.1	±1.1
131.0	130.9	-0.1	±1.1
129.0	128.9	-0.1	±1.1
124.0	124.0	0.0	±1.1
118.0	117.9	-0.1	±1.1
114.0	114.0	0.0	±1.1
109.0	109.0	0.0	±1.1
104.0	104.0	0.0	±1.1
99.0	99.0	0.0	±1.1
94.0	94.0	0.0	±1.1
89.0	89.0	0.0	±1.1
84.0	84.0	0.0	±1.1
79.0	79.0	0.0	±1.1
74.0	74.0	0.0	±1.1
69.0	69.0	0.0	±1.1
64.0	64.0	0.0	±1.1
59.0	59.0	0.0	±1.1
54.0	54.0	0.0	±1.1
49.0	49.0	0.0	±1.1
44.0	44.0	0.0	±1.1
39.0	39.0	0.0	±1.1
34.0	34.0	0.0	±1.1
29.0	29.0	0.0	±1.1
24.0	24.0	0.0	±1.1
19.0	19.0	0.0	±1.1
14.0	14.0	0.0	±1.1
9.0	9.0	0.0	±1.1
4.0	4.0	0.0	±1.1

QE-TS12-04-04-02044

Continuation of Calibration Certificate

Cert. No. : ACL22135
Job No. : YC65AC0663
Pages : 7 of 8

8. Level Uncertainty including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	±1.5

9. Tone burst response

Tone	Tone burst duration, T _b (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	106.0	107.9	-0.1	1.5 ± 5.0
	2	3	117.0	117.9	0.0	1.0 ± 2.5
Slow	250	800	134.0	134.0	0.0	±1.0
	2	8	106.0	106.0	0.0	1.5 ± 5.0
SEL	250	800	127.6	127.6	0.0	±1.0
	0.25	1	94.0	94.9	-0.1	1.5 ± 5.0
	2	8	106.0	106.0	0.0	1.0 ± 2.5
	250	800	126.0	126.0	0.0	±1.0

10. Peak C-weight level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
C-weight	136.4	135.7	-0.7	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
Positive half cycle	135.4	135.1	-0.3	±2.0
Negative half cycle	135.4	135.1	-0.3	±2.0

QC-FS-12-04-04-02064

T. Petch.

Continuation of Calibration Certificate

Cert. No. : ACL22043
Job No. : YC65AC0661
Pages : 3 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by based on IEC 61672-3 (2012) Standard for sound level meter (SLM). The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Acoustic chamber and Reference Standard Instruments.

For test results of each item were made by observation from each instrument display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	35210A	MY49017076	11-40012-21	10-Feb-22
Waveform Generator	33511B	MY5260742	11-40011-21	10-Feb-22
Digital Multimeter	33461A	MY53220104	11-1107-05-0264	09-Feb-22
Digital Multimeter	33461A	MY53220076	11-1107-05-0264	09-Feb-22
Digital Multimeter	34461A	MY6042751	11-1107-05-0261	15-Sep-22
Programmable Attenuator	MAT-1070	62100114	1509-0774E	06-Sep-22
Condenser Microphone	4100	2977900	AA1108-21	05-Feb-22
Measuring Amplifier	NA-420A	3456095	AA3003-21	16-Jun-22

2. This result of calibration is as found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

- National Institute of Standards (NIST),
- Thailand Institute of Scientific and Technological Research (TISTR).

QC-FS-12-04-04-02064

T. Petch.

Continuation of Calibration Certificate

Cert. No. : ACL22135
Job No. : YC65AC0663
Pages : 8 of 8

11. Overload indication

Measured value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	107.5	-0.2
Negative one-half cycle	107.5	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	137.0	137.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation providing a level of confidence of approximately 95 %.

End of Calibration Certificate

QC-FS-12-04-04-02064

T. Petch.

Continuation of Calibration Certificate

Cert. No. : ACL22043
Job No. : YC65AC0661
Pages : 3 of 8

Summary of Measurement Results :

Parameter	Pass	Fail	Uncertainty (dB)	Maximum permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings	✓	-	0.3	0.6
125 Hz	✓	-	0.3	0.6
1000 Hz	✓	-	0.3	0.6
8000 Hz	✓	-	0.3	0.7
4.1 Rectified signal tests of frequency weightings	✓	-	0.3	0.6
For 10 Hz to 4 kHz	✓	-	0.3	0.6
For 4 kHz to 10 kHz	✓	-	0.3	0.7
For 10 kHz to 20 kHz	✓	-	0.3	1.0
5. Frequency and time stability	✓	-	0.2	0.2
6.1 Temp. - time stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. Tone burst response	✓	-	0.2	0.3
10. Peak C-weight level	✓	-	0.2	0.35
11. Overload indication	✓	-	0.2	0.25
12. High level stability	✓	-	0.3	0.1

QC-FS-12-04-04-02064

T. Petch.



611-43/11 Sathorn Rd, Bangkok, Bangkok 10100 THAILAND
Tel: 02-213-8070 Fax: 02-213-1579 e-mail: sithiporn@sithiporn.com http://www.sithiporn.com

Cert. No. : ACL22043
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-45 Microphone UC-52; Pre-amplifier NH-24
Serial No. : 00872053 / 171587-21329
ID No. : BKCF_P50490

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP THAILAND CO., LTD.
104 PIATTHANAKAN 40, PIATTHANAKAN ROAD,
KIOKANG PIATTHANAKAN, KHEET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3.3) °C
Pressure : (101.3 ± 1.3) kPa
Relative Humidity : (50.0 ± 2.0) %
Received Date : 05 JANUARY 2022
Calibration Date : 15-16 JANUARY 2022
Date of Issue : 17 JANUARY 2022

REVIEWED BY: [Signature]
APPROVED BY: [Signature]
NEXT CAL DATE: 16/1/25

Calibrated by : Sathiporn Petchum

Approved by : T. Petch.
(Thakol Petchum)

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QC-FS-12-04-04-02064

Continuation of Calibration Certificate

Cert. No. : ACL22043
Job No. : YC65AC0661
Pages : 4 of 8

Results of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limits (dB)
93.9 (93.96)	93.9	0.0	±1.5

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.5

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	32.1
C-weight	39.4
Flat	24.7

3. Acoustical signal tests of frequency weightings

Mean free-field acoustic response at a level of 94 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
125	0.2	0.2	0.2	±1.5
1000	0.0	0.0	0.0	±1.0
8000	-0.3	-0.3	-0.2	±5.0

QC-FS-12-04-04-02064

T. Petch.

Continuation of Calibration Certificate

Cert. No. : SCL22043
Job No. : VCSAC0041
Pages : 5 of 8

A. Electrical signal test of frequency weightings

Weighting network response with reference to 1 kHz

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	0.0	±0.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	-0.1	0.1	±3.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	-
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	-
Slow	94.0	0.0	±0.1
Eq	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	±0.2

QR-FS12-04-04-020044

T. Petch

Continuation of Calibration Certificate

Cert. No. : SCL22043
Job No. : VCSAC0041
Pages : 6 of 8

10. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	99.0	0.0	±1.5
Negative one-half cycle	99.0	0.0	±1.5

11. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	137.0	137.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$
or any value following calculation providing a level of confidence of approximately 95 %

End of Calibration Certificate

QR-FS12-04-04-020044

T. Petch

Continuation of Calibration Certificate

Cert. No. : SCL22043
Job No. : VCSAC0041
Pages : 6 of 8

7. Level Accuracy on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±0.3
136.0	136.0	0.0	±0.3
135.0	135.0	0.0	±1.1
134.0	134.0	0.0	±1.1
133.0	133.0	0.0	±1.1
132.0	132.0	0.0	±1.1
131.0	131.0	0.0	±1.1
130.0	130.0	0.0	±1.1
129.0	129.0	0.0	±1.1
128.0	128.0	0.0	±1.1
127.0	127.0	0.0	±1.1
126.0	126.0	0.0	±1.1
125.0	125.0	0.0	±1.1
124.0	124.0	0.0	±1.1
123.0	123.0	0.0	±1.1
122.0	122.0	0.0	±1.1
121.0	121.0	0.0	±1.1
120.0	120.0	0.0	±1.1
119.0	119.0	0.0	±1.1
118.0	118.0	0.0	±1.1
117.0	117.0	0.0	±1.1
116.0	116.0	0.0	±1.1
115.0	115.0	0.0	±1.1
114.0	114.0	0.0	±1.1
113.0	113.0	0.0	±1.1
112.0	112.0	0.0	±1.1
111.0	111.0	0.0	±1.1
110.0	110.0	0.0	±1.1
109.0	109.0	0.0	±1.1
108.0	108.0	0.0	±1.1
107.0	107.0	0.0	±1.1
106.0	106.0	0.0	±1.1
105.0	105.0	0.0	±1.1
104.0	104.0	0.0	±1.1
103.0	103.0	0.0	±1.1
102.0	102.0	0.0	±1.1
101.0	101.0	0.0	±1.1
100.0	100.0	0.0	±1.1
99.0	99.0	0.0	±1.1
98.0	98.0	0.0	±1.1
97.0	97.0	0.0	±1.1
96.0	96.0	0.0	±1.1
95.0	95.0	0.0	±1.1
94.0	94.0	0.0	±1.1
93.0	93.0	0.0	±1.1
92.0	92.0	0.0	±1.1
91.0	91.0	0.0	±1.1
90.0	90.0	0.0	±1.1
89.0	89.0	0.0	±1.1
88.0	88.0	0.0	±1.1
87.0	87.0	0.0	±1.1
86.0	86.0	0.0	±1.1
85.0	85.0	0.0	±1.1
84.0	84.0	0.0	±1.1
83.0	83.0	0.0	±1.1
82.0	82.0	0.0	±1.1
81.0	81.0	0.0	±1.1
80.0	80.0	0.0	±1.1
79.0	79.0	0.0	±1.1
78.0	78.0	0.0	±1.1
77.0	77.0	0.0	±1.1
76.0	76.0	0.0	±1.1
75.0	75.0	0.0	±1.1
74.0	74.0	0.0	±1.1
73.0	73.0	0.0	±1.1
72.0	72.0	0.0	±1.1
71.0	71.0	0.0	±1.1
70.0	70.0	0.0	±1.1
69.0	69.0	0.0	±1.1
68.0	68.0	0.0	±1.1
67.0	67.0	0.0	±1.1
66.0	66.0	0.0	±1.1
65.0	65.0	0.0	±1.1
64.0	64.0	0.0	±1.1
63.0	63.0	0.0	±1.1
62.0	62.0	0.0	±1.1
61.0	61.0	0.0	±1.1
60.0	60.0	0.0	±1.1
59.0	59.0	0.0	±1.1
58.0	58.0	0.0	±1.1
57.0	57.0	0.0	±1.1
56.0	56.0	0.0	±1.1
55.0	55.0	0.0	±1.1
54.0	54.0	0.0	±1.1
53.0	53.0	0.0	±1.1
52.0	52.0	0.0	±1.1
51.0	51.0	0.0	±1.1
50.0	50.0	0.0	±1.1
49.0	49.0	0.0	±1.1
48.0	48.0	0.0	±1.1
47.0	47.0	0.0	±1.1
46.0	46.0	0.0	±1.1
45.0	45.0	0.0	±1.1
44.0	44.0	0.0	±1.1
43.0	43.0	0.0	±1.1
42.0	42.0	0.0	±1.1
41.0	41.0	0.0	±1.1
40.0	40.0	0.0	±1.1
39.0	39.0	0.0	±1.1
38.0	38.0	0.0	±1.1
37.0	37.0	0.0	±1.1
36.0	36.0	0.0	±1.1
35.0	35.0	0.0	±1.1
34.0	34.0	0.0	±1.1
33.0	33.0	0.0	±1.1
32.0	32.0	0.0	±1.1
31.0	31.0	0.0	±1.1
30.0	30.0	0.0	±1.1
29.0	29.0	0.0	±1.1
28.0	28.0	0.0	±1.1
27.0	27.0	0.0	±1.1
26.0	26.0	0.0	±1.1
25.0	25.0	0.0	±1.1

QR-FS12-04-04-020044

T. Petch

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY451-4517 / Sukhum Rd, Bangkok, Bangkok 10110 THAILAND
Tel: +662-0601 7623 / 7624 / 7625 / 7626 / 7627 / 7628 / 7629 / 7630 / 7631 / 7632 / 7633 / 7634 / 7635 / 7636 / 7637 / 7638 / 7639 / 7640 / 7641 / 7642 / 7643 / 7644 / 7645 / 7646 / 7647 / 7648 / 7649 / 7650 / 7651 / 7652 / 7653 / 7654 / 7655 / 7656 / 7657 / 7658 / 7659 / 7660 / 7661 / 7662 / 7663 / 7664 / 7665 / 7666 / 7667 / 7668 / 7669 / 7670 / 7671 / 7672 / 7673 / 7674 / 7675 / 7676 / 7677 / 7678 / 7679 / 7680 / 7681 / 7682 / 7683 / 7684 / 7685 / 7686 / 7687 / 7688 / 7689 / 7690 / 7691 / 7692 / 7693 / 7694 / 7695 / 7696 / 7697 / 7698 / 7699 / 7700 / 7701 / 7702 / 7703 / 7704 / 7705 / 7706 / 7707 / 7708 / 7709 / 7710 / 7711 / 7712 / 7713 / 7714 / 7715 / 7716 / 7717 / 7718 / 7719 / 7720 / 7721 / 7722 / 7723 / 7724 / 7725 / 7726 / 7727 / 7728 / 7729 / 7730 / 7731 / 7732 / 7733 / 7734 / 7735 / 7736 / 7737 / 7738 / 7739 / 7740 / 7741 / 7742 / 7743 / 7744 / 7745 / 7746 / 7747 / 7748 / 7749 / 7750 / 7751 / 7752 / 7753 / 7754 / 7755 / 7756 / 7757 / 7758 / 7759 / 7760 / 7761 / 7762 / 7763 / 7764 / 7765 / 7766 / 7767 / 7768 / 7769 / 7770 / 7771 / 7772 / 7773 / 7774 / 7775 / 7776 / 7777 / 7778 / 7779 / 7780 / 7781 / 7782 / 7783 / 7784 / 7785 / 7786 / 7787 / 7788 / 7789 / 7790 / 7791 / 7792 / 7793 / 7794 / 7795 / 7796 / 7797 / 7798 / 7799 / 7800 / 7801 / 7802 / 7803 / 7804 / 7805 / 7806 / 7807 / 7808 / 7809 / 7810 / 7811 / 7812 / 7813 / 7814 / 7815 / 7816 / 7817 / 7818 / 7819 / 7820 / 7821 / 7822 / 7823 / 7824 / 7825 / 7826 / 7827 / 7828 / 7829 / 7830 / 7831 / 7832 / 7833 / 7834 / 7835 / 7836 / 7837 / 7838 / 7839 / 7840 / 7841 / 7842 / 7843 / 7844 / 7845 / 7846 / 7847 / 7848 / 7849 / 7850 / 7851 / 7852 / 7853 / 7854 / 7855 / 7856 / 7857 / 7858 / 7859 / 7860 / 7861 / 7862 / 7863 / 7864 / 7865 / 7866 / 7867 / 7868 / 7869 / 7870 / 7871 / 7872 / 7873 / 7874 / 7875 / 7876 / 7877 / 7878 / 7879 / 7880 / 7881 / 7882 / 7883 / 7884 / 7885 / 7886 / 7887 / 7888 / 7889 / 7890 / 7891 / 7892 / 7893 / 7894 / 7895 / 7896 / 7897 / 7898 / 7899 / 7900 / 7901 / 7902 / 7903 / 7904 / 7905 / 7906 / 7907 / 7908 / 7909 / 7910 / 7911 / 7912 / 7913 / 7914 / 7915 / 7916 / 7917 / 7918 / 7919 / 7920 / 7921 / 7922 / 7923 / 7924 / 7925 / 7926 / 7927 / 7928 / 7929 / 7930 / 7931 / 7932 / 7933 / 7934 / 7935 / 7936 / 7937 / 7938 / 7939 / 7940 / 7941 / 7942 / 7943 / 7944 / 7945 / 7946 / 7947 / 7948 / 7949 / 7950 / 7951 / 7952 / 7953 / 7954 / 7955 / 7956 / 7957 / 7958 / 7959 / 7960 / 7961 / 7962 / 7963 / 7964 / 7965 / 7966 / 7967 / 7968 / 7969 / 7970 / 7971 / 7972 / 7973 / 7974 / 7975 / 7976 / 7977 / 7978 / 7979 / 7980 / 7981 / 7982 / 7983 / 7984 / 7985 / 7986 / 7987 / 7988 / 7989 / 7990 / 7991 / 7992 / 7993 / 7994 / 7995 / 7996 / 7997 / 7998 / 7999 / 8000Cert. No. : SCL22043
Job No. : VCSAC0041
Pages : 6 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-32 / Pre-amplifier NIB-24
Serial No. : 0010645 / 134066 / 13466
ID No. : RKA_F0009

Condition As Found : GOOD

Customer : AIN LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTANAKAN 40, PHATTANAKAN ROAD,
KHWAENG PHATTANAKAN, KHEO SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location :
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 26 MAY 2022
Calibration Date : 09-10 JUNE 2022
Date of Issue : 14 JUNE 2022

Calibrated by : Nattakorn Pongpan

Approved by : T. Petch
(Thanakorn Petchurai)

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced
other than in full, except with the prior written approval of the head of Calibration Laboratory.

QR-FS12-04-04-020044

Continuation of Calibration Certificate

Cert. No. : SCL22043
Job No. : VCSAC0041
Pages : 7 of 8

8. Level Accuracy including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Any	94.0	94.0	0.0	±1.1

9. Time device response

Time Weighting	Time base duration, T _b (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	100.0	107.9	-0.1	1.5 ± 0.0
	2	8	117.0	117.0	0.0	1.0 ± 0.0
	200	800	134.0	134.0	0.0	±0.0
Slow	2	8	100.0	100.0	0.0	1.5 ± 0.0
	200	800	127.0	127.0	0.0	±0.0
	0.25	1	99.0	99.0	-0.1	1.5 ± 0.0
SLL	2	8	100.0	100.0	0.0	1.0 ± 0.0
	200	800	128.0	128.0	0.0	±0.0

10. Peak C-weight level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Leq (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
One	136.4	136.2	-0.1	±0.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
Positive half cycle	135.4	135.1	-0.3	±0.0
Negative half cycle	135.4	135.2	-0.2	±0.0

QR-FS12-04-04-020044

T. Petch

Continuation of Calibration Certificate

Cert. No. : SCL22043
Job No. : VCSAC0041
Pages : 7 of 8

Calibration Procedure : CP-SAC-01

Calibration Method :

This equipment was calibrated by based on IEC 61672-1 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with A-weighting and Reference
Standard Tolerances.

For test results of each item were made by observation of each instrument display and also used SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Issue Date
Waveform Generator	33210A	34Y40017076	EF-00067-22	04-Feb-23
Waveform Generator	33311A	34Y52302742	EF-00068-22	04-Feb-23
Digital Multimeter	3446A	34Y3220104	JEL-HP, 010635	09-Feb-23
Digital Multimeter	3446A	34Y3220076	JEL-HP, 010635	09-Feb-23
Digital Multimeter	3446A	34Y6002473	JEL-HP, 010635	09-Feb-23
Programmable Attenuator	MAAT-1670	62100114	8F-00009-22	07-Feb-23
Condenser Microphone	4180	2977900	AA-10013-22	24-Feb-23
Measuring Amplifier	NA-42KAJ	343006495	AA-3006-22	22-Feb-23

Continuation of Calibration Certificate

Cert. No. : ACL22138
Job No. : YC65AC0063
Page : 1 of 8

Summary of Measurement Results

Parameter	Pass	Fail	Uncertainty (dB)	Maximum permitted uncertainty of measurement (dB)
1. Absolute sensitivity	✓	-	0.2	N/A
2. Self-generated noise	✓	-	0.2	N/A
3. Acoustical signal tests of frequency weightings				
125 Hz	✓	-	0.3	0.6
1000 Hz	✓	-	0.3	0.6
5000 Hz	✓	-	0.3	0.7
4. Electrical signal tests of frequency weightings				
For 10 Hz to 4 kHz	✓	-	0.3	0.6
For 4 kHz to 10 kHz	✓	-	0.3	0.7
For > 10 kHz to 20 kHz	✓	-	0.2	0.7
5. Frequency and time weightings at 1 kHz	✓	-	0.2	0.2
6. Long-term stability	✓	-	0.1	0.1
7. Level linearity on the reference level range	✓	-	0.2	0.3
8. Level linearity including the level range control	✓	-	0.2	0.3
9. Time burst response	✓	-	0.2	0.3
10. Peak C sound level	✓	-	0.2	0.35
11. Overload indication	✓	-	0.2	0.25
12. High level stability	✓	-	0.1	0.1

QF-TS12-04-04-02064

T. Rth.

Continuation of Calibration Certificate

Cert. No. : ACL22138
Job No. : YC65AC0063
Page : 1 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±1.1
136.0	136.0	0.0	±1.1
135.0	135.0	0.0	±1.1
134.0	134.0	0.0	±1.1
133.0	133.0	-0.1	±1.1
132.0	132.0	-0.1	±1.1
131.0	131.0	0.0	±1.1
129.0	129.0	0.0	±1.1
124.0	124.0	0.0	±1.1
119.0	119.0	0.0	±1.1
114.0	114.0	0.0	±1.1
109.0	109.0	0.0	±1.1
104.0	104.0	0.0	±1.1
99.0	99.0	0.0	±1.1
94.0	94.0	0.0	±1.1
89.0	89.0	0.0	±1.1
84.0	84.0	0.0	±1.1
79.0	79.0	0.0	±1.1
74.0	74.0	0.0	±1.1
69.0	69.0	0.0	±1.1
64.0	64.0	0.0	±1.1
59.0	59.0	0.0	±1.1
54.0	54.0	0.0	±1.1
49.0	49.0	0.0	±1.1
44.0	44.0	0.0	±1.1
39.0	39.0	0.0	±1.1
34.0	34.0	0.0	±1.1
29.0	29.0	0.0	±1.1
24.0	24.0	-0.1	±1.1
19.0	19.0	-0.1	±1.1
14.0	14.0	-0.1	±1.1
9.0	9.0	-0.1	±1.1
4.0	4.0	-0.1	±1.1

QF-TS12-04-04-02064

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Continuation of Calibration Certificate

Cert. No. : ACL22138
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Result of Calibration

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limits (dB)
93.9 (93.9)	93.9	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
13.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A-weight	12.0
C-weight	19.5
Flat	24.8

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 94 dB

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
125	0.1	0.2	0.2	±1.2
1000	0.0	0.0	0.0	±1.0
5000	-0.3	-0.3	-0.4	±0.0

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T. Rth.

Continuation of Calibration Certificate

Cert. No. : ACL22138
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8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	±1.1

9. Time burst response

Time Weighting	Burst duration, T _B (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; ±0.0
	2	8	117.0	117.0	0.0	1.0 ; ±2.5
	200	800	134.0	134.0	0.0	±1.0
Slow	2	8	108.0	108.0	0.0	1.5 ; ±0.0
	200	800	127.6	127.6	0.0	±1.0
	0.25	1	99.0	99.0	-0.1	1.5 ; ±0.0
NFI	2	8	108.0	108.0	0.0	1.0 ; ±2.5
	200	800	128.0	128.0	0.0	±1.0

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Equal (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
Time	134.4	135.4	-0.8	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	-
Positive half cycle	133.4	133.1	-0.3	±2.0
Negative half cycle	133.4	133.1	-0.3	±2.0

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Continuation of Calibration Certificate

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4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz

Frequency (Hz)	Flat	C-weight	A-weight	Acceptance Limits
43	0.0	-0.1	-0.1	±2.0
125	-0.1	0.0	0.0	±1.5
250	0.0	0.0	-0.1	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
3000	0.0	0.0	0.0	±3.0
8000	0.0	0.1	0.1	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	0.0	-
C-weight	94.0	0.0	±0.2
Flat	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	0.0	-
Slow	94.0	0.0	±0.1
Leq	94.0	0.0	±0.1

6. Long-term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	94.0	94.0	0.0	±0.3

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Continuation of Calibration Certificate

Cert. No. : ACL22138
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11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
99.5	99.6	0.1	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	137.0	137.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor k = 2
or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

QF-TS12-04-04-02064

T. Rth.



CERTIFICATE OF CALIBRATION

Certificate No. 02-120-01
Page 1 of 2

Equipment Name: Heat Stress Monitor
Manufacturer: DAKOTA
Model: H032.2
Serial No: 15006713
ID No: EHV_15006713

Customer:
Name: AIS Laboratory (Public Health) Co., Ltd.
Address: 104 Phrasimam Road, Phrasimam
Rd, Phrasimam Sub-town, Phrasimam Sub-town, Bangkok
10250 Thailand

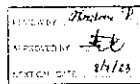
Received date: 04 Jun 2022
Calibration date: 05 Jun 2022
Issue date: 12 Jun 2022

Reference Used During Calibration
1 Standard Temperature Probe Model: STS-100-A500,
Serial No: 601402-09, Due date: 23 Mar 2023
2 Digital Temperature Indicator Model: DTI-1000A-8, 8,
Serial No: 611407-00221, Due date: 04 Jun 2022

Calibration Conditions
Temperature: (23.0 ± 0.2) °C
Relative Humidity: (55 ± 1) %

Calibration Procedure
The temperature calibration was done by in-house
calibration method as "WCL-001" according to
comparison method with standard digital temperature
indicator and standard temperature probe. The
temperature scale was set to ITS-90

Traceability
The measurement results are traceable to the
international system of units (SI) through National
Institute of Standards and Technology (NIST) Certificate
number: 17-0034-22, Certificate number: 18-0032-
21



Calibrated by:
Mr. Petchkasem
Mr. Petchkasem (Laboratory)

Approved Signature:
Mr. Petchkasem
Calibration Department Manager



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HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY.



Certificate No. 02-120-01
Page 2 of 2

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment
Calibration Range: 20 - 40 °C

Table 1: This equipment was connected with wet bulb probe Model: HP3270.2 5/N, 15011605
Dimension: Diameter 14 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
30	20.054	20.0	0.0	0.009
30	20.042	20.0	0.0	0.009
30	20.030	20.0	0.0	0.009
30	20.018	20.0	0.0	0.009
30	20.006	20.0	0.0	0.009

Table 2: This equipment was connected with temperature probe Model: TP3270.2 5/N, 15011605
Dimension: Diameter 14 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
70	20.054	20.4	0.3	0.009
70	20.042	20.0	0.0	0.009
70	20.030	20.0	0.0	0.009
70	20.018	20.0	0.0	0.009
70	20.006	20.0	0.0	0.009

Table 3: This equipment was connected with Glue Thermometer probe Model: TP3270.2 5/N, 15011605
Dimension: Diameter 8 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.054	20.0	0.0	0.009
110	20.042	20.0	0.0	0.009
110	20.030	20.0	0.0	0.009
110	20.018	20.0	0.0	0.009
110	20.006	20.0	0.0	0.009

UUC: Unit Under Calibration
The reported expanded uncertainty is based on assumed uncertainty multiplied by a coverage factor k=2
providing a level of confidence of approximately 95%.

End of Certificate



Certificate No. 02-120-01
Page 2 of 2

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment
Calibration Range: 20 - 40 °C

Table 1: This equipment was connected with wet bulb probe Model: HP3270.2 5/N, 15011605
Dimension: Diameter 14 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
30	20.054	20.0	0.0	0.009
30	20.042	20.0	0.0	0.009
30	20.030	20.0	0.0	0.009
30	20.018	20.0	0.0	0.009
30	20.006	20.0	0.0	0.009

Table 2: This equipment was connected with temperature probe Model: TP3270.2 5/N, 15011605
Dimension: Diameter 14 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
70	20.054	20.4	0.4	0.009
70	20.042	20.0	0.0	0.009
70	20.030	20.0	0.0	0.009
70	20.018	20.0	0.0	0.009
70	20.006	20.0	0.0	0.009

Table 3: This equipment was connected with Glue Thermometer probe Model: TP3270.2 5/N, 15011605
Dimension: Diameter 8 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.054	20.0	0.0	0.009
110	20.042	20.0	0.0	0.009
110	20.030	20.0	0.0	0.009
110	20.018	20.0	0.0	0.009
110	20.006	20.0	0.0	0.009

UUC: Unit Under Calibration
The reported expanded uncertainty is based on assumed uncertainty multiplied by a coverage factor k=2
providing a level of confidence of approximately 95%.

End of Certificate



Certificate No. 02-120-01
Page 3 of 2

CERTIFICATE OF CALIBRATION

Equipment Name: Heat Stress Monitor
Manufacturer: DAKOTA
Model: H032.2
Serial No: 15006713
ID No: EHV_15006713

Customer:
Name: AIS Laboratory (Public Health) Co., Ltd.
Address: 104 Phrasimam Road, Phrasimam
Rd, Phrasimam Sub-town, Phrasimam Sub-town, Bangkok
10250 Thailand

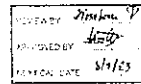
Received date: 04 Jun 2022
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Reference Used During Calibration
1 Standard Temperature Probe Model: STS-100-A500,
Serial No: 601402-09, Due date: 23 Mar 2023
2 Digital Temperature Indicator Model: DTI-1000A-8, 8,
Serial No: 611407-00221, Due date: 04 Jun 2022

Calibration Conditions
Temperature: (23.0 ± 0.2) °C
Relative Humidity: (55 ± 1) %

Calibration Procedure
The temperature calibration was done by in-house
calibration method as "WCL-001" according to
comparison method with standard digital temperature
indicator and standard temperature probe. The
temperature scale was set to ITS-90

Traceability
The measurement results are traceable to the
international system of units (SI) through National
Institute of Standards and Technology (NIST) Certificate
number: 17-0034-22, Certificate number: 18-0032-
21



Calibrated by:
Mr. Petchkasem
Mr. Petchkasem (Laboratory)

Approved Signature:
Mr. Petchkasem
Calibration Department Manager



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CERTIFICATE OF CALIBRATION

Certificate No. 02-120-01
Page 1 of 2

Equipment Name: Heat Stress Monitor
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Rd, Phrasimam Sub-town, Phrasimam Sub-town, Bangkok
10250 Thailand

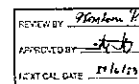
Received date: 04 Jun 2022
Calibration date: 05 Jun 2022
Issue date: 12 Jun 2022

Reference Used During Calibration
1 Standard Temperature Probe Model: STS-100-A500,
Serial No: 601402-09, Due date: 23 Mar 2023
2 Digital Temperature Indicator Model: DTI-1000A-8, 8,
Serial No: 611407-00221, Due date: 04 Jun 2022

Calibration Conditions
Temperature: (23.0 ± 0.2) °C
Relative Humidity: (55 ± 1) %

Calibration Procedure
The temperature calibration was done by in-house
calibration method as "WCL-001" according to
comparison method with standard digital temperature
indicator and standard temperature probe. The
temperature scale was set to ITS-90

Traceability
The measurement results are traceable to the
international system of units (SI) through National
Institute of Standards and Technology (NIST) Certificate
number: 17-0034-22, Certificate number: 18-0032-
21



Calibrated by:
Mr. Petchkasem
Mr. Petchkasem (Laboratory)

Approved Signature:
Mr. Petchkasem
Calibration Department Manager



THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL, UNLESS PERMISSION FOR REPRODUCTION
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Certificate No. 02-120-01
Page 2 of 2

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment
Calibration Range: 20 - 40 °C

Table 1: This equipment was connected with wet bulb probe Model: HP3270.2 5/N, 15011605
Dimension: Diameter 14 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
30	20.054	20.0	0.0	0.009
30	20.042	20.0	0.0	0.009
30	20.030	20.0	0.0	0.009
30	20.018	20.0	0.0	0.009
30	20.006	20.0	0.0	0.009

Table 2: This equipment was connected with temperature probe Model: TP3270.2 5/N, 15011605
Dimension: Diameter 14 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
70	20.054	20.4	0.4	0.009
70	20.042	20.0	0.0	0.009
70	20.030	20.0	0.0	0.009
70	20.018	20.0	0.0	0.009
70	20.006	20.0	0.0	0.009

Table 3: This equipment was connected with Glue Thermometer probe Model: TP3270.2 5/N, 15011605
Dimension: Diameter 8 mm, Length 170 mm

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.054	20.0	0.0	0.009
110	20.042	20.0	0.0	0.009
110	20.030	20.0	0.0	0.009
110	20.018	20.0	0.0	0.009
110	20.006	20.0	0.0	0.009

UUC: Unit Under Calibration
The reported expanded uncertainty is based on assumed uncertainty multiplied by a coverage factor k=2
providing a level of confidence of approximately 95%.

End of Certificate



63/14-15.6/735-36, Soi Petchkasem 7/71, Petchkasem Rd,
Watthana, Bangkok, Bangkok 10000 Thailand.
Tel: (66) 02-868012913 Fax: (66) 02-8680860 www.jnascert.com

CERTIFICATE OF CALIBRATION

Certificate No. : CJ 032 03
Page 1 of 2

Equipment Name: Digital thermometer with RTD
Manufacturer: OTC Model: H033.2
Serial No: 13012940
ID No: BAK_730654

Customer:
Name: A.S. Laboratory group (Thailand) Co., Ltd.
Address: 104 Phetchaburi Rd, Phetchaburi
Rd, Khwaeng Sam Luang, Khet Sam Luang, Bangkok
10250 Thailand.

Received date: 15 MAR 2022
Calibration date: 17 MAR 2022
Issue date: 18 MAR 2022

Reference Used During Calibration:
1. Standard Temperature Probe Model: ITS-90 A500,
Serial No: 667682 09, Due date: 23 Mar 2022
2. Digital Temperature Indicator Model: DTI 1200A, Lot
6, Serial No: 671407 00521 Due date: 04 June 2022

Calibration Condition:
Temperature: (23.0) °C
Relative Humidity: 55±15%

Calibration Procedure:
The temperature calibration was done by in-house
calibration method as per ISO 9001 according to
comparison method with standard digital temperature
indicator and standard temperature probe. The
temperature scale was based on ITS-90.

Traceability:
The measurement results are traceable to the
international system of units (SI) through National
Institute of Metrology (NIMT) Certificate
number: IT 0039-22, Certificate number: EN 0032-
21.

REVIEWED BY: *Hayden P*
APPROVED BY: *Hayden P*
NEXT CAL DATE: 18/3/23

Calibrated by:
J. W. Sornchai Thacharut
J. W. Sornchai Thacharut

Approved Signature:
Mr. Pannipon Booncharoen
Calibration Department Manager

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CERTIFICATE OF CALIBRATION

Certificate No. : CJ 032 05
Page 2 of 2

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment
Calibration Result: 20 - 40 °C
Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2 S/N: 15013021.
Dimension: Diameter 34 mm, Length 170 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
30	20.042	20.1	0.0	0.099
30	20.075	20.1	0.0	0.099
30	20.078	20.1	0.0	0.099
30	20.084	20.1	0.0	0.099
30	20.095	20.1	0.0	0.099

Table 2: This equipment was connected with temperature probe Model: TP3201.2 S/N: 15034776.
Dimension: Diameter 14 mm, Length 150 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
70	20.042	20.2	0.1	0.099
70	20.076	20.0	0.0	0.099
70	20.078	20.0	0.0	0.099
70	20.072	20.0	0.0	0.099
70	20.073	20.0	0.0	0.099

Table 3: This equipment was connected with digital thermometer probe Model: TP3201.2 S/N: 15023215.
Dimension: Diameter 8 mm, Length 170 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.042	20.0	0.0	0.099
110	20.075	20.0	0.0	0.099
110	20.074	20.0	0.0	0.099
110	20.076	20.0	0.0	0.099

UUC*: Unit Under Calibration
The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

REVIEWED BY: *Hayden P*
APPROVED BY: *Hayden P*
NEXT CAL DATE: 18/3/23

Calibrated by:
J. W. Sornchai Thacharut
J. W. Sornchai Thacharut

Approved Signature:
Mr. Pannipon Booncharoen
Calibration Department Manager

End of Certificate

J NAC
JANUARY 2022 (10.10)

63/14-15.6/735-36, Soi Petchkasem 7/71, Petchkasem Rd,
Watthana, Bangkok, Bangkok 10000 Thailand.
Tel: (66) 02-868012913 Fax: (66) 02-8680860 www.jnascert.com

CERTIFICATE OF CALIBRATION

Certificate No. : CJ 123 03
Page 1 of 2

Equipment Name: Heat Stress Monitor
Manufacturer: Defa-004
Model: H033.2
Serial No: 15000706
ID No: BAK_730654

Customer:
Name: A.S. Laboratory group (Thailand) Co., Ltd.
Address: 104 Phetchaburi Rd, Phetchaburi
Rd, Khwaeng Sam Luang, Khet Sam Luang, Bangkok
10250 Thailand.

Received date: 04 Jul 2022
Calibration date: 05 Jul 2022
Issue date: 12 Jul 2022

Reference Used During Calibration:
1. Standard Temperature Probe Model: ITS-90 A500,
Serial No: 667682 09, Due date: 23 Mar 2022
2. Digital Temperature Indicator Model: DTI 1200A, Lot
6, Serial No: 671407 00521 Due date: 04 June 2022

Calibration Condition:
Temperature: (23.0) °C
Relative Humidity: 55±15%

Calibration Procedure:
The temperature calibration was done by in-house
calibration method as per ISO 9001 according to
comparison method with standard digital temperature
indicator and standard temperature probe. The
temperature scale was based on ITS-90.

Traceability:
The measurement results are traceable to the
international system of units (SI) through National
Institute of Metrology (NIMT) Certificate
number: IT 0039-22, Certificate number: EN 0032-
21.

REVIEWED BY: *Hayden P*
APPROVED BY: *Hayden P*
NEXT CAL DATE: 12/7/23

Calibrated by:
J. W. Sornchai Thacharut
J. W. Sornchai Thacharut

Approved Signature:
Mr. Pannipon Booncharoen
Calibration Department Manager

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CERTIFICATE OF CALIBRATION

Certificate No. : CJ 124 05
Page 1 of 2

Equipment Name: Heat Stress Monitor
Manufacturer: Defa-004
Model: H033.2
Serial No: 15000706
ID No: BAK_730654

Customer:
Name: A.S. Laboratory group (Thailand) Co., Ltd.
Address: 104 Phetchaburi Rd, Phetchaburi
Rd, Khwaeng Sam Luang, Khet Sam Luang, Bangkok
10250 Thailand.

Received date: 04 Jul 2022
Calibration date: 05 Jul 2022
Issue date: 12 Jul 2022

Reference Used During Calibration:
1. Standard Temperature Probe Model: ITS-90 A500,
Serial No: 667682 09, Due date: 23 Mar 2022
2. Digital Temperature Indicator Model: DTI 1200A, Lot
6, Serial No: 671407 00521 Due date: 04 June 2022

Calibration Condition:
Temperature: (23.0) °C
Relative Humidity: 55±15%

Calibration Procedure:
The temperature calibration was done by in-house
calibration method as per ISO 9001 according to
comparison method with standard digital temperature
indicator and standard temperature probe. The
temperature scale was based on ITS-90.

Traceability:
The measurement results are traceable to the
international system of units (SI) through National
Institute of Metrology (NIMT) Certificate
number: IT 0039-22, Certificate number: EN 0032-
21.

REVIEWED BY: *Hayden P*
APPROVED BY: *Hayden P*
NEXT CAL DATE: 12/7/23

Calibrated by:
J. W. Sornchai Thacharut
J. W. Sornchai Thacharut

Approved Signature:
Mr. Pannipon Booncharoen
Calibration Department Manager

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CERTIFICATE OF CALIBRATION

Certificate No. : CJ 123 03
Page 2 of 2

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment
Calibration Result: 20 - 40 °C
Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2 S/N: 15008021.
Dimension: Diameter 34 mm, Length 170 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
30	20.042	20.0	0.0	0.099
30	20.075	20.0	0.0	0.099
30	20.078	20.0	0.0	0.099
30	20.084	20.0	0.0	0.099
30	20.095	20.0	0.0	0.099

Table 2: This equipment was connected with temperature probe Model: TP3201.2 S/N: 15003274.
Dimension: Diameter 14 mm, Length 150 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
70	20.042	20.5	0.5	0.099
70	20.076	20.0	0.0	0.099
70	20.078	20.0	0.0	0.099
70	20.072	20.0	0.0	0.099
70	20.073	20.0	0.0	0.099

Table 3: This equipment was connected with digital thermometer probe Model: TP3201.2 S/N: 15009034.
Dimension: Diameter 8 mm, Length 170 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.042	20.0	0.0	0.099
110	20.075	20.0	0.0	0.099
110	20.074	20.0	0.0	0.099
110	20.076	20.0	0.0	0.099
110	20.072	20.0	0.0	0.099

UUC*: Unit Under Calibration
The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

REVIEWED BY: *Hayden P*
APPROVED BY: *Hayden P*
NEXT CAL DATE: 12/7/23

Calibrated by:
J. W. Sornchai Thacharut
J. W. Sornchai Thacharut

Approved Signature:
Mr. Pannipon Booncharoen
Calibration Department Manager

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Certificate No. T221644 Page 1 of 4

Certificate of Calibration

Equipment : Chamber (Cold Room)
Manufacturer : KOLITECH
Model : KM320
Serial No. : TBN-101206105
Customer Code : BK02 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 Naksakred (Site Calibration Manager)
Approved By : / Boonchai Suriyawan (Site Calibration Manager)
Date of Issue : 04 JUL 2022

REVIEW BY : Sujjar P.
APPROVED BY : Y.L. AL
NEXT CAL DATE : 04/07/23

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 13111715-05-43



Certificate No. T221644 Page 4 of 4

Calibration Report

Measurement Results:

Calibration Point	Average Standard Reading at each position (°C)									
	TN101	TN102	TN103	TN104	TN105	TN106	TN107	TN108	TN109	TN110
3	2.71	2.82	2.75	2.89	2.95	3.68	3.02	2.96	3.03	2.83
	TN111	TN112	TN113	TN114	TN115	TN116				
	2.97	3.02	2.99	3.01	2.97	3.31				

Chamber (Cold Room)			Temperature Distribution				
Setting (°C)	Reading (°C)		Average (°C)	Stability (Δ°C)	Uniformity (°C)	Uncertainty (Δ°C)	Coverage Factor
	Min. /Max	Average					
3.0	2.9 - 3.0	3.2	2.99	1.00	1.30	1.66	2.00

* The quoted uncertainty includes " uniformity " .
The calibration result apply only the above calibrated item.
The result of test is 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 distribution, providing a level of confidence of approximately 95 %.

Approved By : Sujjar P.

FM 13111715-05-43



Certificate No. T221644 Page 2 of 4

Calibration Report

Equipment : Chamber (Cold Room)
Date of Calibration : 30 June - 1 July 2022
Environment : Temperature : 15.9-23.7 °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 using size standard thermocouples type T into its chamber , the other one standard thermocouples type T use for ambient temperature measurement . The calibration was done in accordance as WI-T20 (based on ASTM E145-94 (Reapproved 2001) and AS2353-1966) .
All data shown 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	TN101-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 (NSG-TISI-TIS 17025 CALIBRATION 024) .

4. Condition of calibrated item : good

Equipment Description :

Time Constant : 3 Hour : 4 Minute : 3 °C

Peak Air Discharge : ☐ Open ☐ Close ☐ Medium ☐ Max

☒ Not Available

5. Adjustment :

() without adjustment (X) after adjustment

Approved By : Sujjar P.

FM 13111715-05-43



Certificate of Calibration

Represent to Certificate of Calibration : PTC01/2021

Certificate No. : PTC01/2021 Page : 1 of 2
Equipment : Digital Balance
Manufacturer : Sartorius
Model : MS2024-101 DU
Type of Balance : Single pan

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

Environment Condition : Temperature : 21.5 °C ± 0.7 °C
Humidity : 61.6 %RH ± 4.7 %RH
Air density : 1.19 kg/m³

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

The Method used : In house method : PTC-BW-07, based on (European) EN 103
Traceability : This certificate is traceable to the SI Units through this Calibration Service Co., Ltd.
: NSG-0100 Accreditation No. Calibration 0109

Date Received : February 25, 2022
Calibration Date : February 25, 2022
Issued Date : March 01, 2022
Calibration By : Mr. Rungroj Metakul

REVIEW BY : Sujjar P.
APPROVED BY : Y.L. AL
NEXT CAL DATE : 04/07/23

Approved By : (Mr. Rungroj Metakul)
Reviewed by : (Mr. Rungroj Metakul)
Laboratory Manager

This certificate is issued for the use of measurement on carrying to the "International System of Units (SI)". It provides traceability of measurement to international standards for national metrology laboratories.

The measurement uncertainty stated in this certificate is the standard uncertainty which is obtained from the standard uncertainty included in the measurement (factor 1.2) to provide a level of confidence of approximately 95%. It is expressed in accordance with the Guide to the Expression of Uncertainty in Measurement (GUM). This value is the result of the measurement process and is not a coverage factor.

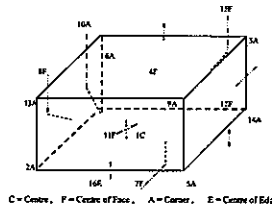
This certificate is valid only for the measurement and usage in full only, unless otherwise specified in the certificate conditions of use.

FM 13111715-05-43



Certificate No. T221644 Page 3 of 4

Calibration Report



1C = TN161	11F = TN171
2A = TN162	12F = TN172
3A = TN163	13A = TN173
4F = TN164	14A = TN174
5A = TN165	15F = TN175
6A = TN166	16E = TN176
7F = TN167	
8F = TN168	
9A = TN169	
10A = TN170	

Approved By : Sujjar P.

FM 13111715-05-43

Represent to Certificate of Calibration : PTC01/2021

Certificate No. : PTC01/2021 Page : 2 of 2

Measurement Results:

Without Adjustment

Function Calibration : Non Adjustment

Exceeding Error Weight to be 12.1/2 or of Maximum capacity

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

Repeatability Test : Weight to be 10.0 g, Minimum capacity

Determination of the standard deviation of weighing balance, Repeatability : 0.0001 (g)

Normal test value (g)	Standard Deviation
200	0.0005

Error of indication : from nominal value, Repeatability : 0.0001 (g)

Nominal Value (g)	Conversion Value (g)	Indication (g)	Correction of Balance (g)	Uncertainty (g)	k
0	0.00000	0.0000	0.0000	0.00016	2.53
0.1	0.10000	0.1000	0.0000	0.00017	2.30
0.5	0.50000	0.5000	0.0000	0.00016	2.26
1	1.00001	1.0000	0.0000	0.00016	2.26
2	2.00001	2.0000	0.0000	0.00016	2.26
5	5.00001	5.0000	0.0000	0.00016	2.26
10	10.00002	10.0000	0.0000	0.00016	2.26
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	2.08
150	150.00004	150.0000	0.0000	0.00022	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 about (g)

The End of Certificate

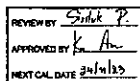
FM 13111715-05-43



Cert.No.: ZT1W122
Page: 1 of 2

Certificate of Testing

Equipment: DO Meter
Manufacturer: YSI
Model: 5000-230V
Serial No.: 08110147
ID No.: BKK_EN0017
Received Date: 20 May 2022
Test Date: 24 May 2022
Reference: Z205-053806C-6
Submitted by: ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanasukan Rd.,
Klongsuan Phatthanasukan, Klongsuan Luang,
Bangkok 10250 Thailand
Laboratory Condition:
Temperature: (25 ± 5) °C
Humidity: (50 ± 20) %
Test Procedure: In-house method: QP0109
by Comparison Technique with Auto Modification Method
Tested by: Wansorn Lamsangpradit
Approved by:
Approved Signature
() Make Bulky
() Make Mainpiece
() Wansorn Lamsangpradit
Issue Date: 31 May 2022



0285244



Cert.No.: ZT1W122
Page: 2 of 2

Condition of this result of calibration

1. Reference Standard Instrument:
This certificate is traceable to the International System of Unit through the reference standards
Laboratory of Industrial Calibration Center, Technology Promotion Association (Thailand-Japan).

Instrument	Serial No.	Ref. No.	Cal. Exp. Date	Due Date
1) Barometer	1309U10	21001399	25 Mar 2023	
2) Balance	1126143784	140RC004	21 Mar 2022	

2. Standard Material:
Material: Manufacturer: Lot No.: Assay:
Sodium Thiosulfate pentahydrate: Merck: A31783216: 100.2%

3. Method: Dissolved Oxygen Meter Adjustment With Air 180 %
Dissolved Oxygen Probe No.: 164100468

Titration Method (Addition 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 prevent to organization it may concerned
Intend to use for advertising and referral purpose is prohibited. The report may not be reproduced
other in full, without written approval of the laboratory.

-00-

1110482

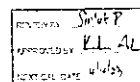


Certificate No. T111113

Page 1 of 3

Certificate of Calibration

Equipment: Chamber (Incubator)
Manufacturer: SHEL LAB
Model: 2020-2E
Serial No.: 802899
Customer Code: BKK_EN0005
ID No.: T7499A0
Customer: ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanasukan Rd., Phatthanasukan, Klongsuan Phatthanasukan,
Klongsuan Luang, Bangkok 10250
Customer Location: Wet Chemistry Lab2
Date of Receipt: 1 October 2021
Calibrated By: Sujar Nakkakred (Site Calibration Manager)
Approved By:
/Boonchai Suriyong (Site Calibration Manager)
Date of Issue: 8 OCT 2021



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 recognized the measurement capability of the laboratory and its traceability to recognized national
standards and to the units of measurement required of 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.

1110117101244

1090806



Cert. No.: Z21MB3
Page: 1 of 2

Certificate of Calibration

Equipment: DO Meter with Sensor
Manufacturer: YSI
Model: 5000-230V
Serial No.: 08110147
ID No.: BKK_EN0017
Submitted by: ALS Laboratory Group (Thailand) Co., Ltd.
104 Phatthanasukan Rd.,
Klongsuan Phatthanasukan, Klongsuan Luang,
Bangkok 10250 Thailand
Location: TPA On Site Calibration Laboratory
Received Date: 20 May 2022
Calibrated Date: 20 May 2022
Ambient Temperature: (26 ± 10) °C
Relative Humidity: (50 ± 30) %
AC Line Voltage: (220 ± 22) V
Calibrated by: Tawatchai Pansa
Approved by:
Approved Signature
() Porntong Tanyasud
() Make Bulky
() Sweet Pansa
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 Calibration Services, Instrument Calibration and Testing Services.

0038957



Certificate No. T211123

Page 2 of 3

Calibration Report

Equipment: Chamber (Incubator)
Date of Calibration: 4-5 October 2021
Environment: Temperature: 23.8-24.9 °C
Line Voltage: 227.5-231.1 V
Relative Humidity: 55-45 %RH

Condition of this result of calibration

1. This equipment was calibrated by using two resistance thermometer detectors into its chamber, the other one
resistance thermometer detector was for ambient temperature measurement. The calibration was done in accordance
with W1-T20 (based on ASTM E115-91 (Reapproved 2001) and AS2353-1986).
All data shown 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	109 ohm	29-CH11-191	T210118	2 February 2022
DATA LOGGER	34978A	747	T210118	2 February 2022

3. This certificate is traceable to:
National Institute of Metrology (Thailand) through Metrological Center (NSG-TS-TIS (7025 CALIBRATION 0244))

4. Condition of calibrated item: good

Equipment Description:

Time Constant: 2 Hour 20 Minute At 20 °C
Fresh Air Duct: ☐ Open ☐ Min ☐ Medium ☐ Max
☐ Close
☒ Not Available

5. Adjustment:

() without adjustment (X) after adjustment

Approved By:

1110117101244

Bara Scientific Co., Ltd.
164 U Chai Leng Building (Plot 7) Ramat Road
Shree Bangsar Bangkok Thailand 10502
Tel: 02-6234300 Fax: 02-6234367
www.barscientific.co.th

Certificate of Calibration

Number of Page(s) 1 of 3

Certificate No. BSCCAV-38722
Equipment UV/Vis Spectrophotometer
Model UV1800
Manufacturer Shimadzu
Serial No. A1145490332C3
ID No. 8665_816018
Date of receipt 16 September 2022
Date of calibration 16 September 2022
Date of issue 23 September 2022

Customer name ALS Laboratory Group (Thailand) Co., Ltd.
Address 104 Soi Phatthanakarn 40, Phatthanakarn Road, Phatthanakarn, Suan Luang, Bangkok 10250

Temperature (22.1-23.3) °C (in air)
Humidity (58-64) % RH (in air)

Equipment condition Good Operation
Calibration location Organic Photo
Calibration procedure In-house method WH-010-01 based on ASTM E275-07

Traceability Wavelength Accuracy is traceable to certificate No. 95817 and 95818
Photometric Accuracy is traceable to certificate No. 89501 and 89817
Bery Light is traceable to certificate No. 89506
The above certificates are traceable to SI unit through Bara Scientific Ltd.
(China) accredited calibration laboratory NO. 16599

Calibrated by 17-11-2022 Janghany

Approved by *[Signature]*
Bhattacharya Choudhury
Technical Manager

The above results are valid and acceptable for the calibration service as mentioned in the report / certificate.
Advertising the report / Certificate and validity of the results are prohibited and shall not be recommended
except in full without written approval of the Bara Scientific Co., Ltd.

TH/UV-38722 Rev 01 (23/09/22)

Bara Scientific Co., Ltd.
164 U Chai Leng Building (Plot 7) Ramat Road
Shree Bangsar Bangkok Thailand 10502
Tel: 02-6234300 Fax: 02-6234367
www.barscientific.co.th

Certificate of Calibration

Certificate No. BSCCAV-38722 Number of Page(s) 1 of 3

Calibration Results:

1. Wavelength Accuracy

Wavelength (nm)	Calibrated Wavelength (nm)	UVC (nm)	Error (nm)	Uncertainty (nm)
241.70	241.63	-0.07	0.18	
334.02	333.92	-0.10	0.18	
418.53	418.48	-0.05	0.18	
572.99	572.95	-0.04	0.18	
579.43	579.37	-0.06	0.18	

2. Photometric Accuracy (UV)

Wavelength (nm)	Calibrated Absorbance (A)	UVC (A)	Error (A)	Uncertainty (A)
226	0.0020	0.0020	0.0000	0.0075
257	0.2000	0.0000	0.0000	0.0075
311	0.0000	0.0000	0.0000	0.0075
350	0.0000	0.0000	0.0000	0.0075

*CNA = Customer not required

The above results are valid and acceptable for the calibration service as mentioned in the report / certificate.
Advertising the report / Certificate and validity of the results are prohibited and shall not be recommended
except in full without written approval of the Bara Scientific Co., Ltd.

TH/UV-38722 Rev 01 (23/09/22)

Bara Scientific Co., Ltd.
164 U Chai Leng Building (Plot 7) Ramat Road
Shree Bangsar Bangkok Thailand 10502
Tel: 02-6234300 Fax: 02-6234367
www.barscientific.co.th

Certificate of Calibration

Certificate No. BSCCAV-38722 Number of Page(s) 1 of 3

Calibration Results:

3. Photometric Accuracy (Visible)

Wavelength (nm)	Calibrated Absorbance (A)	UVC (A)	Error (A)	Uncertainty (A)
429.8	0.0020	0.0020	0.0000	0.0042
440.2	0.0020	0.0020	0.0000	0.0042
463.0	0.0020	0.0020	0.0000	0.0042
546.1	0.0020	0.0020	0.0000	0.0042
586.0	0.0020	0.0020	0.0000	0.0042
635.3	0.0020	0.0020	0.0000	0.0042

*CNA = Customer not required

4. Bery Light

Standard	Wavelength (nm)	Transmittance (%)	Absorbance (A)
200-950.0 nm	200-950	9.9999	0.0001

The above results are valid and acceptable for the calibration service as mentioned in the report / certificate.
Advertising the report / Certificate and validity of the results are prohibited and shall not be recommended
except in full without written approval of the Bara Scientific Co., Ltd.

TH/UV-38722 Rev 01 (23/09/22)

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Agilent CrossLab Compliance Services

EQUIPMENT QUALIFICATION REPORT (EQR)

Agilent CrossLab Compliance

Qualification Type: IQPMS-QQ

System ID: JP1547188

EQR Name: AgilentRecommended

EQR Revision: IQPMS.02.30

EQR Publish Date: March 2020

Date: September 30, 2021 4:07:18 PM

Report Type: Report

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

Org. Location: 104 Phatthanakarn 40, Suan Luang, Bangkok 10250

REVIEW BY *[Signature]*
APPROVED BY *[Signature]*
NEXT CAL DATE 18 Dec 2022

Date: September 30, 2021 4:07:18 PM
System ID: JP1547188

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Agilent CrossLab Compliance Services

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Test Summary

Purpose

The system provides a status for each scheduled test and the overall qualification. For each test that is run, (1) the status is automatically determined based on pre-defined levels, and (2) the test number of times the test was run is displayed. For detailed results and specifications for a test, refer to the test number in the EQR.

Details	Status	Runs
Autosampler Check: 8P54	Pass	1
Integrated Sample Introduction System (ISIS) Check: 8P53	Pass	1
Airflow: 8P43A	Pass	1
Background (No Gas Mode): 8P43A	Pass	1
Background (Gas Mode): 8P43A	Pass	1
30-Minute Stability (No Gas Mode): 8P43A	Pass	1

Overall Qualification Status: Pass

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Service Details

Purpose:
This section includes local contact and delivery details, for this service.

General Details:	
Service Order Number:	0001537154
EQP Name:	Agilent 8453/8454
EQP Function:	ICP-AES 02.50
Report Type:	Report
Organization Details:	
Client:	ALS Laboratory Group (Thailand) Co., Ltd.
Location:	104 Pratumgum Rd, Sam Lang, Bangkok 10330
Local Contact Details:	
Name:	Chatcharn Kanyasakul
Job Title:	Manager
Organization Location:	Laboratory
Operator Details:	
Name:	Pattaya Kanyasakul
Job Title:	Field Service Engineer
Data Acquisition Details:	
Acquisition Software Name:	MassHunter
Acquisition Software Version:	0.01.04
Computer Data System (CDS):	ICP-AES MassHunter

Calculation Formulas

Purpose:
This section includes calculation formulas for all available tests. Depending upon which tests are scheduled, all or some apply to your certification.

For a description of calculations for ICP-AES tests performed by the MassHunter software, refer to the MassHunter application and documentation.

Instrument Details

Purpose:
This section describes the as found system configuration.

Details:	
ICP-AES 1	
Manufacturer:	Agilent Technologies
Name:	7000
Model Number:	05405A
Installed Options:	01001, Standard Package with Hydrogen option
Detector Type:	ED
Wavelength:	8453/8454
Spray Chamber:	Chamber
Torch:	Chamber
Sampling Cone:	16
Skimmer Cone:	16
Serial Number:	JP15471169
Feature Pack:	C01.04
ICP-MS 1	
Manufacturer:	Agilent Technologies
Name:	8453
Model Number:	05411A
Type:	Parallel flow system
Serial Number:	JP15512237
Autosampler 1	
Manufacturer:	Agilent Technologies
Name:	SPS4
Model Number:	05410A
Serial Number:	A215430722

Protocol Details

Purpose:
This section lists the revisions for all test units used in this report. For complete test specific and high-level change details, refer to the Revision History document.

Test Number	Test
ICP-AES 02.50	20-Element Stability (No Gas Mode)
ICP-AES 02.30	Autosampler Check
ICP-AES 02.40	Autosampler
ICP-AES 02.50	Background (Gas Mode)
ICP-AES 02.50	Background (No Gas Mode)
ICP-AES 02.50	Integrated Sample Introduction System (ISIS) Check

Order 1

Manufacturer:	Agilent Technologies
Name:	Order
Model Number:	03202A
Serial Number:	201610719

Autosampler Check

Purpose:
This test demonstrates that the autosampler module is correctly installed and connected. It does not test module performance.

Setup				
Results	Criteria	Observed Result	Expected Result	Status
After the seal has, a probe in the normal position?				
Yes	Yes	Yes	Pass	
As commanded, is the probe positioned at val 2?				
Yes	Yes	Yes	Pass	
Setup Status:	Pass			Run: 11
Overall Autosampler Check Test Status:				
Pass				

Integrated Sample Introduction System (ISIS) Check

Purpose

This test demonstrates that the ISIS module is correctly installed and connected. It does not test module performance.

Sequence	Criteria	Observed Result	Expected Result	Status
1	At command, does the pump rotate?	Yes	Yes	Pass
2	At command, do the valves hold and eject?	Yes	Yes	Pass
Sequence Status:				Pass
Overall Integrated Sample Introduction System (ISIS) Check Test Status:				Pass

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System ID: JPI1471189
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Autotune

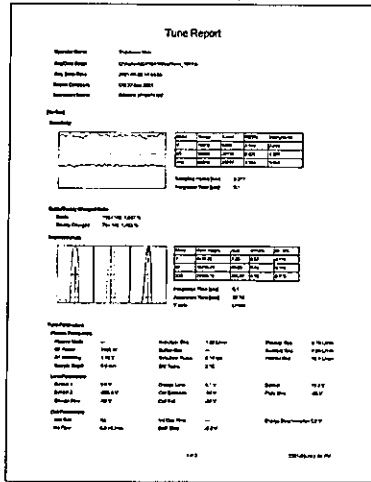
Purpose

This test uses pre-installed check standards to run a comprehensive autotune on all modes. The test report provides values for peak width, mass area, sensitivity, elution speed, and doubly-charged species tests.

Sequence	Gas Mode	Hydrogen
1	Mass 7	7.118
2	Mass 9	9.05
3	Mass 11	11.05
4	Mass 13	13.05
5	Mass 15	15.05
6	Mass 17	17.05
7	Mass 19	19.05
8	Mass 21	21.05
9	Mass 23	23.05
10	Mass 25	25.05
11	Mass 27	27.05
12	Mass 29	29.05
13	Mass 31	31.05
14	Mass 33	33.05
15	Mass 35	35.05
16	Mass 37	37.05
17	Mass 39	39.05
18	Mass 41	41.05
19	Mass 43	43.05
20	Mass 45	45.05
21	Mass 47	47.05
22	Mass 49	49.05
23	Mass 51	51.05
24	Mass 53	53.05
25	Mass 55	55.05
26	Mass 57	57.05
27	Mass 59	59.05
28	Mass 61	61.05
29	Mass 63	63.05
30	Mass 65	65.05
31	Mass 67	67.05
32	Mass 69	69.05
33	Mass 71	71.05
34	Mass 73	73.05
35	Mass 75	75.05
36	Mass 77	77.05
37	Mass 79	79.05
38	Mass 81	81.05
39	Mass 83	83.05
40	Mass 85	85.05
41	Mass 87	87.05
42	Mass 89	89.05
43	Mass 91	91.05
44	Mass 93	93.05
45	Mass 95	95.05
46	Mass 97	97.05
47	Mass 99	99.05
48	Mass 101	101.05
49	Mass 103	103.05
50	Mass 105	105.05
51	Mass 107	107.05
52	Mass 109	109.05
53	Mass 111	111.05
54	Mass 113	113.05
55	Mass 115	115.05
56	Mass 117	117.05
57	Mass 119	119.05
58	Mass 121	121.05
59	Mass 123	123.05
60	Mass 125	125.05
61	Mass 127	127.05
62	Mass 129	129.05
63	Mass 131	131.05
64	Mass 133	133.05
65	Mass 135	135.05
66	Mass 137	137.05
67	Mass 139	139.05
68	Mass 141	141.05
69	Mass 143	143.05
70	Mass 145	145.05
71	Mass 147	147.05
72	Mass 149	149.05
73	Mass 151	151.05
74	Mass 153	153.05
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76	Mass 157	157.05
77	Mass 159	159.05
78	Mass 161	161.05
79	Mass 163	163.05
80	Mass 165	165.05
81	Mass 167	167.05
82	Mass 169	169.05
83	Mass 171	171.05
84	Mass 173	173.05
85	Mass 175	175.05
86	Mass 177	177.05
87	Mass 179	179.05
88	Mass 181	181.05
89	Mass 183	183.05
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91	Mass 187	187.05
92	Mass 189	189.05
93	Mass 191	191.05
94	Mass 193	193.05
95	Mass 195	195.05
96	Mass 197	197.05
97	Mass 199	199.05
98	Mass 201	201.05
99	Mass 203	203.05
100	Mass 205	205.05
101	Mass 207	207.05
102	Mass 209	209.05
103	Mass 211	211.05
104	Mass 213	213.05
105	Mass 215	215.05
106	Mass 217	217.05
107	Mass 219	219.05
108	Mass 221	221.05
109	Mass 223	223.05
110	Mass 225	225.05
111	Mass 227	227.05
112	Mass 229	229.05
113	Mass 231	231.05
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117	Mass 239	239.05
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133	Mass 271	271.05
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135	Mass 275	275.05
136	Mass 277	277.05
137	Mass 279	279.05
138	Mass 281	281.05
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144	Mass 293	293.05
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158	Mass 321	321.05
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161	Mass 327	327.05
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165	Mass 335	335.05
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317	Mass 639	639.05
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319	Mass 643	643.05
320	Mass 645	645.05
321	Mass 647	647.05
322	Mass 649	649.05
323	Mass 651	651.05
324	Mass 653	653.05
325	Mass 655	655.05
326	Mass 657	657.05
327	Mass 659	659.05
328	Mass 661	661.05
329	Mass 663	663.05
330	Mass 665	665.05
331	Mass 667	667.05
332	Mass 669	669.05
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General

Document Name: Tune reports

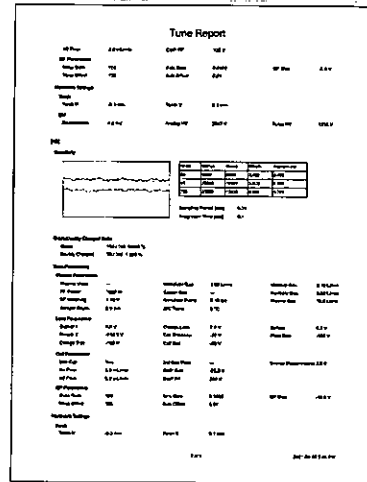


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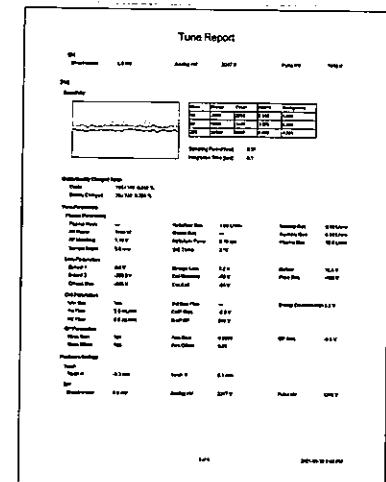


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General

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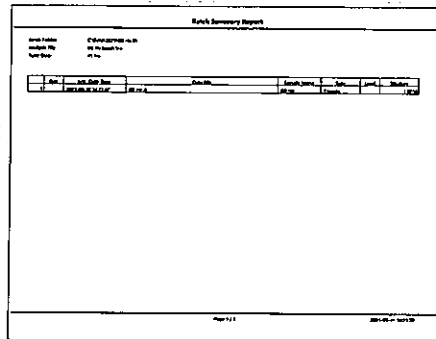


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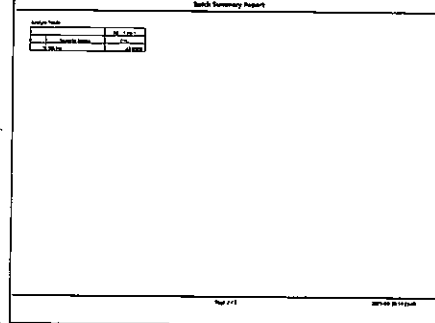


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General

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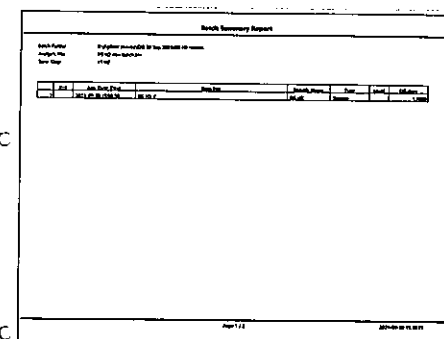


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General

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Test Report

Match Summary Report

Test Report

Quick Summary Report

;Test Report

Dutch Secondary Stage

Purpose

This signature page was created and published because the ACE sign off action was executed, which is valid for it's entire document, including attachments. The ACE signoff is an incident signature that requires two distinct identification components: unique username and personal password. The Agent representative who has delivered the service understands that the meeting and legal status of an electronic signature. As a trained official connector, the Agent representative has a unique password and login to activate ACE and electronically sign this document. (Other e-signatures can be applied to this document using a Document Content Management or other suitable method defined in your data access and control procedure.)

Parthiv Kureshiah
parthiv_kureshiah@gmail.com
September 30, 2021
[Executed protocol and published this original version of document]

The document provides a protocol to verify and record evaluation development and evidence of process operations. It has been provided for our investigation of applicable requirements in order to identify best practices. The document is designed to provide an organized approach of a complete compliance package. Validation depends upon many factors and use of this protocol alone does not ensure compliance. Against the foregoing readers are reminded that requirements are to be satisfactory for any specific regulatory program.

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Section 40: BY THE WAY

Keywords: *Acute stress disorder, Posttraumatic stress disorder, Trauma, Trauma exposure, Trauma symptoms*



Calibration Report

Measurement Results

HEATING BLOCK			Temperature Distribution	
Setting (°C)	Reading (°C)		Stability (°C)	Uncertainty (°C)
	Min. - Max.	Average		
100.0	99.8 - 100.4	99.9	0.20	0.25
165.0	164.8 - 165.4	165.1	0.20	0.24

* The quoted uncertainty includes "repeatability"

The calibration results apply only to the items calibrated here.

The result of use is to be based on the use 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 which for all distributions, providing a level of confidence of approximately 95 %.

Approved By: 

ภาคผนวก จ

สำเนาหนังสืออนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

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 ⁽⁴⁾
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⁾

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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⁾

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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⁾

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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(g)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⁾

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18 Bis(2-ethylhexyl)phthalate...

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⁾
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⁾

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
34 Chromium (III)...

ลำดับที่	สารเคมี	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⁾


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
51 cis-1,2-Dichloroethylene...

ลำดับที่	สารเคมี	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⁾


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68 Fluorene...

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⁾


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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 1254 - PCB 1260	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾


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97 Pentachlorophenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
97	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
98	pH	Electrometric Method ⁽³⁾
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 ^(4,9,21)
110	TPH (C ₁₀ -C ₁₄)	Solvent Extraction, Gas Chromatographic Method ^(9,21)
111	TPH (C ₁₅ -C ₃₃)	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⁾


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 มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าธนบุรี

114 1,1,2-Trichloroethane...

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⁾


รายการสิ่งปฏิกูล (ต่อเนื่องจากหน้า) จำนวน 16 รายการ

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


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 มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าธนบุรี

3 Carbon Monoxide...


ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
3	Carbon Monoxide	1) Sampling Bag Non-Dispersive Infrared Method ⁽³⁾ 2) Non-Dispersive Infrared Method ⁽³⁾ 3) Instrumental Analyzer Method ⁽³⁾
4	Chlorine	1) Absorption Sampling, Ion Chromatographic Method ⁽⁵⁾
5	Copper	2) Isokinetic Sampling, Ion Chromatographic Method ⁽⁵⁾ 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⁾
8	Hydrogen Sulfide	2) Isokinetic Sampling, Ion Chromatographic Method ⁽⁵⁾ 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 ⁽⁵⁾
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	Absorption Sampling, Gas Chromatographic Method ⁽⁵⁾


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สิ่งปฏิกูล...

สิ่งปฏิกูลชนิดอื่นที่ไม่ใช่ตัว จำนวน 35 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,23) 2) Soxhlet Extraction, Gas Chromatographic Method ^(1,9,23) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(23,31)
2	Antimony	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,15) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,15)
3	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,15) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,15)
4	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,15) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,15)
5	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,15) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,15)


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6 Cadmium...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
6	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.6.13) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1.6.14) 3) Digestion, Inductively Coupled Plasma Method ^(7.15) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7.14)
7	Chlordane	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)
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 ^(7.14)
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 ^(7.15, 17) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(7.14, 17)
10	Chromium (VI)	1) Waste Extraction, Colorimetric Method ^(1.6.17) 2) Alkaline Digestion, Colorimetric Method ^(3.17)

(นางวิภาดา ชัยพรกุลกิจ)

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 ^(7.14)
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 ^(7.14)
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)

(นางวิภาดา ชัยพรกุลกิจ)

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) 2) Soxhlet Extraction, Gas Chromatographic Method ^(10.22) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(22.31)
18	Endrin	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)
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 ^(7.14)
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)

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2) Waste Extraction...

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 ^(1.18) 5) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method ^(1.19) 6) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ^(1.20)
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 ^(1.6.19) 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 ^(7.14)
26	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1.6.19) 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 ^(7.14)

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
27 Polychlorinated...

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 ^(1,3,23) 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 ^(1,4,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,4,16) 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 ^(1,4,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,4,16)
32	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,4,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,4,16) 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 ^(1,4,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,4,16) 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 ^(1,4,15) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,4,16) 3) Digestion, Inductively Coupled Plasma Method ^(7,15) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)


เดิม 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 ^(10,23) 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 ^(10,23) 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)


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26 Carbon tetrachloride...

ลำดับที่	สารเคมี	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 ^(7,14)
34	Chromium (III)	1) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(7,15,17) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^(7,15,17)
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)

Signature
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40 DDE...

ลำดับที่	สารเคมี	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	สารเคมี	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	สารเคมี	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 ^(7,14)
82	Manganese	1) Digestion, Inductively Coupled Plasma Method ^(7,15) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,14)
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽¹⁴⁾

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2) Thermal...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
84	Methanol	2) Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry ⁽¹⁾⁽⁹⁾
85	Methoxychlor	3) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ⁽²⁰⁾
86	Methyl Bromide	Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method ^(12,24)
87	Methylene Chloride	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22)
88	2-methylphenol	2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
89	2-Methylnaphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,24)
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)
93	Nitrobenzene	2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,18)
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)	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22)
	- Aroclor 1016	2) Automated Soxhlet Extraction, Gas Chromatographic Method ^(25,31)
	- Aroclor 1221	
	- Aroclor 1232	

สำนักงานสิ่งแวดล้อมภาคที่ 11 นครราชสีมา
(นางจิราภรณ์ อัครสุภาวดี)

- Aroclor 1242...

ลำดับที่	สารเคมี	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',5,5',6'-Heptachlorobiphenyl	
	- 2,2',3,3',4,4',5,5',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)

สำนักงานสิ่งแวดล้อมภาคที่ 11 นครราชสีมา
(นางจิราภรณ์ อัครสุภาวดี)

101 Selenium...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
101	Selenium	1) Digestion, Inductively Coupled Plasma Method ^(7,15)
102	Silver	2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
103	Styrene	1) Digestion, Inductively Coupled Plasma Method ^(7,15)
104	1,1,2,2-Tetrachloroethane	2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
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	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,24)
108	TPH (C ₈ -C ₆)	1) Soxhlet Extraction, Gas Chromatographic Method ^(10,22)
109	TPH (C ₈ -C ₁₀)	2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
110	TPH (C ₁₀ -C ₁₈)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(14,24)
111	1,2,4-Trichlorobenzene	1) Solvent Extraction, Gas Chromatographic Method ^(1,12)
112	1,1,1-Trichloroethane	2) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(25,31)
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)

สำนักงานสิ่งแวดล้อมภาคที่ 11 นครราชสีมา
(นางจิราภรณ์ อัครสุภาวดี)

116 2,4,6-Trichlorophenol...

ลำดับที่	สารเคมี	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)
119	Vinyl Acetate	2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,16)
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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 กรมควบคุมมลพิษ

ศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบผลิตภัณฑ์และประเมินผลปฏิบัติการ กองวิจัยและเตือนภัยมลพิษทางอากาศ กรมโรงงานอุตสาหกรรม โทร. ๐ ๒๖๐๒ ๕๐๐๐, ๕๑๔๖